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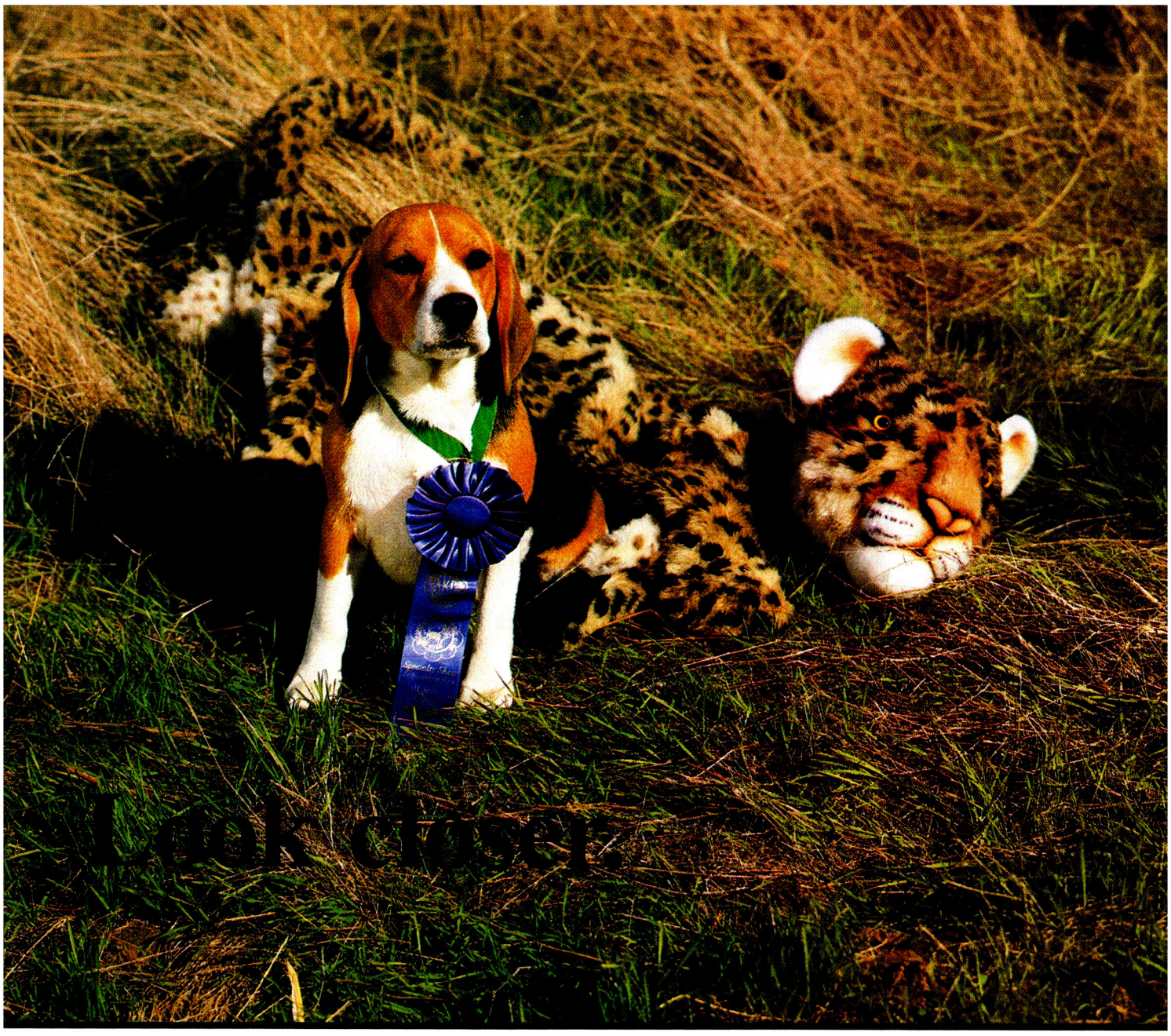

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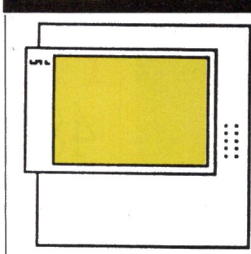

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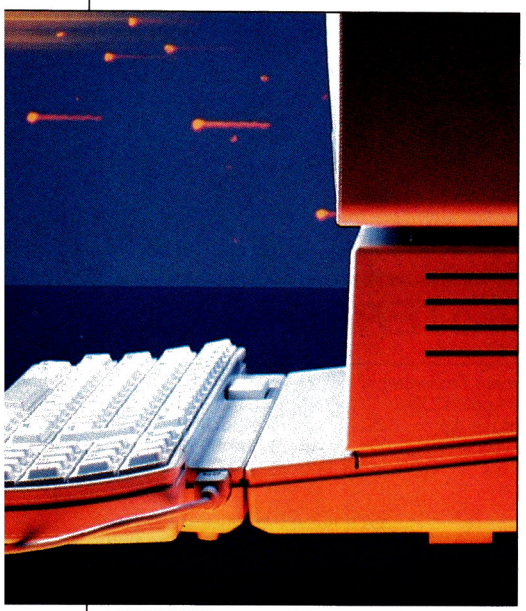

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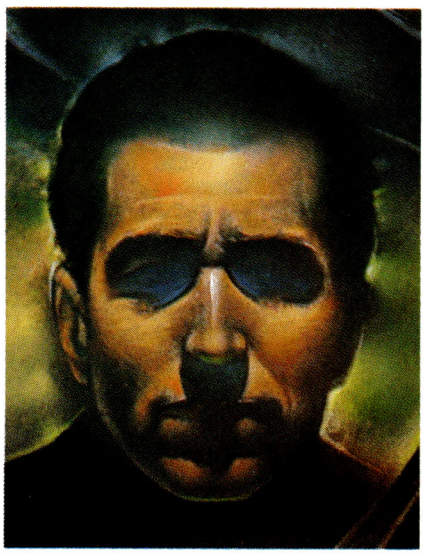

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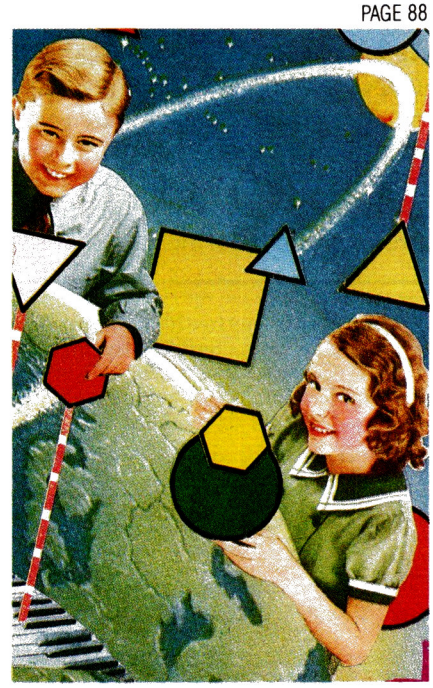

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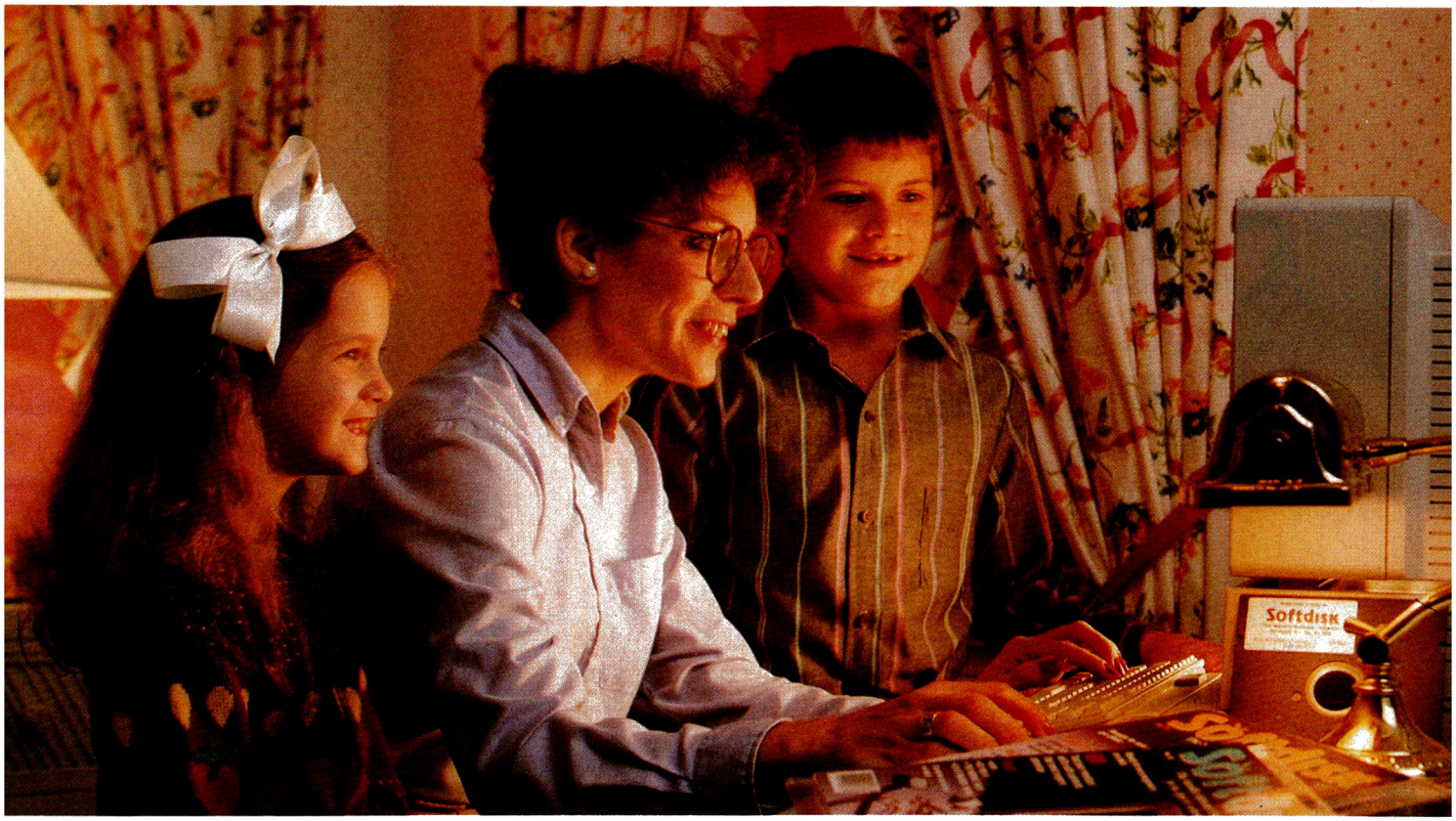

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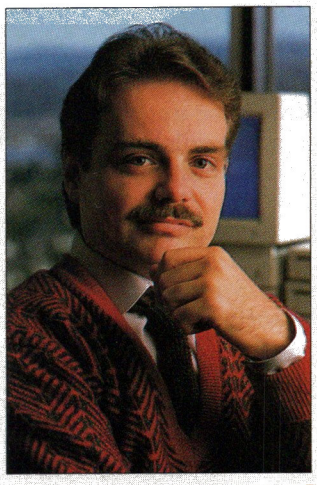

EDITOR'S PAGE

THE NEED FOR SPEED

Everything you know is wrong.

Or so it would seem if you're trying to apply some sort of logic to the modern realities of Apple II computing:

- With the advent of the IIc Plus and IIGS, Apple II computers have become more powerful.
- Software for Apple II computers has also become more powerful.
- Therefore, since Apple II hardware and software are more powerful, Apple II computing in 1989 has become slower and more time-consuming.

Do you sense that something has gone wrong here?

Apple II owners have been quick to embrace the hand-me-down interface technology of the Macintosh. And Apple has worked to encourage and coerce developers to wrap their products around this "Human Interface" of windows and menus. As a result, Apple II computing has never been easier or more accessible.

Or more capable. A familiar interface and powerful hardware have inspired program designers to go beyond themselves in creating versatile and comprehensive applications.

Unfortunately, they have often gone beyond the reality of the hardware. A new generation of Apple II software is as demanding as it is ingenious. Products such as AppleWorks GS and geoPublish (both reviewed in this issue) take Apple II computing into brave new worlds of achievement. But they also require new levels of computing muscle, muscle that the hardware isn't always able to flex.

Never before have Apple II owners more intensely felt the need for speed. In these days of megabyte RAM and high-capacity floppies, we may chuckle at a bygone era of 48K RAM and 140K disks. Yet, try to laugh while waiting for a screen to update or a database to sort or a spreadsheet to recalculate in your newest all-inclusive Apple II productivity software. Then remember when a 64K Apple II Plus sorted a mailing list in the twinkling of a CPU.

Men and computers have a symbiotic and oddly competitive working relationship. Like runners facing off in a hundred-yard dash, one urges the other toward greater achievements. More potent technology spurs us on to greater achievement, and greater achievement craves better and faster technology. Little wonder that the speed of life is gaining velocity as we near the end of the century.

New software is taking Apple II computing into brave new worlds of achievement.

You can go so far as to inflate this relationship into "Man's Will to Surpass Himself" or bring it down to a simple case of "Mainframe Tastes on a Calculator Budget." Fact is, when it comes to hardware/software capability, too much is never enough.

We may envy the efficiency of older single-purpose word-processing and database programs, but we won't turn back after sampling the versatility of integrated software. So, the solution is not to go backward but to design more-efficient hardware accelerators and software to rush us forward.

In this issue, we look admiringly and critically at the cause and effect of Apple II evolution: The software that pushes the technology and the hardware accelerators that pull the software. Products such as AppleWorks GS and geoPublish, TransWarp GS and the RocketChip.

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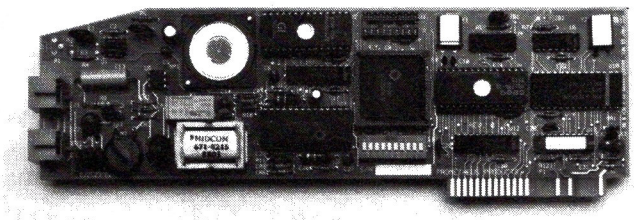

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"The Need for Speed" is a race we'll never win. We'll just run it faster and faster as Apple II computing progresses.

The Jury Is In

Perhaps the most controversial product yet released for the IIGS, Claris' AppleWorks GS is undoubtedly the Apple software product of the year. The original AppleWorks, one of the best-selling programs of all time, set a new standard in efficient productivity and made the Apple II a potent addition to many professional desktops.

Now, a new generation of IIGS users—both beginners and IIe/c veterans who have upgraded—are looking toward AppleWorks GS as a total software solution. With six modules covering the major productivity applications, full graphics support, and total integration, AppleWorks GS is the most comprehensive software ever created for an Apple II.

Considering the comprehensive nature of AppleWorks GS, the editors of *A+* felt we needed to do something equally as comprehensive to bring you the most authoritative and unbiased review possible of this significant program.

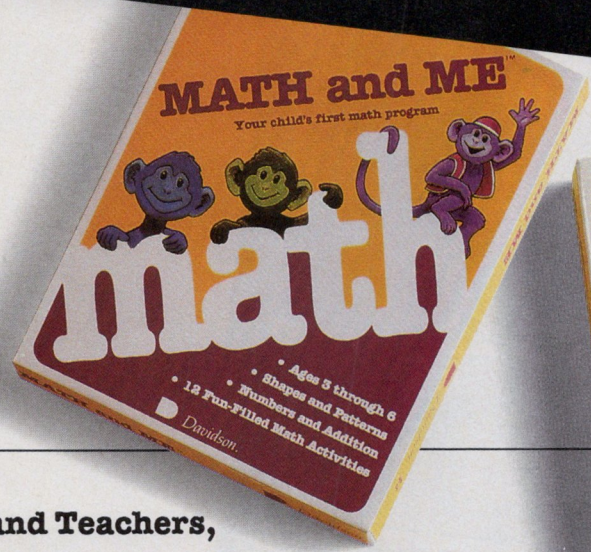
Our decision was to subject the program to the scrutiny of a team of *A+* experts, each concentrating on his or her area of expertise while testing the overall performance of AppleWorks GS. Steve High, coauthor of *AppleWorks Mastery*, compares the word-processing, spreadsheet, and database modules of AppleWorks GS to the same modules in the original AppleWorks. *A+* graphics editors Roberta Schwartz and Michael Callery evaluate the paint/draw and page-layout modules. And telecommunications editor Michael Fischer gives the lowdown on downloading (and other matters) in the communications module.

The result is a penetrating review of a program that may—or may not—define the current standard of Apple II productivity. I think you'll be surprised by our writers' candor and their recommendations about AppleWorks GS.

Bob

BOB LINDSTROM/**EDITOR**

Teach your children well.



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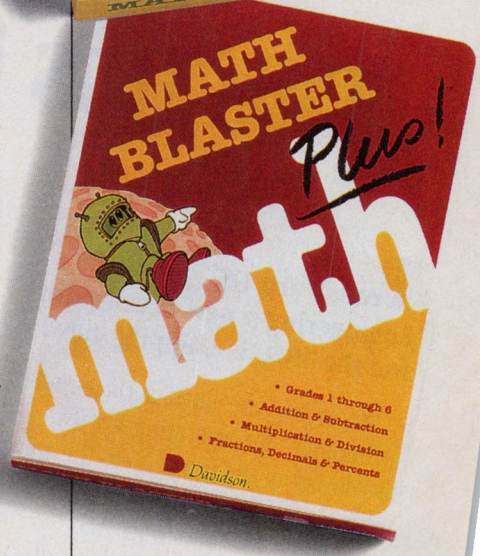

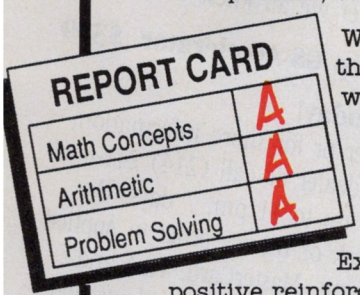

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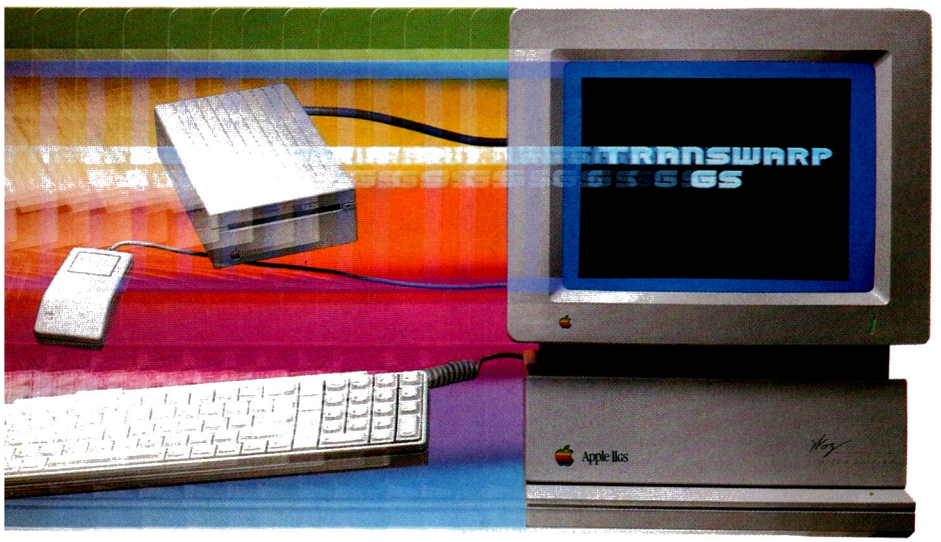

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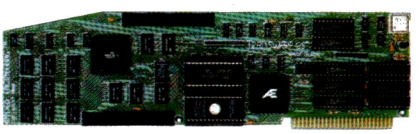

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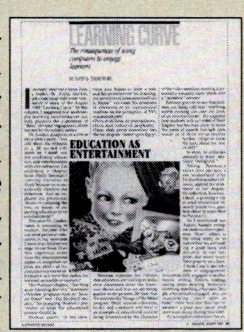
LETTERS TO THE EDITOR

RIGHT YEAR, WRONG WAR

Dear A+: I don't often find cause for criticism in A+, but a comment by David Thornburg in January's "Learning Curve" was just too silly to let pass.


LEARNING CURVE

EDUCATION AS ENTERTAINMENT

In discussing education as entertainment, Thornburg states, in regard to the War of 1812, that "most students would gain a new perspective on that conflict by listening to Tchaikovsky's '1812 Overture,' exploring the relationship between the musical themes and the progress of the war itself." For a magazine that emphasizes the educational market, that *really* is a howler.

The "1812 Overture" was written to commemorate the defeat of Napoleon's "Grande Armée" at the gates of Moscow in 1812 and the beginning of Napoleon's disastrous retreat from Russia. The dominant themes—particularly toward the end—are of "La Marseillaise" and the Czarist anthem "God Preserve the Czar" (anachronistically, since it was not written until 1833), together with cannons and church bells.

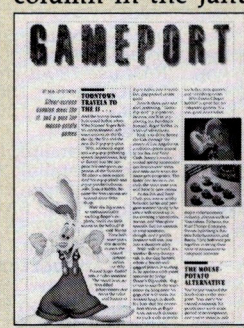
The War of 1812, by contrast, *began* that year with the invasion of Canada by American forces. It ended some three years later, after a vastly outnumbered Canadian militia had dealt a series of devastating defeats to the invaders (and had avenged the burning of York—which is now Toronto—by penetrating as far as Washington and burning the capital, hence the White House), when Wellington's victory over Napoleon at Waterloo permitted the British to commit additional troops to the campaign in Canada.

There is a very tenuous connection in that Napoleon was defeated in Russia, and his subsequent defeat in Belgium led to a definitive end to the War of 1812, but to suggest that the overture was written to mark the progress of the War of 1812 is plain nonsense.

PAUL S. DUNSEATH
OTTAWA, ONTARIO
CANADA

MOUSE POTATOES, UNITE

Dear A+: Can I believe my eyes? I read Bob Lindstrom's "GamePort" column in the January issue, and, wonder of wonders, you call for *easier* games. Games that are more fun, even relaxing! And I thought all serious gameheads would only want more intricate and devious ways of meeting their doom, usually quickly and on the first level.


GAMEPORT

TOONTOWN TRAVELS TO THE II...

THE MOUSE-POTATO ALTERNATIVE

Well, I must admit, I too am a devout "mouse potato" (great name, Bob). I probably own 30 games for my Macintosh and IIGS computers, and I have completed a total of one! My frustration level is much too low to develop the skills necessary to get far in adventure or arcade games. I too am only looking for a few minutes' relaxation and enjoyment, but I keep buying the darn things anyway, hoping against hope that I'll find one easy enough to hold my interest.

Actually, I have found a few games that require only marginal skill and hand/eye coordination, and I return to these again and again. Shanghai; Tetris; and my current favorite, Arkanoid, are genuinely fun to play. My favorite on the IIGS is Thexder, only because I have patched it so that the robot is invincible. Nothing more fun than alien bashing when you can't be hurt. I know there's no real challenge, but for us mouse potatoes, that only adds to the enjoyment.

I would suggest to game creators: Take pity on us less-than-adept consumers. Why not include a practice mode, a beginner mode, or a nuke-the-creeps-back-to-the-

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LETTERS

Stone-Age mode? You may find that your sales will pick up. If the person who writes "GamePort" feels this way, think how many more of us there must be out here!

ROBERT B. DANLEY
URBANA, IL

Dear *A+*: I am in total agreement with your Mouse Potato column. I can't even get Hitchhiker out of his room, and I object to bombs and war in general. Usually just trying to follow the directions destroys what's left of my ego at day's end. Another point is that people like me who have started on computers without a childhood spent on arcade games have a real struggle with eye/hand coordination. We also lack the younger person's apparently intuitive understanding of how a game is played. I'm 68 now, about 8 years into computers.

I can use only games that can be played alone or against the computer. If I had playing partners handy, I wouldn't be looking for computer games.

I'd enjoy learning of other games for Mouse Potatoes.

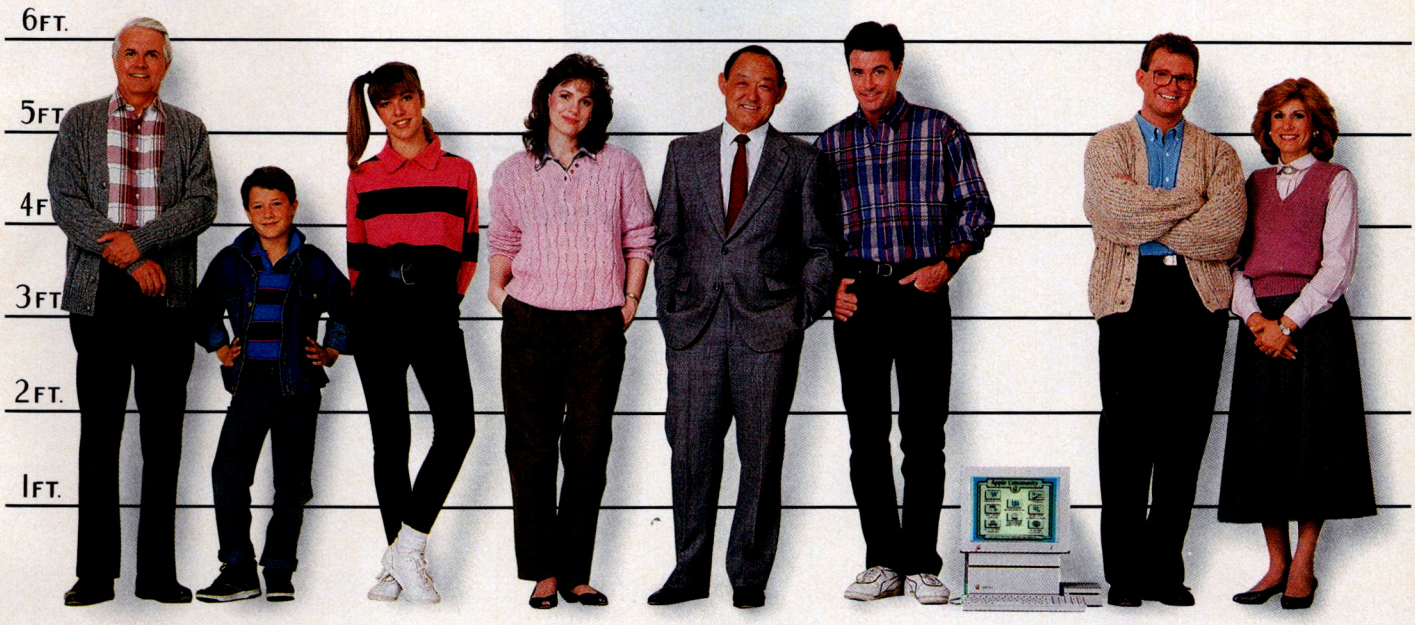
EVELYN STEWART
MILFORD, NJ

Dear *A+*: I thoroughly enjoyed Bob Lindstrom's "GamePort" column about the "mouse potato."

By definition, a game is an "activity engaged in for diversion or amusement" (*Webster's New Collegiate Dictionary*, 1980). I'm not diverted or amused by a frustrating or impossible computer program, although I may be diverted by running the program disk and documentation through the Cuisinart. Such "games" are not fun; they are work, and I already have enough of that, thank you. The hot-shot game writers need to get away from the arcade pinball stuff and come up with reasonable, instructive, and fun computer games. There is a gold mine of consumer support out here just waiting.

AL MARTIN, EDITOR
THE ROAD APPLE
PORTLAND, OR

Break into Apple Headquarters. You'll get 30 days.



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NEWSPLUS

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SLUGGING IT OUT IN COURT

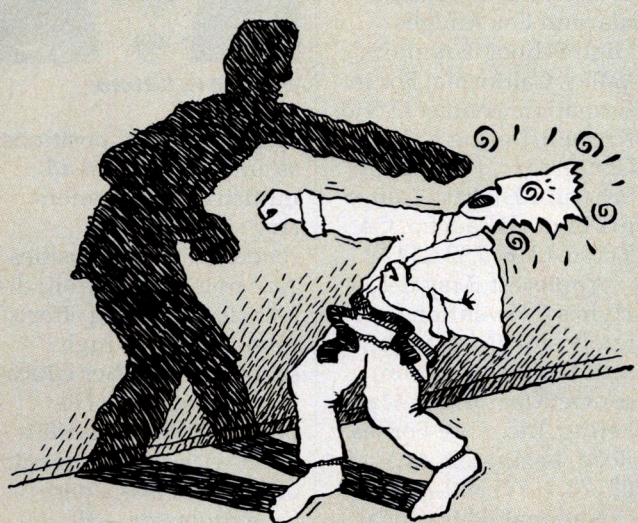
Watch yourself the next time you glare at a computer screen and declare, "Just another karate game." Apparently, the Ninth Circuit Court of Appeals can tell the difference between martial-arts games, even if you can't.

Epyx, Inc., publisher of World Karate Championship, has been named the winner in a "look and feel" suit (or, in the case of martial-arts games, "appearance and punch") brought by Data East, publisher of Karate Champ. The appellate court overturned a lower-court decision against Epyx.

"We believe this is the first time in the computer industry that a look-and-feel lawsuit has been decided in favor of the defendant," said Epyx CEO and president David Morse. "It confirms and supports the industry's commitment to providing the public with the best games that technology can produce through a healthy atmosphere of competition."

Ken Wasch, executive director of the Software Publishers Association, noted, "This decision and other cases pending will remove a substantial degree of uncertainty with respect to the scope of copyright protection in software development."

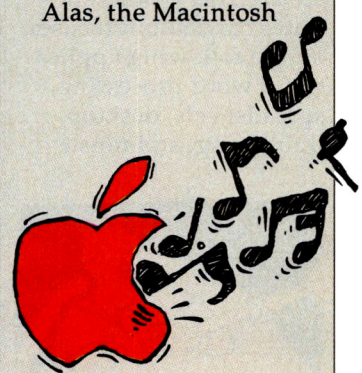
The bottom line? The computing world has been kept safe for dozens and dozens of new chop-and-flip hand-to-hand-combat games. Is that great news, or what?—*BL*



SINGING APPLE II PRAISES

At one time, an Apple II was in the collection of every serious electronic musician. As one of the first entrants into the MIDI (Musical Instrument Digital Interface) market, the Apple was standard gear for those who wanted to play with computers and music.

Alas, the Macintosh



has supplanted the pioneering Apple II in MIDI racks everywhere. But at least one source keeps the tune alive.

Music, Midi and Your Apple II is a monthly newsletter, published by MMP Systems, tuned up for the musically faithful of the Apple world. The second issue is a brief (four-page) but helpful array of Q&A, product news, and tips about using a II in a synthesizer/sequencer setup.

This same issue also includes the first of a bimonthly series of one-page pull-out reference sheets: a glossary of elec-

ILLUSTRATIONS BY COURTNEY GRANNER

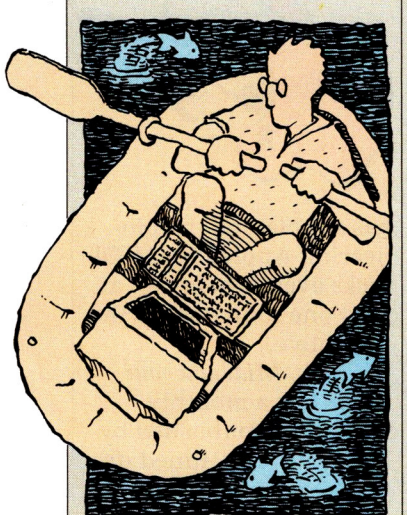
NEWSPLUS

tronic-music terms.

A one-year subscription is available for $14.95 from MMP Systems, 20681 Celeste Circle, Cupertino, CA 95014; (408) 996-9270.—*BL*

SUMMER FUN

The University of Oregon Computer Camp promises 11 days of computing and recreation during the summer of '89 session, which runs July 15–25. This year's computer curriculum focuses on the following applications: word processing, spreadsheets, desktop publishing, and music.



Additional special-interest sessions highlight advanced computer applications, music composition, CAD, and programming. The availability of Apple IIe, Macintosh, and IBM computers makes this camp a wonderful opportunity for students who are seriously interested in computers. Campers will also brave a rafting trip; visit the Marine Science Center in Newport, Oregon; and have access to gymnasiums, swimming pools, and tennis and racquetball courts. For more information, contact The University of Oregon Continuation Center, 1553 Moss Street, Eugene, OR 97403; (800) 824-2714; (503) 686-3537.—*JB*

GAME GOLIATHS GATHER

The biggest personalities in the computer-game biz assembled for the second Computer Game Developers' Conference last September 17–19 in Milpitas, California. Some 180 designers, programmers, and developers discussed shared problems, common challenges, and communal gripes while participating in a rich series of lectures and panel discussions.

So successful was the event that another, bigger and better, conference has been scheduled for May 7 and 8 at the Hilton Hotel in Sunnyvale, California. Attendance at the upcoming event is limited to 300. For more information, contact Computer Game Developers' Conference '89, P.O. Box 50282, Palo Alto, CA 94303.—*BL*

EDUCATIONAL-COMPUTING CONFERENCES

Spring '89 offers interesting professional-development opportunities for computer-using teachers:

The 27th Annual Conference of the International Association for Computing in Education, March 27–29, St. Francis Hotel, San Francisco, California. Contact IACE/89, 1230 17th Street N.W., Washington, DC 20036.

The 1989 Computers & Reading/Learning Difficulties Conference, April 13–15, The Adams Mark Hotel, Philadelphia, Pennsylvania. For information, contact Educational Computer Conferences, 1070 Crows Nest Way, Richmond, CA 94803; (415) 222-1249.

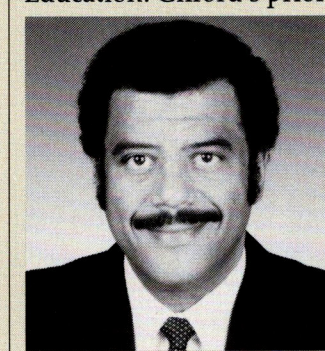
The 1989 Spring CUE (Computer-Using Educators) Conference, May 5–6, The Irvine Hilton & Towers, Irvine, California, and Los Amigos High School, Fountain Valley, California. For information, contact David Kressen, Spring CUE Conference, Polytechnic School, 1030 East California Blvd., Pasadena, CA 91106; (818) 792-2147.

AppleFest, May 6–8, Hynes Convention Center, Boston, Massachusetts. For information, contact Cambridge Marketing, Inc., One Forbes Road, Lexington, MA 02173; (617) 860-7100.

National Educational Computing Conference, June 20–22, Hynes Convention Center, Boston, MA. Contact International Council for Computers in Education, University of Oregon, 1787 Agate Street, Eugene, OR 97403; (503) 686-4414.

APPLE VP OF EDUCATION

Apple Computer recently appointed Bernard R. Gifford, Ph.D., as the company's first official vice president of education. Gifford comes to Apple from the University of California, Berkeley, where he was the dean of the Graduate School of Education. Gifford's prior career involved positions as an educator and administrator in elementary schools, high schools, and universities. At Apple, Gifford will direct all marketing efforts for elementary, high school, and higher education institutions. He plans to retain his affiliation with the University of California as a part-time professor.—*JB*



Bernard R. Gifford

NEWSPLUS

UPDATE

■ In order to avoid confusion with another Apple II graphics-utility program, Kraig Pritts has changed the name of his graphics-management program The Graphics Manager ("Roundup," *A+* December 1988, page 151) to Graphics Unlimited. Version 2 of the program, which will include screen dumps to an ImageWriter for hi-res and double-hi-res Dazzle Draw graphics as well as Apple Computer's most recent System Utilities program, should be available by press time. Registered owners of Version 1 under either name will be able to upgrade to Version 2 by returning their original program disk plus a check or money order for $5 ($10 outside the U.S.) to Kraig D. Pritts, Data Services, 76 West Elizabeth Street, Skaneateles, NY 13152; (315) 685-5130.

■ Timeworks is now selling Third Wave Technology's Magna-Charta (see "SmartPort," February 1989) as Graph It!, a graphing program for the IIe/c/GS/c+ that can easily plot up to 400 data points in 12 different graph formats, using the familiar Mac-style user interface. Graph It! generates charts from numerical data, either entered manually or contained in spreadsheet and database files originally created within AppleWorks, DB Master, or any other program that produces ASCII files. Graph It! produces charts that can be imported directly into Timeworks' Publish It! or any program that accepts double-hi-res pictures. Graph It! is available on both 5¼- and 3.5-inch disks for $69.95 from Timeworks, 444 Lake Cook Road, Deerfield, IL 60015-4919; (800) 535-9497 or (312) 948-9200.

■ Blue Lion Software is introducing school editions for RSVP and the five "Ticket To" programs. Teachers' editions include a teachers' guide and one backup disk. The company also offers two lab-pack options. The standard lab pack includes five disks, five manuals, and one teacher's guide. The super lab pack comes with ten disks, ten manuals, the teachers' guide, and a classroom-activity guide. Classroom-activity guides are also available separately. Special foreign-language lab packs are available for Ticket to Paris and Ticket to Spain. For information about pricing and purchase options contact Blue Lion Software, 90 Sherman Street, Cambridge, MA 02140; (800) 333-0199; (617) 876-2500. ✚

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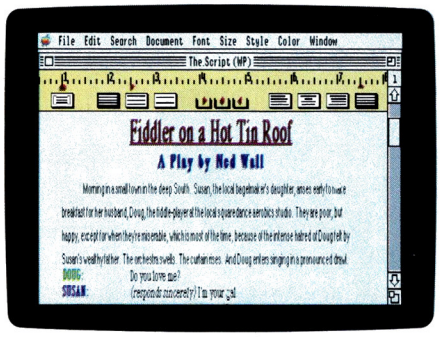
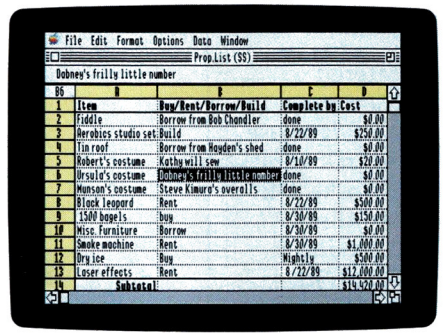
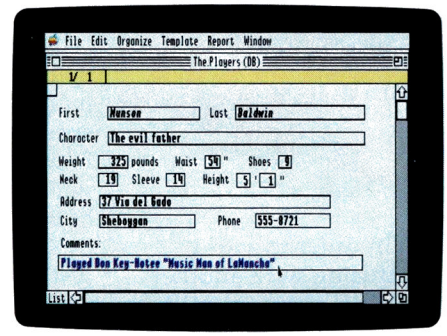
Introducing AppleWorks GS. Now you've seen everything.



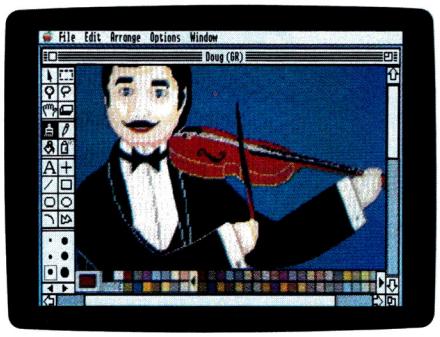
It's six powerful programs in one program. Including a word processor that lets you use different type styles and sizes.



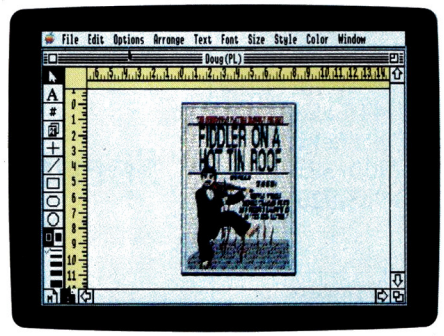
A powerful spreadsheet lets you calculate grades, analyze finances or run a small business—and transforms your numbers into colorful graphs.



The database lets you store and sort thousands of business, school or home records. And you can use a mouse and pull-down menus.



A combination painting/drawing program is designed to utilize all the amazing graphics capabilities the IIGS is famous for.



AppleWorks GS includes the most powerful Apple II page-layout program you can buy. Put all the pieces together. Then publish them.

A spell checker with an 80,000-word dictionary is built in. Ditto for a thesaurus that can make you more articulate, eloquent or perspicuous.

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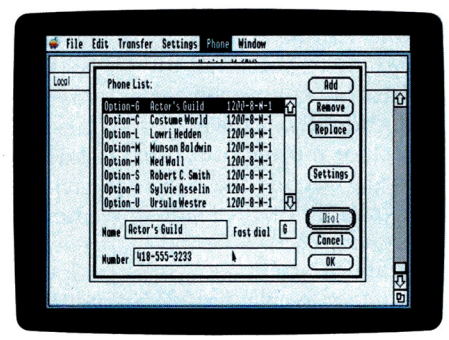

AppleWorks GS supports most popular modems to let you send and receive files via telephone.

AppleWorks® GS gives you six of the most popular applications for your Apple IIGS in a single, easy-to-use package.

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REVIEW BY OWEN W. LINZMAYER

Shift your Apple II into high gear.

TransWarp GS

THE NEED FOR SPEED

Applied Engineering's TransWarp GS accelerator card is unquestionably the most eagerly awaited third-party Apple II product introduced so far in 1989. With its 2.6-MHz microprocessor, super-hi-res graphics, and Ensoniq sound chip, the IIGS can perform computer calisthenics that its predecessors couldn't even dream of. Unfortunately, GS-specific programs often overburden the machine's processing powers, leaving the CPU gasping for breath and users twiddling their thumbs to kill time. TransWarp GS gives the Apple IIGS the shot of digital adrenaline the demanding application programs of today crave.

During the last few months, I've put the TransWarp GS through its paces, using it daily with the strange configurations of software and hardware my job demands. It has performed flawlessly, more than doubling the speed of the IIGS. I've become addicted to computing at warp speed with the TransWarp GS. Once you get a taste of the TransWarp GS, you'll wonder how you ever got anything accomplished with your IIGS lumbering along at an unaccelerated pace.

Plug and Play

The TransWarp GS is a board-based accelerator that plugs into an expansion slot and the CPU (central processing unit) socket, making it only slightly

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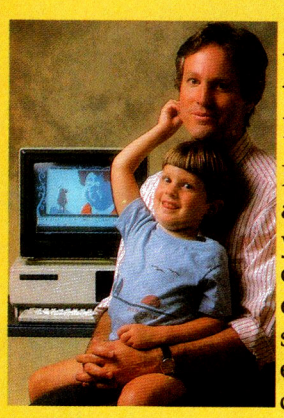

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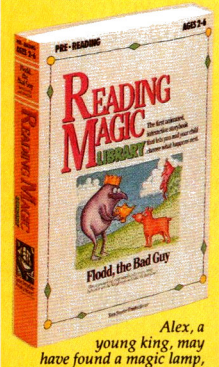
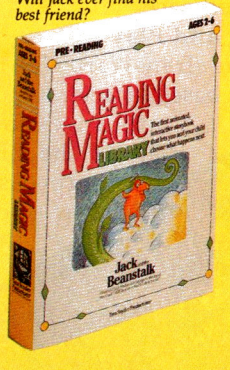


Alex, a young king, may have found a magic lamp, but can it save his kingdom from Flodd the Bad Guy?

What will Jack find on his voyage to the top of the cloud? Will Jack ever find his best friend?



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more difficult to install than most peripheral cards. As long as you proceed with caution and don't zap any components with static electricity, installation should take less than ten minutes.

First remove the 65C816 processor chip from its socket on the GS motherboard, using a flat-blade screwdriver, and store it in a safe place.

Taking care not to bend any pins, plug the stiff-ribbon-cable adapter on the TransWarp GS into the empty CPU socket. Finally, insert the TransWarp GS edge connector into slot 3 or 4.

As most IIGS owners already know too well, plugging a peripheral card into a slot usually overrides the built-in function of that slot. For example, to add a hard-disk drive to your system, you usually use the Control Panel to set slot 7 to Your Card, thereby sacrificing the ability to use AppleTalk. TransWarp GS, however, does not commandeer the function of the slot (built-in text display for slot 3, mouse port for slot 4) into which it is connected.

A plug-and-play device, the TransWarp GS is at your service immediately after installation. No special preboot software is necessary to activate the board. When you turn the computer on, you see a brief animated start-up sequence with the words TRANSWARP GS popping onto the super-hi-res graphics screen, accompanied by the sound of a spaceship blasting into orbit. TransWarp GS then performs a self-test and automatically installs a classic desk accessory (CDA) into memory that allows you to modify the accelerator's operation.

Warp Speed

Even without the special-effects fanfare, the TransWarp GS makes its presence known almost immediately. Windows pop open and shut instantaneously, lists sort without hesitation, and cursors flash so fast they appear solid. (For benchmark tests of the speed improvement, see "TransWarp GS Benchmark Results.") I wasn't able to find a single piece of software incompatible with it, nor could I attribute any system problems to the card's presence.

Applied Engineering rates the TransWarp GS at 7 megahertz (MHz), more than double the 2.6 MHz at which Apple rates the IIGS in its fast-system-speed mode and a full seven times quicker than the standard 8-bit Apple II/+/e/c.

A 1-MHz microprocessor runs at 1 million cycles per second, which may sound extremely fast, but processor speed is only a rough estimate of computing power. Efficiency, the number of cycles necessary to complete a single operation, is equally important as raw clock speed for comparing relative processor performance.

The TransWarp GS achieves its acceleration with a faster version of the 65816 CPU and memory caching. Simply stated, memory caching is a technique that monitors the data needs of the CPU, storing frequently requested data in relatively fast "cache" memory, from which bytes can be retrieved quickly, as opposed to laborious fetching of data from slow memory whenever it's needed. (For a detailed explanation of memory caching, see "The Zip Chip: Life in the Fast Lane," August 1988.) The Disk Cache NDA that comes with the GS/OS operating system works on the same principle but speeds up disk operations, not processor functions.

Cruise Control

A TransWarp GS classic desk accessory automatically installs into memory on start-up. Since the CDA loads directly from ROM on the TransWarp GS board, any increase in boot time is imperceptible. Thereafter, whenever you press ⍁-Control-Escape to access the CDA menu, TransWarp GS appears as an option. You can set the speed, change the configuration, initiate a self-test, and run the "About TransWarp GS" demonstration from within this accessory.

The TransWarp CDA menu has three speed settings: Normal, 1.0 MHz; Fast, 2.6 MHz; and TransWarp, 7.0 MHz. There is no way to

VITAL STATISTICS

TRANSWARP GS

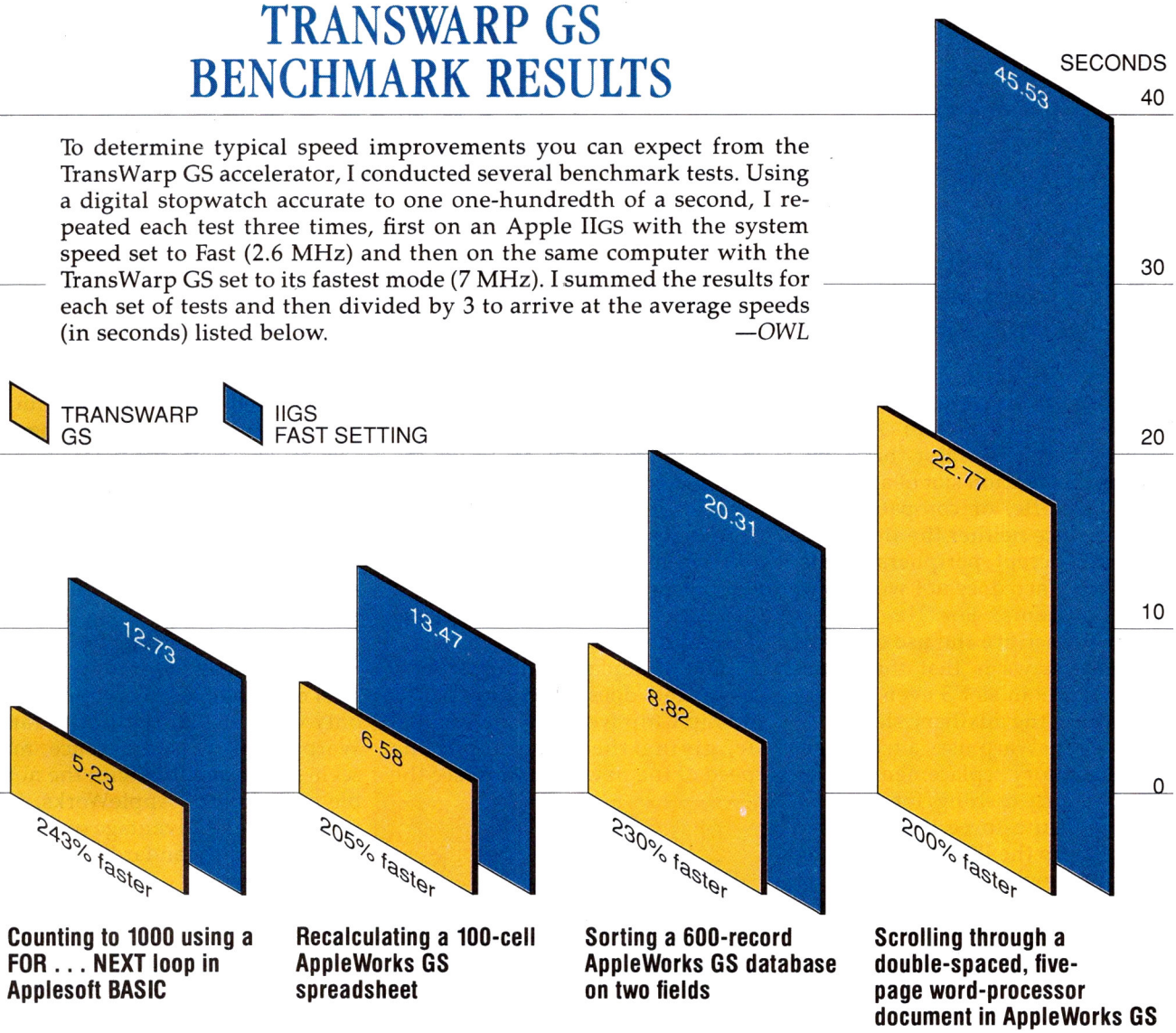
An Apple IIGS accelerator board that more than doubles the computer's processor speed to 7 MHz

PRICE: *$399*

Applied Engineering, Inc.
P.O. Box 5100
Dallas, TX 75011
(214) 241-6060

TRANSWARP GS BENCHMARK RESULTS

To determine typical speed improvements you can expect from the TransWarp GS accelerator, I conducted several benchmark tests. Using a digital stopwatch accurate to one one-hundredth of a second, I repeated each test three times, first on an Apple IIGS with the system speed set to Fast (2.6 MHz) and then on the same computer with the TransWarp GS set to its fastest mode (7 MHz). I summed the results for each set of tests and then divided by 3 to arrive at the average speeds (in seconds) listed below. —*OWL*



Counting to 1000 using a FOR . . . NEXT loop in Applesoft BASIC

Recalculating a 100-cell AppleWorks GS spreadsheet

Sorting a 600-record AppleWorks GS database on two fields

Scrolling through a double-spaced, five-page word-processor document in AppleWorks GS

set any other intermediate speed. The speed setting in the TransWarp GS CDA works in conjunction with the system-speed setting on the Control Panel. For example, if the system speed is set to Normal on the Control Panel, the GS runs at 1 MHz, regardless of the TransWarp setting.

Under the Configure heading, you can choose to disable the graphics and sound-effects fanfare that occurs during start-up—doing so shaves a few seconds off the system's boot time, but you won't get the satisfaction of hearing your friends ooh and aah when they see the demo.

Also under the Configure heading is an option called AppleTalk/IRQ, which you can set to make the TransWarp GS compatible with time-sensitive devices such as AppleTalk drivers.

The self-test option in the CDA involves a series of diagnostic exams. As the different components and functions of the board are checked out, either the word Passed appears or the accelerator is disabled, allowing the GS to function properly at normal speeds.

Speeding Ticket

The only potential drawback of the TransWarp GS is its $399 price tag, but it's the only IIGS accelerator on the market. Also worth noting: The board was designed to accept faster microprocessors as they become available, so a TransWarp GS running at 10 MHz or more is conceivable. The TransWarp GS additionally comes with a full one-year parts-and-labor warranty.

Whether you want to add a RAM disk, hard-disk drive, or accelerator to your computer, speed comes at a hefty price. RAM disks offer almost instant load times, and hard-disk drives tack on the convenience of having one place to store all your files, but only an accelerator such as the TransWarp GS increases the raw power of your computer, regardless of the application. It's an improvement you're going to appreciate every time you place your fingers on the keyboard.

If you're like many IIGS owners who have grown disillusioned by the lethargic performance of complex software packages such as AppleWorks GS (see reviews in this issue), check out the TransWarp GS. It is the only hardware product currently available that delivers the power that today's sophisticated software packages desperately need. ✚

Owen W. Linzmayer is A+'s technical editor.

THE NEED FOR SPEED

GET YOUR EIGHT BITS' WORTH

If running at 7 MHz with the TransWarp GS sounds enticing but you don't have an Apple IIGS, don't despair. Accelerators are available for the entire line of Apple IIs.

"Classic" TransWarp

The TransWarp from AE is a board-based accelerator that plugs into any expansion slot of an Apple II, II Plus, IIe, or compatible. Of course, since neither the IIc nor IIc Plus can accept peripheral cards, the TransWarp does not work with these systems. For IIe owners loathe to sacrifice the use of a slot, the good news is that the TransWarp works in slot 3 even if there is a card in the auxiliary slot.

The TransWarp uses a technique called memory replacement, rather than memory caching, for acceleration—a brute-force approach to speeding up the II. Instead of using a small amount of fast memory to keep track of commonly requested data, the TransWarp has 256K of fast RAM and a souped-up version of the 65C02 central processor that runs at 3.6 MHz. With this setup, only main memory and the first 64K bank are enhanced. Since it emulates a language card, if you add a TransWarp to an Apple II Plus, the computer will have a total of 128K of bank-switched memory and the ability to run ProDOS, even on a 48K machine.

The TransWarp runs at a maximum speed of 3.6 MHz. This rate is great for crunching numbers, but if you try to save data to disk this quickly, you'll be in trouble, since many input/output devices, such as disk drives, rely on the normal 1-MHz timing of the Apple II. To prevent such problems, the TransWarp card has two banks of DIP switches that you set to determine the speed (1, 1.7, or 3.6 MHz) at which different slots run. They allow you to maximize the efficiency of the acceleration. Once you've configured it for your system, just plug the TransWarp into your computer and forget about it.

Zip Chip

The Zip Chip (see "Life in the Fast Lane," August 1988) is a microprocessor replacement for the Apple II Plus, IIe, and IIc that runs up to four times faster than the standard 1-MHz 6502/65C02 CPU. To install the Zip Chip, pull the CPU out of its socket on the motherboard and plug in the bulkier Zip Chip in its stead. This operation requires a more delicate touch than does inserting a TransWarp card into a slot, but anyone exercising care can do it.

Since it replaces the microprocessor and doesn't require a slot, the Zip Chip works in the original IIc, giving the machine all the speed of the newer IIc Plus (see the November 1988 cover story for a complete review of the IIc Plus). Using menu-driven configuration software that comes with the Zip Chip, you can set it to run at 18 different speeds, up to a maximum of 4 MHz. Theoretically, this range of speeds lets you slow down programs to analyze their operation or speed them up for greater performance. In the real world, however, most people just plug the chip in and run it at full throttle all the time.

The Zip Chip uses a 16K memory cache that allows it to speed up a total of 2Mb of RAM, as opposed to only the first 128K with the TransWarp card. This difference may seem significant, but with the notable exception of AppleWorks, few programs take advantage of memory beyond the standard 128K.

RocketChip

[Editor's Note: Zip Technology, maker of the Zip Chip, has filed suit against Bits & Pieces, maker of the RocketChip, claiming that the RocketChip is based on technology developed under contract to Zip Technology. Bits & Pieces has in turn filed a countersuit. The relative merit of these suits will ultimately be determined by the courts. As of this writing (January 1989), both products are available.]

In physical terms, the RocketChip closely resembles the Zip Chip. It too is a replacement microprocessor for the 6502/65C02 of the Apple II, II Plus, IIe, and IIc. Installation consists of removing the CPU and replacing it with the RocketChip.

The RocketChip uses 16K of cache memory and, in theory, speeds up the first 1.6Mb of RAM. My tests revealed that although the RocketChip worked fine with programs that required 128K or less, its performance was erratic when it was used with AppleWorks and an Apple Memory Expansion Card. AppleWorks loaded itself into the extended memory and appeared to function properly, but when I cre-

VITAL STATISTICS

TRANSWARP (VERSION 1.3)
An accelerator board that more than triples the processor speed to 3.6 MHz
Apple II/+/e, Franklin, Laser; 64K RAM
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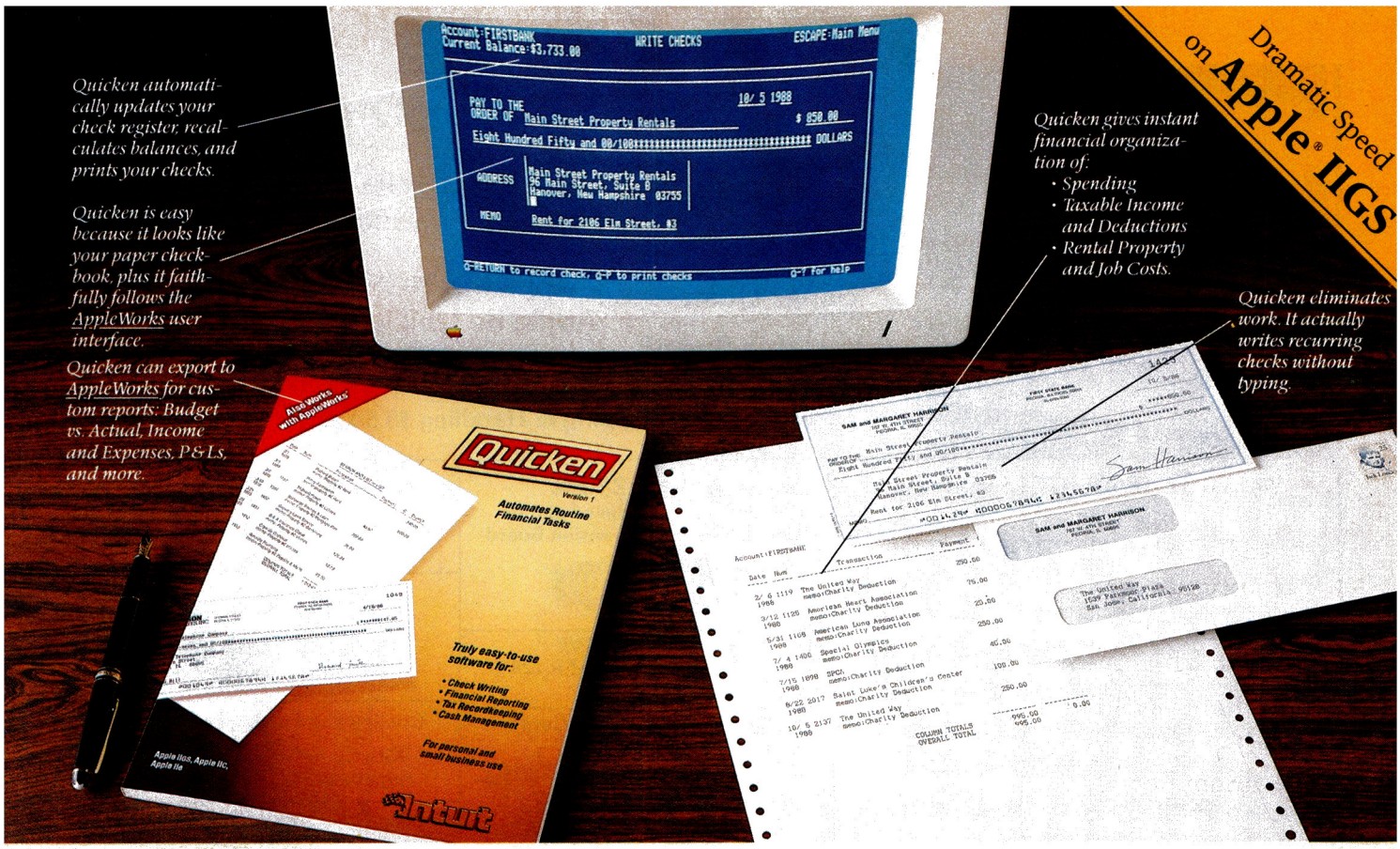

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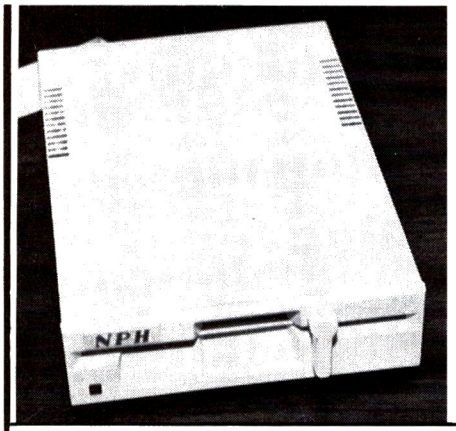

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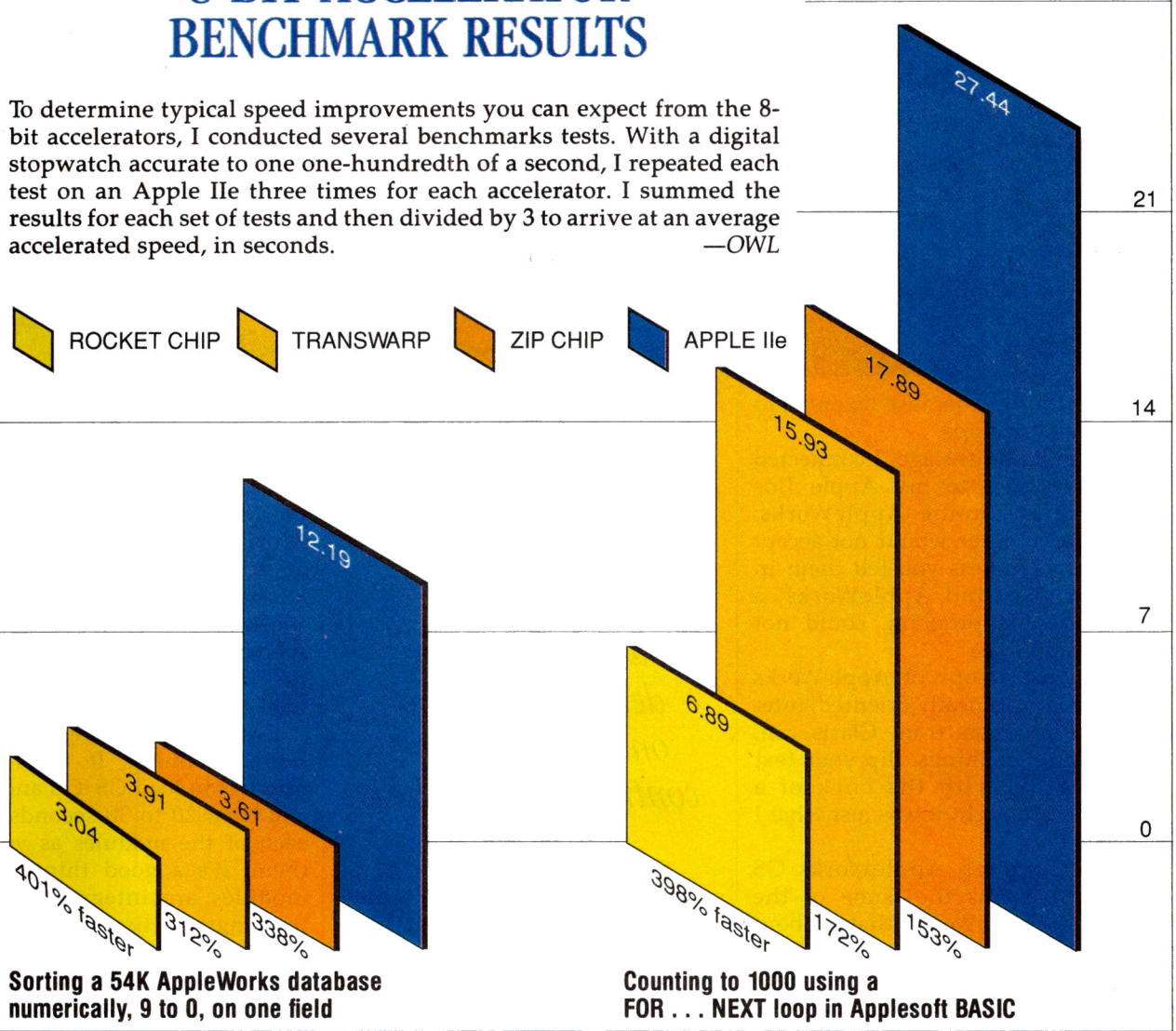
8-BIT ACCELERATOR BENCHMARK RESULTS

To determine typical speed improvements you can expect from the 8-bit accelerators, I conducted several benchmarks tests. With a digital stopwatch accurate to one one-hundredth of a second, I repeated each test on an Apple IIe three times for each accelerator. I summed the results for each set of tests and then divided by 3 to arrive at an average accelerated speed, in seconds. —*OWL*



Sorting a 54K AppleWorks database numerically, 9 to 0, on one field

Counting to 1000 using a FOR . . . NEXT loop in Applesoft BASIC

ated a new file or loaded an existing one from disk, the program crashed. I duplicated these disastrous results on separate computers, in a variety of system configurations, using two different RocketChips. The memory cards passed their self-tests, and I couldn't replicate the crashes with a Zip Chip or TransWarp, so I can only conclude that the problem lies with the RocketChip.

The RocketChip normally powers up with slots 5 and 6 running at 1 MHz and all others operating at 5 MHz. If your disk drives are not in the slow slots or you have a problem running a particular card in a fast slot, you must use the provided configuration software to make modifications to the standard start-up state.

The configuration software consists of several files on a flippy disk (ProDOS on one side, DOS 3.3 on the other) that you run manually from the Applesoft prompt. Using these programs, you can set the system speed at 50 KHz (a 20th of the standard 1 MHz) to 5 MHz. Bits & Pieces promises to provide a self-booting disk with a menu-driven program to all registered owners. Since there is no way to "program" the RocketChip to remember alternative settings, you must run the configuration software every time you turn on the computer. You can, however, activate some functions, such as speed, by holding down different keys on booting.

Making the Decision

When you get down to brass tacks with accelerators, the foremost concern is how fast the device makes your computer run under real-world conditions. As our benchmarks show (see "8-Bit Accelerator Benchmark Results"), the Zip Chip and TransWarp operated at roughly the same speed, but the RocketChip outperformed its competitors handily. Unfortunately, because of its problems with extended memory, I cannot recommend the RocketChip.

Deciding between the Zip Chip and the TransWarp depends on which computer you own. If you have a IIc, you are limited to the Zip Chip, since the machine lacks a peripheral expansion slot for the TransWarp card. If you have an Apple II or II Plus, the fact that the TransWarp emulates a language card, giving you extra memory, should weigh heavily in its favor. IIe owners face a more difficult decision, though, since both the Zip Chip and the TransWarp provide similar acceleration.

Owen W. Linzmayer

REVIEW BY STEVE HIGH

AppleWorks GS

THE NEED FOR SPEED

Our jury of experts delivers its verdict on one of the most controversial products of the year.

This all started because I wanted to print an envelope.

Several months ago, I connected a LaserWriter to my Apple IIGS computer running AppleWorks. The LaserWriter would not accept envelopes unless you fed them in lengthwise, and AppleWorks, a text-oriented program, could not print sideways.

So I got a copy of AppleWorks GS. This graphically oriented, integrated program from Claris can, among other things, flip your text 90 degrees with the click of a mouse. I thought it was just what I needed.

Even though AppleWorks GS (AWGS) claims the name of the original AppleWorks, that is about the only thing the programs have in common. AWGS most closely resembles Microsoft Works for the Mac, with integrated word-processing, database, spreadsheet, and communications modules. It goes a step further, however, by adding a full-color paint module and a page-layout module (see figure 1).

AWGS is missing a few features that it should have had, such as the ability to save selected records only in the database module, but in general AWGS has more goodies stuffed into it than does a brand-new Japanese car.

Muscular or Muscle-Bound?

AWGS does much more than AppleWorks but does it much more slowly. AWGS took 15 seconds to sort a 550-name database and 9 seconds to search through the whole file for a nonexistent record. AppleWorks took 3 seconds to do the sort and 2 seconds to do the find.

Anyone accustomed to generating hard copy in AppleWorks is going to be discouraged by the print speed of AppleWorks GS. A typical one-page business letter created in AppleWorks took 53 seconds to print on an ImageWriter II in the NLQ (near-letter-quality) mode. The same letter took just under 5 minutes to print in the 10-point Courier font in the Better Text mode from within AppleWorks GS, and the resulting document looked much less professional. It's possible to whip out a rough, unadorned-text copy in the Draft mode, but the formatting is thrown off. To be fair, this sluggish print speed is also typical of other IIGS-specific word-processing programs that utilize Apple's Print Manager toolbox and device drivers.

Even loading the program is time-consuming. It takes several minutes to load GS/OS and AWGS and then 20 to 30 seconds to load each of the modules as you need them. It's a good thing that the modules are integrated, because the length of time for loading the program discourages jumping in and out. You can make the most commonly used modules memory-resident, but that requires vast amounts of expensive RAM.

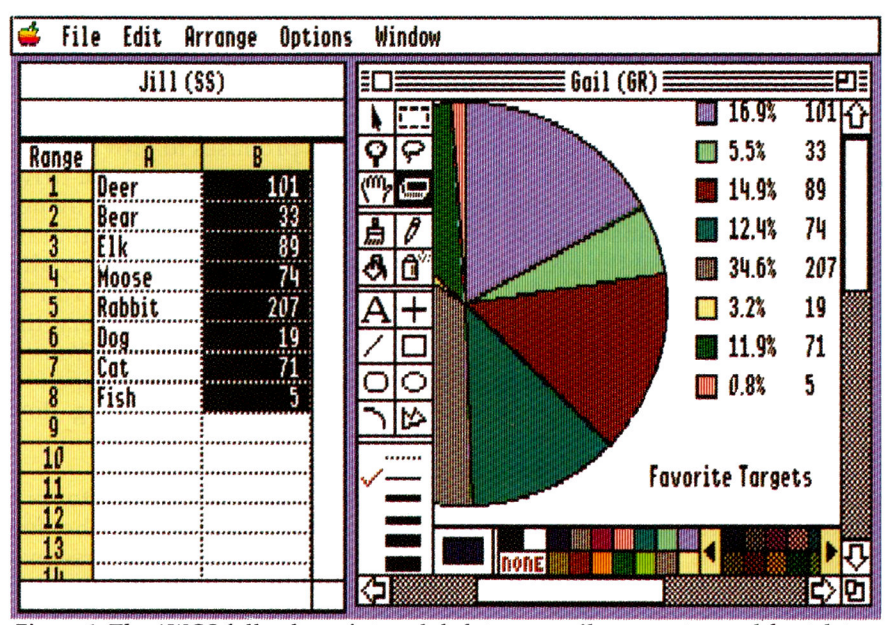


Figure 1: The AWGS full-color paint module lets you easily convert spreadsheet data into attractive pie charts.

As it is, AWGS needs a lot of costly hardware to run properly, starting with a minimum 1.25Mb of RAM and two 3.5-inch floppy drives. Because the use of slow floppy disks only adds to the lengthy loading times, the program works best with a hard-disk drive or battery-backed-up high-capacity RAM disk. Finally, at $299, the price of AWGS is slightly higher than that of the original AppleWorks, $249.

Bear in mind, however, that AWGS can do many things in seconds that its forebear couldn't do in a hundred years of trying. This program has tremendous depth. AWGS includes several important features that AppleWorks does not, including a spelling checker, thesaurus, communications module, paint module, and page-layout module. Still, you can add many of these features to AppleWorks with third-party accessories such as Beagle Bros' TimeOut series.

The Programs Face Off

AWGS implements the word-processing, database, and spreadsheet functions much more completely than AppleWorks does. The spreadsheet module has many more logical and math functions, and the database module has fewer constraints.

When AppleWorks was introduced in 1984, it immediately knocked the older AppleWriter program off the best-seller charts. One reason was that AppleWorks' WYSIWYG (what-you-see-is-what-you-get) word-processing module reflected the printed page on the screen far more accurately than did AppleWriter.

But now it's AppleWorks that is suffering by comparison to AWGS. Resembling Claris' MultiScribe for the IIGS, the word processor of AWGS is graphically oriented in every respect. Fonts, typestyle, formatting, even imported graphics appear on the screen. If you want your GS to have the look and feel of a Mac, this program is for you.

The spelling checker seems to function about as quickly as Beagle Bros TimeOut QuickSpell utility, but it is much more awkward. It forces you to step one at a time through words it thinks you have misspelled. The handling of double words is especially sloppy, since it slaps the message announcing the double word right over the text (see figure 2).

The database module has computed fields as well as many powerful functions, including date and time, that it shares with AWGS's spreadsheet module. You can use these features with Mail Merge to prepare a sophisticated invoice and billing system beyond the reach of AppleWorks.

The AppleWorks GS spreadsheet is so slow and so limited by memory as to be almost without practical value.

Although AWGS imported a small AppleWorks spreadsheet effortlessly (and converted the data into a tasty-looking pie graph), scrolling and manipulating the spreadsheet were a lot less appetizing. What is distressing about the AWGS spreadsheet module is that the basic functions of scrolling, copying, and calculating are simply not fast enough. It took me 2 minutes simply to specify a range of 360 cells to fill by holding down the mouse button. In AppleWorks, the equivalent command (down-arrow) took 17 seconds. Filling and calculating the cells took 35 seconds in AWGS, compared with 7 seconds for AppleWorks.

The convenience of having a spreadsheet program integrated with other programs is almost completely diluted by this leaden performance. On all but the smallest jobs, it would be faster to leave AWGS, go to another spreadsheet

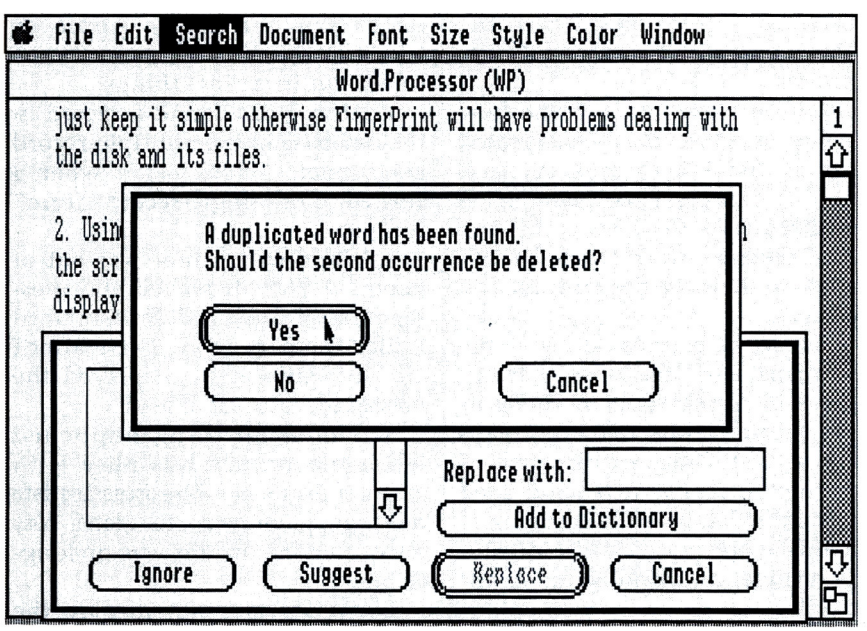


Figure 2: When the AWGS spelling checker finds a duplicated word, its message appears right over your text.

FREE APPLEWORKS GS UPGRADE

Just as this issue was going to press, Claris provided *A+* editors with an early upgrade version of AppleWorks GS that the company plans to send free of charge to all registered users by mid-March. Tests by the *A+* staff indicate that the upgrade addresses some of the problems in Version 1.0:

- Claris has written a new ImageWriter printer driver. The company claims a 25–45% speed increase, an increase that our own tests verified. In addition to providing this speed increase, the new driver is more effective than the old one in avoiding system errors due to insufficient RAM.
- Several problems associated with Draft-mode printing have been fixed, including the inability of V. 1.0 to cancel draft printing in progress. In addition, the Draft mode no longer inserts extraneous spaces or overprints lines.
- The upgrade can import graphics files larger than 32K. As a result, you can bring graphics into the graphics module in their entirety without their being cut off.
- Since Claris has discovered that many users' problems relate to faulty RAM chips, the upgrade includes a RAM-testing utility for verifying the quality of all expansion RAM.

Bob Lindstrom

APPLEWORKS GS AT A GLANCE

A feature-packed integrated software package that does much more than the original AppleWorks but does it much more slowly. Requires at least 1.25Mb of RAM (more is better) and two 3.5-inch floppy drives, hard-disk drive, or high-capacity battery-backed-up RAM disk (can run with a single 3.5-inch floppy drive, with incessant disk swapping).

Features

- Mac-like user interface.
- Graphic word processor with on-screen fonts and typestyles.
- Spelling checker.
- Thesaurus.
- Paint program.
- Page-layout program.
- Mail-merge.
- Database module with 256 fields (categories) per record.
- Spreadsheet module with trigonometric, conditional, and charting functions.
- Apple- and Hayes-compatible communications module.
- Is able to read AppleWorks and ASCII text files and exchange data internally in all directions.

Value

At less than $50 per individual program, an excellent software value, but may require more hardware investment than you are willing to make. You can exchange your original copy of AppleWorks 2.0 for AppleWorks GS for $99.

program, and then return again.

Like the rest of AWGS, the spreadsheet module may grow more functional with time. You have 9,999 rows at your disposal—ten times as many as in AppleWorks. My 1.75Mb system ran out of memory before it filled even a single column with a single numeral. But when AppleWorks was first shipped for 128K computers, owners could use only a fraction of the cells in its spreadsheet. As more and more RAM becomes available (and affordable), a vast number of cells in AWGS will be usable.

Playing in Different Keys

The other thing I found irritating about the spreadsheet module was that it borrowed its command conventions from the Macintosh instead of from AppleWorks. Rather than typing `@SUM(a1..a10)`, you type `=SUM(a1..a10)`. AWGS is unnecessarily hard for AppleWorks users to learn because it requires you to forget nearly everything you have learned in AppleWorks.

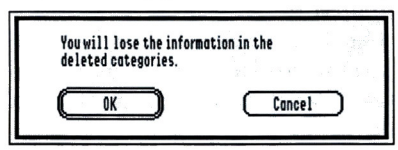
The keystroke substitutes for mouse clicks are hard to remember, and, although a few of the AppleWorks commands exist in the same form, the spirit of the AppleWorks interface is violated constantly with things like Ó-* to protect a cell and Ó-= to recalculate. Ó-F means "find" in the database but "fill" in the spreadsheet.

Solving Real-World Problems

Although the new features are impressive, the combined shortcomings of AWGS and its differences from AppleWorks can add difficulty to even a simple task, as I found out as I continued with my envelope dilemma.

All I needed was a single envelope, printed sideways. The data was stored in an AppleWorks database file. I was delighted to see that AWGS could read AppleWorks files directly, without first requiring conversion to ASCII text files.

When I tried to import my AppleWorks database to the AWGS format, I quickly had to confront a scary (and cryptic) screen message:



Hoping that this caveat did not mean my hard disk was about to be formatted, I went ahead with the conversion, which took a full five minutes.

When it was done, a brand-new AWGS database had been created from my old AppleWorks database. But only 5 of my 15 database fields had been imported. I was missing some crucial information for my envelope, namely the address and ZIP code.

The five categories I'd been able to import were the ones that appeared in AppleWorks on the multiple-record layout, which displays data in a spreadsheet-like form. I returned to AppleWorks and tried saving the database file in a single-record layout, with all the categories visible, and also as an ASCII text file.

All was still not well in AWGS. Despite my 1.75Mb of RAM, I received a `not enough memory` message after five minutes of trying to import the ASCII text file. After five more minutes of importing the AppleWorks file, I managed to produce only the same five database categories, still minus the ZIP code and street address.

I returned to AppleWorks and used the Ó-L command to change the multiple-record layout. Finally I figured out what AWGS meant by `You will lose the information in the deleted categories`. AppleWorks uses the words *delete* and *insert* ambiguously to describe the process of hiding and revealing category names with the Ó-L, or multiple-record report format, commands.

To make sure your AppleWorks database files can be completely imported by AWGS, you should either insert all the "deleted" categories one by one or add a new category (which resets the multiple-record layout to standard) before saving it to disk.

This time, my database was imported flawlessly.

Choosing the LaserWriter was easy, as was creating a mail-merge document. This procedure is so similar to the AppleWorks Mail Merge that I managed it without the manual.

And that's how, six hours later, I got my envelope printed and gained an education into the ways of AWGS.

Bug Hunting

As shipped, AWGS Version 1.0 is buggier and rougher around the edges than any new Apple or Claris program I've seen. Some small, but irritating, things:

1. After I had found a record in the database in the multiple-record list format, AWGS lost it when I shifted to the single-record "form" format.

2. When my printer was out of paper, AWGS displayed the message `Preparing data` indefinitely until I filled the paper tray. Then (after I already knew it) it displayed the message `Printer out of paper`.

3. The same thing happened when the printer was busy with another user's job. The `preparing data` message gave way to `status busy` only after the printer was no longer busy.

4. AWGS does not display the amount of RAM available. With a 1.25Mb system, the program did

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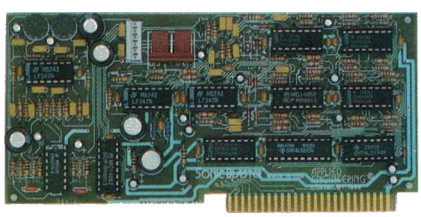

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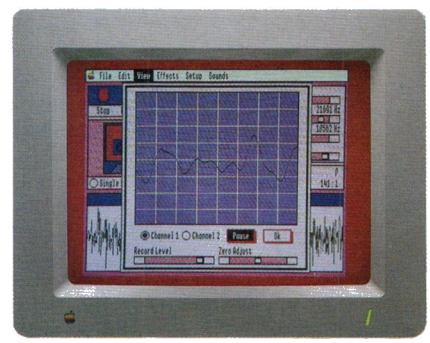

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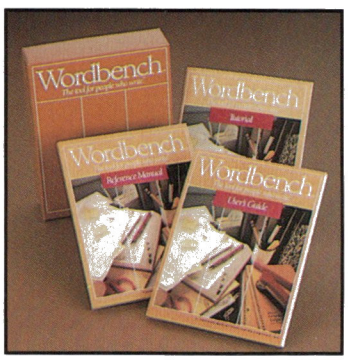
Wordbench by Addison Wesley



Wordbench is the new way to prepare documents that goes beyond word processing. *Wordbench* lets you start your project with a full-featured Outliner and Notetaker, helping you organize your ideas, references, and notes, long before you begin to write the first draft. Then, unleash the *Wordbench* Writer to pull all of your work together clearly and effectively, without retyping. *Wordbench* lets you add creativity and correctness to your documents with its Brainstormer to help put your creative processes to work, a Thesaurus to help find the perfect word, and a Spellchecker to help you mind your "P's" and "Q's". And when it's time to print, *Wordbench* lets you add the text formatting you need to add impact and style to any presentation.

Wordbench ..... **99.**

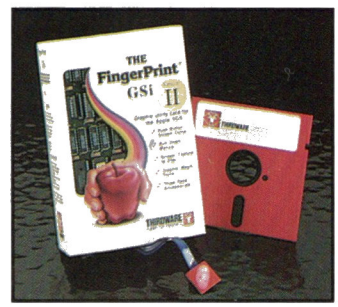
Utilities & Languages

Absoft AC/BASIC *(16-bit BASIC Compiler for IIGS)*	84.
Big Red Computer	
PS Lovers' Utility Set *(AP or IIGS)*	29.
Roger Wagner SoftSwitch *(IIGS)*	39.
Merlin 8/16 *(IIe, IIc, IIGS)*	79.
The Byte Works	
ORCA/M Assembler *(IIGS)*	39.
ORCA/Pascal Desktop Debugger *(IIGS)*	80.
ORCA/Pascal *(IIGS)*	69.
ORCA DeskTop *(IIGS)*	34.
TML Systems	
TML Basic *(IIGS)*	84.
TML Pascal *(IIGS)*	84.
TML Source Code Library *(IIGS)*	35.
TML Speech Toolkit *(IIGS)*	49.
Zedcor	
ZBASIC 4.0 Interactive Compiler	39.

Disk Drives & Hard Disk SubSystems

American Micro Research *(Micro Sci)*	
A5 D Half Height 5¼" Drive *(IIGS Daisychain)*	155.
A.5 Half Height *(II+ & IIe)*	129.
A.5C Half Height *(IIc)*	129.
Micro Sci C2 Controller	52.
Applied Engineering	
Transdrive 360K	209.
Transdrive Dual 360K	305.
Transdrive Half Height 360K	119.
Chinook CT-20 Hard Drive *(AP & IIGS)*	639.
CT-20c Hard Drive IIc	709.
CT-30 Hard Drive *(AP & IIGS)*	739.
CT-40 Hard Drive *(AP & IIGS)*	835.
CMS	
"SD Series - Stack" Platinum IIe, IIGS	
20 MB w/SCSI II card	645.
43 MB w/SCSI II card	845.
60 MB w/SCSI II card	950.
Cutting Edge XL 30 + SCSI HD *(IIe & IIGS)*	629.
XL 45 + SCSI HD *(IIe & IIGS)*	829.
First Class T6 60MB Tape	709.
D2 20MB HD *(IIe & IIGS)*	***Special*** 509.
D4/A 40MB HD *(IIe & IIGS)*	645.
D4/T 40MB HD/High Perf. *(IIe & IIGS)*	855.
D9 90MB HD/High Perf. *(IIe & IIGS)*	1465.
D96 Combo 90MB HD & 60MB Tape *(IIe & IIGS)*	2155.
Rodime Rodime 20 Plus Ext HD *(IIe, IIGS)*	629.
Rodime 45 Plus Ext HD *(IIe, IIGS)*	939.
Rodime 60 Plus Ext HD *(IIe, IIGS)*	1019.
Rodime 100 Plus Ext HD *(IIe, IIGS)*	1169.
Rodime 140 Plus Ext HD *(IIe, IIGS)*	1319.
Video Technology	
Universal Disk Controller	79.
Laser 800KB Drive	185.
Universal Disk Controller/800KB Drive Bundle	259.

FingerPrint GSi by Thirdware



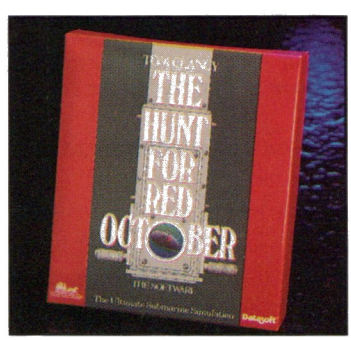
FingerPrint GSi is the graphics utility card that instantly captures and dumps screen images to your printer or disk. But *FingerPrint GSi* does much more - you can crop, rotate, stretch, invert, reposition and enlarge captured images up to 140 feet by 100 feet. You can also reload saved screen images into graphics programs, desktop publishing packages, and word processors that support imported graphics at the touch of a button! *FingerPrint GSi* comes with loads of extras - including three desk accessories (calendar, typewriter, and calculator), printer/ font utilities, and page formatting tools that help make you and your Apple IIGS more productive. Years of use are guaranteed by Thirdware's five year, no hassle warranty.

FingerPrint GSi for the IIGS ..... **79.**

Accessories

Apple Computer Apple Mouse *IIe*	125.
Apple Mouse *IIc*	85.
Applied Engineering TimeMaster II H.O.	79.
Sonic Blaster *(IIGS)*	109.
IBM Style Keyboard	119.
Audio Animator *(IIGS)*	185.
Asher Engineering	
Turbo Trackball *(IIe or IIGS)*	69.
Big Red Computer	
Labels, Labels, Labels	29.
Bose	
RoomMate Powered Speaker System	229.
CH Products Hayes Flight Stick	52.
Hayes Mach II Joystick *(Beige or Platinum)*	29.
Hayes Mach III Joystick *(Beige or Platinum)*	36.
Hayes Mach IV Plus Quad or ADB	65.
Mirage Quad or ADB (Turns joystick into mouse)	39.
Cutting Edge	
EADB-105 Extended Keyboard *(IIGS)*	***Special*** 149.
Digital Vision	
Computer Eyes *(IIe or IIc)*	109.
Computer Eyes *(IIGS)*	209.
Ergotron Mouse Cleaner 360° *(IIGS)*	15.
Epyx Epyx 500J Joystick	27.
Kalmar	
Teakwood Rolltop Disk Case *(Holds 50)*	18.
Kensington	
Mouse Pocket *(Reg. or ADB)*	8.
Mouseway *(Mousepad)*	8.
Apple IIGS Dust Cover or Imagewriter Cover	9.
Mouse Cleaning Kit w/Pocket	17.
Disk Drive Cleaning Kit *(3.5" Drives Only)*	20.
Apple Security System	34.
Printer Muffler 80	43.
Printer Muffler 132	58.
Printer Muffler Stand 80 or 132	24.
AntiGlare Filter IIGS	39.
System Saver *(Platinum or Beige)*	69.
System Saver *(IIGS)*	75.
New Turbo Mouse *(Reg. or ADB)*	119.
Kraft	
Universal 3 Button Joystick *(IIe or IIc)*	34.
Koala Technologies	
Koala Pad Plus w/Graphics Exhibitor	84.
Kurta	
IS ADB Tablet w/stylus *(IIGS)*	315.
MDIdeas	
Digitizer Professional *(IIGS)*	139.
The Conserver *(IIGS Switched Surge Suppressor w/Fan)*	99.
SuperSonic *(Stereo Card for IIGS)*	49.
SuperSonic Digitizer *(IIGS)*	49.
Mouse Systems A+ Mouse *(IIc)*	65.
A+ ADB Mouse *(IIGS)*	85.
MousTrak	
MousePad 7"x9" Size	8.
MousePad 9"x11" Size	9.
MousePad L/F *(Low Friction)*	9.
Passport Designs	
Master Tracks Pro *(IIGS)*	99.
MIDI Interface w/Drum Sync *(AP & IIGS)*	89.
MIDI Interface w/Tape & Drum Sync *(AP & IIGS)*	135.
Ribbons	
Available colors: black, blue, brown, green, orange, purple, red, yellow, silver or gold	
ImageWriter Ribbon-Color	4.
ImageWriter Ribbon-Black six pack	20.
ImageWriter II - 4 Color Ribbon	9.
ImageWriter Rainbow Pk. (6 Colors)	20.

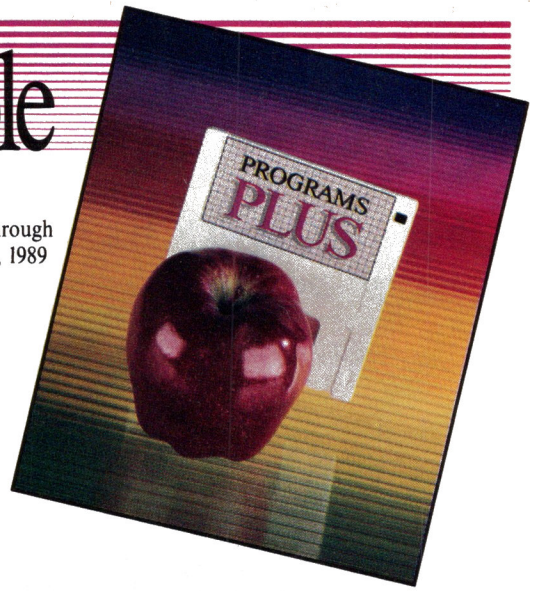
The Hunt for Red October by Datasoft



The Hunt for Red October comes from the pages of Tom Clancy's best selling novel. As captain of Russia's state-of-the-art submarine, the *Red October*, you (and your officers) have decided to defect to the USA, and take your boat with you. To the USA, you must navigate the Atlantic avoiding detection by both the Russian and NATO forces. You have sonar to show your boats position in relation to NATO and Russian forces. A periscope provides detailed views of vessels in the immediate area. Good luck Captain!

The Hunt for Red October (AP) ..... **30.**
The Hunt for Red October for the IIGS ..... **37.**

to Polish Up Your Apple



Specials good through
April 30, 1989

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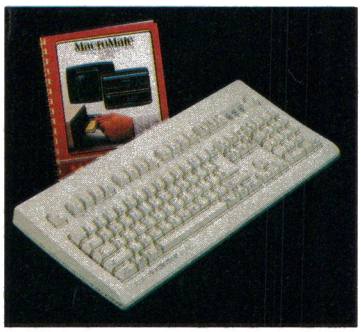
Communication Software

Activision Teleworks Plus *(IIGS)*	66.	**Pinpoint**	
Checkmate Technology		Point-To-Point	74.
ProTERM *(IIGS, IIe, IIc)*	95.	**United Software Industries**	
Compuserve		ASCII: Express Pro: Prodos	72.
Compuserve Starter Kit	24.	ASCII: Express Mousetalk 1.5	69.

Cutting Edge 105 ADB Keyboard by Cutting Edge



The ***Cutting Edge 105 ADB Keyboard*** for the Apple IIGS combines the best features of both IBM and Apple Keyboards and is designed for speed and accuracy. This keyboard features function keys, six page control keys, an inverted 'T' cursor keypad and an 18 key numeric keypad, as well as command, option and control on both sides of the keyboard. The keyboard comes bundled with Roger Wagner Publications Inc.'s powerful new macro program MacroMate.™

Cutting Edge 105 ADB Keyboard for the IIGS ..... 149.

Apple Compatible Computers

Video Technology		Laser 190A Printer	
Laser 128 Computer	379.	*(Imagewriter Compatible)*	239.
The Laser 128 includes an Expansion Slot, RGB Video Output, Parallel Printer Port, and a 10 Key Numeric Keypad!		Laser RGB Monitor	325.
		Laser Amber Monitor	99.
Laser 128EX Computer	459.	Laser 128 2nd Disk Drive	
The Laser EX includes a Built-in RAM Expansion Board, Universal Disk Controller, Built-In Expansion Slot, and Ports for all Peripherals!		*(5¼", ½ height)*	89.
		Laser 128 800K 3.5" Drive w/Controller	259.
		Laser 128 Cables	
		(Parallel, Serial, RGB or Modem)	16.
		Laser 128 Mouse	49.

Backup Utilities & Boards

Alpha Logic		**Central Point Software**	
Locksmith 6.0	36.	Copy II Plus *(5.25" & 3.5" Bit Copy)*	23.
Apple		**FWB Software**	
GS/OS *(IIGS)*	34.	Disk Util II *(IIGS)*	52.

The Magic Candle by Miles Computing

The ***Magic Candle*** is a graphic adventure game like no other, fore when the Magic Candle goes out, the evil demon Dreax will be set free. The *Magic Candle* provides full perspective views of the towns, castles, dungeons and countryside of the land of Deruvia. You must learn how to keep the demon Dreax trapped in the Magic Candle's flame. Manage your companions well. Find food, buy supplies, or talk to wary Deruvians. The Fate of Deruvia is in your hands.

Magic Candle ..... 36.

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Medley by Milliken Publishing

Medley, a desktop publishing program designed exclusively for the Apple IIGS, gives you word processing, page layout, and graphics. Twenty fonts, a dictionary and thesaurus available with *Medley's* word processor. Import Appleworks' files with formatting intact. *Medley's* powerful page layout program automatically wraps text around any object. Artwork from most Apple IIGS paint programs and digitized pictures import easily into *Medley,* or create original art using *Medley's* powerful art tool.

Medley for the IIGS ..... **119.**

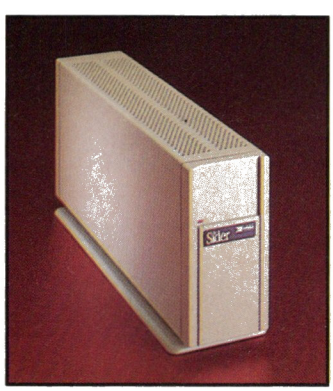
Printers

Brother M-1109AP *(ImageWriter Comp.)*	249.	**Seikosha**	
Panasonic		Seikosha SP 1000	
KXP-1080I/M2 *(144 cps)* NLQ Mode	195.	*(Imagewriter Compatible)*	235.
KXP-1091I/M2 *(192 cps)* NLQ Mode	209.	**Video Technology**	
KXP-1092I *(240 cps)* NLQ Mode	349.	Laser 190A *(Imagewriter Compatible)*	239.

Graphics Packages

Abracadata Design Your Own Train	35.	Print Shop Graphics Lib. Sampler Ed. *(IIGS)*	24.
Design Your Own Home: Architecture *(IIGS)*		Print Shop Graphics Lib. Party Ed. *(IIGS)*	24.
or Interiors *(IIGS)*	65.	**Electronic Arts** DeluxePaint II *(IIGS)*	65.
Design Your Own Home: Architecture,		DeluxeWrite w/DeluxePaint II *(IIGS)*	85.
Interiors or Landscape	49.	DeluxeWrite *(IIGS)*	55.
Architecture Library 1, 2, 3 or 4 *(AP or IIGS)*	21.	**EPYX** Art & Film Director *(IIGS)*	55.
Interiors Library 1, 2 or Landscape		Printmagic	34.
Library 1	21.	Create-A-Calendar	21.
Activision PaintWorks Gold or Draw Plus	66.	**Roger Wagner** Graphic Exchange *(IIGS)*	35.
Paint/Write/Draw *(Not Protected IIGS)*	80.	**Springboard** Newsroom	32.
Baudville Award Maker Plus *(IIe & IIGS)*	24.	Springboard Publisher 2.0 *(IIe or IIGS)*	84.
816/Paint *(Works On All Apples)*	46.	Certificate Maker	26.
Berkeley Softworks GEOS	80.	Certificate Maker Library #1	19.
GEOPublish	80.	Fonts For Springboard Publisher *(IIGS)*	19.
Broderbund Dazzle Draw or Show Off *(IIGS)*	39.	Newsroom Clip Art Collection Vol. 1 or 3	18.
Print Shop Enhanced or Fantavision	29.	Newsroom Clip Art Collection Vol. 2	23.
Print Shop *(IIGS)* or Fantavision *(IIGS)*	39.	Style Sheets/Newletters *(IIe or IIGS)*	19.
Print Shop School Edition	39.	Works of Art Education, Holidays	
Print Shop Companion	25.	or Assortment *(IIe or IIGS)*	25.
Print Shop Graphics Library I, II, III		**Styleware** TopDraw	43.
or Holiday Ed.	16.	**Thunderware** Thunderscan *(IIGS, IIe, & IIc)*	179.

Sider D2 20 Megabyte HDD by First Class Peripherals



The Sider D2 20 Megabyte Hard Disk Drive is a reliable, affordable mass storage solution for Apple IIe and IIGS owners. This 20 megabyte hard disk is shipped with all cards, cables and accessories required to operate. But most important, this drive supports four operating systems - ProDos (all versions), Dos 3.3, CP/M, and Apple Pascal - so you can run virtually all Apple II software from one hard disk. The Sider includes formatting utilities which allow you to assign disk memory to one, some, or all four operating systems, offering the user complete flexibility in control of partition format and size. The Sider is daisy-chainable with other Sider products, including the T6 tape backup. The included diagnostics package, one year warranty on parts and labor, and readily available technical support assure a solution in the unlikely event that a problem does occur.

Sider D2 ..... **509.**

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Blank Media

3½" Blank Diskettes		Fuji 3.5" DS/DD *(box of 10)*	19.
Bulk *(Sony)* 3½" DS/DD *(box of 10)*	17.	Maxell 3.5" DS/DD *(box of 10)*	20.
Centech 3½" DS/DD Color Disks		Verbatim DS/DD *(box of 10)*	19.
(box of 10)	19.	3M 3.5" DS/DD *(box of 10)*	20.
Sony 3.5" DS/DD *(box of 10)*	19.	C. Itoh 3.5" DS/DD Color Disks *(box of 10)*	25.

Dungeon Master by F.T.L.

Step into the world of ***Dungeon Master*** and see the fantasy come to life. *Dungeon Master* puts you *inside* the most detailed dungeon ever created in software. Every twist and turn, every nook and corner looks *real.* Everything moves and works! Pick up a key and open a locked door. Maybe there's treasure on the other side, or maybe a monster! Choose your champions carefully. You'll need strong fighters and powerful magicians to survive the intricate puzzles and cunning traps in the world of *Dungeon Master.*

Dungeon Master ..... **29.**

Business Software

Addison-Wesley		**Peachtree** Back To Basics	
Wordbench *(IIe & IIGS)*	***Special*** 99.	Accounting System: *GL/AR/AP*	129.
Beagle Brothers Timeout Graph	55.	**Pinpoint Publishing** Graphics Edge	55.
Timeout SuperFonts	45.	ProFILER 3.0	74.
Timeout QuickSpell	45.	**Roger Wagner Publishing**	
Timeout UltraMacros or SpreadTools	37.	Macro Mate *(IIGS)*	35.
Timeout SideSpread, FileMaster, or		Mouse Write *(IIe, IIc, IIGS)*	84.
DeskTools	32.	**Sensible Software**	
Timeout Thesaurus, DeskTools II		Sensible Grammar ProDos *(3.5" & 5.25")*	59.
or PowerPack	32.	Sensible Speller ProDos w/3.5" & 5.25"	69.
GS Font Editor or Program Writer	32.	**Seven Hills Software**	
Timeout MacroTools or MacroTools II	19.	Graphicwriter III *(IIGS)*	85.
Broderbund On Balance	39.	**Simon & Schuster**	
Bank Street Writer *Plus*	50.	Webster's Spelling Checker *(ProDos)*	41.
Claris Apple Works *(IIGS)*	215.	**Software Publishing**	
Apple Works	185.	*All Programs for IIe with 128K or IIc*	
Multiscribe 3.0 w/Speller *(128K IIe or IIc)*	65.	PFS: Workmates *(File/Report/Plan/Write)*	119.
Multiscribe IIGS 3.0	75.	**Softsync**	
Dac Software Dac-Easy Accounting	65.	Personal Newsletter with Clip Art	39.
Garde Footing To Finish	55.	**Softview** TaxView Planner *(IIGS)* or	
ImagiMedia FactWorks 1, 2, 3 or 4	24.	TaxView Federal *(IIGS)*	72.
Intuit Quicken	34.	California or New York Supplement *(IIGS)*	39.
Legi Soft Will Maker	39.	**Stone Edge** DB Master v5	145.
Manzanita *BusinessWorks*		DB Master Professional	***Special*** 195.
System Manager *(IIe & IIGS) (Required)*	69.	**StyleWare** Deskworks *(IIGS)*	30.
GL/AR/AP/ or Inventory		Picture Manager or Desk Accessories	26.
Control *(IIe & IIGS)*	139.	**Third Wave Technology** Magna Charta	41.
Payroll Module *(IIe & IIGS)*	139.	Print-Quick	34.
BusinessWorks Bundle IIe & IIGS *(Sys.*		Print-Quick Font Disk 1 or 2	15.
Manager, G/L, A/P, A/R, Inventory)	299.	**Timeworks** Art Portfolio 4 in 1	75.
MECA		Publish-It 2.0 *(IIe or IIGS)*	84.
Managing Your Money 3.0 *(IIe, IIc, IIGS)*	95.	People, Places and Things *(IIe & IIGS),* Design	
Mecc		Ideas *(IIe & IIGS),* Symbols and Slogans	
Calendar Crafter School *(IIGS)*	59.	*(IIe & IIGS),* Education Graphics *(IIe &*	
Milliken Medley *(IIGS)*	***Special*** 119.	*IIGS),* Font Pack 1 or 2 *(IIe & IIGS)*	27.
Monogram		**Word Perfect Corporation**	
Dollars and Sense *(II+, IIe or IIc)*	72.	WordPerfect V1.1 w/Speller *(IIe & IIc)*	99.
Multisoft DoReMe	55.	WordPerfect *(IIGS)*	99.

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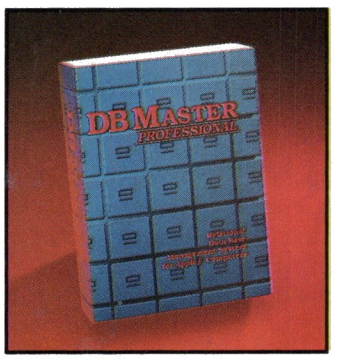
Accelerators/Ramcards/Z-80/80 Column Cards

Apple Computer Apple IIe Enhancement Kit 49.
Apple IIe Extended 80 Col. Card 89.
Applied Engineering
RamWorks III *(64K to 3 MB)* Call
Ram Express *(256K to 1 MB)* Call
Ramkeeper or SlotMover *(Option)* Call
PC Transporter *(768K)* Call
PC Transporter Installation Kit *(IIe or IIgs)* Call
RamFactor *(256K to 1MB)* Call
Z-RAM Ultra 1 *(256K or 512K)* Call
Z-RAM Ultra 2 or 3 *(256K to 1MB)* Call
GS-RAM *(256K to 1.5Meg)* Call
GS-Ram Plus *(1MB to 6MB)* Call
RamWorks Basic *(256K or 512K)* Call
Phasor *(II+, IIe, or IIgs)* 139.
TransWarp Accelerator *(AP or IIgs)* 175.
ViewMaster 80 *(II+)* 129.
Z-80 Plus *(II+, IIe, IIgs)* 125.
Checkmate Technology
MemorySaver *(IIgs)* 125.
Orange Micro
RamPak 4GS
(512k Exp. to 4MB w/Utilities) 139.
Zip Technology Zip Chip 165.

DB Master Professional by Stone Edge Technologies



DB Master Professional brings the power of a relational database manager to Apple II users at an affordable price. Accountants, educators, salespeople, and anyone else who needs to keep track of interrelated types of information can put *DB Master Professional* to work automating the tedious task of record keeping. Simple "import and export rules" let you relate up to 10 files for automatic data entry, posting, and updating. Its full-featured report generator lets you print your information in easy-to-read columnar and form type reports. *DB Master Professional* offers flexible address label printing and mail merge for efficient form letter processing. Its password security option and AppleWorks compatibility are just some of the features that make *DB Master Professional* the database choice.

DB Master Professional ..... **195.**

Educational Software

Barron's Computer SAT Revised Version 34.
Britannica JigSaw *(IIgs)* 25.
Body Transparent or States & Traits 25.
Designasaurus 24.
Designasaurus *(IIgs)* or Revolution *(IIgs)* 28.
Millionaire II 34.
Broderbund Geometry *(IIgs)* 68.
Science Tool Kit Master Module 50.
Science Tool Kit Module I, II or III 26.
Type! 19.
Where in the World is Carmen Sandiego? 25.
Where in the USA is Carmen Sandiego? 29.
Where in Europe is Carmen Sandiego? 29.
Coda
Music Class Courses 1-5 *(Bundle)* 149.
Fundamentals, Rhythm, or Ear Training 35.
Music Symbols or Note Reading 27.
Compu-Teach Once Upon A Time 25.
Stepping Stones Level I or II 25.
Joshua's Reading Machine 25.
See the U.S.A. 30.
Davidson & Associates
Math Blaster Plus *(IIgs)* or Word Attack Plus *(IIgs)* 29.
Alge-Blaster or Math Blaster Plus 29.
Grammar Gremlins or Read 'N' Roll 29.
Spell-It, Word AttackPlus! or Math Blaster Mystery 29.
Math & Me *(IIgs)* or Reading & Me *(IIgs)* 29.
Math & Me or Reading & Me 25.
Electronic Arts Mavis Beacon Typing 30.
Mavis Beacon Typing *(IIgs)* 37.
First Byte/Electronic Arts
The Rhyming NoteBook, The Dinosaur Discovery Kit *(IIgs)*, The Puzzle StoryBook *(IIgs)* 29.
Grade Busters Corp. Grade Busters 1, 2, 3 64.
Great Wave Kidstime II *(IIgs)* 24.
SpaceLace 20.
Harcourt, Brace, Jovanovich
Computer SAT 29.
Learning Company
Reader Rabbit *(IIgs)* or Writing and Publishing Center *(AP or IIgs)* 36.
Writer Rabbit *(IIgs)*, Think Quick *(IIgs)* or Rockys Boots *(IIgs)* 30.
Magic Spells *(IIgs)* or Math Rabbit 24.
Gertrude's Secrets *(IIgs)* 24.
Think Quick, Writer Rabbit or Math Rabbit *(IIgs)* 30.
Reader Rabbit, Magic Spells or Rocky's Boots 24.
MindPlay Easy Street or Cotton Tales 35.
Mindscape Crossword Magic 34.
Perfect Score SAT 48.
Pinpoint Micro Cookbook *(IIe or IIc)* 31.
Bon Appetit 37.
Roger Wagner HyperStudio *(IIgs)* 85.
Sensible Software Report Card II *(IIe & IIgs)* 37.
Simon & Schuster Speed Reading Tutor IV or Typing Tutor IV 27.
Speed Reader Tutor IV *(IIgs)* 34.
Typing Tutor IV *(IIgs)* 34.
Spinnaker Kidwriter Gold *(IIgs)* 31.
Homework Helpers Writing or Math *(IIe or IIgs)* 34.
Facemaker: Golden Edition 27.
Kidwriter 27.
Terrapin Terrapin Logo Plus 79.
Tom Snyder Productions
Reading Magic Library: Jack and the Beanstalk or Flodd, the Bad Guy 25.
Weekly Reader
Stickybear Series: Sticky Bear ABC (5¼), Basket Bounce (5¼ or 3½), Bop (5¼), Math I (5¼ or 3½), Math II (5¼ or 3½), Numbers (5¼ or 3½), Opposites (5¼ or 3½), Reading (5¼ or 3½), or Shapes (5¼ or 3½) 24.
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not have enough memory to load a 56K file. With a 1.75Mb system, it could not load a 343K file.

5. There is no way (that I could find) to mark several files for loading at one time.

To Works or Not to Works

If you already have a souped up IIGS with 2Mb or more of memory, AWGS offers good software value for the money, since you get six sophisticated programs for less than $50 each. If you are thinking of buying a IIGS or trading in a IIe/c in order to run AWGS, however, you should think again. The total system cost is excessive when compared with that of either an Apple IIc Plus with a megabyte of RAM, standard AppleWorks, and Time-Out enhancements from Beagle Bros (my price/performance favorite) or to a Macintosh Plus with Microsoft Works.

Retrograde Upgrade

It is also a mistake to think of AWGS as an "upgrade" to the original AppleWorks program. If Detroit recalled my car and sent it back loaded with new features but running five times slower than before, I would resent it.

Personally, I wouldn't use AppleWorks GS at its present speed. For me, trying to enjoy its new features is like trying to enjoy a double date with Freddie Krueger in the back seat. After typing a few paragraphs of this review with AWGS, I couldn't wait to get back to AppleWorks to get the job done.

And when I mailed the review to *A+*, I addressed the envelope on a typewriter. ✚

Steve High is president of High, Tech & Cook Advertising in San Jose, California. He is coauthor, with Chris Van Buren, of AppleWorks Mastery *(Scott Foresman, 1988).*

VITAL STATISTICS

APPLEWORKS GS (VERSION 1.0)
This integrated program comprising six modules sacrifices speed for a multiplicity of functions.

Apple IIGS, 1.25Mb RAM, two 3.5-inch disk drives, GS/OS, not copy-protected
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REVIEW
BY MICHAEL FISCHER

This module pales in comparison with other telecommunications programs.

APPLEWORKS GS COMMUNICATIONS

AppleWorks GS's communications module is the program's weakest link. It appears to have been thought of the least and given the fewest significant features, and it possesses some bugs that make it practically unusable for any serious telecommunicator.

The module is not a complete disaster, however. It has some nice features and, with work, could evolve into a useful part of the AWGS package.

AWGS works with external modems connected to an Apple Super Serial Card (or clone) or the modem or printer ports. Like most newer telecommunications programs, it works with several internal modems, but not the Hayes MicroModem or the Novation AppleCat. Instead, it works with internal modems emulating a serial card and a Hayes Smartmodem.

The program provides a default initialization string tailored for ten popular modems. You can also specify a no modem setting for direct communication between two computers connected with a null-modem cable.

To set the communications parameters (speed, parity, word size, and the like), you make choices from a dialog box (see figure 1). It can handle all the common speed rates—from 110 to 19,200 baud. You can select odd, even, or no parity; seven or eight data bits; and one or two stop bits. AWGS's only emulation mode is for a standard Teletype (TTY) terminal. If you need VT-100 or similar emulation, you should consider more sophisticated programs such as ProTERM, Modem MGR (see *A+*, February 1989), or CommWorks.

AWGS has a 256-line scroll-back buffer that enables you to review text that has scrolled off the top of your screen. When you save a communications document, the text in the buffer is saved along with your configuration settings and phone numbers.

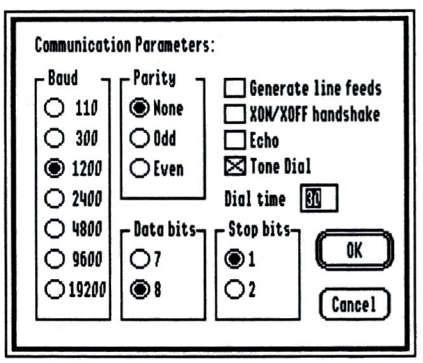


Figure 1: The AWGS communications module's parameter choices

The communications module brings "multitasking" to the IIGS. During a telecommunications session, for example, you can work in one of AWGS's applications windows while transferring text or program files in the single telecommunications window. (Unlike other AWGS modules, the communications module lets you have only one window open at once.)

The telecommunications window updates only when you are not taking some action in another window, but nothing is lost, because the incoming data is buffered. The effort of keeping up with

As it is, AWGS needs a lot of costly hardware to run properly, starting with a minimum 1.25Mb of RAM and two 3.5-inch floppy drives. Because the use of slow floppy disks only adds to the lengthy loading times, the program works best with a hard-disk drive or battery-backed-up high-capacity RAM disk. Finally, at $299, the price of AWGS is slightly higher than that of the original AppleWorks, $249.

Bear in mind, however, that AWGS can do many things in seconds that its forebear couldn't do in a hundred years of trying. This program has tremendous depth. AWGS includes several important features that AppleWorks does not, including a spelling checker, thesaurus, communications module, paint module, and page-layout module. Still, you can add many of these features to AppleWorks with third-party accessories such as Beagle Bros' TimeOut series.

The Programs Face Off

AWGS implements the word-processing, database, and spreadsheet functions much more completely than AppleWorks does. The spreadsheet module has many more logical and math functions, and the database module has fewer constraints.

When AppleWorks was introduced in 1984, it immediately knocked the older AppleWriter program off the best-seller charts. One reason was that AppleWorks' WYSIWYG (what-you-see-is-what-you-get) word-processing module reflected the printed page on the screen far more accurately than did AppleWriter.

But now it's AppleWorks that is suffering by comparison to AWGS. Resembling Claris' MultiScribe for the IIGS, the word processor of AWGS is graphically oriented in every respect. Fonts, typestyle, formatting, even imported graphics appear on the screen. If you want your GS to have the look and feel of a Mac, this program is for you.

The spelling checker seems to function about as quickly as Beagle Bros TimeOut QuickSpell utility, but it is much more awkward. It forces you to step one at a time through words it thinks you have misspelled. The handling of double words is especially sloppy, since it slaps the message announcing the double word right over the text (see figure 2).

The database module has computed fields as well as many powerful functions, including date and time, that it shares with AWGS's spreadsheet module. You can use these features with Mail Merge to prepare a sophisticated invoice and billing system beyond the reach of AppleWorks.

The AppleWorks GS spreadsheet is so slow and so limited by memory as to be almost without practical value.

Although AWGS imported a small AppleWorks spreadsheet effortlessly (and converted the data into a tasty-looking pie graph), scrolling and manipulating the spreadsheet were a lot less appetizing. What is distressing about the AWGS spreadsheet module is that the basic functions of scrolling, copying, and calculating are simply not fast enough. It took me 2 minutes simply to specify a range of 360 cells to fill by holding down the mouse button. In AppleWorks, the equivalent command (down-arrow) took 17 seconds. Filling and calculating the cells took 35 seconds in AWGS, compared with 7 seconds for AppleWorks.

The convenience of having a spreadsheet program integrated with other programs is almost completely diluted by this leaden performance. On all but the smallest jobs, it would be faster to leave AWGS, go to another spreadsheet

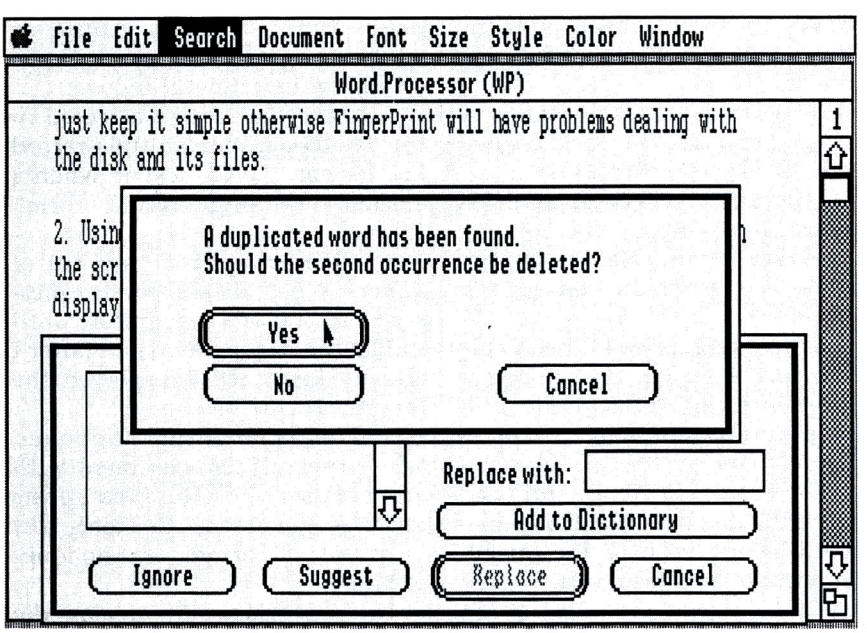


Figure 2: When the AWGS spelling checker finds a duplicated word, its message appears right over your text.

FREE APPLEWORKS GS UPGRADE

Just as this issue was going to press, Claris provided *A+* editors with an early upgrade version of AppleWorks GS that the company plans to send free of charge to all registered users by mid-March. Tests by the *A+* staff indicate that the upgrade addresses some of the problems in Version 1.0:

- Claris has written a new ImageWriter printer driver. The company claims a 25–45% speed increase, an increase that our own tests verified. In addition to providing this speed increase, the new driver is more effective than the old one in avoiding system errors due to insufficient RAM.
- Several problems associated with Draft-mode printing have been fixed, including the inability of V. 1.0 to cancel draft printing in progress. In addition, the Draft mode no longer inserts extraneous spaces or overprints lines.
- The upgrade can import graphics files larger than 32K. As a result, you can bring graphics into the graphics module in their entirety without their being cut off.
- Since Claris has discovered that many users' problems relate to faulty RAM chips, the upgrade includes a RAM-testing utility for verifying the quality of all expansion RAM.

Bob Lindstrom

APPLEWORKS GS AT A GLANCE

A feature-packed integrated software package that does much more than the original AppleWorks but does it much more slowly. Requires at least 1.25Mb of RAM (more is better) and two 3.5-inch floppy drives, hard-disk drive, or high-capacity battery-backed-up RAM disk (can run with a single 3.5-inch floppy drive, with incessant disk swapping).

Features

- Mac-like user interface.
- Graphic word processor with on-screen fonts and typestyles.
- Spelling checker.
- Thesaurus.
- Paint program.
- Page-layout program.
- Mail-merge.
- Database module with 256 fields (categories) per record.
- Spreadsheet module with trigonometric, conditional, and charting functions.
- Apple- and Hayes-compatible communications module.
- Is able to read AppleWorks and ASCII text files and exchange data internally in all directions.

Value

At less than $50 per individual program, an excellent software value, but may require more hardware investment than you are willing to make. You can exchange your original copy of AppleWorks 2.0 for AppleWorks GS for $99.

program, and then return again.

Like the rest of AWGS, the spreadsheet module may grow more functional with time. You have 9,999 rows at your disposal—ten times as many as in AppleWorks. My 1.75Mb system ran out of memory before it filled even a single column with a single numeral. But when AppleWorks was first shipped for 128K computers, owners could use only a fraction of the cells in its spreadsheet. As more and more RAM becomes available (and affordable), a vast number of cells in AWGS will be usable.

Playing in Different Keys

The other thing I found irritating about the spreadsheet module was that it borrowed its command conventions from the Macintosh instead of from AppleWorks. Rather than typing `@SUM(a1..a10)`, you type `=SUM(a1..a10)`. AWGS is unnecessarily hard for AppleWorks users to learn because it requires you to forget nearly everything you have learned in AppleWorks.

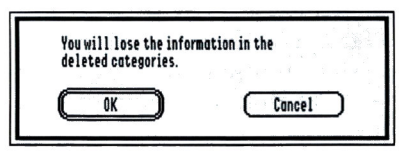
The keystroke substitutes for mouse clicks are hard to remember, and, although a few of the AppleWorks commands exist in the same form, the spirit of the AppleWorks interface is violated constantly with things like Ó-* to protect a cell and Ó-= to recalculate. Ó-F means "find" in the database but "fill" in the spreadsheet.

Solving Real-World Problems

Although the new features are impressive, the combined shortcomings of AWGS and its differences from AppleWorks can add difficulty to even a simple task, as I found out as I continued with my envelope dilemma.

All I needed was a single envelope, printed sideways. The data was stored in an AppleWorks database file. I was delighted to see that AWGS could read AppleWorks files directly, without first requiring conversion to ASCII text files.

When I tried to import my AppleWorks database to the AWGS format, I quickly had to confront a scary (and cryptic) screen message:



Hoping that this caveat did not mean my hard disk was about to be formatted, I went ahead with the conversion, which took a full five minutes.

When it was done, a brand-new AWGS database had been created from my old AppleWorks database. But only 5 of my 15 database fields had been imported. I was missing some crucial information for my envelope, namely the address and ZIP code.

The five categories I'd been able to import were the ones that appeared in AppleWorks on the multiple-record layout, which displays data in a spreadsheet-like form. I returned to AppleWorks and tried saving the database file in a single-record layout, with all the categories visible, and also as an ASCII text file.

All was still not well in AWGS. Despite my 1.75Mb of RAM, I received a `not enough memory` message after five minutes of trying to import the ASCII text file. After five more minutes of importing the AppleWorks file, I managed to produce only the same five database categories, still minus the ZIP code and street address.

I returned to AppleWorks and used the Ó-L command to change the multiple-record layout. Finally I figured out what AWGS meant by `You will lose the information in the deleted categories`. AppleWorks uses the words *delete* and *insert* ambiguously to describe the process of hiding and revealing category names with the Ó-L, or multiple-record report format, commands.

To make sure your AppleWorks database files can be completely imported by AWGS, you should either insert all the "deleted" categories one by one or add a new category (which resets the multiple-record layout to standard) before saving it to disk.

This time, my database was imported flawlessly.

Choosing the LaserWriter was easy, as was creating a mail-merge document. This procedure is so similar to the AppleWorks Mail Merge that I managed it without the manual.

And that's how, six hours later, I got my envelope printed and gained an education into the ways of AWGS.

Bug Hunting

As shipped, AWGS Version 1.0 is buggier and rougher around the edges than any new Apple or Claris program I've seen. Some small, but irritating, things:

1. After I had found a record in the database in the multiple-record list format, AWGS lost it when I shifted to the single-record "form" format.

2. When my printer was out of paper, AWGS displayed the message `Preparing data` indefinitely until I filled the paper tray. Then (after I already knew it) it displayed the message `Printer out of paper`.

3. The same thing happened when the printer was busy with another user's job. The `preparing data` message gave way to `status busy` only after the printer was no longer busy.

4. AWGS does not display the amount of RAM available. With a 1.25Mb system, the program did

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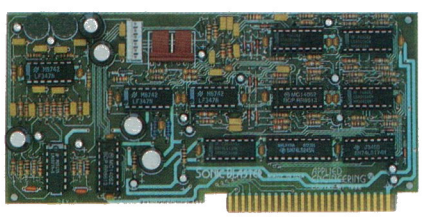

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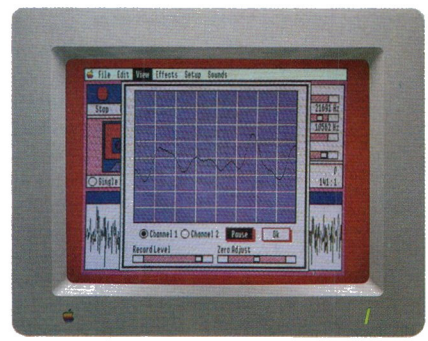

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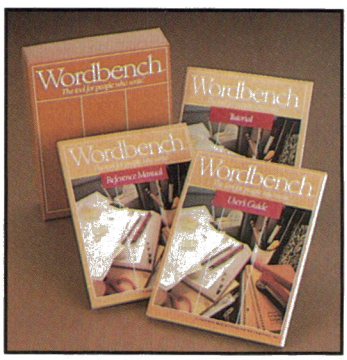
Wordbench by Addison Wesley



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Transdrive Half Height 360K	119.
Chinook CT-20 Hard Drive *(AP & IIGS)*	639.
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CT-30 Hard Drive *(AP & IIGS)*	739.
CT-40 Hard Drive *(AP & IIGS)*	835.
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Cutting Edge XL 30 + SCSI HD *(IIe & IIGS)*	629.
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Rodime Rodime 20 Plus Ext HD *(IIe, IIGS)*	629.
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Rodime 100 Plus Ext HD *(IIe, IIGS)*	1169.
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Video Technology	
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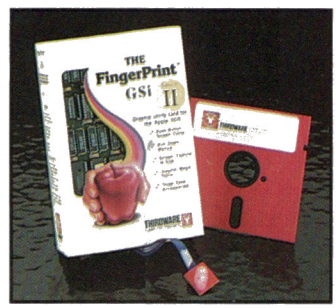
FingerPrint GSi by Thirdware



FingerPrint GSi is the graphics utility card that instantly captures and dumps screen images to your printer or disk. But *FingerPrint GSi* does much more - you can crop, rotate, stretch, invert, reposition and enlarge captured images up to 140 feet by 100 feet. You can also reload saved screen images into graphics programs, desktop publishing packages, and word processors that support imported graphics at the touch of a button! *FingerPrint GSi* comes with loads of extras - including three desk accessories (calendar, typewriter, and calculator), printer/ font utilities, and page formatting tools that help make you and your Apple IIGS more productive. Years of use are guaranteed by Thirdware's five year, no hassle warranty.

FingerPrint GSi for the IIGS ..... **79.**

Accessories

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Asher Engineering	
Turbo Trackball *(IIe or IIGS)*	69.
Big Red Computer	
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RoomMate Powered Speaker System	229.
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Hayes Mach II Joystick *(Beige or Platinum)*	29.
Hayes Mach III Joystick *(Beige or Platinum)*	36.
Hayes Mach IV Plus Quad or ADB	65.
Mirage Quad or ADB (Turns joystick into mouse)	39.
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EADB-105 Extended Keyboard *(IIGS)*	***Special*** 149.
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Computer Eyes *(IIe or IIc)*	109.
Computer Eyes *(IIGS)*	209.
Ergotron Mouse Cleaner 360° *(IIGS)*	15.
Epyx Epyx 500J Joystick	27.
Kalmar	
Teakwood Rolltop Disk Case *(Holds 50)*	18.
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Mouseway *(Mousepad)*	8.
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Printer Muffler 132	58.
Printer Muffler Stand 80 or 132	24.
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Koala Pad Plus w/Graphics Exhibitor	84.
Kurta	
IS ADB Tablet w/stylus *(IIGS)*	315.
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Passport Designs	
Master Tracks Pro *(IIGS)*	99.
MIDI Interface w/Drum Sync *(AP & IIGS)*	89.
MIDI Interface w/Tape & Drum Sync *(AP & IIGS)*	135.
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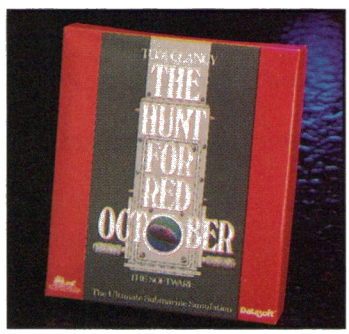
Available colors: black, blue, brown, green, orange, purple, red, yellow, silver or gold	
ImageWriter Ribbon-Color	4.
ImageWriter Ribbon-Black six pack	20.
ImageWriter II - 4 Color Ribbon	9.
ImageWriter Rainbow Pk. (6 Colors)	20.

The Hunt for Red October by Datasoft



The Hunt for Red October comes from the pages of Tom Clancy's best selling novel. As captain of Russia's state-of-the-art submarine, the *Red October*, you (and your officers) have decided to defect to the USA, and take your boat with you. To the USA, you must navigate the Atlantic avoiding detection by both the Russian and NATO forces. You have sonar to show your boats position in relation to NATO and Russian forces. A periscope provides detailed views of vessels in the immediate area. Good luck Captain!

The Hunt for Red October (AP) ..... **30.**
The Hunt for Red October for the IIGS ..... **37.**

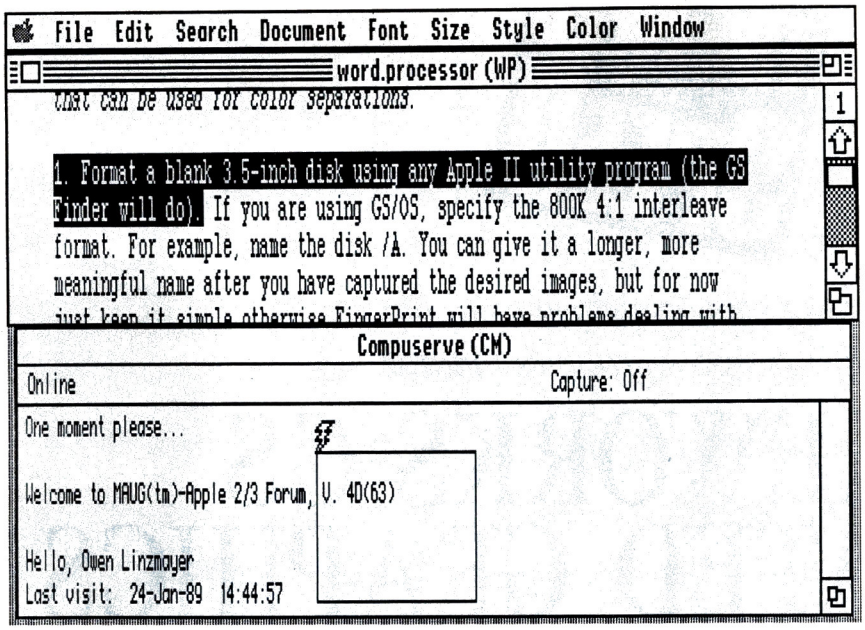


Figure 2: The communications module brings "multitasking" to the IIGS: for example, you can copy text from another AWGS module into an active telecom session.

two modules and two windows at once, however, makes the somewhat jerky response of AWGS even more jerky.

Other features of the communications module include

- The ability to copy text from another AWGS module into the telecommunications window, through either the clipboard or the lightning-copy (Control-drag) method, and send that text as part of the telecommunications session (see figure 2).
- Built-in Binary II file transfer.
- Batch file transfer.
- XModem, XModem CRC, and YModem protocols.
- Control-character display.
- A dialing directory with room for 64 entries per telecommunications document.
- An edit line that keeps outgoing text separate from the receiving screen.

The display speed of the communications module is adequate, considering that it is in Apple IIGS super-hi-res graphics. At 1200 and 2400 baud, the display is jerky, but I did not lose any characters.

This module's display font is 9-point Monaco, which can be hard to read. Although font substitution is not possible, you can "hack" a fix by changing the identification information of a monospaced font so that it is the same as that of 9-point Monaco. Then, remove the 9-point Monaco font from your system fonts folder.

The size of the capture buffer depends solely on available memory. When I ran two modules of AWGS (communications and word processor) on my 1.25Mb IIGS, it took nearly 500,000 characters to fill the buffer.

The Wrong End of the Line

I found an intermittent bug in the file-download function that prevented me from transferring some files. A file that successfully transferred once hung a second time. When I discussed the problem with Claris technical-support personnel, they acknowledged the problem but were not sure of the cause.

The biggest shortcoming in this module is its lack of macros, which prevents you from automating system log-ons and message checking. Most telecommunications programs today permit such automation. You'll also miss the ability to print from within the module. And, although the other AWGS modules have an Undo command, there isn't one here.

The inability to download files reliably, the lack of macros, and the absence of other important features render the communications module an interesting toy at best. AWGS will have worthy telecommunications abilities only if Claris puts serious improvements into this part of the program. ✚

Michael Fischer is A+'s telecommunications editor.

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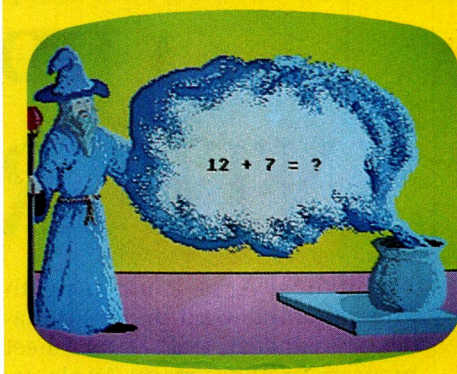

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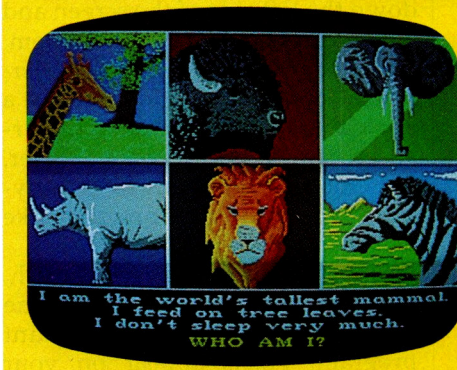

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CIRCLE 179 ON READER SERVICE CARD

REVIEW

BY ROBERTA SCHWARTZ
AND MICHAEL CALLERY

THE NEED FOR SPEED

Drawing some conclusions about AppleWorks GS's graphics module

APPLEWORKS GS INTEGRATED GRAPHICS

The original AppleWorks' smooth integration of word processor, database manager, and spreadsheet program provides many Apple users with everything they need in productivity software, but those of us who use graphics in our work benefit little. AppleWorks GS adds the missing elements with graphics and page-layout modules.

We like the graphics module. Open it, and you see a tool palette down the left side of the screen and a pattern palette across the bottom. Other than working in the super-hi-res 640 mode, it appears to be a typical paint program. Appearances can be deceptive, however. This module turns out to be a hybrid paint and draw program like no other we've seen.

Use the paint tools (paintbrush, pencil, fill, and airbrush), and the program behaves like any paint program: Pixels appear on your canvas. Switch to the drawing tools (text, lines, rectangles, rounded rectangles, circles, polygons, and arcs), and you'll find yourself working with objects, as in TopDraw or Draw *Plus*. Draw a circle. Is it too big? You don't have to erase it and draw another; you can easily resize it by dragging on the handles that appear when it's selected. You can change other characteristics, such as line width, color fill, and border color, just as easily. And, unlike those of other graphics programs, AWGS editing tools work on draw objects.

Painted areas have handles too. The graphics module creates paint objects bounded within a rectangular area. If you change to a drawing tool or choose the Begin New Paint Object command, the area you were painting becomes a paint object that can be manipulated like any other object (see figure 1).

Those of you who use the Apple LaserWriter will be disappointed to discover that although you're creating draw objects, you can't tap into the higher resolution of your printer. On dot-matrix printers such as the ImageWriter, output from paint and draw programs is identical, but on the Apple LaserWriter there's usually a big difference. Paint programs reproduce the screen pixel for pixel, but draw programs translate screen objects into PostScript commands to produce graphics at 300 dots per inch. When you print your AppleWorks GS graphic, objects or not, it prints out as a paint graphic.

The graphics module doesn't offer sophisticated features of dedicated GS paint programs, such as masking and perspective. If you need more esoteric tools, however, AppleWorks GS allows you to import graphics from DeluxePaint II, Paintworks Gold, and other paint programs.

We were able to import 320-mode graphics we'd created with Paintworks Gold when we'd saved them in the paint and screen formats, but when importing graphics saved in Apple Preferred Format, we lost half of the image (the right half). When we tried to import 640-mode graphics, only those saved in the screen format made it into AWGS. And we were unable to import a full-page, 8½ × 11-inch graphic in either resolution.

AWGS's use of the 640 mode makes working with color pictures from other programs difficult. If you import graphics created in the 320 mode into AppleWorks GS, you may not like the way the colors translate. The 640-mode palette has only four "real" colors; the others are produced by a process called dithering and are therefore much less vibrant (see figure 2).

Palette editing is a problem too. You can edit the palette, but changing one of the pure colors changes all of the dithered colors that use that pure color. Editing a palette is a little more difficult than it should be, as you cannot see your graphic when you're mixing your colors—the edit-colors dialog box covers the entire screen.

You may also have to edit the same palette more than once, since, when you edit the palette in any of the modules, the edit applies only to that module. A palette used to create an object in one module cannot travel with the object into another module, so you have to make color adjustments when you move graphics between modules.

The Page-Layout Module

Using the AppleWorks GS page-layout module, you can combine text and graphics to create impressive documents such as invitations, fliers, newsletters, and manuals. The feature set of this module is impressive—the program design-

ers at Claris obviously looked closely at the popular page-layout program PageMaker. It follows the same free-form approach to page layout; you simply place text and graphics anywhere on the page. Everything you place on a page is an object, and you can rotate and flip the graphics objects.

You can enter text from within the page-layout module or import word-processing files. Graphics can be brought in from the graphics module or imported from most major paint programs. Here's where you'll really appreciate AppleWorks GS's integration. Write a poem using the word-processing module. Pull down the Window menu from the menu bar and select your page-layout document. Voilà, you're in the page-layout module! Import the poem you just wrote. Now, pull down the Window menu and select your graphic document. Draw a picture to illustrate your poem. Copy it to the clipboard. Return to your page-layout document and paste it in (see figure 3).

Or, if you have the graphics and page-layout modules in two windows simultaneously, use the Lightning Copy feature to move your graphic into your layout. This nifty feature lets you select an object in one window and move it directly into different modules in another window. Want to edit the graphic some more? Simply return to the graphics module. Of course, the number of windows you can have open at one time and how much manipulation you can do depends on how much memory your GS has, but having two windows open is usually no problem.

The documentation claims you can import graphics created in other programs into the AWGS page-layout module, but we had the same problems with this as we had when we tried to import graphics into the graphics module.

Graphics imported into the page-layout module print just as they do from the graphics module. Graphic objects created with the page-layout drawing tools (lines, rectangles, ovals, and rounded rectangles) do take advantage of the LaserWriter's 300-dpi resolution, however.

Like the graphics module, the page-layout module of Apple-

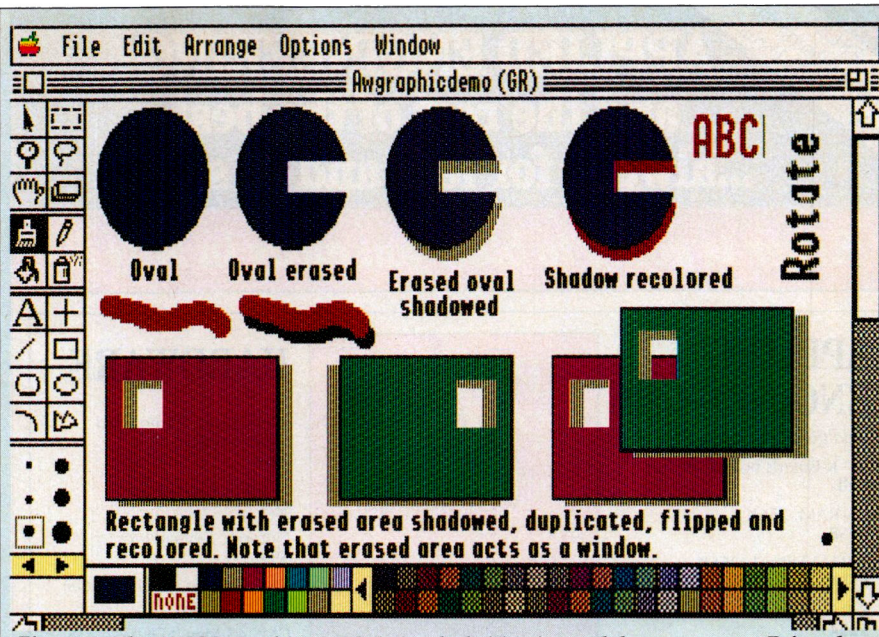

Figure 1: The AWGS graphics module is a hybrid paint and draw program. Painted objects aren't indelibly added to the electronic canvas, but, rather, they can be manipulated like draw objects for interesting effects.

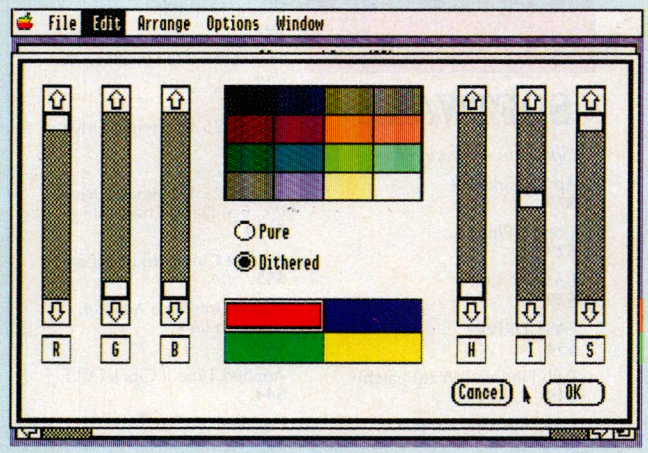

Figure 2: The 640-pixel super-hi-res graphics mode has only four pure colors, although dithering creates a more extensive palette.

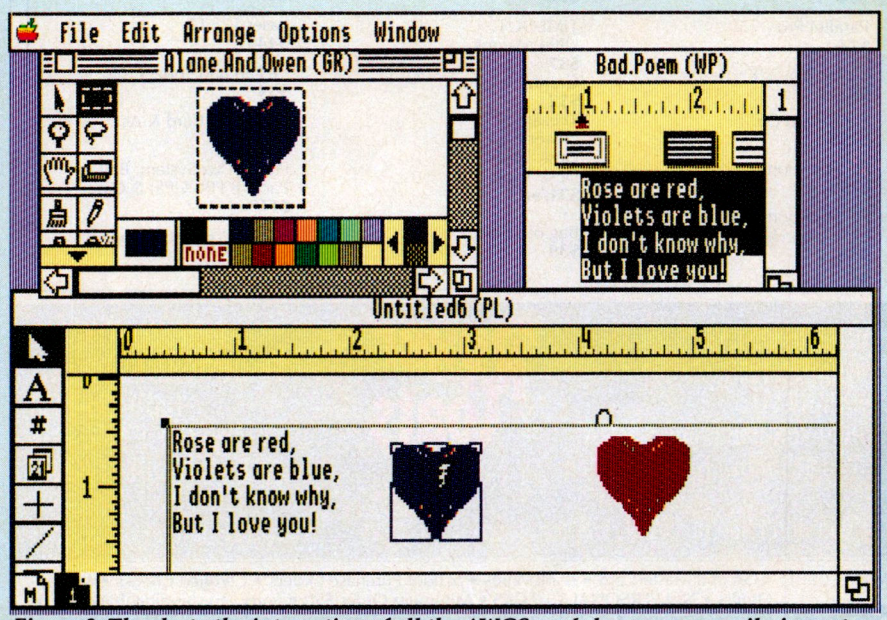

Figure 3: Thanks to the integration of all the AWGS modules, you can easily import graphics and text into a page-layout document.

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CIRCLE 109 ON READER SERVICE CARD

Works GS lacks sophisticated features. For example, it doesn't have a full set of typographic controls such as variable word and letter spacing, hyphenation, or picture wrap. Still, you can create some pretty exciting documents.

Graphic Through and Through

Graphics enhance two other AppleWorks GS modules. In the database module, you can use picture fields to put a graphic into each record, and in the spreadsheet module, you can create informative and attractive graphs, although one time when we tried this, the program crashed. The spreadsheet-generated graph appears in a graphics-module window, which gives you access to all the drawing tools you need to customize your graph. (Pieces of the graph—bars, pie slices, and so on—become individual objects.)

No Speed Demon

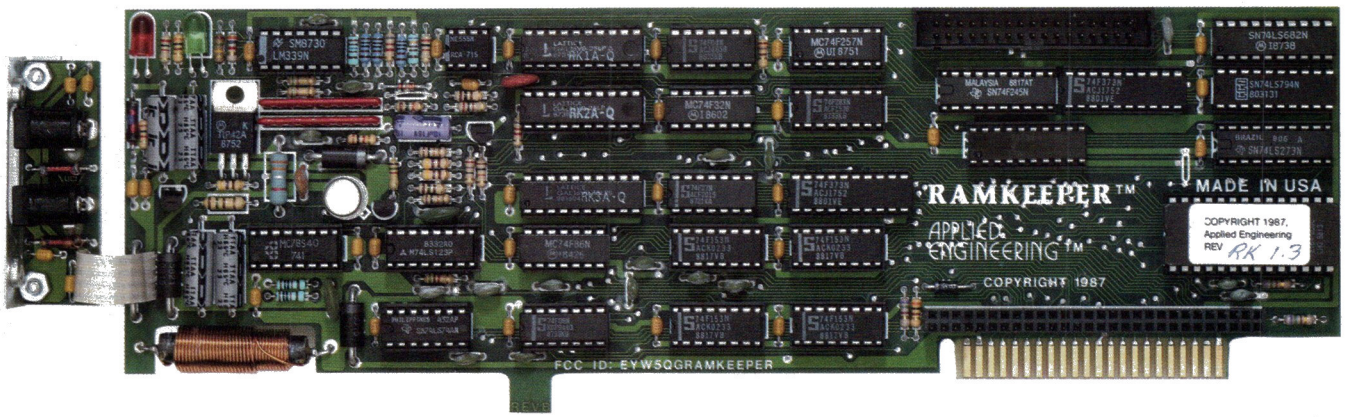
We found AppleWorks GS to be sluggish, but the graphics module is no slower than other painting or drawing programs. Graphics programs generally run slowly because of the amount of data they must deal with. We do, however, think more speed is possible in the page-layout module. It's somewhat faster than the original release of Springboard Publisher but not as fast as Publish It! Since you'll frequently rely on the page-layout module to integrate graphics with text, you'll quickly long for a speed boost (see review of TransWarp GS elsewhere in this issue).

Both of us experienced crashes during extensive cutting and pasting. We alternated between total crashes into the system monitor and cursor freeze-ups. Be sure to save your individual documents before you attempt to cut and paste or do anything else that might drastically alter the memory situation, such as changing fonts or opening a desk accessory.

The integration of AWGS provides useful and exciting capabilities. Of course, you can do just about the same things with separate programs, but having instant access to all these modules at once not only makes it easier for you to integrate different types of data, but encourages you to do so. ✚

Roberta Schwartz and Michael Callery are A+'s graphics editors.

RamKeeper.™ If not the first board you add to your IIGS



Certainly the second.

Chances are the first board you add to your computer will be for memory expansion. RamKeeper™ makes a smart second addition by performing *two important tasks:*

First, it gives you a sensible way to grow beyond the Apple memory expansion board that probably came with your IIGS. Apple's board has room for only 1 MEG of memory, and the new, integrated programs need a MEG just to boot.

RamKeeper lets you add a second memory board to your memory expansion slot with a special "back pocket" connector. That way, you can use your 1 MEG Apple board and still expand beyond its 1 MEG limit. And RamKeeper "sees" the two boards as one, so all you'll notice is the increased memory.

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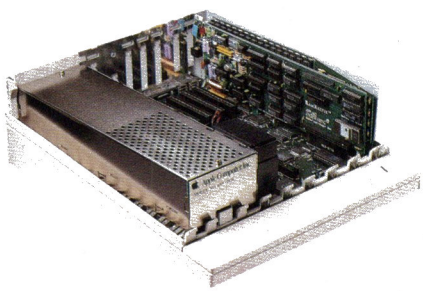

RamKeeper is easy to install and stores programs in an "instant on" electronic hard disk.

while the power was off. To protect the operating software against program crashes, we installed RamKeeper's controlling firmware in an EPROM.

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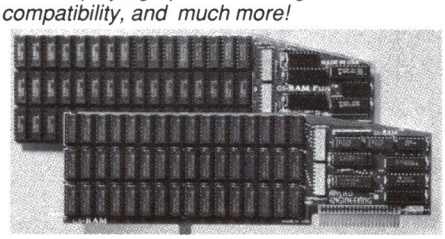

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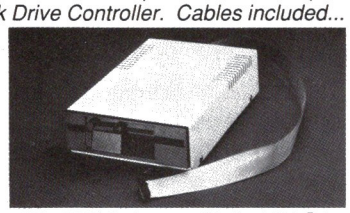

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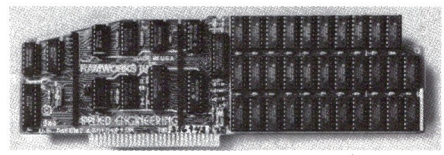

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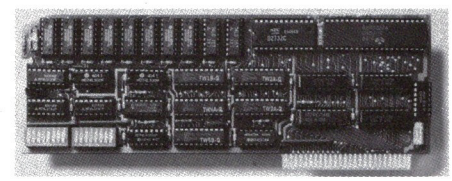

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REVIEW BY JOHN ECKHOUSE

GEOPUBLISH

THE NEED FOR SPEED

A feature-laden Apple II desktop-publishing program

The unveiling of the Macintosh computer a few years back launched a new age in the world of personal computers, an age of easy-to-use, high-quality graphics and the ability to create page layouts. Pretty soon, everything from company newsletters to union leaflets to coffee-table books was being published from the desktop.

Unfortunately for Apple II fans, the Mac was the only choice in this new field for a long while. But what about "the rest of us"? Were we supposed to abandon our faithful Apple II machines in favor of a Mac if we, too, wanted to become desktop publishers?

The answer is no, although it took a few years of waiting. But now—because memory-expansion cards and high-capacity disk drives are readily available—several software companies have decided it's feasible and desirable to write graphically oriented software for the Apple II market. At last, those of us who have taken the slogan "Apple II forever" seriously can become expert desktop publishers, too. Indeed, we've gone from famine to feast as at least three companies have released Apple II desktop-publishing programs recently.

So far, the most feature-laden package appears to be geoPublish from Berkeley Softworks. This program is an extension of the company's GEOS (Graphic Environment Operating System) software, which is included in the package. GEOS's pull-down menus and familiar icons for files, folders, trash, and so forth make it easy to navigate around geoPublish. With a mouse, pointing and clicking is quick and easy. Or you can use keyboard commands if you prefer.

(For a complete description, see "GEOS" in the September 1988 issue of *A+*.)

The biggest advantage of geoPublish, its power, may also be its biggest shortcoming. Packing all that power and all those features into the software makes it somewhat difficult to learn and very slow to execute.

You notice the power the moment you pick up the package and find it filled with four manuals and five double-sided 5¼-inch disks (or two 3.5-inch disks). Although most people probably plunge right into new programs without reading the instructions, that really isn't possible with geoPublish unless you have a background in typesetting or graphic design.

Although I've been writing professionally for years, I needed to read about 300 pages of instructions before I felt comfortable trying to control what I encountered on the computer screen. Many of the icons just don't make a lot of sense unless you are familiar with computer drawing software. I'm afraid not too many people know what an open spline is, let alone what its icon might look like on a screen.

The other spot where you notice the program's huge girth is when you want to make a working disk. It can range in size from 128K with only one font to 471K with most of the program's features. If you have just one 3.5-inch drive, it takes close to 50 disk swaps to make the 471K working disk!

Modular Publishing

The program has three modes: Master Page, Page Layout, and Overlay Graphics. It's equivalent to having three pieces of transparent paper laid on top of each other:

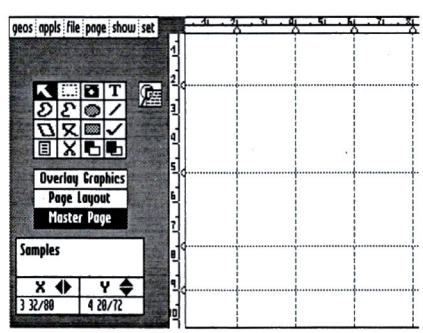


Figure 1: The grid lines in the Master Page mode act as both a guide and a tool for creating a template for your document. You can position elements on a page and then "snap" them to the grid to ensure proper alignment.

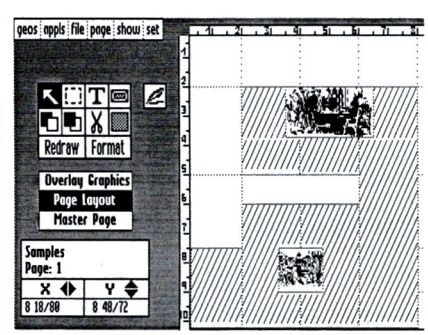


Figure 2: In the Page Layout mode, you draw boxes to define where text and graphics will appear on a page and then add text and graphics to those boxes.

You use different modes for different functions, but the contents of all three will appear on the same printed page at the end. The names of the modes are not quite exact in describing their function. Master Page is for anything that repeats on every page; Page Layout is where you drop in text and clip art; and Overlay Graphics is where you create oversize text and graphics.

You start in the Master Page mode (see figure 1). Here you create anything that will appear on every page in the finished document, such as a newsletter's title and logo. You also use this mode to establish horizontal and vertical rules and a basic template, such as a three-column style, that will help you lay out the newsletter. You can use geoPublish's library of standard formats or create your own formats and add them to the library.

From Master Page, you move on to Page Layout, which is where you drop in text and graphics (see figure 2). First you define regions for text. Then you create other regions for graphics or headlines, or a box where you might put a pull-quote (a brief excerpt from the body of the text that is enlarged and set off in a ruled box). The text automatically wraps around any graphics or pull-quote boxes you define. You place the text and clip art in the regions before leaving the Page Layout mode.

Despite its name, the Overlay Graphics mode is where you write the headlines and pull-quotes and add them to the regions you've previously defined in the Page Layout mode (see figure 3). Overlay Graphics is also for creating special borders around regions to set them off and for creating large posters. You can do freehand drawings in both the Master Page and Overlay Graphics modes, using lines, polygons, ellipses, rectangles, and curves in any of 32 patterns.

Once you've finished laying out your document, you can print it on a dot-matrix printer or use the geoPubLaser utility to make high-resolution prints on the Apple LaserWriter (see figure 4).

Art Imports

The geoPublish package includes five files of clip art, which you can plop onto your page in any size. A nice feature allows you to stretch and scale the artwork to fit the bounding box you have created for the graphic. You also can smooth the graphic to remove the stair-step effect that usually occurs when you enlarge a piece of clip art (see figure 5).

Besides its own clip art, geoPublish offers a utility called Graphic Grabber, which enables you to import more graphics from The Print Shop, PrintMaster, The Newsroom, and Dazzle Draw. I had no problem pulling clip art from the Print Shop and The Newsroom and dropping graphics into a newsletter, but I could not get geoPublish to accept any graphics from my PrintMaster disks.

I had even worse trouble importing text. The geoPublish program has its own text editor for writing or editing anything from a headline to a manuscript but supposedly also can import AppleWorks, MultiScribe, or WordPerfect files. I never could get this feature to work quite right. Using the GEOS Text Grabber, I was able to convert my AppleWorks files, but half the time they seemed to disappear, and the rest of the time they failed to go to the right spot so I could manipulate them with a function known as Text Manager.

Even after six hours of trying, I couldn't get text importation to work properly. Totally frustrated, I

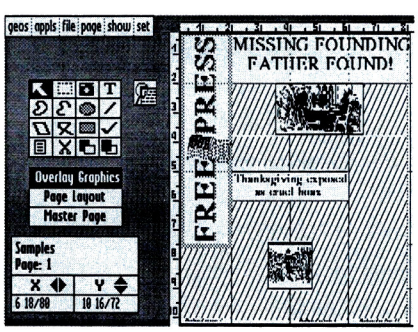


Figure 3: You add headlines, pull-quotes, and borders in the Overlay Graphics mode.

Figure 4: With geoPublish, you can print documents on either a dot-matrix (above) or a laser printer (right).

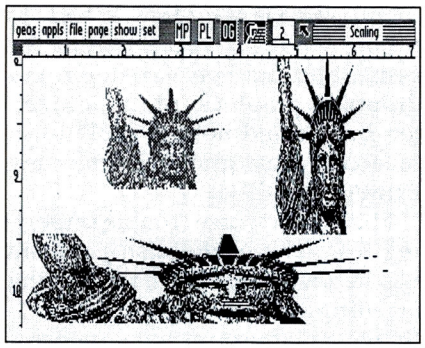


Figure 5: With geoPublish, you can stretch, smooth, or scale bit-mapped images to fit into a graphics box of any size that you have created.

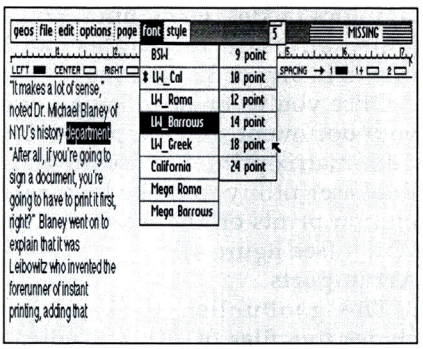


Figure 6: The geoPublish text editor, modeled after geoWrite, has a graphics menu-oriented interface and lets you edit text in columns.

called Berkeley Softworks for help, but the company no longer provides technical support on the telephone. If you need assistance, you must post a message on AppleLink.

Working with Text

Once you have text on the page, however, you can manipulate it with the text editor (see figure 6). For example, you can change the type font or size or print text in boldface, italics, or outline style. The geoPublish program is WYSIWYG: what you see is what you get.

The text editor offers a choice of seven fonts for the body type, but two of them are available only when you're outputting to a laser printer. You can choose to print the text in 9–24 point type. A smaller type font would be nice, as would a way to specify what is known as leading, the amount of white space between lines.

The Overlay Graphics mode offers a wider selection of type fonts and sizes. Here you can choose from nine fonts and type that ranges in size from 4 to 192 points. You also can print words down or up the page as well as across. This mode also lets you print transparent graphics, so you can see words underneath the artwork.

Peculiar Trichotomy

The concept of three different modes seems peculiar. Master Page makes a lot of sense—you don't have to recreate items you want on every page—but separating Page Layout from Overlay Graphics leads to some problems. For example, why should you have to switch modes to create a pull-quote? You should be able to stay in the same mode to create a ruled box, drop in a quote in any size type and font, and then have the text wrap around that box. But that's not possible with geoPublish. Another area of frustration: If you move something in the Overlay Graphics mode, you have to remember to move its boundary box in the Page Layout mode, or you end up with words printed over graphics.

The Page Layout mode also exhibits several weaknesses. It lacks the Zoom command of the other two modes, which lets you enlarge on the screen the portion of the page on which you are working. Also, you don't know how much space your writing takes up on the page until you reformat it—a time-consuming process. Thus, you have to endure a cumbersome process of trial and error to get your words to fit right. If you are creating a four-page newsletter, for example, you don't want to end up with three or five pages of text. You need to know quickly how much text you have.

The Learning Curve

One of geoPublish's four manuals offers a step-by-step tutorial. Even though its instructions were clear, I found them unsatisfying. After finishing, I felt as if I had just created the Mona Lisa on a paint-by-numbers canvas: The result was pretty, but I would be unable to recreate it on my own.

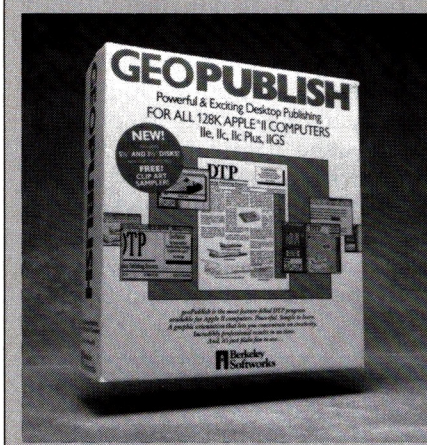
Case in point: After spending two and a half hours reading about the program and another two hours playing around with it, I set out to create a newsletter. It took me about an hour to design just one page and another four minutes for my ImageWriter II to print it. To my chagrin, all the headlines were in the same 9-point size as the body type, the graphics were the wrong size for the boxes in which I had placed them, and my pull-quotes stood alone without the lined boxes I thought I had drawn around them. All the errors turned out to be my fault, and my performance improved with time, but this description may give you some idea of the length of the program's learning curve for novice users.

Type A people may also get impatient on discovering how long you have to wait for some parts of the program to execute. It spent 27 seconds going from the Master Page format to Overlay Graphics, presumably because the program had to format and then store several different regions of text and graphics on the page I had created.

Still, geoPublish may be just what you need to jump into desktop publishing. Its creativity tools and power can be awesome. Plus, its ability to generate output on the Apple LaserWriter can make your creations look as if they'd just emerged from a professional print shop. It's nice to know that solid desktop-publishing programs such as geoPublish are finally around for the Apple II. ✚

John Eckhouse is a business writer for The San Francisco Chronicle.

VITAL STATISTICS



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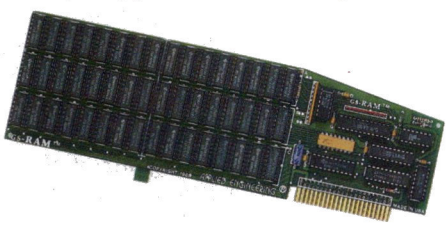

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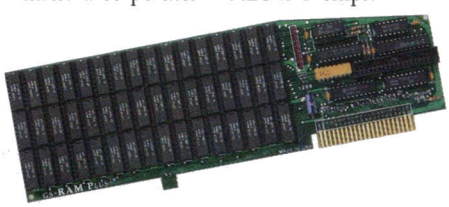

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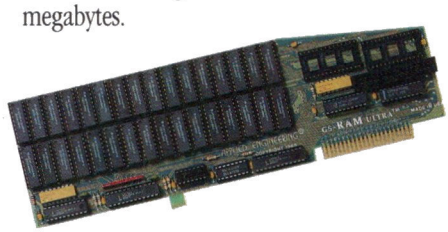

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PRODUCTIVITY BY MORGAN DAVIS

Inoculating yourself against the myth, mystery, and dangers of computer viruses

TERMINAL ILLNESS

According to the evening news, computer viruses have an affinity for mammoth-size mainframes. Sadly, these digital diseases can infect your personal computer just as easily, and with deadly results. A strain of viruses attacked the Apple II world in recent months, and they will strike again. So how safe is your Apple?

A little knowledge about viruses goes a long way toward protecting your programs and files from infection. Safety and good computing health are measured by understanding and awareness. Always practice "safe hex." End of sermon.

That said, keep this basic fact in mind: No computer is immune from a virus.

Viruses, Trojan Horses, or Bugs?

The first step in understanding a virus is to define what one is. The name "virus" generically describes all kinds of computer illnesses, caused intentionally or otherwise. Informally, however, *virus* refers only to computer illnesses spread intentionally.

A computer virus starts out as an unwanted bundle of instructions attached to programs and operating systems. Not all viruses are destructive. Some simply pop up on your screen to display a message. The more dangerous type comes armed with two goals:

- Duplicate so that it thoroughly infiltrates your disks.
- Destroy—its job is complete when your files are obliterated.

The duplication process is subtle. It can take months before any damage is done or even detected. Its uncanny likeness to a deadly human virus is worth noting.

Another insidious beast, the Trojan horse, is a program that purports to do something wonderful but then proceeds to destroy your computer data. For example, a new utility program may claim to make your hard-disk drive run faster by organizing its files, but when invoked it may actually annihilate your files.

Computer programmers readily admit that most programs of reasonable size contain bugs, programming errors that cause programs to run incorrectly. Usually bugs are just a nuisance, at worst causing a system crash from which you can recover by rebooting and losing whatever data was in RAM at the time. Some bugs can actually cause damage, corrupting the file you're working on or even all the files on a floppy or hard disk, but the damage is unintentional. Bugs are not viruses; they are mistakes.

In order to be considered a bona fide virus, a program must replicate and distribute itself to other application programs on your disks, just like a biological virus spreads and infects living beings. Since bugs and Trojan horses do not propagate under their own power, they are not viruses.

In personal computers such as the Apple II series, a stealthy virus consists of machine-language instructions that the computer's processor executes directly. For the computer to follow these instructions, the virus must become part of an application—a program that you run.

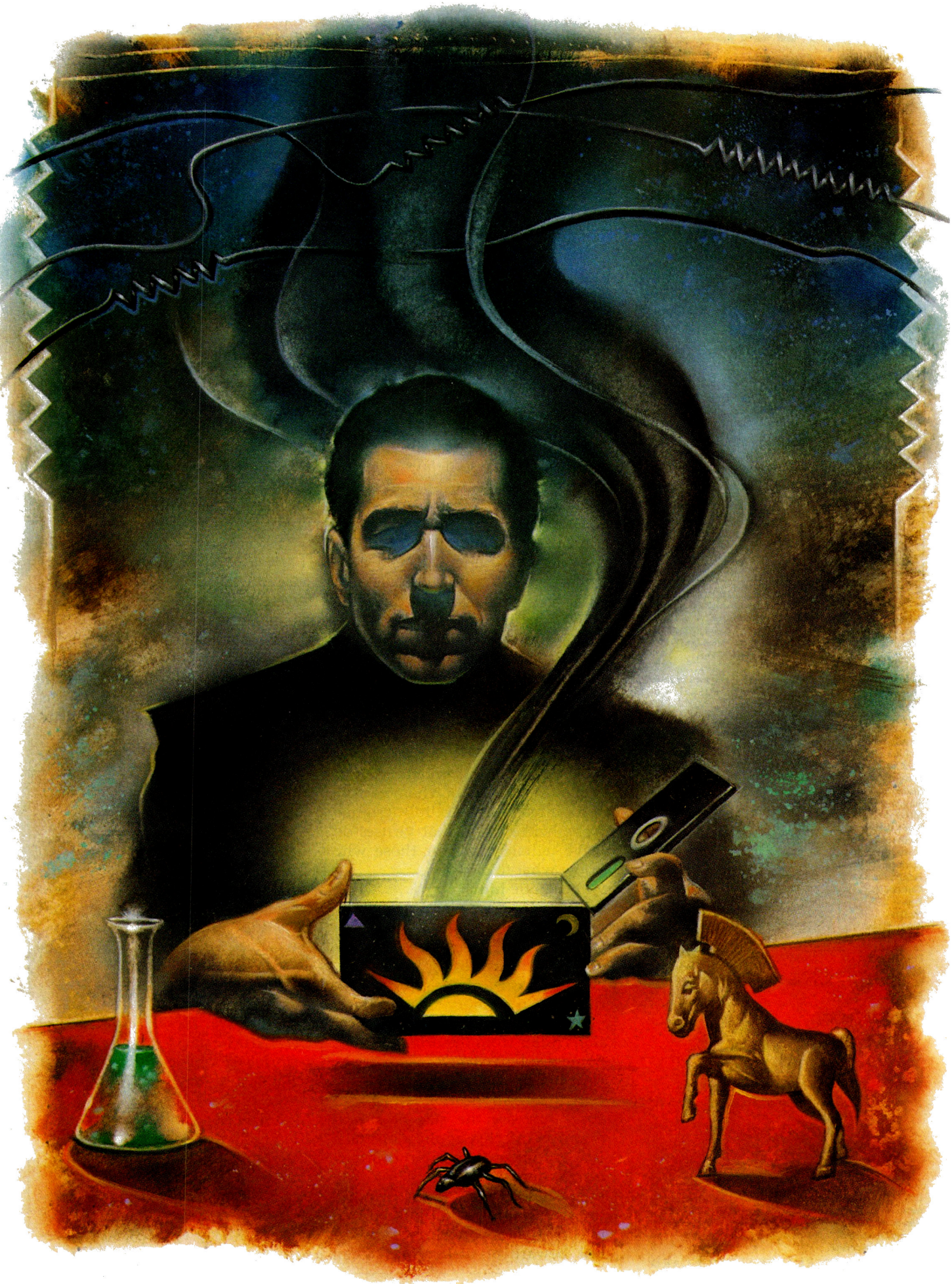
Viruses do *not* infect data files, such as word-processing documents, graphics, or sound files, because such files do not contain instructions that the computer's microprocessor executes. BASIC programs are unaffected too, because they contain special codes interpreted by Applesoft, the program that resides in read-only memory on all Apple II computers. Note that the BASIC.SYSTEM file can be infected, however, since it is a ProDOS system application.

Viruses don't float through the air, entering through your disk-drive door to infect your disks. So how are viruses caught, and how do they spread?

Initially, a computer program is seeded with the virus by its creator, a computer programmer. To get the virus into circulation, the programmer may place a copy of the program on a computer bulletin-board system or, worse, on a major information system. In no time, users obtain copies of the infected program and store them on their disks.

Don't worry about telecommunicating. You cannot contract a virus from another system unless you download a corrupted file. Even then, the virus will remain dormant until you run the corrupted program.

When the program runs, the computer faithfully performs the virus's commands. Because the job of a virus is to duplicate itself, it seeks out another program on disk, inserting a copy of itself into that program. Now two programs are infected with the same virus, and each can infect more.



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CIRCLE 146 ON READER SERVICE CARD

Every time an infected program runs, it may spread the virus to other programs. In just a short time, an entire disk collection can fill with diseased applications. Unsuspecting Apple users may share these disks with friends at school, work, or club meetings, and a major epidemic can break out.

Term Warfare

At some point, the attack on your system becomes obvious. A "creeping" virus slowly and surreptitiously wreaks havoc on your system. Typically, however, a virus hides a counter on the disk, which it increments each time an infected program runs, until it reaches a certain value. When the deadly number arrives, the virus unleashes its wrath on your system. Some viruses wait until a certain date and time before exploding, like a time bomb. These delays give the virus a chance to spread itself around before expiring.

Depending on the virus, any kind of mayhem might ensue. A destructive virus may delete files, scramble blocks on your disk, or erase the whole disk. Often while this is happening, the virus displays a message on your screen from its creator. Your hardware is not in danger—viruses affect only software. Some nondestructive but mischievous viruses just display a message and go away.

Micro Scope

Being small and undetectable is the most important characteristic of an infectious virus. It's designed to be hard to find. But viruses do leave telltale clues for those who know what to look for.

Some subtle hints:

- Applications are larger than the originals on master disks. Since they append themselves to programs, viruses almost always increase the size of the program on disk and in memory.
- Modification dates on applications differ from the originals.

Some dead giveaways:

- An inordinate amount of disk access during application launch. Viruses increase the size of a program, so infected applications take longer to boot than their uninfected counterparts.
- Unusual access to disks in other drives. Many applications poll all on-line devices on initial start-up, but beware of disk access when none is called for. A virus may be searching for uninfected files on other disks.
- Unknown Apple IIGS "init" files in the SYSTEM/SYSTEM.SETUP directory.
- Unknown "invisible" files.

Extra disk activity or differing modification dates may not actually be due to a virulent infestation, but if you run a program and notice that it causes the computer to do something it didn't used to do, be wary.

Safety Software

If the prognosis for your programs sounds bleak, here's a list of utilities that can help keep your disks and files healthy. Improved variations of these programs are constantly popping up on bulletin-board systems as well as on-line information services, so check regularly for new releases.

These programs run on all Apple II-series computers, unless otherwise indicated:

Virus Detector
Guy T. Rice
Public domain
Automatically checks boot disks each time GS/OS is launched and warns Apple IIGS users if their boot disks contain the Festering Hate or CyberAIDS virus.

Virus.Rx
Glen E. Bredon
521 State Road
Princeton, NJ 08540
Compares your applications with information from known-to-be-safe versions, informing you of any discrepancies ($20).

VirusMD
Morgan Davis
Public domain
Scans disks for files infected with the CyberAIDS or Festering Hate virus, restoring sick files to their original state.

Mister Fixit
Glen E. Bredon
521 State Road
Princeton, NJ 08540
Part of an indispensable set of ProDOS utilities in Glen Bredon's ProSel package, Mister Fixit attempts to repair corrupted disk volumes ($40).

Certain viruses leave unique footprints that can help you detect them. Since each virus is different, though, no signature can identify all viruses, which makes it particularly difficult for programmers to develop software to detect and disinfect all virus-ridden files.

Is There a Cure?

Wouldn't it be wonderful if the world's top microbiologists were able to create a vaccine that could keep all of us from ever getting sick again? Not likely. The same is true for computer "vaccines." There is no cure-all for computer viruses.

Currently, a smattering of public-domain Apple II programs are available that seek out virus-infected applications (see "Safety Software"). Some, such as VirusMD, even go so far as to disinfect diseased programs. These utilities are highly specialized, however, and can detect only certain strains of viruses. You must run these programs on a regular basis, which can be a hassle.

Automated solutions, such as Virus Detector, can detect viruses each time you boot a disk. And others, such as Virus.RX, compare your applications to a database containing information about healthy versions of those same programs. If it finds a discrepancy, you get a warning that one of your files might be infected. This approach is only as good as the database entries you must maintain for each application on your drive, though.

Prevention

Here are just a few steps you can take to help stave off the ravages of a computer virus:

• Exercise caution whenever testing out newly acquired software from bulletin-board systems or other

Arresting Viruses

Computer viruses have infected computers all over the country, cropping up everywhere, from hospitals and universities to the House of Representatives. Although 48 states now have laws dealing with computer crimes, only a few specifically mention viruses. There is currently no federal law on the subject.

But that may be about to change. Rep. Wally Herger (R-CA), along with 35 cosponsors, has introduced the Computer Virus Eradication Act of 1989 into the House of Representatives. The Act provides for criminal penalties—fines and/or up to ten years in prison—for anyone who knowingly inserts a computer virus into someone else's computer system without their knowledge or consent, and civil penalties that allow victims of viruses to recover the costs of loss or damages.

A federal law already on the books could be used to prosecute virus-related crimes. The 1986 Computer Fraud and Abuse Act makes it illegal for anyone to intentionally access a U.S. government computer without authorization and, in doing so, alter, damage, or destroy information in the system. First offenders can be fined and/or imprisoned for up to five years. Second offenders can be fined and/or imprisoned for up to ten years.

Several problems arise in prosecuting anyone under this law, though. First, it applies only to government computers or financial institutions; second, it requires proof of intent to cause harm, as well as actual harm. For example, in the case of Robert T. Morris, the graduate student accused of introducing a virus that got into the Pentagon-supported Arpanet network, the virus slowed down the computer and occupied memory but did not "alter, damage, or destroy" any files. Morris claims that the intrusion of the virus into the system was an accident, which makes intent to cause harm difficult to prove.

There have been no prosecutions for virus-related crimes under the 1986 Act.

Under the Computer Virus Eradication Act, inserting a virus into a computer system would in itself be considered a threatening action, according to Rep. Herger's legislation director, Roger Mahen. Such an action would be punishable whether or not any damage or loss had occurred. The virus would still have to involve interstate or foreign commerce, however, so existing state laws might also have to be updated to cover many virus-related crimes. *Shanon Cullen*

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Flight notes # 6B

New IIGS Flight Simulator? - Flight Simulator II for the Apple II plus, IIe, and IIc computers has been a phenomenal success ever since it was introduced back in 1984. While the program set new standards for graphic animation and simulation realism in its time, FS2 has never really been updated to take advantage of subsequent advances in hardware/software technology and 6502-compatible processing power. Most noticeably, Flight Simulator II has never utilized the special graphics and sound capabilities of the Apple IIGS computer.

Due to a great increase in the number of calls and written requests in recent months, we've begun to consider the possibility of doing a completely revised Flight Simulator II program specifically for the IIGS. This would present several big (but not insurmountable) programming difficulties. Larger questions concern the viability of such a product from a sales and marketing point of view. Would a IIGS-specific version of Flight Simulator pay back the programming time and effort we'd have to invest in its development? Is the IIGS market large enough to support this product? We'd be interested in hearing from you IIGS owners on this subject. Would you like to see us release a Flight Simulator II program specifically for your computer? For those of you who already own an Apple II copy of FS2, would you be interested in upgrading to a IIGS-specific Flight Simulator program? Please feel free to call or write us and let us know your opinions. Your feedback in this case really can make a difference.

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CIRCLE 110 ON READER SERVICE CARD

sources. It is not unreasonable to place a new program on a scratch disk (or RAM disk), remove all other disks, and switch off your hard-disk drive before running the application a few times. Also, check new software with virus-detection utilities.

- Watch out for bogus software names and version numbers. Be highly suspicious of anything like "Super AppleWorks Plus Version 8.02."
- Stay informed about new viruses by keeping up with the latest news. Word travels faster if you have a modem.
- Before the age of computer viruses, there were 41 good reasons for making regular disk backups. Now there are 42. Keeping valuable files backed up on disks and stored in a safe place, in case of trouble, is one of the smartest things any hard-disk user can do.
- Run virus-detection utilities regularly, and always before backing up a hard disk (see "Safety Software" for a list of detection and eradication utilities).

If a virus does attack your drive, your best remedy is to restore a clean set of backups. If that isn't possible, check out a good disk-repair program as a last resort—and keep your fingers crossed.

Software developers can protect their customers by incorporating simple virus-detection systems into their programs. The majority of infected applications are larger than healthy copies of the same applications. With this fact in mind, the application can inspect itself on disk to see if it meets certain specifications, such as a known file size and/or data checksum. The application can warn you if it determines it has been altered, allowing you to continue or quit at that point.

Is Anyone Really Safe?

Nobody is safe.

You don't need a modem and accounts on a whole bunch of bulletin-board systems to catch a virus. You don't need to join a computer club to swap public-domain software to infect your hard disk at home. You don't need to use computers at the school, the office, or your friend's house to become infected. All you need is exposure to an infected commercial program you've bought at a local computer store. Such a case is extremely rare, but it has happened.

The only truly safe computer users are the ones who never run anything but their own homemade applications, written from scratch. Such people do exist—some people build their own houses and grow their own food, too.

Living in the age of the virus is an inevitable hazard of working with computers. Big deal. It's not something that you can run away from. More harm comes from fear, uncertainty, doubt, and failure to use your computer to its full capability. The only security you can truly possess is a healthy understanding of viruses. ✚

Morgan Davis, a programmer, is moderator of the Apple II conference on the BYTE Information Exchange and Telecommunications Forum consultant on AppleLink Personal Edition. He has written two technical books on mastering the Apple IIGS toolbox.

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CIRCLE 187 ON READER SERVICE CARD

BY RICH JAROSLOVSKY

A new graphics-based writing program for the Apple IIGS

DELUXEWRITE

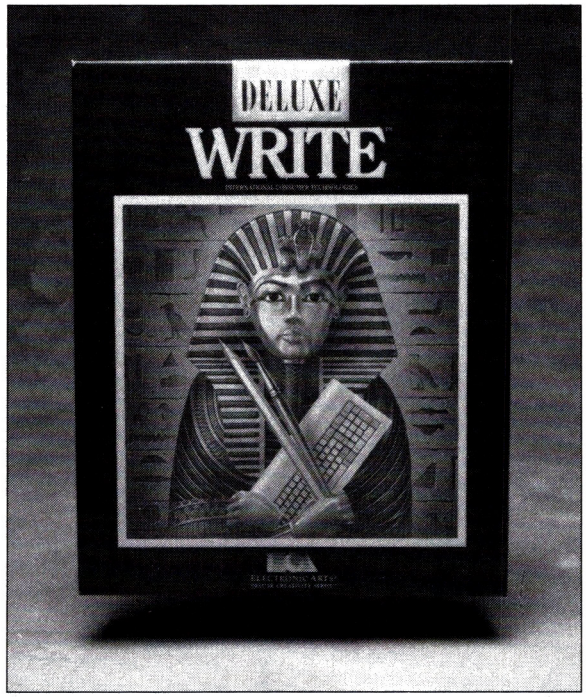
When the Apple IIGS appeared in 1986, it was quickly followed by two mouse-driven, graphics-based word-processing programs: StyleWare's MultiScribe GS (now available from Claris) and Activision's Writer's Choice *elite*. Combining a Macintosh-like interface with the Apple IIGS's color and graphics capabilities, the two products have dominated the market for graphics-based writing programs for the IIGS.

Now these two venerable programs have worthy competition in the form of DeluxeWrite from Electronic Arts. Any Apple IIGS users who aren't wedded to one of the earlier products—and maybe even some who are—ought to take a look at the new offering.

DeluxeWrite comes on two 3.5-inch disks. The system disk contains the operating system, six fonts, and other tools; the second disk contains the program itself. With a bit of disk swapping, you can run the program with a single floppy drive, but two are recommended, and a hard disk is desirable. An adequate manual and good on-line help shorten the learning curve.

First Impressions

In software as in life, first impressions are important, and DeluxeWrite makes a good one. Too many IIGS programs have an elongated, hard-to-read default font that must be changed to something more legible. DeluxeWrite, by contrast, offers 8-point Shaston as its default—a small but appreciated accommodation to users' convenience and comfort. Other little touches are also welcome: Although DeluxeWrite's cursor appears as only a thin vertical line on the screen, it is red, making it fairly easy to locate on a white screen with black letters.



DeluxeWrite users can have more than one file on the desktop at a time (see figure 1). Bear in mind, though, that the program requires at least 768K of RAM, and, even with that much, Electronic Arts warns that not all the features may work. A megabyte or more of memory is preferred.

Not Too Swift

Once you begin to write, you realize that the program is just plain slow. To a large extent, that's the fault of the IIGS hardware. Until accelerator cards or a faster CPU come into use for the IIGS, the same complaint can be leveled at all graphics-based programs. However, Electronic Arts could and should have done more to speed up DeluxeWrite.

In its initial release, the program is incompatible with GS/OS, the high-performance operating system for the IIGS. Thus, DeluxeWrite can't take advantage of the increased speed and other attributes of the new operating system. You will have plenty of time to mourn the missing speed as you wait for DeluxeWrite to complete such disk-intensive functions as using its 90,000-word dictionary to check for spelling mistakes (checking a document the length of this review takes about ten minutes).

DeluxeWrite is easy to set up and use. You set margins, line spacing, and the like with a ruler across the top of the page, after which you can hide the ruler, making more text visible. Changing the format in the middle of the document is simple: You need only insert an-

other ruler, adjust it accordingly, and make it vanish.

Viewed as a writing tool, the program does just about everything you expect of a state-of-the-art graphic word-processing program. It recognizes not only files in its own format, but also "Classic" AppleWorks files. When you load an AppleWorks file, an automatic utility takes over, converts the document to a DeluxeWrite file, and displays it on the screen with its original formatting intact. (You can bring other programs' files into DeluxeWrite by first saving them as unformatted ASCII text files.)

DeluxeWrite also does headers, footers, and merges. The program's Undo Typing command erases all keystrokes—up to 256 characters—since the last mouse-button click; the Redo Typing command undoes the undo. Many of DeluxeWrite's pull-down-menu commands have ⌘-key equivalents. Power users may miss the presence of macros, recorded series of keystrokes that play back at the touch of a command key.

Picture This

The real reason for using a graphics-based word-processing program is the ability to dress up your work with fonts and graphics. Here DeluxeWrite performs very well indeed. Graphics insert smoothly into DeluxeWrite documents. The program comes with a folder of clip art and lets you import pictures created with Electronic Arts' DeluxePaint II. (EA is selling its graphics program bundled with DeluxeWrite in a $129.95 "power pak.") DeluxeWrite can also load graphics created with other paint programs if they have been saved in the Apple Preferred Format.

In software as in life, first impressions are important, and DeluxeWrite makes a good one. In general, it is an attractive, flexible, and useful package.

DeluxeWrite is a what-you-see-is-what-you-get (WYSIWYG) program. Page breaks, underlining, italics, and boldfacing all appear on-screen just as they will print out (except, because of IIGS limitations, some Shaston fonts don't display on-screen underlining, although they print out fine). But DeluxeWrite offers even more: an excellent page-preview feature that displays in a pop-up window exactly how the finished product will look—including the location and relative size of any graphics you've inserted into the text.

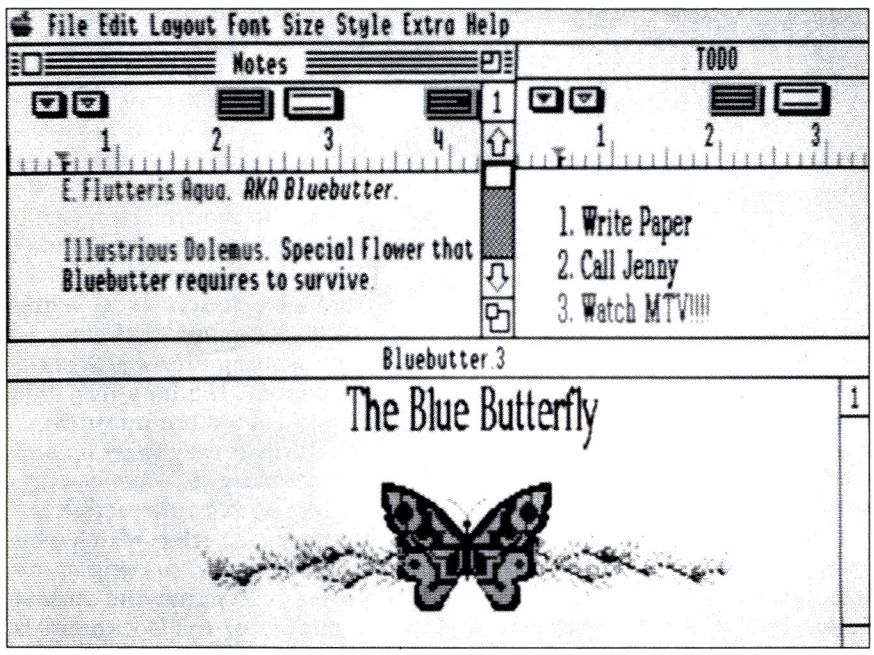


Figure 1: With DeluxeWrite, you can have more than one file on the desktop at a time.

The Downside

Although the program incorporates some elements of desktop publishing, it is far better suited to turning out dressed-up school reports or letters than it is to producing serious business documents. While printing in its two high-quality modes is more than adequate, it is slow.

A 700-word document in the 8-point Shaston typeface with a single small graphic image, for example, took seven minutes to print in the Better Text mode. (The Better Color mode produces sharper graphics.) If you are printing a longer document, you may as well start the job, head into the kitchen for a snack, and curl up on the sofa with a good book.

A few other problems: During high-quality printing, the edge of the text may be shaved off if the left-hand margin is at 0. Also, the manual fails to explain that the word counter that appears while the spelling checker is working counts only the first occurrence of a word. If the word *the* appears in your document 50 times, it counts as only one word. And occasionally after I'd spell-checked a document, DeluxeWrite forgot to display the list of questionable words it had compiled, forcing me to start the process all over again.

Bright Prospects

In general, DeluxeWrite is an attractive, flexible, and useful package that compares favorably with any stand-alone graphics-based word processor now available for the IIGS. Once Electronic Arts comes up with a way to break the speed barrier, DeluxeWrite will be a hard product to top. ✚

Rich Jaroslovsky is a political editor and columnist in The Wall Street Journal*'s Washington Bureau.*

VITAL STATISTICS

DELUXEWRITE (VERSION 1.0)
A mouse-driven, graphics-based word-processing program

Apple IIGS, 768K RAM (1Mb or more recommended), one 3.5-inch disk drive, ProDOS 16, not copy-protected
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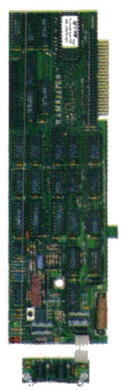

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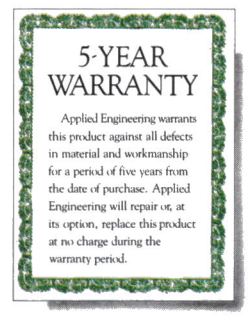

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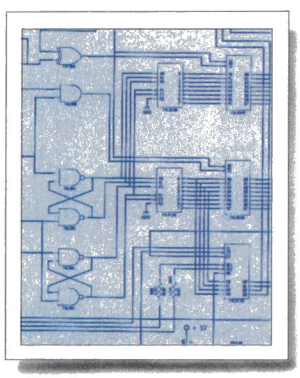

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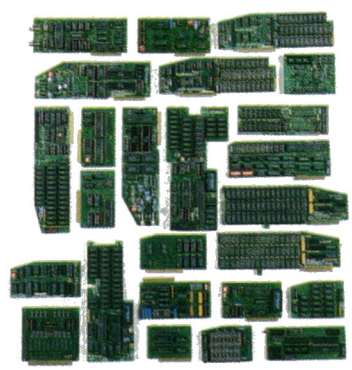

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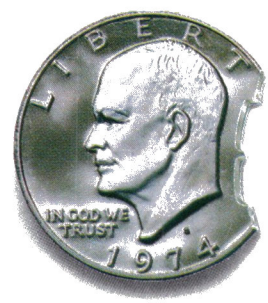

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REVIEW BY KEN LUCKE AND MIKE MARKOWITZ

Streamline your telecommunications with an internal 2400-baud modem.

Recent advances in microchip technology have made the price of 2400-baud modems drop dramatically. Now, many manufacturers are introducing internal-card versions of 2400-baud modems for the Apple II series of computers.

The majority of telecomputing enthusiasts have used external modems, for three reasons: (1) External modems have usually been less expensive. (2) Internal modems lack external status indicators. External status indicators show what is happening electronically with the signals and can help experienced users solve a lot of problems that may occur during a transmission as well as simply reassure them that something is really going on during long file transfers. And (3) you can't upgrade to a different computer and expect an internal modem to be compatible.

The first of these reasons now seems to have disappeared, with internal modems being roughly the same price (some actually lower) than their external counterparts. The second and third reasons still present problems, although one of the modems reviewed here (the Classic II) has means to overcome the status-light problem.

One advantage of having an internal instead of an external modem is that you don't have to buy a separate RS-232C card to provide a serial signal to the external device. Add to that the opportunity to reduce the octopus of cables coming from the rear of your Apple (typical external modems need an RS-232C cable, a phone cable, and a power-supply cable; internal modems need only the phone-line connection), and you have some advantages that are hard to beat.

Why 2400?

Do you really need the speed? Most users find that they do, especially if they spend a lot of time sending, receiving, and downloading files. Remember, though, that most on-line services, such as GEnie and CompuServe, charge higher rates for faster speeds, and 2400 baud may actually cost you more if you just browse a lot. Most 2400-baud modems can function at the slower speeds as well, so you can have the best of both worlds. ✚

THE INSIDE LINE

EPIC 2400 CLASSIC II

The Epic 2400 Classic II internal 2400-baud modem from Epic Technology responds to the need for speed in telecommunications.

Functioning at 300, 1200, or 2400 baud, the Classic II features "AT" command-set compatibility. Although it is not 100% compatible with all AT commands, it is compatible with all the standard ones. The Classic II also has self-test modes; auto-dial/auto-answer capability; nonvolatile RAM; pulse, tone, or mixed-mode dialing; a software-controlled built-in speaker; and a five-year warranty.

Installation and configuration of the modem are easy but not well-documented in the manual. Plug the card into your Apple II Plus, IIe, or IIGS, using any empty peripheral expansion slot except number 3 (slot 2 is customary for modems), and run the supplied modular phone cord from the modem to the telephone jack on your wall. The modem also has a phone-out jack to let you use a telephone on the same line. The Classic II automatically cuts off the phone when the modem goes on-line, thereby preventing any accidental interruption of the data stream by voice or noise (this cutoff does not affect phones connected to other extensions). I don't like the way the external phone cords have to run through the computer's back panel to connect directly to the card, though.

A limited version (ASCII only) of Talk Back communications software comes with the Classic II. I used a variety of terminal programs, including ProTERM 2.0, MouseTalk, ASCII Express (both DOS 3.3 and ProDOS versions), and Point-to-Point. All worked equally well with the Classic II in normal use, for file transfers, and in the local-terminal mode.

The Classic II proved to be a workhorse that did not overheat in an Apple IIe with all slots full. The modem I tested was powered and in use 24 hours a day for more than two months without a failure. Several 1200-baud users did note, however, that the handshake signals and guard tones initially missed, forcing them to redial. I also noticed that even at the maximum volume setting, the built-in speaker was hard to hear during dialing and connection.

For those who have shunned internal modems because they lack external status indicators, the Classic II modem board has a ten-pin connector that allows use of exter-

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nal status lights. Epic has promised a self-contained plug-in unit to include six of the eight common indicator lights (HS, CD, OH, RD, SD, and TR)—it omits only the Auto Answer and Modem Ready (AA, MR) indicators. At a planned retail price of $39.95, this external unit should be available soon. The package includes connector pin-out information that you can use if you want to assemble your own light unit.

One limitation of the Classic II modem is its disorganized and uninformative manual. It is devoted largely to the AT commands, the S-register defaults and ranges, a list of four known compatible programs, and a 16-page glossary of telecommunications terminology. Installation instructions comprise two short sentences in a loose insert marked Appendix E, in the back of the manual. Inexperienced computer users could easily become frustrated by this manual.

With the exception of the manual, Epic seems to have a good product. Reliable, affordable, and easy to use, the Epic 2400 Classic II is a good choice for new users as well as those who want to move to an internal 2400-baud modem from their current hardware.

Ken Lucke

PROMODEM 2400A

Prometheus Products has finally put a 2400-baud internal modem, the ProModem 2400A, on the market. As with virtually all newer modems, it operates at 300, 1200, and 2400 baud and is AT-command-compatible. It also has auto-answer/autodial and self-test modes and autoredial and lets you keep many of its operating parameters in nonvolatile memory when the unit is powered down. The package has a telecommunications program called II Talk, full documentation, and free access to the Prometheus bulletin-board system (BBS) for product and update information.

Considerably larger than a lot of other internal cards, the ProModem 2400A did not interfere with any function or ventilation of the Apple IIe in which I tested it.

The installation process is easy and well documented. The manual even explains the need to remap the slots in the Control Panel when

Internal 2400-baud modems give you some advantages that are hard to beat.

you're using an Apple IIGS and includes instructions on which position to place the Data Carrier Detect jumper in. Plug the card into slot 2, connect a cable to the back panel, and you're ready to go.

The connector on the back panel is somewhat different from that of most internal modems. The cable terminates in a 9-pin D-style connector that fits through the rear slot, rather than a modular phone plug. Phone compatibility comes from a female-9-pin-to-female-modular-plug adapter.

Configuration was smooth and easy with many different types of software, including II Talk. With most, I simply chose the Hayes 2400-baud parameter or a similar alternative.

I had no compatibility problems with any of the terminal programs I used and was impressed by the clarity of sound from the tiny internal speaker. The ProModem 2400A is the first internal modem I have used that let me hear clearly what was happening during the dial and connect phases of the call.

Although the modem comes with II Talk, I would recommend buying another terminal program, since II Talk can handle only the ASCII and XModem protocols.

Overall, this new product was so reliable and easy to use that even I (a diehard external-modem user) am tempted to switch.

Ken Lucke

DATALINK 2400

The DataLink 2400 is neatly engineered, with only 13 chips, all socketed. Socketing increases the cost of production but makes replacement a snap in the unlikely event that a component should fail. The edge connectors are real gold, the DIP switches are clearly marked, and the overall workmanship is meticulous. Two particularly handy fea-

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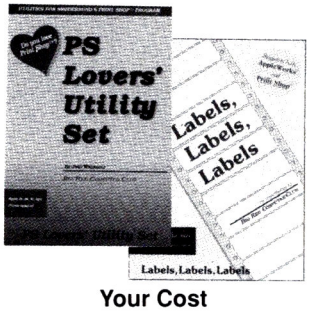

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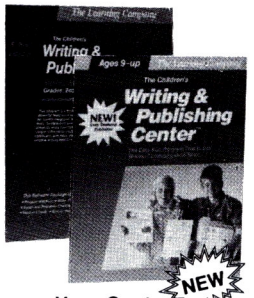

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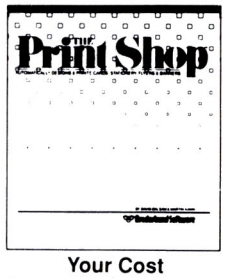

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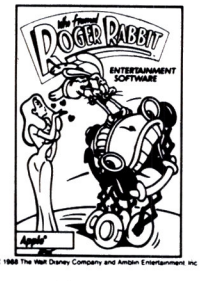

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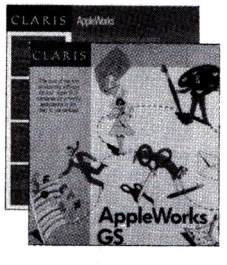

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tures are a long modular phone cable and a little external connector box that attaches to the back plate of your Apple and lets you disconnect the phone lines without opening the case.

The DataLink 2400 can live in any Apple slot except slots 0 and 3 of the II Plus, slot 3 and the auxiliary of the IIe, and slot 3 and the memory-expansion slot of the IIGS.

The 5¼-inch disk that comes with the DataLink contains two different communications programs: DataTerm and OnLine 64. DataTerm is an improved version of the popular public-domain program Talk is Cheap by Don Elton. It requires an Apple IIe with 128K, or a IIGS. It is a sophisticated program, highly regarded by several Apple sysops I've spoken with. Online 64 is a simpler program that runs on Apple II Plus or IIe systems with only 64K of memory.

The DataLink disk also includes some utilities, such as the public-domain programs ALU and BLU, for packing and unpacking files; FreeWriter, a little word-processing program for creating or reading text files; an "analog loopback test"; and a modem game.

The 69-page users' manual for the modem and 96-page manual for the software are clearly organized and packed with good information. The modem manual, for example, includes a brief tutorial on the ProDOS operating system, and the software manual has an excellent glossary of the rather intimidating terminology of telecommunications. You'll also find a Quick Reference card for the DataTerm software and AT firmware commands and a packet of low-cost special offers from various on-line information services.

With its five-year warranty and $239 price tag, the DataLink 2400 is an excellent value.

Mike Markowitz

Ken Lucke is a paramedic living and working in Seaside, Oregon. He has been involved with personal computers since 1978, becoming an Apple enthusiast in 1981. He also owns a small custom programming and consultation business. Mike Markowitz is a computer engineer and has been writing about Apple II computing since 1983.

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SPEAKING OF GRAPHICS

The road to publication for the best of your submissions

BY ROBERTA SCHWARTZ AND MICHAEL CALLERY

'GRAPHICS GALLERY': THE LONG JOURNEY

We've received many inquiries about submissions to "Graphics Gallery." Who selects them? How are they selected? And, most often, why does it take so long after submission for the graphics to actually appear in print? Since you've asked, here's the countdown.

5. After you send your disks to *A+*, they're forwarded to Roberta, who has the unenviable task of unwrapping them. We use the word *task* because

a. Many of you, understandably concerned about damage to your disks, pack them in paper, cardboard, styrofoam, and/or bubble wrap. They're often wrapped, strapped, and boxed so inventively that it takes an assortment of tools to release them from their bondage without damaging them.

b. Some of the disks aren't labeled, so Roberta has to copy the names and addresses from the letters to the disks.

c. Many of the letters don't have addresses, so Roberta has to copy the addresses from the wrappings (which she may or may not have torn to shreds in the process of opening them) to the letters and then to the disks.

4. Roberta reads the letters and sorts the disks according to program: Dazzle Draw, 816/Paint, DeluxePaint, MousePaint, Paintworks Gold, and so on. This step is necessary because many of you don't have access to slide-show programs, so we have to look at the images with the appropriate paint program. The sorting takes quite a while because

a. Some of the letters are somewhat difficult to read. (Thank you to those of you who use word-processing programs.)

b. Letters on small scraps of paper tend to get lost in the shuffle.

c. Some of you don't indicate which program you used to create the images, so Roberta has to catalog the disk first.

d. Some of you do not include letters at all.

3. Roberta reviews the submissions—every image on every disk (that's the fun part)—and makes a list of those she considers appropriate for the gallery.

2. The disks go to Michael, who also looks at every image and makes his selections. We consider so many variables in the selection process that it's difficult to be specific. We try to showcase a variety of styles and subjects. We generally avoid using copies of commercial cartoon characters (Snoopy, the Noid, the California Raisins, and so on), copies of works done in other media by other artists (because of copyright problems), or images that lack enough contrast or detail to reproduce well.

1. Michael then takes the selected images from the original disks and puts all of them onto new disks, which he sends to Roberta.

Blast-Off

Roberta makes a list of the selected files, the artists, their addresses (that's how you get your T-shirts!), and any special commentary to provide the text for "Graphics Gallery." The final disks, and the copy, are then sent back to the *A+* art department in Foster City.

Fabian Cooperman, the art director, describes what happens next: "We photograph screens from the monitor and lay out the resulting slides on a light table to group them into cohesive arrangements of complementary images. Sometimes we will select several artists' interpretations of a similar subject area, and sometimes we have enough outstanding images from a single artist to devote a spread to one person's work. With 6–10 screens in a

ILLUSTRATION BY ED NARANJO, 12TH-GRADER AT THE SANTA FE INDIAN SCHOOL, NEW MEXICO

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Don't be discouraged. Much of the work we receive for the 'Gallery' will be published.

spread and only 12 issues a year, we can't begin to keep up with the hundreds of excellent submissions Roberta and Michael select for us to use.

"After we've chosen our graphic images for the month and completed the layout, we convert the graphics files into the Graphics Interchange Format (GIF). This format allows us to transfer an Apple IIGS file to a Macintosh, enabling us to do film separations in-house on a Macintosh II. These images will actually appear on the newsstand in *A+* three months later, since production of an issue begins three months before the cover date. Finally, we send an *A+* T-shirt to each artist whose work we've selected to appear."

Fame and Fortune

Since we've been receiving disks almost daily for the last year or so, you can imagine how many there are. Please be patient with us. Don't be discouraged. Much of the work we receive is wonderful and will be published. During the course of one month, hundreds of thousands of people will see your name and creation! Rembrandt should have been so honored.

We're very proud of "Graphics Gallery," and, judging from the feedback we get, so are you. You can make things a lot easier for us and help speed the process if you follow these guidelines:

1. **Label every disk** with your name, address, and the paint program(s) you used.
2. Include a letter (preferably on 8½ × 11-inch paper). Be sure the letter includes your name, address, T-shirt size, and the paint program(s) you used. Please also list the images that are on the disk. How old are you? If you're under 21, please indicate your age, as we have different considerations when selecting work by young people. We also appreciate other background information, as we're always glad to know more about our readers. We're especially interested in whether or not you were drawing and painting with traditional media before you entered the world of computer graphics and, if so, how your approach, style, or goals have changed.
3. Wrap your disks securely but remember that they have to be unwrapped. Try to use commercial floppy-disk mailers, which are available in most computer-supply or stationery stores, for 5¼-inch floppy disks. Such disks also arrive in good form if you sandwich (not tape) them between two pieces of cardboard and put them into an appropriate-size envelope. Standard envelopes suffice for 3.5-inch disks.
4. Mail the disks to A+ Graphics Gallery, 950 Tower Lane, 18th Floor, Foster City, CA 94404. On the envelope, write: "Caution: Magnetic Media."

During the course of one month, hundreds of thousands of people will see your name and creation.

Return Receipt

Although we can't let you know if your graphics are being used, we do realize how frustrating it can be to wonder if the disk was actually received. Alice Nudelman from Connecticut recently sent us a duplicate disk explaining that "for all I know, my disk and letter are sitting in some pile in somebody's office not being attended to." Good point, Alice. So . . .

If you'd like to know that your disks have been received, enclose a stamped, self-addressed postcard with the words "We received your disks" or something comparable. When we get your disks, we'll be happy to drop the postcards into a mailbox.

That's it for now. Keep up the good work. If all goes according to plan, next month we'll tell you about products that can help you get more from programs such as AppleWorks GS, including an interesting variety of papers to use for slick printouts. ✚

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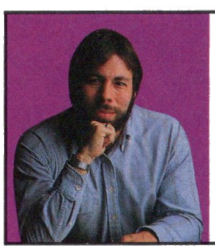

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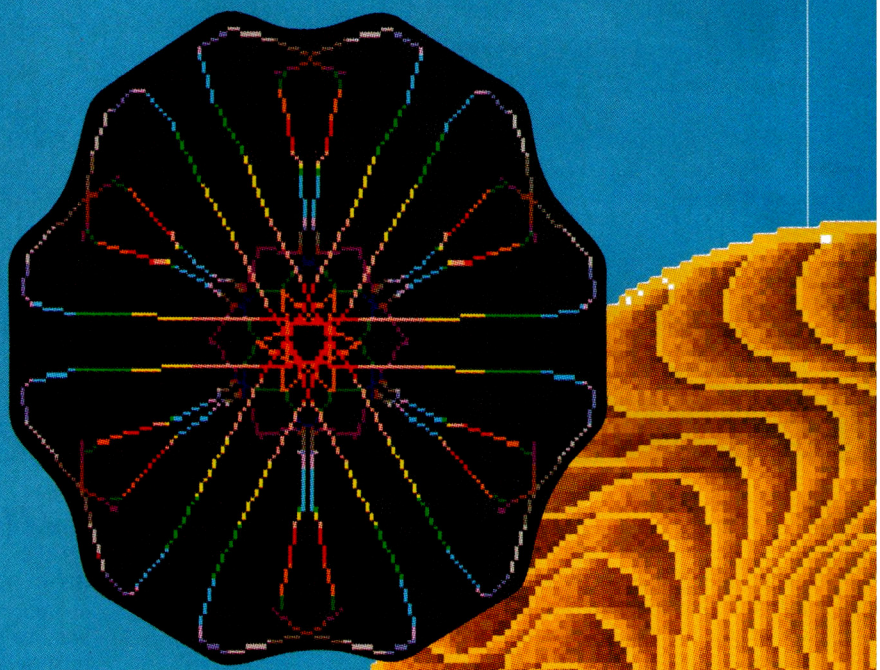
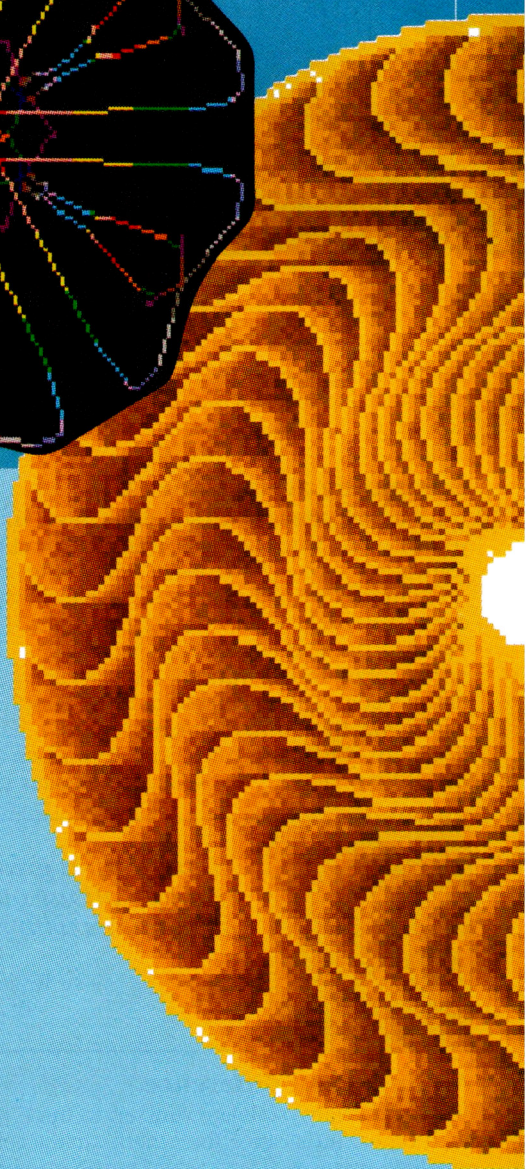
SPEAKING OF GRAPHICS GALLERY

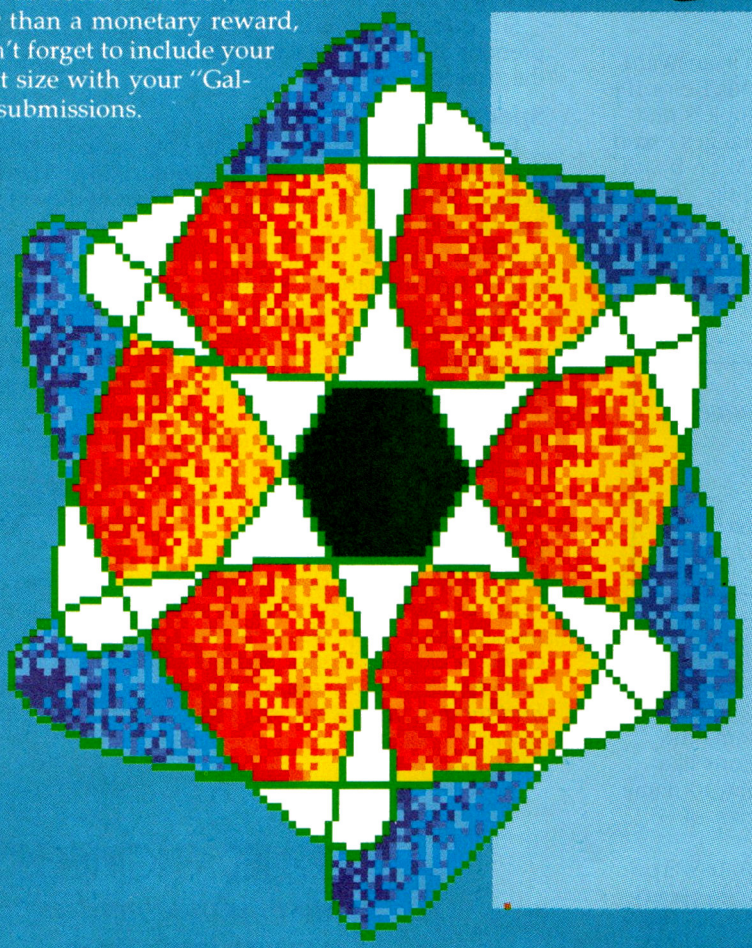
PAINTING IN PATTERNS

With an Apple monitor as the canvas and a paint program as the medium, artists are free to experiment with patterns, shapes, and colors in ways not possible with more traditional tools and palettes. This month's gallery is a collection of work by Gilles Grossiord of Esery, France, who created his designs and abstract images on his Apple IIGS, using Paintworks Plus and Deluxe Paint II.

Artists please note: Beginning with the June 1989 issue, artists whose work is selected to appear in *A+* will receive an *A+* T-shirt rather than a monetary reward, so don't forget to include your T-shirt size with your "Gallery" submissions.







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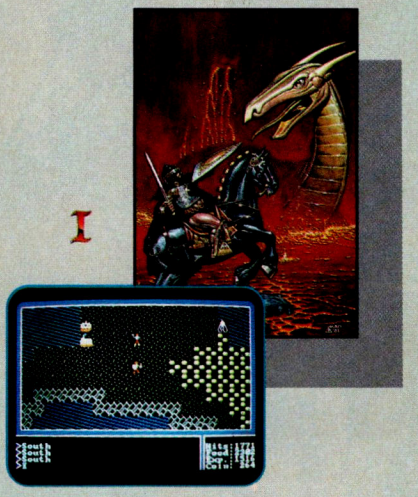

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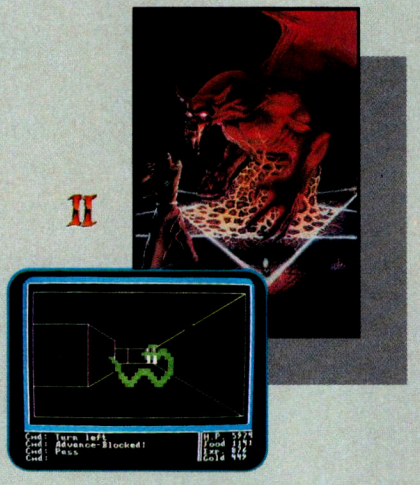

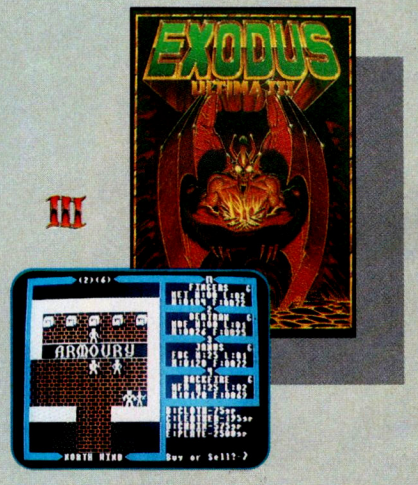

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GAMEPORT

BY BOB LINDSTROM

New games revealed at Las Vegas Consumer Electronics Show, and more for mouse potatoes

LAS VEGAS PREVIEWS

Las Vegas: the cultural capital of the USA. They've got it all: Neon Art; Rhythm Machine Lounge Music; Casino Statuary; and Wayne Newton, aka The Midnight Idol. Right-brain stimulation just doesn't get any better than that.

Once a year in January, software publishers bring computer games to the City of Gaming and preview their new products at the Winter Consumer Electronics Show. Video-game cartridges were the biggest attraction earlier this year, with Nintendo boasting a booth about the size of a football field. But a healthy number of computer publishers were present with impressive new software for Apple II gamers:

After nearly three years of development, Electronic Arts is poised to release John Madden Football. This sports "genre killer" from EA incorporates elements of strategy and arcade games along with statistical simulation and playbook design.

Taito follows its outstanding Arkanoid conversion with visually crisp Apple IIGS interpretations of Renegade (martial arts in the big city) and Operation Wolf (wreak havoc with Rambo-style firepower).

Visuals on the IIGS reach a boggling new high with Discovery Software's Sword of Sodan. It's another hack-and-slash action game but with huge on-screen characters, remarkable graphic detail, and outstanding digitized sound effects.

Strategic Simulations, Inc. (SSI), finally promises a spring release of Pools of Radiance, the first in the company's Dungeons and Dragons series, licensed from TSR, Inc.

Mindcraft's debut game

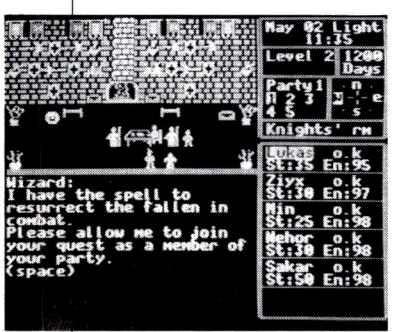
Microillusions delivers on a IIGS version of Dondra. Formerly published by Spectrum HoloByte, the game mixes elements of adventuring and role playing and serves them with enhanced IIGS graphics and sound.

CES game previews included John Madden Football (left) and Sword of Sodan (above).

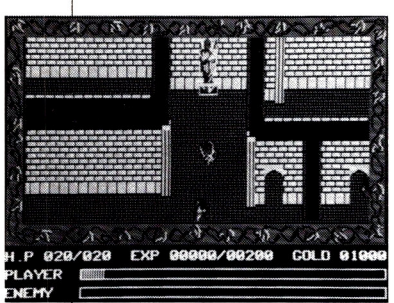
GAMEPORT

Putt nuts should watch for the Apple IIGS version of Jack Nicklaus' Greatest 18 Holes of Major Championship Golf (mid-March from Accolade). This golf simulation goes several swings beyond Accolade's popular Mean 18 and tosses in expert guidance from Nicklaus himself.

Infocom took a few steps toward visual appeal with the 1988 release of InfoComics. Now it goes the rest of the way with a new line of graphic and role-playing adventures. First up is Zork Zero, Steve Meretzky's prequel to the popular Zork Trilogy. Not only do you see the Great Underground Empire, but strategy sequences built into the adventure also let you play ancient Zorkian card games and solve other visually oriented puzzles. Also coming, BattleTech is an RPG that puts you in control of Transformer-like robots of the future (both were due in February for the Apple II).



The Magic Candle, new from Mindcraft



Ancient Land of Ys

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Devon Aire in The Hidden Diamond Caper (Epyx) imports a French jewel caper to the IIe/c/GS/c+. You control the shifty cat burglar as he wanders on-screen rooms in search of hidden gems. Solve puzzles and evade animated challengers in this real-time adventure.

Also on the adventure roster from Epyx: Undersea Commando is a strategy adventure that takes place entirely beneath the surface of the seven seas (Does anyone remember Lloyd Bridges?), and Legend of Blacksilver is the latest fantasy/role-playing extravaganza from the creators of Questron (SSI) and Legacy of the Ancients (EA). Both are slated for spring release on the Apple II.

Winter CES marked the debut of Mindcraft and its first fantasy/role-playing game, The Magic Candle. This new RPG simulates a three-dimensional environment with ingenious use of tile graphics (à la Ultima). Designers Ali Atabek and Jim Thomas have attempted to combine the depth of a full-length fantasy game with a context-sensitive on-screen command structure intended to take the confusion out of role playing.

The masters of role playing, Origin Systems, do a satirical sendup of the genre in Tangled Tales (IIe/c/GS/c+). Aimed as an introduction to role playing, Tangled Tales contains 3 missions, 50 characters, and an icon-based command system borrowed from Origin's hit Times of Lore.

It looks as if Apple II game players will have plenty to fill their time and empty their wallets in 1989.

And for those nostalgic multitudes who want to catch up to Lord British's Ultima series, Origin will publish the Ultima Trilogy, a boxed set containing Ultimas I, II, and III at a bargain price ($59.95, IIe/c/GS/c+).

Japanese gamers made Kyodai's Ancient Land of Ys a number 1 hit in the "floating kingdom." It will become Kyodai's Apple IIGS calling card when the company begins importing games to these shores later this year. Like Tangled Tales, Ancient Land of Ys mixes arcade action with role-playing depth. Kyodai software will be distributed by Brøderbund.

It looks as if Apple II game players will have plenty to fill their time and empty their wallets in 1989.

BONUS FOR MOUSE POTATOES

Judging from the response in this month's letters column, the January 1989 "GamePort" sermon about the difficulty of computer games fell on receptive ears. The belief that games tend to be too tough, intimidating, and complex is attracting a fast-growing cult of "mouse potatoes." We're all looking for games that are more entertaining than punishing.

At least one software publisher is intent on giving them to us. And I do mean "giving." Brad Fregger, president of Publishing International, wants to hear from fellow "mouse potatoes," and he is willing to make it worth your while to write to him.

"I've been in the industry eight years now," says Fregger, "and I still can't fly a flight simulator or solve a graphics text adventure . . . I'm willing to bet that there have been thousands of flight simulators sold that have only been used for about a half an hour and then put on the shelf.

"I'm afraid that many of those people . . . believe that these complex programs represent the world of computer entertainment and are not aware of the many fun and exciting computer games that are challenging but not frustrating."

GAMEPORT

The belief that games tend to be too tough, intimidating, and complex is attracting a fast-growing cult of 'mouse potatoes.'

So, just to make sure you're going to have fun with your computer, Fregger is prepared to send you a free copy of Pharoah's Revenge, designer Ivan Manley's ingenious maze-running variation on Brøderbund's Lode Runner.

If you've struggled with a flight simulator, grappled with role playing, or puzzled fruitlessly over a text adventure, send Fregger a letter describing your sorry experience. If you also tuck $5 (for postage and handling) into the envelope, Fregger will send you a copy of Pharoah's Revenge. Be sure to specify whether you want the Apple II, C64, or IBM version. (And if you're a "GamePort" reader, it'd better be Apple II.)

Give software away? Free? What's the catch?

"We're a young company, and we need the publicity," Fregger admits. "But I also think that when people show Pharaoh's Revenge to their friends, we'll sell a couple copies for every one that I give away. I just want people to know that there are 'fun' computer games available out there."

So, get those $5 checks and, especially, those written tales of woe prepared and send them to: Mouse Potatoes Unite!, c/o Brad Fregger, Publishing International, 333 West El Camino Real, Suite 222, Sunnyvale, CA 94087.

EASTER EGGS OF THE CROWN

Designer Manley, who joins Fregger in trading big profits for giveaway fame, is a well-known programmer whose credits include the Apple IIGS versions of Activision's Shanghai and Publishing International's Hometown U.S.A.

As an additional treat for "GamePort" readers, Manley shares some Easter Eggs that he and his team hid in the IIGS version of Cinemaware's Defender of the Crown:

1. Hold down the Option key as the program is loading. You'll be treated to a greeting from the programming team.

2. If you hold down Shift-Option-Ć while firing the catapult, you'll hit the wall every time.

3. Press Shift-Option-Ć any time the name of a princess is displayed, and her name will change.

4. When you're checking on the lords of various areas, pressing Shift-Option-Ć displays the lord's name as Sir Ivan Manley. +

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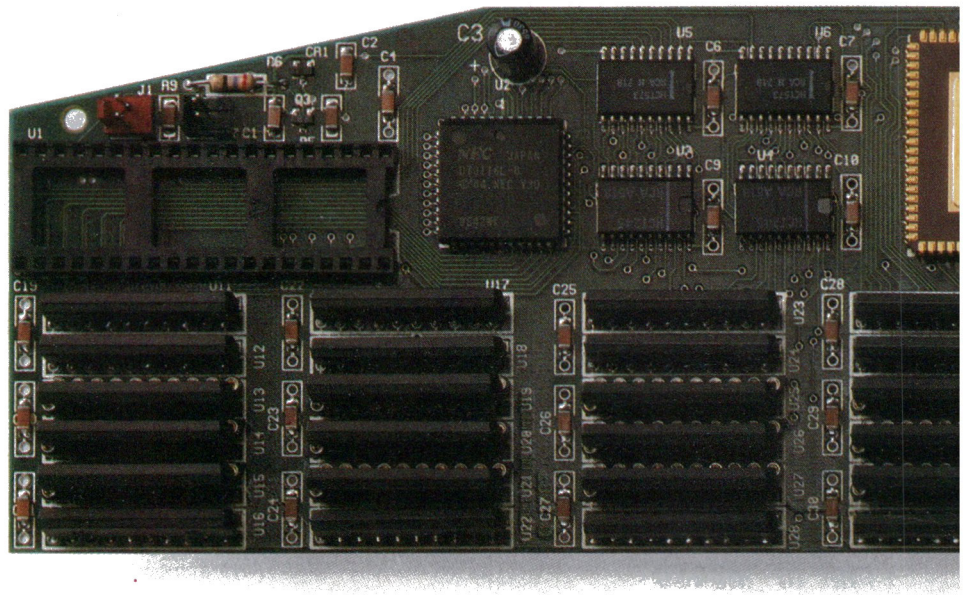

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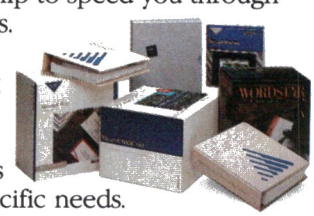

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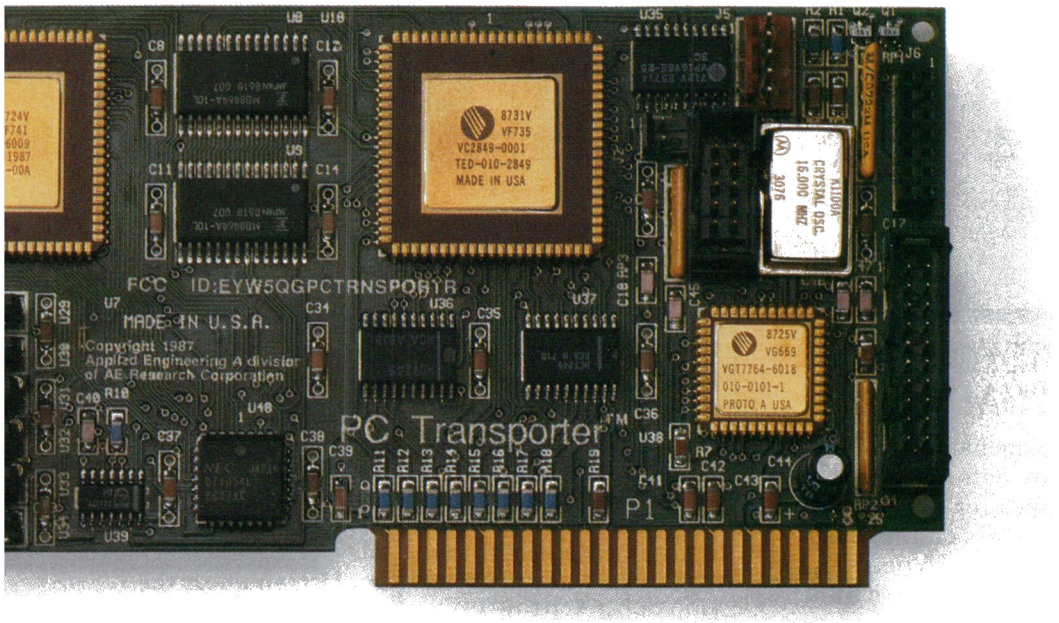

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ENTERTAIN

Coaching football, sweeping through the galaxies, and playing in California

KEYBOARD COACHING

Armchair quarterbacks are notorious for second-guessing plays called by coaches on the field. Now, coach potatoes can make their own calls with 4th & Inches, a football strategy game from Accolade.

The 4th & Inches game lets you orchestrate your team's offensive and defensive strategies and pits you against either the computer or another player. You also participate in the game by directly controlling selected offensive and defensive players through four quarters of traditional football.

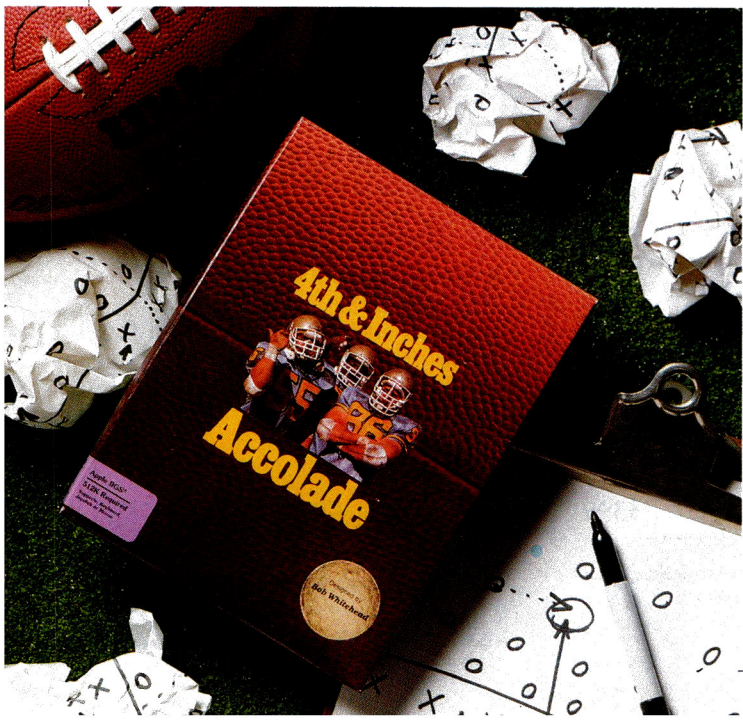
A 4th & Inches quarter consists of 5, 10, or 15 minutes of playing time, and a game of 5-minute quarters takes about an hour to complete. There's no rest for the weary—you must play the game until it's over, as it lacks any provision for saving a game in progress. In the event of a tie, you go into overtime.

The game plays simply enough. In most cases, you select the formation, the play, and the key position. In an offensive situation, you might select Short Yardage, call a draw play, and designate the fullback as the ball carrier. Likewise, the computer, or your opponent, sets up the defense. When both teams are ready, the center automatically snaps the ball to the quarterback. Now you become a player who, depending on the play, can run, block, tackle, kick, pass, and occasionally fall down while attempting to make the play.

You control the game with a keyboard, mouse, or joystick. In the two-player mode, each player selects a different control method. Although the joystick and mouse allow more fluid control, the keyboard plays surprisingly well.

The graphics and sound are excellent and contribute to making 4th & Inches a delight to play. When players make contact, you hear the crack of equipment and the groans of the wounded. Sometimes you even hear the ball bouncing downfield after an incomplete pass. Organ music plays at halftime and at tense moments ("Da-da-da-dat-da-DAH, CHARGE!"). The players are well animated and occasionally show emotion: On scoring a touchdown, for instance, the receiver pumps his arm in a victory salute, while the defender angrily jumps up and down.

Accolade has achieved a fine balance between control and playability. In fact, the only cumbersome aspect of the game involves plays that go deep—such as passes, kicks, and punts—because the screen displays only about 20 yards of the playing field, with the line of scrimmage at the center of the screen. If you are throwing a deep pass, you cannot watch your receiver to know when he's open because the screen focuses on the quarterback until you throw the pass, at which time it shifts to the receiver. But this criticism is minor and does



not affect the game's playability.

The 12-page 4th & Inches manual contains the coach's playbook, which, for the most part, provides all the offensive and defensive options you could want: 11 offensive formations and 20 offensive plays. There are no trick plays, but you have room for creativity and flexibility: The punt formation lets you pass or run, and passing plays let the quarterback bootleg the ball and run for it. A quick reading of the handbook gets you onto the field and into the game.

A Team Construction Disk, available from Accolade for $14.95, incorporates preprogrammed teams and allows you to create your own teams. You develop the stats, name the players and the team, and even pick the team colors. You could conceivably build an entire league.

What's it take to make it in the keyboard pros? Understanding football strategy is important, but would-be keyboard coaches unfamiliar with football formations and plays, don't despair. The playbook covers all you need to get started, and it doesn't take long to learn what works and what doesn't on the playing field. You don't have to be a football junkie to love this game—4th & Inches is great fun; is easy to use; and, best of all, has a season that lasts all year long.

Mark DuCharme

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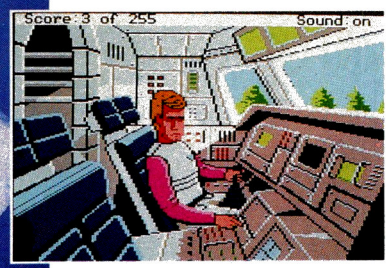
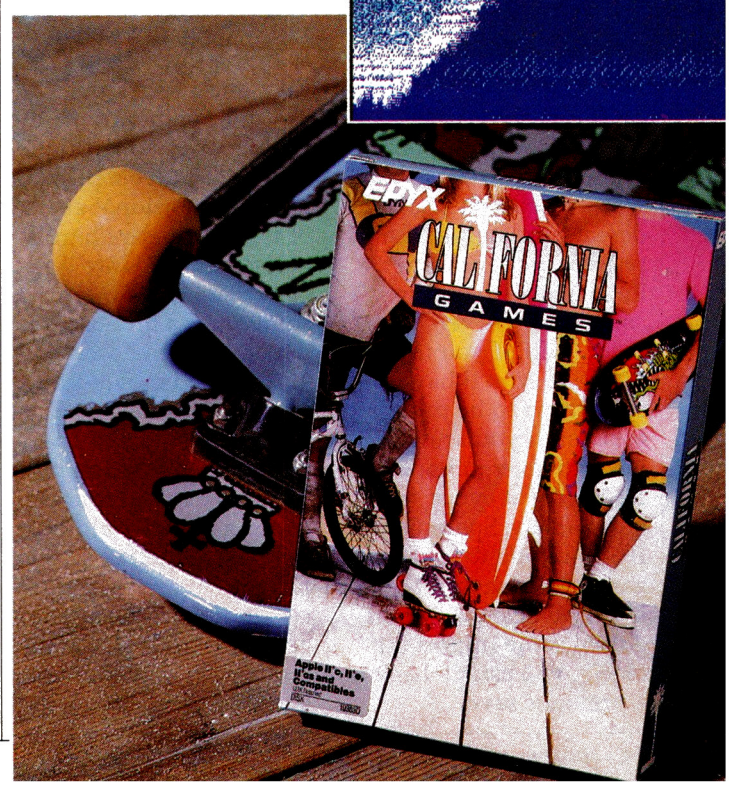


FOILING AN INSURANCE PLOT

Janitors see a lot of the world go by, but they don't generally get involved in the intrigues and adventures that, say, a spy would encounter. At least that is true of most janitors—but not Roger Wilco, a futuristic sanitation engineer with a penchant for landing smack in the middle of plots for intergalactic domination.

Because he foiled the evil Sarien plot involving the Star Generator (in the original Space Quest), you would think Roger would be recognized for his exceptional service, but no. He's back sweeping the space station.

But the evil Vohaul has other plans and abducts Roger, marooning him on the hostile planet Labion. What follows are Roger's adventures on Labion and his subse-

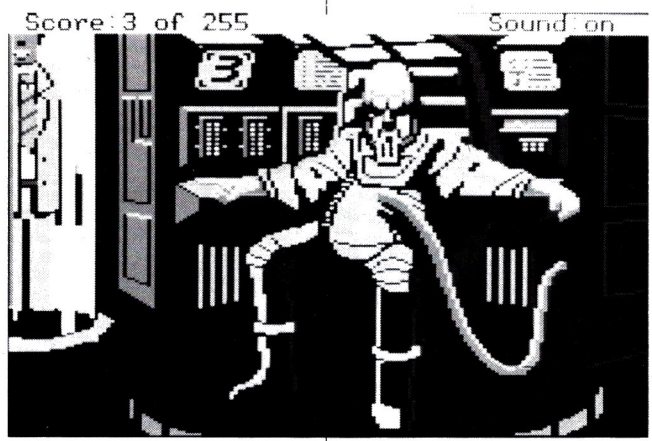


quent attempts to foil Vohaul's sinister plan to unleash millions of door-to-door insurance salesmen on the world.

You may have noticed a slightly tongue-in-cheek slant. If you've played Space Quest, you will recognize the style. If you haven't, it doesn't matter. Space Quest II plays independently of the previous adventure but shares its humorous tone.

Despite the humor, Space Quest II is full of puzzles, some of them relatively easy, others quite difficult. As with all the Sierra adventures, you play the game by controlling your character on the screen. You can use the keyboard, joystick, or mouse—I recommend a combination of these methods. Also, you frequently type instructions for manipulating objects or performing actions that the simple movement techniques can't easily convey.

Vohaul is pretty nasty, and you feel a sense of reward when you finally defeat him, but, in the process, you (or rather Roger) have to endure some pretty severe treatment. Still, if you make it out alive, you'll have something to be proud of. Even if you know what to do, you have to be careful at every step. Fortunately, Space Quest II allows you to save games incrementally, so if you realize you've forgotten some important object, you can go back to a previous save.



Vohaul is pretty nasty, and you have to endure some pretty severe treatment to defeat him.

People already familiar with Sierra's games will probably find few surprises here, but the quality of the puzzles, the action, and the graphics is up to the standards of the other games. The unique character movement and three-dimensional effect of the screens are here, and the puzzles are typically clever, although sometimes a bit obscure.

I enjoyed the occasional animated movie-like sequences, and I scratched my head appropriately over the puzzles, but I found that controlling Roger could be tedious. Sometimes you have to be very, very precise in moving your character, and tiny miscalculations can make him get stuck or fail to move on, even when it appears he should be able to move. I'm not talking about places where this precision is part of the game (such as the challenging root maze or the fallen log in Space Quest II) but about the ordinary screens where your character gets hung up on a simple rock, root, or other screen feature that has little to do with the plot.

For nonexperts, I recommend Sierra's excellent hint book, which is available separately. I found the company's telephone hint line hard to reach, but the hint book covers 99% of what you may need to know if you get stuck.

Rusel DeMaria

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WISH THEY ALL COULD BE CALIFORNIA GAMES

Lacking any civilizing influences, the young people of Southern California evolved a culture based on their own uniquely Californian sports. Like tribal rites of passage, these sports are feats of strength; coordination; and, above all, reckless daring.

Go for it, dude.

California Games makes it possible for even the most feeble and fainthearted New Yorker (this reviewer, for example) to experience the true meaning of "gnarly."

Brilliantly adapted for the IIGS by Jimmy Huey and Dan Chang, this game follows in the footsteps, skid marks, and ski tracks of Winter Games, World Games, and other Epyx sports classics, proving again that joysticks aren't just for steering planes.

California Games includes six activities: Half Pipe Skateboard, Foot Bag ("like juggling with your feet"), Surfin', Roller Skating, BMX Bike Racing, and Flying Disk ("Frisbee").

The main menu gives you the option to compete in all the events, some of them, or just one. You can also simply practice an event. Up to eight different players can take turns, select a corporate sponsor, and memorial-

REVIEWS

California Games provides entertainment for every skill level.

ize their high scores on the program disk. The program also provides a simple joystick-calibration routine that takes only a few seconds. You can also use the numeric keypad instead of a joystick, but such a digital interface loses some of the analog excitement.

The sports vary in difficulty. Flying Disk and Foot Bag are easy but fun. Surfin' is tricky but delightful. I found BMX and Roller Skating difficult and Skateboard almost impossible because of critical timing requirements. A bouncy sound track and realistic sound effects show off the audio capabilities of the IIGS to good advantage. The quality of the graphics and animation is superb. The scene of the Yosemite Valley that serves as a backdrop to Flying Disk is strikingly beautiful. All the animated figures have distinct personalities, especially when they fall on their faces. This game has a laid-back, mellow sense of humor. In Foot Bag, you have to avoid a low-flying seagull. In Surfin', five typical beach characters holding up cards display your final scores.

A 12-page instruction manual explains the rules and the scoring, with a bare minimum of tips and hints.

An anomaly in this program and other Epyx games for the IIGS causes a crash during loading if certain memory cards (in my case the AST SprintDisk) are active in slot 7. At first I thought the disk was defective, but when I changed the Control Panel setting to disable the RAM card, the problem disappeared. Publishers cannot test every possible configuration for incompatibility, but when glitches such as this one turn up, they should be documented, if only to save on customer-service calls.

California Games provides entertainment for every skill level. The activities are not violent and emphasize individual skill rather than competition between players. Unlike the growing crowd of look-alike baseball, basketball, and football simulations, California Games earns high marks for creativity.

Mike Markowitz

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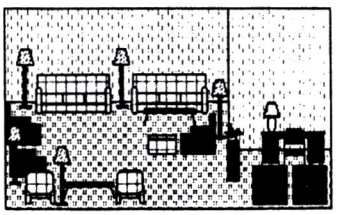

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SMARTPORT

Carve your Apple II into multiple computers.

BY OWEN W. LINZMAYER

Have you ever wished you could combine your favorite stand-alone programs into a custom integrated package that outperformed all commercial offerings and addressed your individual needs? If you've got enough RAM, your prayers have been answered. SoftSwitch from Roger Wagner Publishing is an amazing Apple IIGS program that lets you do just that and much more. Quality Computing's RAMUP offers a similar solution for the entire Apple II family.

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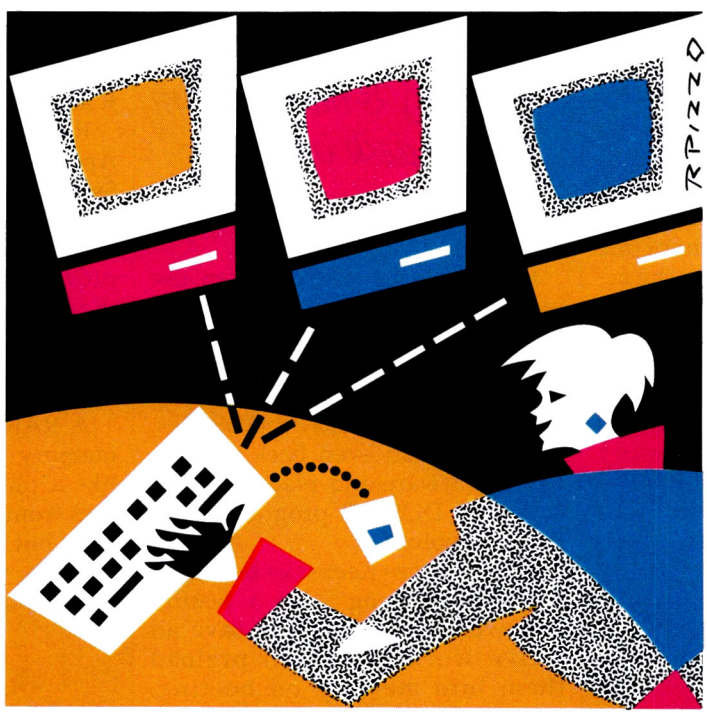

SoftSwitch

SoftSwitch was inspired by Andy Hertzfeld's Switcher utility for the Macintosh and, as its name suggests, is a desk accessory that allows you to switch at will among several programs coexisting in memory. Jump instantaneously from AppleWorks to ProSel to Copy II Plus and back again. It's much like having multiple computers attached to a single keyboard.

How did SoftSwitch programmer Ken Kashmarek pull off this incredible feat? The typical GS has at least one megabyte of random-access memory (RAM), quite possibly even more, to accommodate the majority of sophisticated GS-specific programs such as Paintworks Gold. SoftSwitch carves up this abundance of memory into workspaces 133K large, each of which can contain a separate 8-bit application. Depending on how much RAM you have, up to nine programs can reside in memory simultaneously.

Since 16-bit applications are memory hogs (AppleWorks GS requires a minimum of 1.25Mb), SoftSwitch does not allow you to run more than one while 8-bit applications are stored in RAM. Although most 8-bit programs require 128K or less, that's no indication of their relative power. Many are faster and more robust than their GS-specific counterparts (see "SmartPort," February 1989).

Installing the SoftSwitch program is as easy as copying two files into the DESK.ACC folder on your startup disk. The next time you reboot, SoftSwitch takes its place among the other Classic Desk Accessories (CDAs) in your system and is available from within almost every program when you press ⌘-Control-Escape. Anyone who has used the Control Panel already knows how to invoke SoftSwitch. The Fast Path option allows you to avoid the desk-accessory menu altogether and jump directly to SoftSwitch.

SoftSwitch displays a graphic representation of the program you have suspended by invoking the SoftSwitch CDA (see figure 1) above several workspaces. You can save an image representing a suspended program into one of these spaces. Press the number 1, and the graphic appears in workspace 1, with the time and date automatically added below. You're supposed to be able to distinguish between programs by looking at their mini-screens, but I'd prefer the ability to replace the "Workspace #" labels with meaningful program names.

When you exit from SoftSwitch, you return to the suspended application, which reappears exactly as you left it. To appreciate the power of SoftSwitch, quit your current application and launch another. Return to SoftSwitch and save the new program in a different workspace. Now, when you press number 1 followed by Return, the first application pops up, ready to accept commands. Using SoftSwitch as a conduit, you can jump between previously stored applications in a flash instead of waiting for pro-

ILLUSTRATION BY ROBERT PIZZO

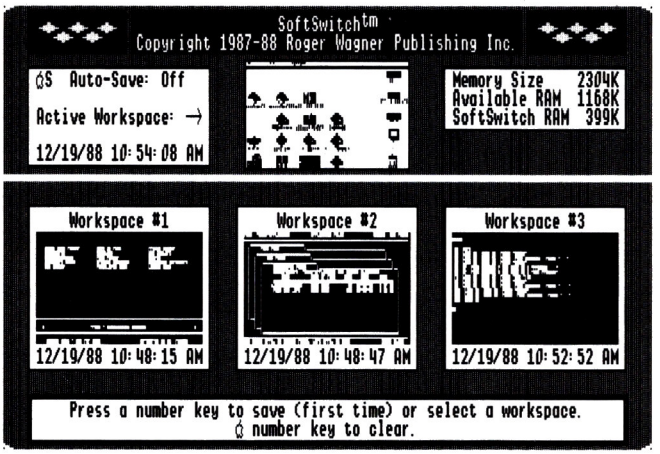

Figure 1: Each SoftSwitch workspace, with its graphics representation of the suspended program's screens, is the equivalent of a 128K Apple IIe.

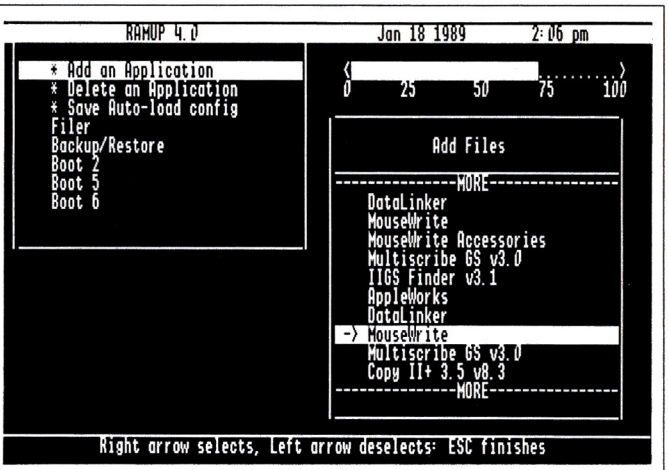

Figure 2: With RAMUP, you define what programs you want and where they can be found; thereafter they can be loaded into a RAM disk automatically.

grams to load from disk each time you want to switch gears.

In effect, SoftSwitch turns any 8-bit program into a desk accessory for any other. The possibilities are endless. Place Copy II Plus in one workspace to give every other program sophisticated file- and volume-maintenance features. Take a break from Managing Your Money with a quick game of Chessmaster 2000. Or summon MagnaCharta from within AppleWorks whenever you need a graph.

SoftSwitch is not a multitasking environment—it doesn't allow the GS to run two or more programs concurrently; it only keeps them in memory at the same time. The workspaces are independent of one another, and the program in the active workspace has the undivided attention of the CPU (central processing unit). So in the last example, since MagnaCharta doesn't really pop up inside AppleWorks as a Beagle Bros TimeOut accessory does, it can graph only data previously saved to disk. It cannot take data directly from an active AppleWorks spreadsheet.

You are not limited to running ProDOS 8 programs with SoftSwitch. Provided you have enough memory, you can run ProDOS 16 or GS/OS applications while other programs are saved with SoftSwitch. You cannot access any of the suspended programs until you exit from the 16-bit application, though.

In effect, SoftSwitch turns any 8-bit program into a desk accessory for any other.

On a positive note, you can use most DOS 3.3 and copy-protected programs with SoftSwitch. Employed in conjunction with the Keepsake utility, which saves workspaces to disk as ProDOS files, SoftSwitch can even back up protected software and place running copies of DOS 3.3 programs onto ProDOS volumes.

I'd like to see Keepsake built into SoftSwitch, along with a feature that would automatically save all active workspaces and preload them into memory on booting, much as Quality Computer's popular RAMUP utility for RAM disks does (see below).

SoftSwitch has another unique ability: It lets you copy graphics and text displays from within one program and paste them into another. And with Screen Manager, another utility that comes with SoftSwitch, you can save screens you capture to disk. This feature makes SoftSwitch a poor man's FingerPrint GSi, albeit minus FingerPrint's push-button simplicity.

By allowing you to have up to nine programs, or a single program such as an adventure game saved in nine different states, SoftSwitch may redefine the way people work on the GS. The ridiculously long boot times for 16-bit software will seem all the more absurd once you've become accustomed to switching between programs in a matter of seconds.

RAMUP

RAMUP is a utility for the entire Apple II family that, like SoftSwitch, allows you to switch between programs quickly. SoftSwitch keeps copies of suspended programs in memory; RAMUP, on the other hand, quickly moves programs in and out of main memory by using extended memory as a lightning-fast RAM disk.

A RAM disk is a large block of memory that the computer treats like a physical disk. You can load files from and save them to a RAM disk, but anything in memory disappears when you turn off the

VITAL STATISTICS

SOFTSWITCH (VERSION 8.9)

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RAMUP (VERSION 4.0A)

A utility that automatically loads multiple programs onto a ProDOS RAM disk and allows you to move among them at will

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computer. You have to transfer files you want to keep from the RAM disk to a nonvolatile medium such as a floppy disk.

RAMUP eliminates the hassle of copying your favorite programs to a RAM disk each time you turn on your computer. You define what programs you want and where RAMUP can find them (a hard disk is best), and thereafter RAMUP loads them for you. Select an application from the RAMUP menu (see figure 2), and RAMUP instructs the computer to pull the desired program off the RAM disk and place it in main memory, where it can run. This RAM-to-RAM transfer takes only a few seconds.

Unlike the SoftSwitch program, RAMUP doesn't let you suspend applications at any point, nor can it mix and match ProDOS and DOS 3.3 programs. But RAMUP earns its keep by providing a simple way to load a RAM disk automatically.

Extra K

If you have a IIc, IIc Plus, or a IIe with 128K RAM, you can get two programs into your computer at once with Extra K, a collection of extended-memory utilities from Beagle Bros.

On the 8-bit Apple II computers, the first 64K of RAM is referred to as main memory, since the 65C02 CPU can't directly address anything more. A technique called bank switching takes advantage of the remaining available memory. With Extra K's Extra Apple utility, you can load two different 64K programs into a 128K machine and switch between them in the blink of an eye. You can even have ProDOS 8 in one bank and DOS 3.3 in the other.

RAMUP eliminates the hassle of copying your favorite programs to a RAM disk each time you turn on your computer.

Other programs in the Extra K collection include Extra Variables, which keeps variables and data separate from Applesoft programs running in main memory; Disk Copy, a fast disk-duplication program; Extra Screens, a set of ampersand routines that lets you rapidly display text and graphics screens; and Hybrid Create, a program that formats a floppy disk half in DOS 3.3 and half in ProDOS 8.

EuroWorks Correction

In the January 1989 "SmartPort," I discussed several ways to create foreign characters that would print out on the ImageWriter II from AppleWorks, including using a TimeOut UltraMacros-based program called EuroWorks.

When describing the way to enter foreign characters with EuroWorks, I incorrectly said that to appear with foreign accents in EuroWorks "most characters use abbreviations enclosed by asterisks." This is true for symbols but not foreign characters, as Frank W. Wells, president of EuroWorks' maker, The S.A. AuTeur Company, points out. "Accented foreign characters are typed almost exactly as they are written by hand: First the character, then its accent. If the desired accent doesn't appear on the keyboard, you type one asterisk and EuroWorks determines the intended accent.

"In French, type de 'ja ' and EuroWorks prints déjà. Type franc*ais, and since the keyboard has no cedilla, EuroWorks correctly prints français. Thus, you type foreign characters just about as you'd write them, with the same number of keystrokes as penstrokes."

For additional information regarding the EuroWorks program, contact The S.A. AuTeur Company, P.O. Box 7459, Beaverton, OR 97007; (503) 645-2306. ✚

VITAL STATISTICS

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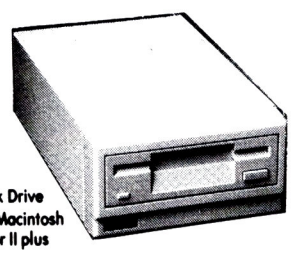

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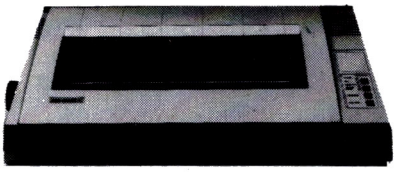

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CIRCLE 265 ON READER SERVICE CARD

Claris, the publisher of AppleWorks and AppleWorks GS, answers your AppleWorks questions.

APPLEWORKS HELP FILE

IMPORTING TEXT

Q. *When I try to import a word-processing file into the Page Layout module in AppleWorks GS, I cannot place it in an already existing text box. Instead, it gets its own new text box. How can I import text into an existing text box in the Page Layout module?*

A. Select the text tool and the insertion point in the desired text box, and then choose Import File . . . from the File menu. The file you select will end up in that text box.

PRINTING MAILING LABELS

Q. *I have trouble printing mailing labels to my ImageWriter printer with AppleWorks. I set up a label-styles report, position the fields, and set the page length to the length of my label. When I try to print the labels, one label is printed every 11 inches. The printer is form-feeding an 11-inch page, even though I've specified the page length to be one inch. How can I correct this problem?*

A. The solution is to set Accepts top-of-page commands to No. From the AppleWorks main menu,

1. Choose Other Activities and press Return.
2. Choose Specify information about your printer(s) and press Return.
3. Under Change printer specifications, highlight the name of your Imagewriter printer and press Return.
4. Move the cursor to Accepts top-of-page commands and press Return.
5. At the lower left corner of the screen, you will see Change the value? No Yes. Select Yes.

Accepts top-of-page commands will now be set to No, and the labels should print correctly.

INVISIBLE HARD-DISK DRIVE

Q. *I have an Apple Hard Disk 20SC. When I boot up with the AppleWorks GS System Disk, my hard-disk drive does not show on the Finder desktop. What's the problem?*

A. The SCSI card that connects the Apple IIGS to the Apple SCSI hard-disk drive must have ROM version 341-0437-A for GS/OS to recognize the hard-disk drive. Since AppleWorks GS runs under GS/OS, you must have the new ROM installed on your SCSI card for AppleWorks GS to use the hard-disk drive. Contact your Apple Dealer for the ROM revision, which is often referred to as ROM Revision C.

NUMERIC SPREADSHEET RESULTS

Q. *When I try to enter a formula in the AppleWorks GS spreadsheet such as* +A34 * B34, *the spreadsheet returns a text string, not a numeric result as my AppleWorks spreadsheet does. How can I get formulas to return numeric results?*

A. Start all formulas in the AppleWorks GS spreadsheet module with an equal sign (=), not a plus sign (+) as in AppleWorks. Example: =A34 *B34.

MATCHING DATABASE CATEGORY ORDER

Q. *I use the AppleWorks database module to track client information, collecting the information on handwritten forms and then entering them into the computer. I want to make the order of the categories on the AppleWorks screen match the layout of the information on the data forms to facilitate data entry. Is that possible?*

A. Yes. Make sure you are in single-record layout (if not, press Ó-Z). Press Ó-L for Layout. Put your cursor on the first letter of the name of the category whose position you want to change. Use the Ó key and the arrow keys to move the category to the desired location (hold the Ó key down while you press the arrow keys). You can move the category up, down, left, or right. The category you are moving must move around other categories. You cannot move one through another.

Once you have arranged the categories, press Escape. Then choose the order the cursor will follow during data entry after the Return key is pressed. The two choices are 1. Order in which you defined categories and 2. Left to right, top to bottom. In your case, choose number 2. ✚

LEARNING CURVE

Tools for teaching to two often-overlooked forms of intelligence

BY DAVID D. THORNBURG

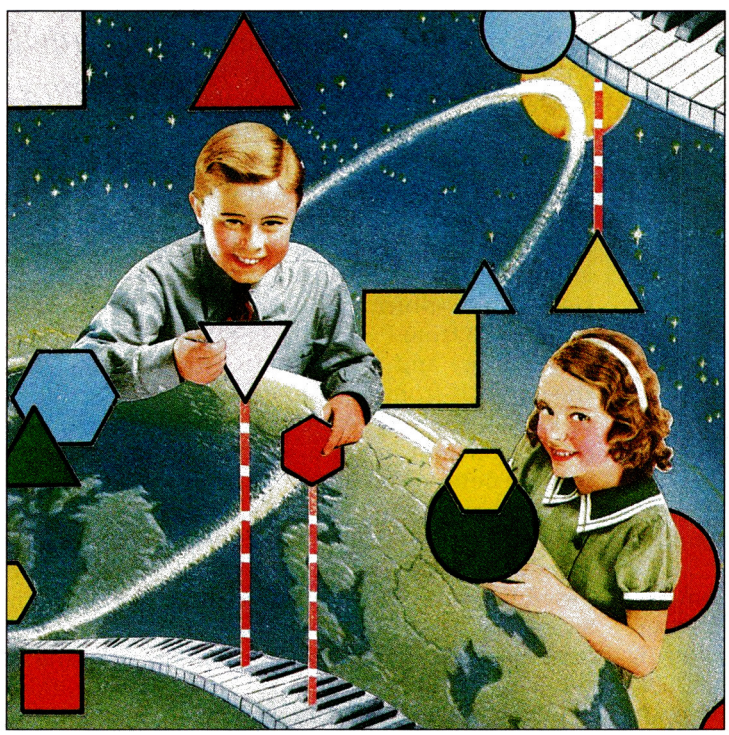
This month we continue to explore the ways classroom computer use can tie in with Howard Gardner's theory of multiple intelligences. Last month we looked at the linguistic and logical-mathematical intelligences; now we delve into the spatial and musical intelligences.

Discussion of these intelligences is especially important because they are not usually nurtured throughout students' school years. Support for painting and music, for example, is high in the primary years but falls off sharply as children reach higher grades. Worse yet, integration of these areas into the curriculum is virtually nonexistent.

On the surface, this situation may not seem problematic, but it is. Research at the University of California suggests that one of the reasons boys tend to score better than girls on standardized math tests is that boys use fast "spatial" reasoning to solve problems, whereas girls tend to use slower "linguistic" methods. Examinations without time constraints produce equivalent scores for both sexes, but differences show up as soon as the questions must be answered in a hurry. This work strongly suggests that we need to develop the spatial reasoning ability of all children—especially girls.

If the incorporation of music into the curriculum seems harder to justify, it is probably because the topic is virtually unexplored. Most classrooms today give the impression that music has never been invented, yet no culture on this planet is without music. The power of music and its relevance to subjects as diverse as history and mathematics suggest that we need more of it in the classroom. Fortunately for the development of both the spatial and musical intelligences, computer tools are abundant.

COMPUTERS IN SPACE AND MUSIC



One of the easiest ways to explore spatial reasoning with students of any age is with Logo's "turtle graphics." The Logo programming language has a rich collection of graphic tools that let students create geometric shapes at any location or in any orientation on the screen. With Logo, children can make discoveries on their own. By creating complex shapes and drawing their mirror reflections, students can reinforce the kind of spatial reasoning that they require to perform well on standardized tests.

Several years ago, my wife had a student who seemed to be incapable of distinguishing a square from a pentagon on a blackboard. After working with Logo for a short time, however, this child overcame his perceptual blocks and was able to generate and recognize a tremendous variety of polygons. Children who are introduced to geometry through Logo, building shapes line by line, develop insights that assist the development of their spatial intelligence.

Social-studies students who just can't make sense of a table of numbers can often see connections when the same information is presented graphically. One product that meets such students' needs beautifully is World GeoGraph for the Apple IIGS. Produced by the Minnesota Educational Computing Corporation (MECC) of St. Paul, World GeoGraph is a geographical database that is able to display information on 177 nations in the form of graphs or colored maps. By looking at information that appears as different colors on the maps, students can see trends that would be much harder to grasp if they were presented as tables of numbers.

ILLUSTRATION BY JOHN CRAIG

Students can add or edit database categories and zoom in on a particular region to observe similarities and differences among nations or discern correlations among economic and cultural data.

Through this program, students can start to develop a feel for the relationships—both spatial and sociopolitical—among the many nations on our planet.

Isn't That Spatial!

The Apple II's ability to plot complex equations allows math students to develop a concrete feeling for abstract mathematical concepts. The math courses I took in college used trivially simple functions to illustrate concepts because they were easy to plot by hand. Today's students have a potential advantage over my generation because of the graphics capability of computers.

Most classrooms today give the impression that music has never been invented.

Sensei's Geometry program (available from Brøderbund, of San Rafael, California, for both the Macintosh and Apple IIGS) is a stellar example of what is possible in this area. Designed as a complete course in Euclidean geometry, this program helps students explore geometrical concepts ranging from congruence to complex theorems, using animated graphics to illustrate the consequences of constraints or assumptions on geometric shapes.

Students with nothing but the built-in Applesoft BASIC interpreter can create excellent plotting programs. The lesson disk on Chaos in last November's column is another example of how computer graphics can underpin the exploration of abstract mathematical ideas.

MIDI to the Max

To muse is to think about something—a solid educational concept. And yet the related word *music* seems to have lost its place in contemporary education. Music is at the heart of human existence.

No one has ever claimed that an unadorned Apple II is a music machine. Its sounds amount to puny peeps that emerge through a tiny loudspeaker. The Apple IIGS, on the other hand, has sound-generation capabilities that rival those of some commercial synthesizers.

Actually, the musical power of these computers (including the GS) comes less from their own capabilities than from their ability to control external synthesizers through a MIDI interface. Inexpensive MIDI interfaces are available from several sources, including Passport Designs, of Half Moon Bay, California, and Apple itself. Because many consumer-level and all studio-grade synthesizers have MIDI interfaces, your computer can control an amazing array of instruments, ranging from electronic percussion ensembles to complete electronic orchestras.

Up to now, music software for the Apple II has fallen into two general classes: sequencers and note editors. Sequencers such as Passport Designs' MasterTracks Jr. (see "Maximum MIDI," February 1989) imitate a multitrack tape recorder that records all the keystrokes and other information it receives from a synthesizer. You can edit this information, send it back through the synthesizer, and replay it in another key or even on another instrument. Note editors allow creation and printing of musical scores. Music Writer for the Apple IIGS from Pygraphic (Grapevine, Texas) and Music Studio for the Apple II from Activision (Menlo Park, California) transcribe music as you play it on a keyboard, placing notes on an on-screen score for further editing.

What is missing is a hook that allows any program to send MIDI-based melodies to external synthesizers as an alternative to the internal beeps and clicks the computer generates. Now that MIDI synthesizers are available for less than $200, our programs should offer us more musical choices.

Music in the Classroom?

For certain learners, music can be a gateway to knowledge. The instrumentation and mood of a piece of music might communicate, more clearly than words, the feeling of an era being studied in history. The exploration of rhythm can help some students understand fractions. Study of the sounds of an organ pipe can lead to an understanding of vibrational modes in physics.

If you are still unconvinced, ask yourself the following question: What caused the German astronomer Johannes Kepler (1571–1630) to think of the motions of planets in musical terms? Astronomy students could program a synthesizer to play Kepler's "music of the spheres" and explore history, science, math, and music all at once.

Learners who are unable to use piano keyboards can still explore music on a computer with the Vocalizer 1000 from Breakaway Systems, of San Mateo, California. You use this versatile instrument by humming into its mouthpiece. It then converts the pitch of your voice into the nearest note, and you can replay it through the MIDI port or a built-in synthesizer.

Breakthroughs in computer-based music tools are taking place faster than we can accommodate them. Of all the intelligences we are exploring, the musical is the most ignored and yet is also the most universal.

Of all the intelligences we are exploring, the musical is the most ignored and yet is also the most universal.

Next month we will explore the role of educational computing in the final three of Gardner's seven intelligences: the intra- and interpersonal and the bodily/kinesthetic. In the meantime, please think about the educational software you use in light of this series of articles and let me know about programs that fit into this framework. ✚

David Thornburg is actively involved in the development of creative uses for computers. He will provide a free copy of the Chaos lesson disk mentioned in this article to those who send a formatted 5¼-inch ProDOS disk and a self-addressed, stamped mailer to him in care of this magazine.

Æ Update . . .

Applied Engineering's new 3.5 Drive is currently undergoing FCC certification and will be released soon. The drive is fully compatible with the Apple 3.5 Drive to work with the IIGS, Macintosh series and computers equipped with AE's PC Transporter. Final retail price has yet to be established, but insiders claim AE's strategy is to put a high quality drive on the market at a "stunningly" low price.

TransWarp GS™ is now shipping. The Transwarp GS accelerator for the Apple IIGS began shipping in February. The accelerator increases processing speed from 2.6 MHz in the fast mode to 7 MHz in TransWarp mode. TransWarp GS occupies slot 3 without sacrificing the slot's dedicated function. TransWarp GS is priced at $399, and is available now.

TransWarp™ is chosen All-Time Best Accelerator. RamFactor™ is All-Time Best RAM card. AE's TransWarp accelerator for the Apple IIe and II+ has been chosen the all time best accelerator by *inCider* Magazine. RamFactor has been selected as the all time best RAM card. The awards were based on a polling of *inCider's* editors and contributors.

GS-RAM Ultra,™ AE's new IIGS memory card, is now available. GS-RAM Ultra incorporates a new DRAM technology utilizing 256K x 4 chips. One DRAM set consists of 2 individual 256K x 4 chips totaling 256K. The card is user-expandable in 256K increments to a total of 4 megabytes. GS-RAM Ultra also contains ROM sockets that are designed to accommodate future applications, as they become available.

Trade in your Apple IIGS memory card. For a limited time, an Apple IIGS memory card can be sent directly to Applied Engineering for a cash trade-in toward the purchase of an Applied Engineering IIGS memory card. Ask your dealer or call Applied Engineering for details.

Applied Engineering now offers low profile MacRAMs™ for the Macintosh Plus, SE and II. The new lower profile SIMM memory module assures proper clearance for all Macintosh peripheral cards and internal devices. Applied Engineering still offers medium height MacRAMs (compatible with most peripheral cards) at a slightly lower price.

Applied Engineering is shipping a newly designed 5.25 Apple II drive. The new drive includes a DB-19 connector for direct connection to the external drive port on the Apple IIc, IIc Plus, or IIGS. A 20 pin adapter cable is also included for direct connection to the drive port on the IIe or II+ Disk II-style controller. The new drive with adapter sells for $149 and is covered by a 1 year warranty.

Æ APPLIED ENGINEERING™

The Apple enhancement experts.

BY JENNIFER BRAWER

Two programs that involve students in environmental issues

A+ TEACHERS' TOOLBOX

If civilization continues to erode the delicate ecological balance of our planet, we won't survive. Industrial waste flowing into rivers kills fish, unrestricted development destroys natural habitats, pollution erodes the atmosphere's ozone layer, and hunting threatens extinction for many animals.

Environmental concern is not exclusively an '80s phenomenon. Since 1905, the National Audubon Society has supported the protection of birds and animals, scientific research, conservation education, and environmental action.

The 1800s gave rise to the National Geographic Society, the largest nonprofit scientific and educational institution in the world. It has sponsored more than 3,400 research projects and explorations, including its early efforts to save California's giant sequoias.

The National Geographic Society and the National Audubon Society are largely responsible for our current understanding of the complex interrelationships between human beings, plants, and other animals. Both organizations boast award-winning magazines, books, and television specials that teach us about ourselves and the rest of the earth's inhabitants. As additions to their already vast collections of print and film resources, they now offer educational software that incorporates their philosophy and environmental information into problem-solving activities.

Tracking the Grizzly

The Audubon Wildlife Adventures software series is a joint venture of the Audubon Society and Advanced Ideas, an educational-software publisher. The first series title, Grizzly Bears, teaches environmental conservation in the context of real social and scientific issues pertaining to the protection of the grizzly and its habitat. Other planned releases include Sharks; Whales; and Poacher Patrol, which tackles the problem of illegal animal trafficking.

Grizzly Bears and Project Zoo incorporate environmental information with problem solving.

Grizzly Bears' main menu introduces four interactive adventures, the *Bear Country Handbook*, a grizzly-food database, a grizzly-habitat model, and record-keeping utilities. In each adventure, students play the role of a person whose experiences have an impact on the life and habitat of grizzly bears. Each role involves making decisions that affect both grizzlies and people.

In the first story, On the Spot with Dr. Potts, students come face to face with a grizzly bear and have to choose the appropriate behavior. First-time users like myself will probably choose "turn around and run," which will actually provoke the bear to follow and attack. Students making the wrong choice will be saved by Dr. Potts, a grizzly expert, who recommends reading her *Bear Country Handbook* to learn what hikers need to know about bears in the wilderness.

The chance encounter with Dr. Potts leads to a series of challenging opportunities to work as her assistant. Students learn about bear behavior, tracking, radio collars, and the foods grizzlies eat during each season. They also get practice using a database when consulting the *Bear Country Handbook*. The database contains information about bears' physical characteristics, habitat, food, and migration patterns; a fascinating synopsis of the history of the grizzly in the United States; and safety instructions.

In the second story, Bear Encounters, students play a park field investigator who investigates encounters between grizzlies and human beings. Continuing this theme, the third story, Grizzly Bear Mystery, introduces an unpleasant aspect of wildlife-conservation work: random killing. Students investigate the circumstances surrounding the suspicious death of a bear by gathering evidence at the scene of the crime; performing a laboratory examination of the bear's body for bullets, poison, or disease; and interviewing individuals who were in the area at the time (see figure 1).

Figure 3: In Zoo Collector, students use charts and graphs to identify a mystery animal.

Figure 4: Zoo Builder graphs the happiness level of animals, visitors, and staff involved in a student-designed zoo and makes suggestions for improvements.

Figure 1: The investigation of a grizzly's mysterious death includes examination of the bear's body for clues.

Figure 2: The grizzly-habitat model lets students assess the environmental impact of an oil-drilling project.

PHOTOGRAPHY BY CARTER DOW

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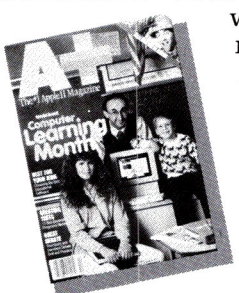

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Ziff-Davis Publishing Company, Retail Sales Department
One Park Avenue–5th Floor, New York, NY 10016.

Viewing problems from multiple perspectives, students must come up with the best answer, not the right answer.

The final story, Oil Explorer, has students working for an oil company planning to drill a well in the heart of bear country. They use the grizzly-habitat model to find compromise solutions to many problems that must take the needs of the oil company, conservationists, and the government into account (see figure 2). Using the model introduces students to the concept of computer modeling and how technology can simulate the cumulative consequences of all the activities involved in a real drilling project.

Graphing Zoo Dwellers

Project Zoo, produced by the National Geographic Society, is a multimedia courseware kit that includes computer software, a filmstrip and audiocassette, a teachers' guide and activity sheets, library catalog cards, and 15 copies of the *Zoo Animals Factbook*. Designed for students in grades 3–5, Project Zoo uses the zoo theme to introduce graphs, measurement, mapmaking, and research. Several activities offer the option of working with customary units of measurement or with metric units. Related problem-solving activities on the disks and in the teachers' guide acquaint students with animal characteristics and survival needs.

The three Project Zoo program disks contain a series of increasing-

VITAL STATISTICS

AUDUBON WILDLIFE ADVENTURES, GRIZZLY BEARS

A program that teaches environmental-conservation principles in the context of protecting the habitat of the grizzly bear

Apple IIe/c/GS/c+, 128K RAM, one 5¼- or 3.5-inch drive, copy-protected, color monitor recommended

PRICE: *$49.95; upcoming enhanced IIGS version, $59.95*

Advanced Ideas, Inc.
2902 San Pablo Avenue
Berkeley, CA 94702
(415) 526-9100

CIRCLE READER SERVICE NO. **360**

ly complex cooperative activities. Disk 1, Zoo Goer, introduces students to several animal houses common in zoos. Here they collect information about animals and learn how to represent the information in picture graphs, bar graphs, and tables.

On Disk 2, Zoo Collector, students find a game that reinforces graphing and animal-classification skills. Mystery animals arrive at the zoo, and students record identity clues from the zookeeper. Once they've collected all their information, the students "walk" through the appropriate animal houses and use the data in graphs and tables to unravel the mystery, earning points for each successful identification (see figure 3).

Disk 3 contains Project Zoo's most challenging activity, Zoo Builder. This exercise is best for groups of four students but also works well with an individual student or a large group. Students select one of two maps and use it to design a zoo that meets the requirements of the animals, visitors, and zoo staff. The players' challenge is twofold: to effectively arrange the animal exhibits on the map and to create appropriate habitats for the animals (see figure 4).

Building a zoo requires that students use information on the program disks, in the *Zoo Animal Handbook*, and from their own personal experiences. They can also ask the program for hints on improving their design. The program evaluates their design decisions and displays a score, which they use to judge their progress.

Realistic Decision Making

I don't often encounter programs that actually teach me something. The majority of products I receive are lots of fun but teach basic K–12 academic skills. I was pleasantly surprised to find that Project Zoo and Grizzly Bears did not fit this mold. Each of these programs provided hours of intellectual challenge and unusually comprehensive information. Furthermore, anyone using Project Zoo or Grizzly Bears will come away with new respect for the creatures with which we coexist.

One of the more valuable features of both Project Zoo and Grizzly Bears is the opportunity to think through problems from more than one perspective and arrive at a compromise solution. Such an exercise performs a service for students that is all too rare at school: It gets them away from thinking that all problems have a right or wrong answer. Viewing problems from multiple perspectives, they must come up with the best answer, not the right answer. The problem-solving aspects of these programs provide realistic decision-making opportunities that will better prepare students for life outside of school. ✚

VITAL STATISTICS

ADVENTURES WITH CHARTS AND GRAPHS: PROJECT ZOO
A multimedia kit that uses a zoo theme to introduce graphs, measurement, mapmaking, and research

Apple II+/e/c/GS/c+, 64K RAM, one 5¼-inch disk drive, copy-protected, printer and color monitor recommended
PRICE: *$149.95*

National Geographic Society
Educational Services
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Washington, DC 20036
(800) 368-2728 • (301) 921-1330

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By Bill Basham **inCider Editors' Choice**

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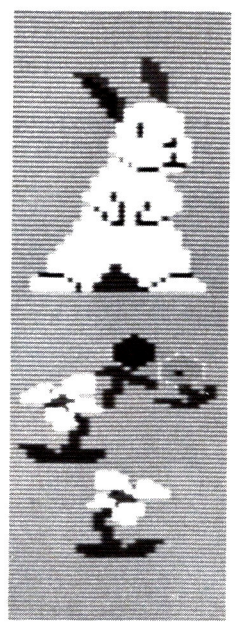
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PICK OF THE CROP
BY LESLIE STEERE, MARY BOHANNON, AND SHANON CULLEN

Disk drives, dream colleges, turtles, tax programs, and more for your Apple II-series computers

PRODUCT ROUNDUP

Logo PLUS adds more than 75 new commands and features to Terrapin's original Logo 3.0.

FINDING YOUR DREAM COLLEGE

So your child or student refuses to go to college unless it's at a very small, private campus in a rural setting in New York, offers horseback riding and ice hockey, includes creative writing as a major, has special services for the hearing-impaired, and does not have sororities or fraternities. It's time to get out the College Explorer, an up-to-date database of 2,800 colleges that helps students find the institution that most closely meets all of their criteria.

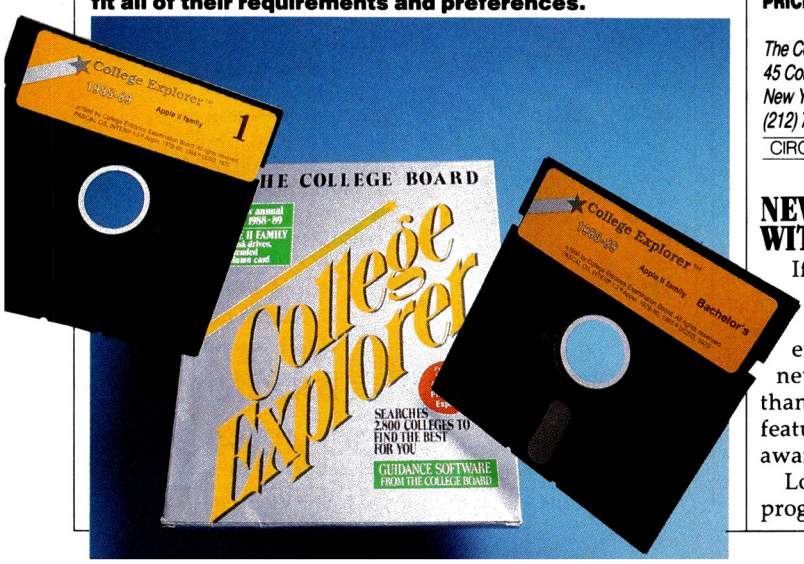
The program leads you through a menu of choices such as degree level, majors, state location, admissions rate, enrollment size, student activities, housing, and tuition rates—and then provides you with an "A" list of colleges that meet all of your necessities and preferences, and a "B" list comprising those that meet your necessities but may or may not match your preferences. You can also request a list of all the colleges that offer the degree level you choose and then browse through them, reviewing the hundreds of features listed for each one. Registered owners of the program also receive regular newsletters from The College Board with lists of options, instructions, and suggestions for using the software.

COLLEGE EXPLORER
Apple IIe/c/GS/c+, 128K RAM, two 5¼- or one 3.5-inch disk drives, Pascal, not copy-protected
PRICE: *$49.95*

The College Board
45 Columbus Avenue
New York, NY 10023-6992
(212) 713-8000

CIRCLE READER SERVICE NO. **501**

The College Explorer searches its database of 2,800 colleges to help students find campuses that most nearly fit all of their requirements and preferences.



NEW TURTLE TRICKS WITH LOGO PLUS

If you haven't been touched by the Logo magic yet, here's another chance. Terrapin's new Logo PLUS adds more than 75 new commands and features to the company's award-winning Logo 3.0.

Logo, an easy-to-learn programming language that turns computer neophytes into programming whizzes overnight, teaches users how to write their own command procedures to explore and combine graphics, word processing, color, and music in forms ranging from the simplistic to the sublime. Both Logo PLUS and its tutorial are geared to accommodate every possible level of sophistication (the graphics portion includes INSTANT, a system for nonreaders that uses single-character commands in place of the longer Logo commands and lets you identify the appropriate keys with colored stickers), and an additional instruction booklet provides more advanced programming and technical information.

Some of the new things Logo PLUS lets you do include easily adding text to graphics screens in various colors, fonts, and styles; writing interactive programs that place text on the graphics screen from within a program; designing and stamping new shapes for the Logo turtle; zooming in on a screen for detailed editing; and saving programs as text files for easy use with word-processing programs and modems. Owners of Terrapin Logo and school

site licenses for Terrapin Logo can upgrade to Logo PLUS for a minimal fee (contact the company for details).

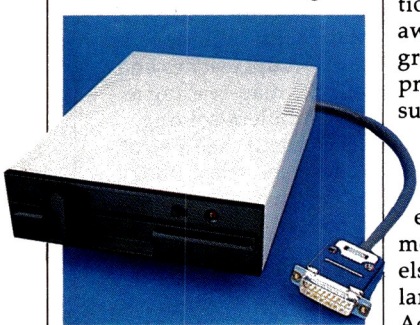
LOGO PLUS
Apple IIe/c/GS/c+, 128K RAM, one 5¼- or 3.5-inch disk drive, ProDOS 8, not copy-protected
PRICE: *$119.95; 5-, 10-, and 20-unit lab packs, $199.95, $299.95, and $399.95, respectively; site license, $399*

Terrapin, Inc.
376 Washington Street
Malden, MA 02148
(617) 492-8816

CIRCLE READER SERVICE NO. **502**

PLUG-IN POWER

Micro-Peripherals' new double-sided 5¼-inch floppy disk drive for the Apple II family is a compact $150-unit that plugs directly into the computer's existing DB-19 connector or daisy-chains with other drives. Using special software, you can format disks with 80 tracks, providing 320K of ProDOS storage.



Micro-Peripherals' new low-cost, compact floppy-disk drive

The MP6 drive has intelligence and can recognize standard 140K ProDOS and DOS 3.3 disks for normal use. A switch on the drive's front automatically "flips" standard two-sided disks without requiring you to remove and turn over the disks by hand. The MP6 also boasts noiseless 0-track recalibration, low power consumption, and built-in indicators.

MP6 DRIVE
Apple IIe/c/GS/c+
PRICE: *$150*

Micro-Peripherals Engineering, Inc.
1720 Lochmoor Blvd.
Jackson, MI 49201
(517) 782-1262

CIRCLE READER SERVICE NO. **503**

THE TAX ADVANTAGE

If you're just now hitting the April 15 panic button, remember: An Apple today keeps the tax man away. Teamed with Double Eagle's 1988 version of The Tax Advantage, your Apple II can lead you smoothly through the annual angst of figuring out how much of the defense budget comes out of your pocket. The Tax Advantage includes most of the common federal tax forms and schedules for computing taxes for individuals and sole proprietors, as well as the latest revisions in tax laws. Even those who pay accountants to do their dirty work can use this program to organize their records.

The Tax Advantage screen displays are simplified versions of actual IRS forms, and for each line of each form, the Help function is only a keystroke away. You can use the program to print out IRS-approved computer-generated substitutes for forms and schedules that do not require signature, and the manual includes a printer-control-code table for more than 100 printer models. Anyone who uses Dollars and $ense, The Home Accountant, or Managing Your Money to keep track of their finances can import data from those programs directly into the correct tax categories in The Tax Advantage, and the program also includes special functions to help you estimate your 1989 tax liability and compute your various tax options.

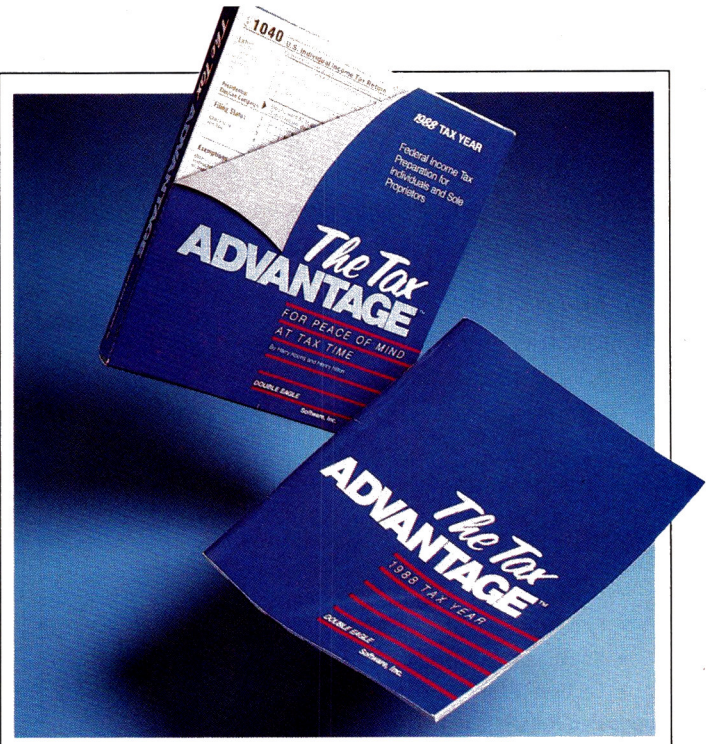
THE TAX ADVANTAGE
Apple II+/e/c/GS/c+, 64K RAM, one 5¼-inch disk drive, ProDOS 8, not copy-protected (3.5-inch or DOS 3.3 versions available on request)
PRICE: *$59.95*

Double Eagle Software, Inc.
2340 Plaza Del Amo, Suite 215
Torrance, CA 90501
(213) 212-6611

CIRCLE READER SERVICE NO. **504**

LESS TAXING

Even those with no prior knowledge of computers or accounting can turn to Swiftax to keep the Feds off their backs. This program guides you through preparing your 1988 federal tax return, displaying IRS forms on-screen as they appear in actual IRS format and providing a taxpayer questionnaire to tell you which forms you must complete. Swiftax automatically checks your tax alternatives and calculates the lowest amount of income tax you must pay.



The Tax Advantage is one choice for lowering the annual income-tax anxiety level.

Also included with the program is the 1988–89 edition of *The Price Waterhouse Personal Tax Advisor*, a 295-page book that provides you with tax information and tax-planning strategies. The Swiftax manual is a step-by-step guide to using the program, and Timeworks offers a telephone consulting service to all registered Swiftax users.

SWIFTAX
Apple IIe/c/GS/c+, 128K RAM, one 5¼- or 3.5-inch disk drive, ProDOS 8, not copy-protected
PRICE: *$69.95*

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444 Lake Cook Road
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Swiftax comes with a 295-page book of tax information and tax-planning strategies.

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Otherwise,
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Please allow up to 60 days for change of address to take place.

PRODUCT ROUNDUP

AN APPLEWORKS TAX TOOL

One option for AppleWorks users at tax time is 1040Works or 1040Works-X from Personal Financial Services. The program lets you use AppleWorks to calculate and print out most of the common federal tax forms and schedules and includes custom macro files for AutoWorks, MacroWorks, Super MacroWorks, and Pinpoint to help you move quickly through the forms. You can also import data from financial-management programs such as Intuit's Quicken and Brøderbund's On Balance. (1040Works and 1040Works-X are essentially the same; 1040Works-X requires more memory for saving larger files.)

The 1040Works screens mimic IRS forms. There is an on-screen tutorial, and the documentation includes helpful suggestions for assembling your tax-return information, understanding and/or following IRS requirements, and printing out and submitting your income-tax returns.

1040WORKS
Apple II+/e/c/GS/c+, 128K RAM for 1040Works, 256K RAM for 1040-X, one 5¼- or 3.5-inch disk drive, AppleWorks, ProDOS 8, not copy-protected
PRICE: *1040Works, $24.95; 1040Works-X, $27.95 (add $3 for 3.5-inch versions)*

Personal Financial Services
P.O. Box 1401
Melville, NY 11747
(516) 261-8652

CIRCLE READER SERVICE NO. **506**

GET ORGANIZED

FamilyFiles is a collection of more than 35 predefined AppleWorks templates that you can use to easily keep track of stocks and dividends, your checkbook and budget, car expenses, maintenance and mileage, insurance policies, credit cards, and other documents. It also aids in tax preparation, estimating the cost of additions to your house, or planning a room addition.

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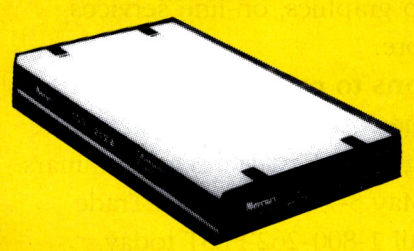

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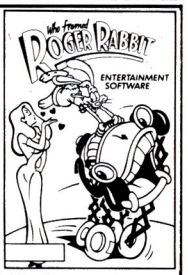

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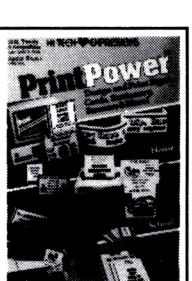

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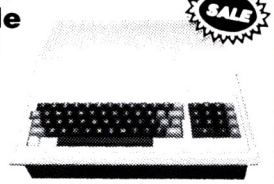

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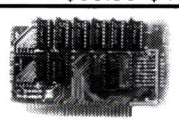

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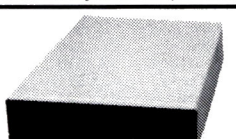

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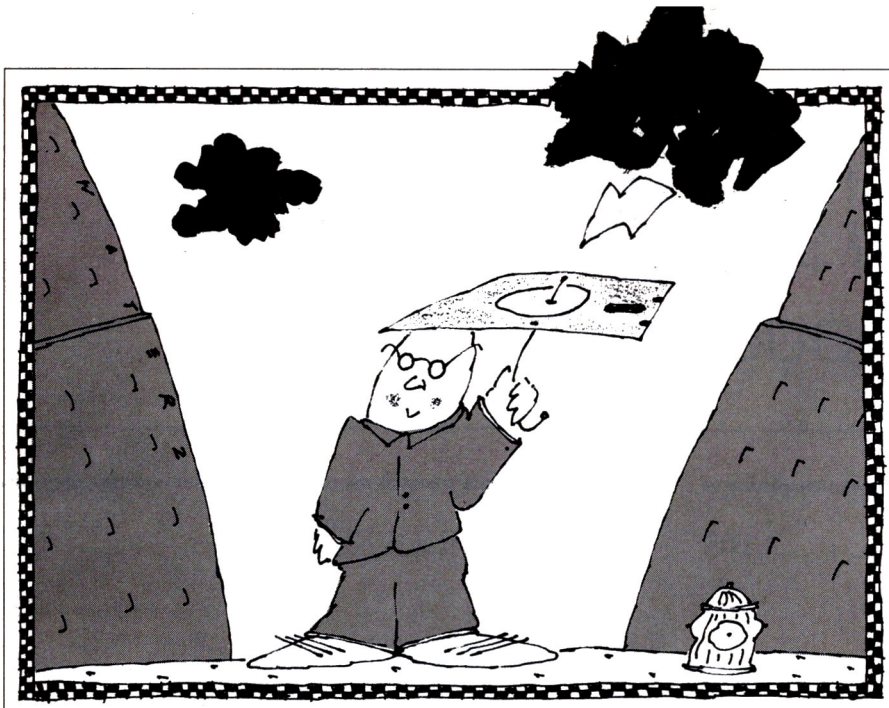

TIPS AND TECHNIQUES

HI-RES VIEWER

The Applesoft BASIC program in figure 1 searches through the current directory looking for standard hi-res-graphics files—they have a starting address of $2000 or $4000 in memory and a block size of 17—and then displays them on the second hi-res page. Hi-Res Viewer works under ProDOS only, and you should be sure to change the prefix to reflect the location of your graphics files if you run the program from a different directory.

DAVID SEIM
ALTENKIRCHEN, WEST GERMANY

```
100  REM  Hi-Res Viewer by David Seim
110  PRINT  CHR$ (21) : REM  Turn off 80-column card
120  DIM A$(258)
130  PRINT  CHR$ (4)"PREFIX" : INPUT PR$
140  PRINT  CHR$ (4)"OPEN";PR$;",TDIR"
150  PRINT  CHR$ (4)"READ";PR$
160  FOR B = 1 TO 258
170  INPUT C$
180  IF MID$ (C$,75,5) = "$2000" AND MID$ (C$,23,6) = "    17" THEN
     A$(B) = LEFT$ (C$,16) : NEXT B : REM  This is a picture
190  IF MID$ (C$,75,5) = "$4000" AND MID$ (C$,23,6) = "    17" THEN
     A$(B) = LEFT$ (C$,16) : NEXT B : REM  This too
200  IF LEFT$ (C$,6) = "BLOCKS" THEN  PRINT CHR$ (4)"CLOSE" : GOTO 220
210  GOTO 170
220  HGR2 : REM  Turn on Hi-Res page 2
230  FOR B = 1 TO 258
240  IF A$(B) = "" THEN TEXT : HOME : END
250  PRINT  CHR$ (4)"BLOAD";A$(B)",A$4000" : REM  Load picture to Hi-Res
     page 2
260  KEY =  PEEK (49152) : IF KEY < 128 THEN 260 : REM  Wait for
     keypress
270  POKE 49168,0 : NEXT B
```

Figure 1: The Hi-Res Viewer program searches through the current directory and displays all the hi-res graphics it finds.

STOP PRINTING

I have always been baffled that the ImageWriter doesn't stop printing immediately when you press the Select button on its front panel, which is supposed to take it offline. *[Editor's note: That's because the ImageWriter continues to print the contents of its built-in buffer.]* If you remove the plastic cover above the printhead, however, the printer is automatically deselected and immediately stops at the end of the current line as a safety measure. To resume printing just where the ImageWriter stopped, replace the cover and press the Select button. This technique comes in handy when you need to fix minor paper jams, adjust the platen up or down, or just check to see if everything is printing correctly.

ALICE JENSEN
KIRKLAND, WA

ALIEN EGG REVISITED

The tip for PBI's Alien Mind game in the February 1989 installment of "Tips and Techniques" might have confused some readers. To jump from level to level, the Caps Lock key must not be engaged when you type the word green. In fact, all you really have to type is a lowercase n. This method works at any time during the game, except when you're logged onto a terminal.

OWEN W. LINZMAYER
TECHNICAL EDITOR

SEASON'S GREETINGS

When I was using Brøderbund's Print Shop IIGS during the holidays at the end of last year, I noticed, instead of The Print Shop in big yellow letters above the main menu, the words Happy Holidays! After fiddling around with the Clock in the Control Panel, I discovered that this message appears only when the date is between December 15 and 31.

GARRETT SLOAN
SHERWOOD PARK, ALBERTA
CANADA

Please send your Apple II tips to "Tips and Techniques," A+, 950 Tower Lane, 18th Floor, Foster City, CA 94404. If you send us a tip that we publish, we will send you an A+ T-shirt. Please include your name, address, and size (S-M-L-XL) with your submission.

ILLUSTRATION BY THOMAS WATERS

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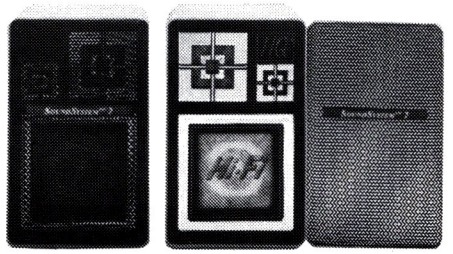

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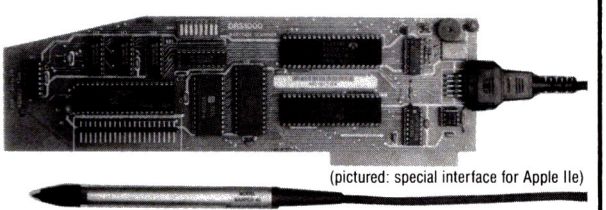

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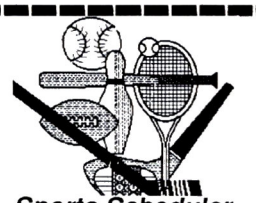

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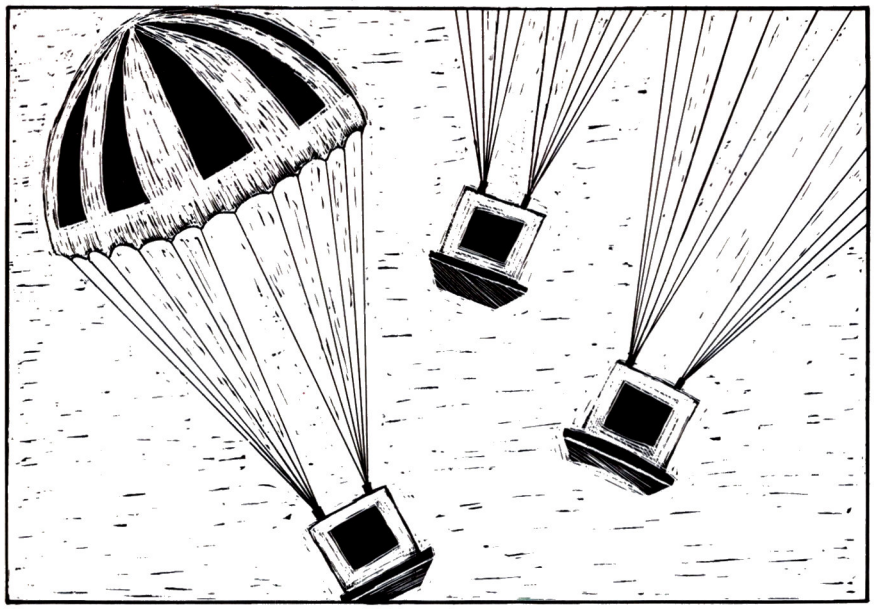

RESCUE SQUAD

BY GARY B. LITTLE

SUPER-HI-RES SLIDE SHOW

Q. *How can I display a super-hi-res picture on the Apple IIGS with a slide-show program written in Applesoft BASIC?*

TERRY YOUNG
VALE, NC

A. Displaying a super hi-res picture from Applesoft is a bit tricky since you can't just use a BLOAD command to transfer the picture file directly into super-hi-res screen memory. (That's because the screen-memory buffer is outside Applesoft's address space.) Furthermore, you have to grapple with three popular screen formats (Apple Preferred, original Paintworks style, and uncompressed screen images).

The easiest picture files to work with are uncompressed screen images, since they contain a simple binary image of a screen. These pictures are always 32K in size; to display one, you have to move it into memory, beginning at location $2000 in bank $E1, and throw a soft switch that enables the super-hi-res display hardware.

The program in figure 1 can display a single super-hi-res picture, provided that it is an uncompressed screen image and has a file-type code of $C1. You can easily expand it into a simple slide-show program if you wish to do so. Just keep in mind that it requires that the area from $1000 to $9000 be free, so you have to keep the program short and not use an excess of variables.

JOYSTICK CULPRIT

Q. *I have another possible reason for the problems encountered by Larry Carter ("Rescue Squad," October 1988). Whenever he turned on his IIGS, he saw the menu for entering the Control Panel and setting system standards. This menu normally appears only if the Option key is held down when you turn on the IIGS. You suggested that he might have a damaged Option key.*

The other possible reason for the malfunction is a faulty joystick button. I had the same general symptoms, but by disconnecting the joystick before turning my system on, I made them go away.

ERNIE BOURASSA
WHITEHORSE, YUKON
CANADA

A. Several readers wrote me and pointed the finger at the joystick. The Option key on the keyboard is equivalent to button 1 on a joystick, so if this button is stuck in the down position, the unwanted menu will appear. Some joysticks have a "button lock" feature, which lets you keep a button down indefinitely (a handy feature for blasting aliens as rapidly as possible), so disengage the lock before turning your system on.

IIGS C COMPILER

Q. *Are there any C compilers for the Apple IIGS that will let me access the tool-set functions in the system ROM?*

CHRISTOPHER DEHOFF
INDIANAPOLIS, IN

A. The only C compiler currently available for the IIGS is Apple's own APW C, which runs in the Apple IIGS Programmer's Workshop (APW) environment. Both APW and APW C are available from the Apple Programmers' and Developers' Association, 20525 Mariani Avenue, MS: 33G, Cupertino, CA 95014; (800) 282-2732. The Byte Works is currently developing a similar C compiler that should be available soon. ✚

Please send your questions and problems to "Rescue Squad," A+ 950 Tower Lane, 18th Floor, Foster City, CA 94404.

```
100 FOR I = 0 TO 23
200 READ X: POKE 768 + I,X
300 NEXT
400 INPUT "Enter name of file: ";F$
500 POKE 49193,193: REM Super On
600 PRINT CHR$ (4);"BLOAD";F$;",T$C1,A$1000,L$8000"
700 CALL 768: GET A$
800 POKE 49193,1: REM Super Off
900 END
1000 DATA 24,251,194,16,162,0,0,191,0,16,0
1010 DATA 159,0,32,225,232,224,0,128
1020 DATA 208,242,56,251,96
```

Figure 1. This program displays an uncompressed super-hi-res picture file.

ILLUSTRATION BY CLAUDIA TANTILLO

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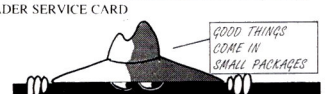

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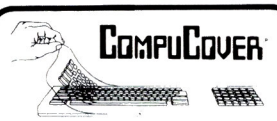

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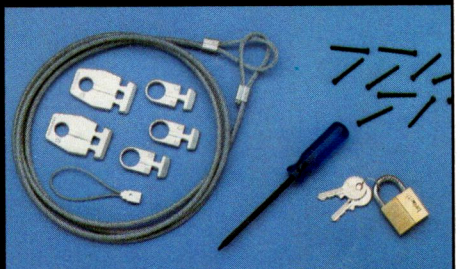

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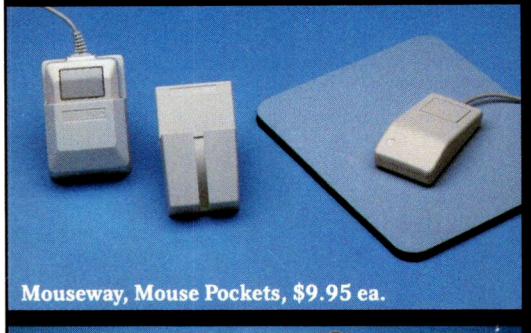

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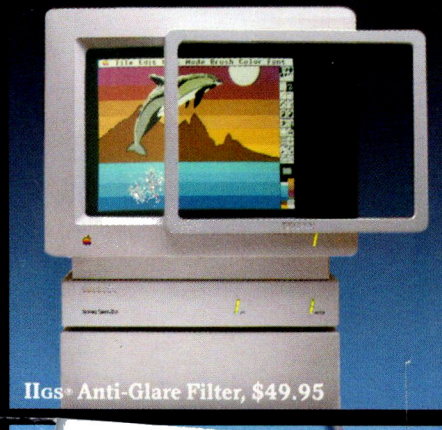

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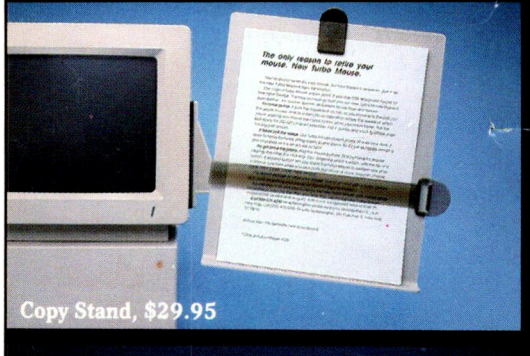

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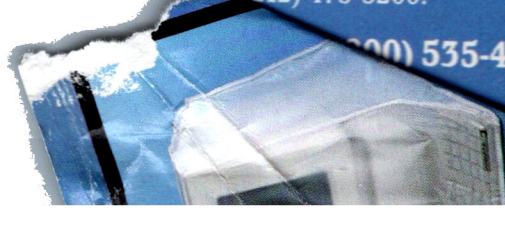
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