inCider A+

THE APPLE II MAGAZINE

Design a Club Newsletter, p. 78

AN IDG/C PETERBOROUGH PUBLICATION
November 1989

PIGSKIN PICKS
6 Apple II Football Games Compared

STICKING WITH IT
13 Joysticks Reviewed

SYSTEM DISK 5.0
Apple's Speedy New GS/OS

Reviews:
- DoubleTalk
- TimeOut SpreadTools
- Multiple Choices
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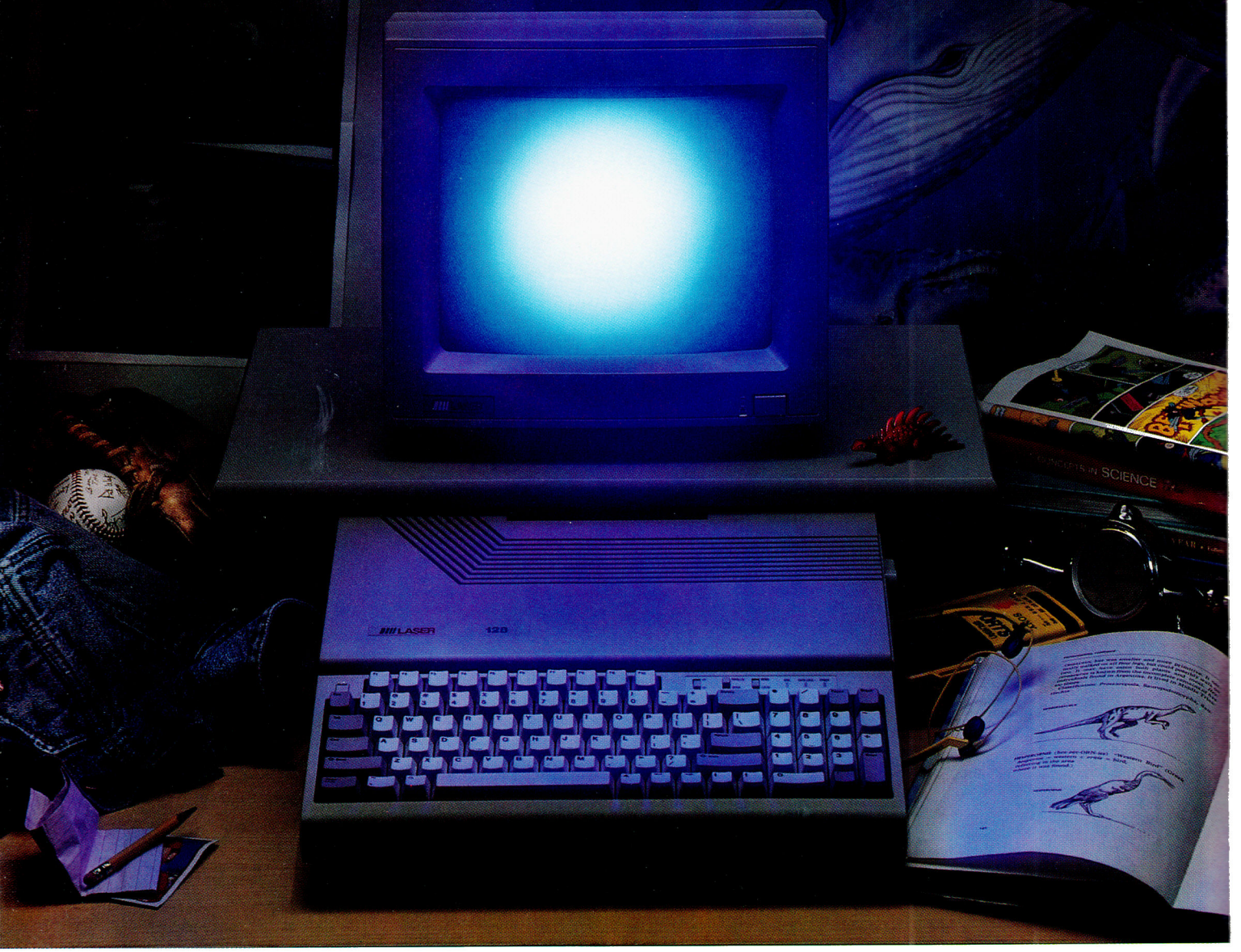

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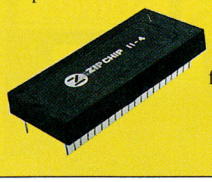

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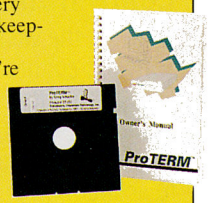

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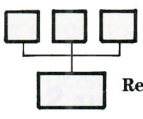

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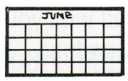

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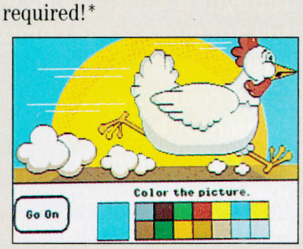

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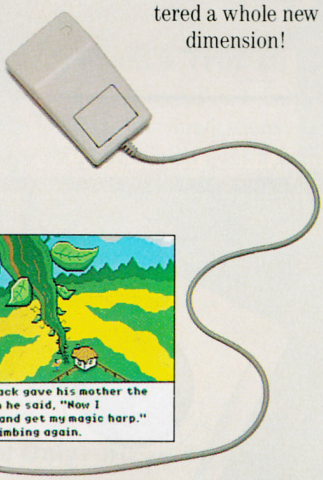

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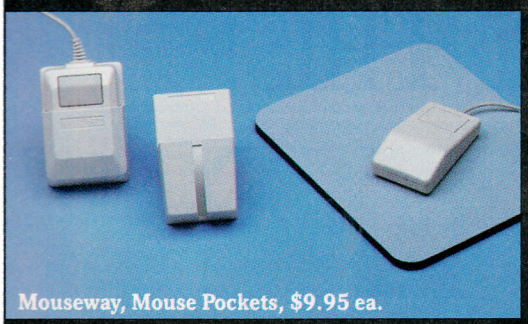

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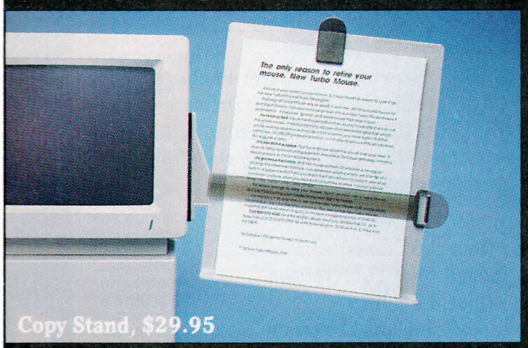

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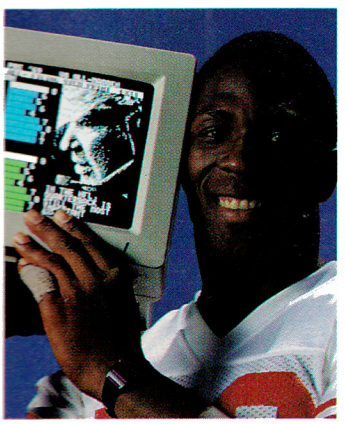

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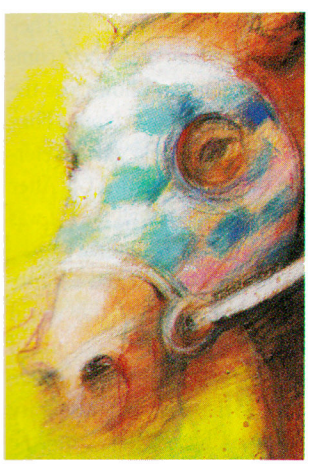

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Stattus Report will return in December.

Cover photograph • Mark Johann

INCIDER'S VIEW

TRUE CONFESSIONS

By DAN MUSE * EDITOR IN CHIEF

After a while I forgot I was talking to football stars. I was talking to Apple II users.

I HAVE TO ADMIT IT. AS WEST COAST EDITOR Jeff Cable and I drove up to the San Francisco 49ers' preseason training camp in Rocklin, California, I wasn't thinking about the Apple II, AppleWorks, desktop publishing, or even games.

We were going to talk to the football team of the decade, the defending Super Bowl champions. The reason for the trip was all business—a cover photograph showing three 49ers who also own Apple IIGSes.

From a magazine-publishing point of view, it all made perfect sense. The cover was scheduled for the November issue, so the football season would be just heating up; our lead story was a comparison of Apple II football games; and these players *really* use GSes.

Tom Holmoe (front), Mike Walter, Jeff Cable, Keena Turner

I was covered. My motives were beyond question. I knew why I really wanted to go to Rocklin, though; anyone who knows me knows why I went. I wanted to get inside the training camp. To eat in the players' cafeteria. To hang around outside the team's locker room, so that when Joe Montana walked by I could just nod and say, "Hi," as if I were a writer from *Sports Illustrated* who wasn't impressed to be that close to him. I wanted to see professional sports from the inside.

I thought it was great that Mike Walter, Tom Holmoe, and Keena Turner, as well as Eric Wright and Tim McKyer, use GSes. But I really wanted to know what it was like to play in the National Football League, to tackle Bo Jackson, to win a Super Bowl. I wanted to know how much they ached the day after a game, how you cover a wide receiver with world-class speed or tackle a 225-pound running-back who runs a 4.5 40-yard dash.

Something happened, though, while Jeff and I were eating lunch with Tom and Mike. I realized that these guys are "into" their Apple IIs. Their enthusiasm was infectious. I started to get excited about Apple IIs and software myself. Now I *was* thinking about things such as AppleWorks, desktop publishing, and games. I forgot that I was talking to professional athletes. I forgot that Roger Craig and Jerry Rice were only a couple of tables down from me.

The more I listened to Mike and Tom, the more I realized how big a role computers are playing in the lives of more and more people—doctors, lawyers, mechanics, teachers, and football players. The questions and comments they had were a lot like the ones we receive from our readers: Why does importing clip art into PaintWorks Gold affect your color palette? What will System Disk 5.0 mean in terms of speed? What's the best desktop-publishing program? Why does the GS take so long to load some games? Is TransWarp GS a necessity or an expensive luxury?

We learned how much the players' kids love Reader Rabbit and Stickybear, how much they themselves love AppleWorks and Mean 18. They told us what they expected to do with their computers when they bought them, and how close the GS has come to fulfilling those expectations. They wondered why it seemed as if Apple gave preferential treatment to the Macintosh over the GS. After a while I forgot I was talking to football stars. I was talking to Apple II users.

While I admit I went to Rocklin excited because I was visiting the summer home of the world champs, I left excited to know that a group of intelligent professional football players tackle Apple II computing with the same tenacity with which they tackle the Chicago Bears and the Cincinnati Bengals.□

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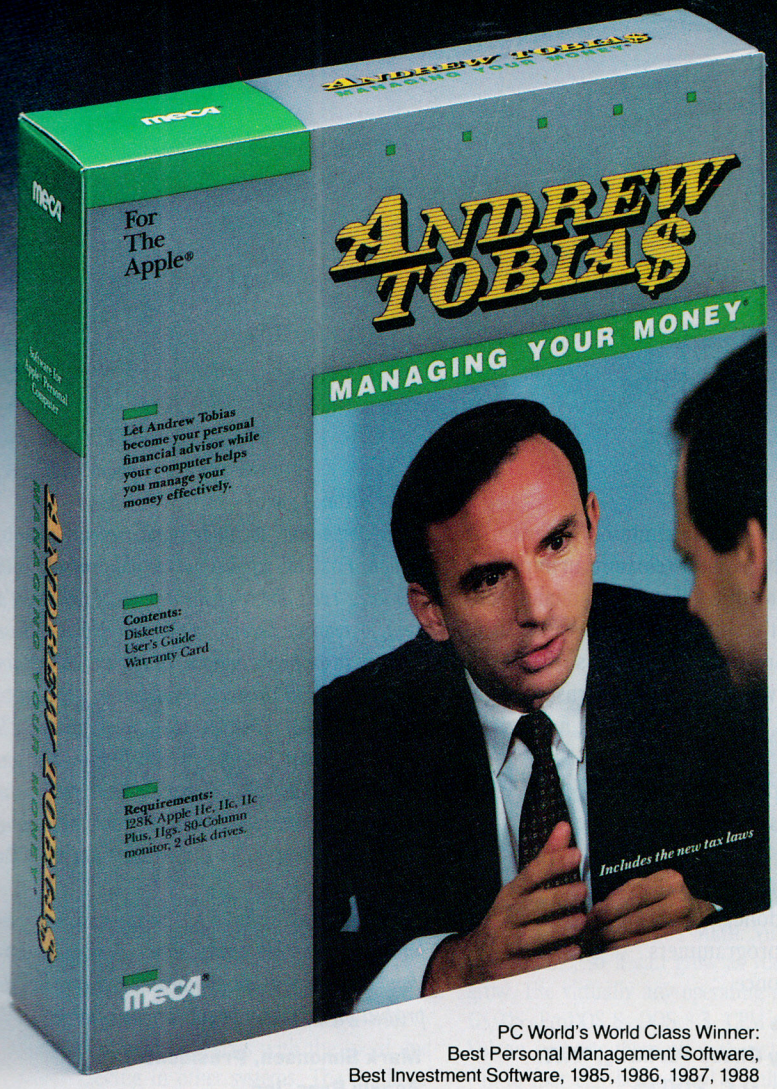

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For many of us, Beagle Bros taught us to program and taught us to laugh. We were a young and buoyant family—until some recent management decisions took effect.

As a minister in the Church of Latter-Day Applesoft Programmers, I cannot stand silently by on this most solemn occasion. Halting the distribution of fine and useful software has grave moral implications for computer users everywhere. What are we faithful Apple II programmers to do when the tools of our trade are summarily discontinued?

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So, let us pray:
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Hallowed be thy name.
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But give us programmers
A break for once.

Phil Shapiro
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Woe be unto those who preach false doctrine! The rumors of our utility programs' demise have been greatly exaggerated. Indeed, Phil's been led astray by wolves in sheeps' clothing—a victim of half-truths and innuendo.

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We've always tried to give our customers the most bang for their buck. This means top quality at the lowest possible prices. Keeping prices down requires getting the best price break possible on the components that make up our products—printing thousands of boxes, manuals, disk labels, and so on.

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Mark Simonsen, President
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LETTERS TO THE EDITOR

but there isn't any other program that puts it all together the way this package does. The longer I use it, the better I like it and the more useful it becomes.

I think most people have disliked AppleWorks GS for three major reasons: It doesn't work exactly like (or as fast as) 8-bit AppleWorks; it's still a young program with some bugs and an annoying tendency to crash (so did the original AppleWorks); people don't stay with the program long enough to discover its tremendous strength.

For example, I was initially disappointed in the database, because it didn't work exactly like AppleWorks Classic. But I stayed with it and learned what the new database can do, and now I'm transferring all my data to AppleWorks GS. I'm using features I could only dream about in the old environment.

We need to support and encourage Claris to stay with this program. Because of our feedback and support, software companies haven't abandoned the II market for the MS-DOS or Macintosh bandwagon. Instead, they've continued to improve and develop new IIGS software.

Rev. Lee L. Cunningham
P.O. Box 268
El Centro, CA 92244-0268

SMART PUP

IN "BEAGLE PUPPIES" (WHAT'S NEW, August 1989, p. 18) you state, "TimeOut GS Font Editor has nothing to do with AppleWorks except that it runs on 8-bit Apples in addition to the IIGS." That isn't true. The GS Font Editor, as the name implies, edits IIGS system fonts, which SuperFonts uses to print word-processor documents. So there is a connection between the two products.

Geoffrey Elliott
36 Fairview Street
Brattleboro, VT 05301

JUMP-START

YOUR SENSE OF THEATER IS wonderful. So you were really going to trash IIGS computers because of a perceived inability to get the battery replaced ("The News Editor's Choice," What's New, August 1989, p. 17)? Amazing. Do you get rid of your automobiles when they run out of gas? Heaven help you should you ever get a flat tire.

Seriously, the business of IIGS batteries has gotten blown out of proportion so badly, it now defies belief. Using Apple parts and Apple service procedures, it costs about $40 and 30 minutes to replace the GS' battery. What's so hard to understand?

Vern L. Mastel
Team Electronics
2304 East Broadway
P.O. Box 1512
Bismarck, ND 58501

Paul Statt responds, "I'd object strongly if I had to take my car back to the dealer every time it ran out of gas and pay the dealer four times what the gasoline cost, just to fill my tank. Apple should have made the GS battery something you *could replace. We know that Apple dealers can replace the GS battery; we just don't want to pay them to do so."*

—eds.

CACHING ON

PAUL STATT'S SIDEBAR, "CACHE as Cache Can" (August 1989, p. 58), contained a few inaccuracies. He states that 64K equals 64,896 bytes. This is simply a case of his calculator needing batteries—1024 bytes per kilobyte times 64 kilobytes equals 65,536 bytes.

Also, the DISK.CACHE NDA included with GS/OS 2.0 (System Disk 4.0) doesn't have a maximum limit of 32K to allocate to the disk cache. You can set the cache anywhere from a lower limit of 0K (no cache) to an upper limit of available system memory. The 32K is the default value, not the maximum. Finally, as far as I know, Diversi-Cache will cache only Apple 3½-inch drives that are connected to the SmartPort connector on the back of the GS.

Jim S. Hart
311 Bordeaux Street
Jacksonville, NC 28540

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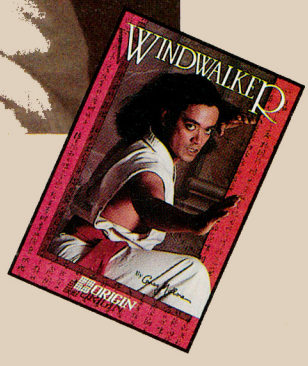

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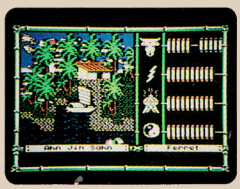

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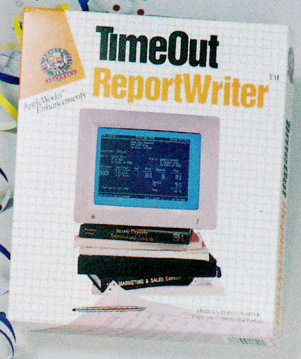

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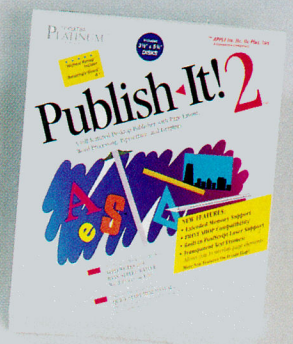

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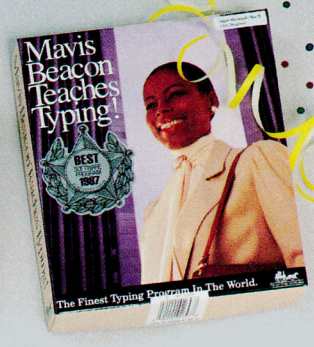

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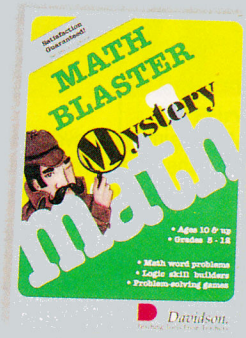

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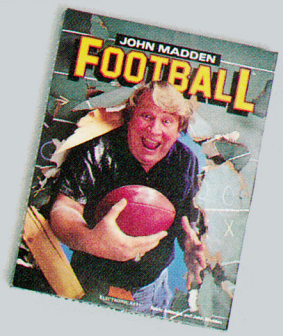

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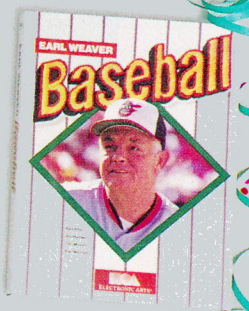

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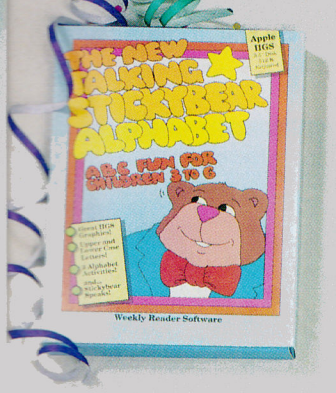

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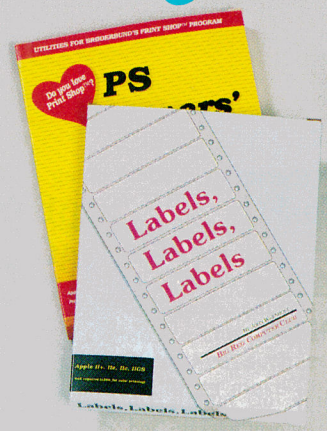

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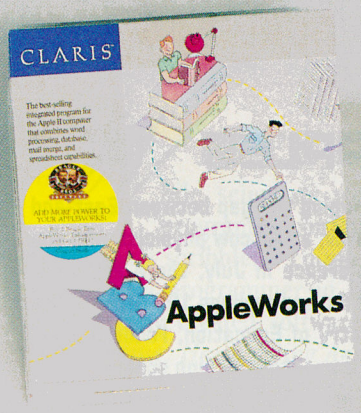

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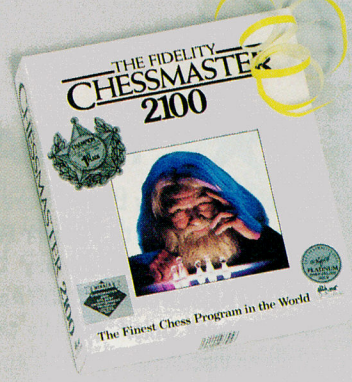

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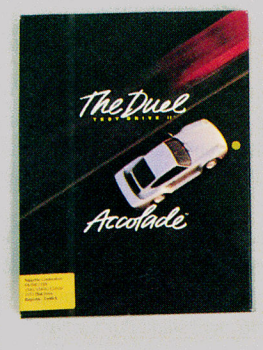

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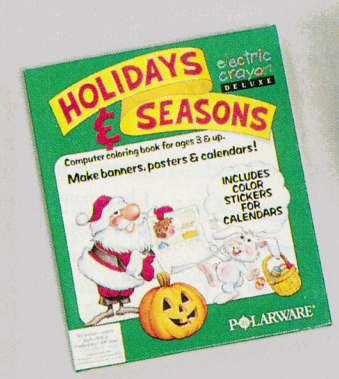

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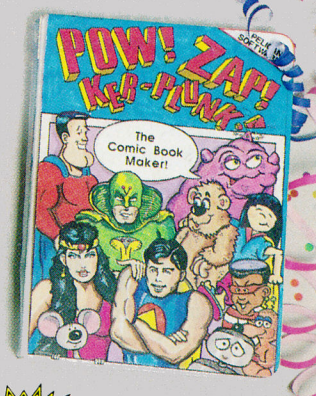

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WHAT'S NEW

By the *inCider* staff

★ RED APPLES ★

"It's not a fairy tale—we are bridging the gap between East and West." According to Vladimir Fedorov, a Moscow physicist who visited the Apple II Developers' Conference in July, there are some 10,000 Apple II clones, 3000 Apple IIs, and perhaps 100 Apple IIGses in the Soviet Union. But the Ministry of Education, Fedorov says, plans to distribute 100,000 Apple computers to high schools soon.

Fedorov showed photographs of his remote pollution-sensing device, called LIDAR, which he built to fit into a Bulgarian Parretz—a clone of the enhanced Apple IIe. Bulgaria appears to be a source of much microcomputer equipment in the Eastern bloc: Fedorov says that he uses a Bulgarian version of AppleWorks called Paris. "We would rather not use pirated software," he explained, "but Western software is often not available, and must be paid for with hard [convertible] currency."

Fedorov believes that the success of perestroika in the Soviet Union depends on making the ruble convertible. In the meantime, he and his colleagues have formed the International Computer Club. The ICC promotes "information science at the service of international dialogue." Its most visible success has been a San Francisco-to-Moscow satellite link, through which scientists are already communicating profitably.

The ICC also helps bring Western currency into the Soviet Union; the membership fee is a heady $10,000, American. Fedorov explains that the organization provides corporate members with invaluable help in dealing with the Soviet bureaucracy when they enter the U.S.S.R. market. On the domestic side, the ICC uses the hard money it receives to buy Western hardware and software on the legal market. Fedorov would like to arrange an Apple computer fair in Moscow someday and suggests holding it in the summer, as "the winters are rather cold."

—Paul Statt

UPDATES

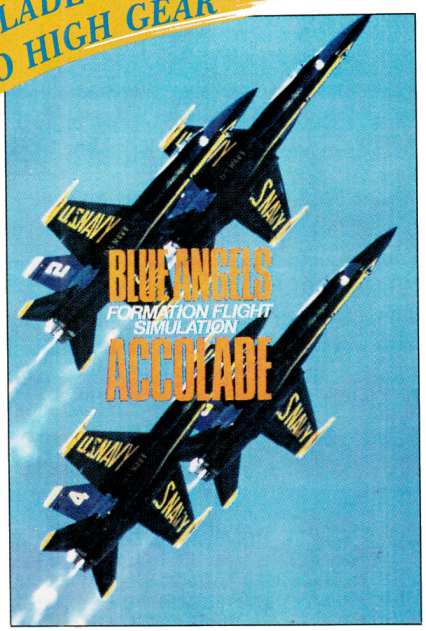
■ The new **Kula Index** (Kula Software, Honolulu, HI)—an AppleWorks database file of all your favorite magazines good through the middle of 1989—is here.

■ Thunderware (Orinda, CA) has introduced GS-specific scanning software for its popular **ThunderScan** optical digitizer. It uses the same hardware (in the ImageWriter printer), but now supports LaserWriter printing and uses the standard Apple interface. The results look sharp. Thunderware's thinking about adding an editor.

■ The Educational Division at **Mindscape** (Chicago, IL) has a new toll-free number for dealers and customers: (800) 999-2242. People with technical-service questions should call (312) 480-8715; the toll-free number is for orders and information only.

GAMES

ACCOLADE SHIFTS INTO HIGH GEAR



Think of superb GS entertainment software, and Accolade (San Jose, CA) comes to mind immediately. If there were "standards" in game software—dazzling graphics, superior sound effects, dizzying animation—this company would be the one to set them.

One of Accolade's latest efforts is **The Blue Angels**, a unique formation-flying simulation. Take off with the Navy's stunt team and perform more than 25 maneuvers in three different types of air shows. You can fly in any of four plane positions; or, if you prefer, view the action from a chase plane, a hot-air balloon, or the grandstand. You can even watch your maneuvers on instant replay.

Heatwave: Offshore Superboat Racing (which Accolade introduced at the June Consumer Electronics Show in Chicago) should be afloat by the time you see this. Heatwave will put you into the cockpit of a 600-horsepower boat along actual race courses in Miami, Biscayne Bay, Fort Lauderdale, and the Mississippi.

Test Drive II aficionados will have some new cars to play with and new roads to travel. **The Muscle Cars** lets you drive five of the notorious beasts that came out of Detroit in the 1960s; **European Roadways** takes you to some of the most scenic and challenging byways on the Continent.

Try swinging with the pros! **Jack Nicklaus Presents the Major Championship Courses of 1989** (for use with Jack Nicklaus' Greatest 18 Holes of Major Championship Golf) is your ticket to playing the host courses of the 1989 U.S. Open, British Open, and PGA Championship—just in case you haven't had a chance to play them in real life.

Accolade will also be releasing GS versions of **Fast Break**, its popular basketball simulation, and **Grand Prix Circuit**, an international auto-racing simulation. Both titles have already proved immensely popular in other formats. The Blue Angels, Heatwave, Fast Break, and Grand Prix Circuit should retail for $44.95 each. The Test Drive II and Jack Nicklaus add-on disks will sell for $19.95 each.

Take heart, all you game fanatics. With seven GS titles coming from Accolade before the end of the year, it should be a very merry holiday season. For more information, contact Accolade at 550 South Winchester, Suite 200, San Jose, CA 94128, (408) 296-8400, or circle number 353 on the Reader Service card.

—Lafe Low

CHECKMATE

Fidelity Chessmaster 2100 is the complete Apple II chess-playing program. It runs on any Apple II and features two- and three-dimensional chessboards; it includes hundreds of classic games and an opening library of 150,000 moves. You can play Chessmaster 2100 with a mouse, keyboard, or joystick.

Once you'd have considered a program that played a decent game to be a miracle. Chessmaster 2100, on the other hand, takes a good game almost for granted. But how about a special "solve for mate" feature that lets you set up chess problems for the program to tackle? Features such as replays and hints make Chessmaster 2100 appealing to beginners, while other features will attract the experienced player. In addition to solving chess problems, Chessmaster 2100 will print your games and let you see what the computer's thinking.

This complete chess package retails for only $49.95 and even includes an informative history of chess. Contact The Software ToolWorks, 19808 Nordhoff Place, Chatsworth, CA 91311, (818) 885-9000, or trap and pin number 352 on the Reader Service card.

WRITE IT OUT

SOFTWARE

While scientists wonder how to program a computer to read a physician's scribble, a couple of psychologists and a programmer in Berkeley, California, have created software that *analyzes* handwriting. *Handwriting Analyst 3.0*, "like its human counterpart," according to Garth Michaels, the psychologist and career counselor behind the product, "aids employers in understanding and motivating employees, and reducing employee turnover." Its reports cover physical and material drives, emotional characteristics, intellectual style, personality traits, social behavior, and much more. Think what it could do for people in love.

Handwriting Analyst requires no formal training in graphology; all you need is a handwriting sample, then just answer a few simple questions. The package includes an illustrated handbook and costs only $69.95, from Ciasa, 2017 Cedar Street, Berkeley, CA 94709, (415) 644-2771. For more information, circle—very carefully—number 350 on the Reader Service card.

•• QUOTES ••

"A computer is 80–85 percent service.... I'll give you an example: What made the Apple II successful was its flexibility. All the other machines that came out at that time had fixed usage, whereas you could take the back off the Apple II and plug special circuit boards into it. And that adaptability, that flexibility, allowed special features to arise from users. Apple didn't have a lot to do with it."

●●●

*—**Regis McKenna,** president and founder of Regis McKenna Public Relations, Apple's PR representatives, quoted in* The Boston Globe, *August 6, 1989*

MOUSING AROUND

HARDWARE

A mouse may be a handy way to talk to your computer, but it takes up a lot of space on your desk. Now **RollerMouse** provides a simple solution: a mouse that doesn't move. Dan Hayes, founder and vice president of CH Products, claims that "RollerMouse provides three times the pointing accuracy and positioning speed in a fluid, effortless environment."

Hayes notes that the stationary design does more than save desktop space. "At your fingertip is the ability to move the cursor across large monitors in one smooth roll," he says, "instead of the several drags it takes with a mouse." And the self-contained RollerMouse should stay cleaner longer than the old-fashioned kind that can roll over almost anything.

The RollerMouse pictured here is the IBM PC version. Hayes promises that IIe/IIc and IIGS versions, priced at $169.95, will be plug-compatible with the Apple mouse. For more information call CH Products, 1225 Stone Drive, San Marcos, CA 92069, (619) 744-1669, or roll over number 351 on the Reader Service card.

LANGUAGE GAINS

Micol Systems (Willowdale, Ontario, Canada) has completed an update to **Micol Advanced BASIC** that gives you desktop features with easy one-word commands, including Menu, Mouse, Dialog, and Window. The update doesn't require any unusual manipulations of information; Micol uses traditional arrays.

The IIe version of Micol is winning accolades for its ten graphics modes, more than ever before available on the IIe. Modes range in resolution up to 560 by 200 pixels, rivaling the GS' 640 by 200.

The desktop comes to IIe/IIc BASIC with the new version 2.0 of **ZBASIC ProTools**, too. Produced by Ariel Publishing (Pateros, WA), ProTools is a collection of library routines you can easily call from and add to your programs. New commands include BarChart, LineGraph, PieChart, MtDesktop, DHRDesktop, GetEvent, and Button. Now a well-polished product, ProTools is the way to go for ZBASIC programmers.

Be sure to check out ***ZNews***, too, a monthly newsletter of tips and techniques published by Ross Lambert and Jay Jennings, who produce a similar newsletter for Merlin programmers as well. You can call them at (509) 923-2025.

The folks at Byte Works (Albuquerque, NM) are smiling at the reception earned by their new **ORCA/C**. This new compiler is compatible with APW C, as well as the suite of ORCA languages. It's also a lot faster than APW C and supports the Floating Point Engine math coprocessor directly. One compiler command turns on FPE code generation, thereafter providing math operations at a speed previously reserved for the most advanced assembly-language programmers. Next up for Byte Works is ORCA/BASIC, along with revisions to all the ORCA languages to support GS/OS version 5.0.

Vince Cooper has joined TML Systems (Jacksonville, FL) as Apple II product manager. Cooper, author of the ProTree bulletin-board system, is also known as AFL Vince on AppleLink Personal Edition. Industry observers say TML's hiring of an Apple II manager will stem support and update problems.

Cooper's first project will be **TML Pascal II**, which will take an object-oriented approach to design of desktop programs—point, click, and you've got a dialog box. After Pascal comes the long-awaited **TML BASIC** update. Look for more object-oriented programming, and a number of features flavored by Macintosh QuickBASIC. Cooper says the arcane VAR and VARPTR commands are going out the window in favor of something that works reliably. **—Joe Abernathy**

TWO NEW DEVELOPER ORGANIZATIONS

Frustrated with Apple's traditional channels for software development, two groups at the July Apple II Developers' Conference in Kansas City, Missouri, founded their own organizations: the Independent Apple Developers Association and the AppleWorks Programmers Association.

The Independent group, championed by Barney Stone (Stone Edge Technology, Maple Glen, PA) and Ron Lewin (Micol Systems, Willowdale, Ontario), hopes that its members will support the Apple II, encourage Apple to do the same, and speak in a united voice to Apple about developer relations. It appears to be a result of Apple's new $750 membership fee for its Apple Partners Program, which has replaced the old Apple developers program.

Bob Shofstall (Nite Owl Productions, Mission, KS) spoke for many smaller developers when he said, "That price simply makes it impossible for us to make a profit and be a developer, too." Bill Basham (Diversified Software Research, Farmington, MI) supported the independent association, but was also applauded heartily when he stressed that "we don't want an adversary relationship with Apple."

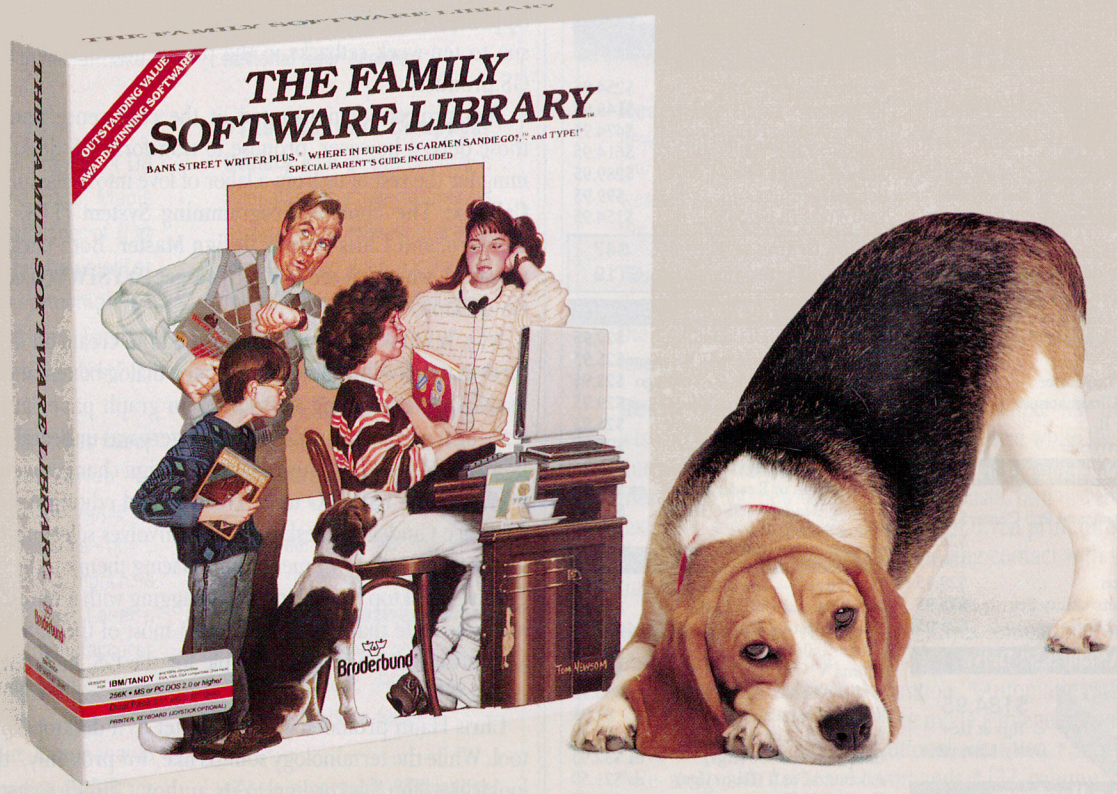
Stone said it was "time to act," adding, "I don't think we have time to wait for Apple. I want them to make money, too." While Lewin suggested that the association should try to convince Apple to separate its Apple II and Macintosh divisions again, he expressed doubts that Apple would respond. "I don't think we have a huge chance of success," he noted, "but we're drawing attention to the problem of the Apple II at Apple."

Less contentious was the founding of the AppleWorks Programmers Association. After seeing the crowds that attended the seminars on programming with TimeOut UltraMacros and writing TimeOut applications, Dave Gair, author of numerous TimeOut macros, determined that there were plenty of other macro authors out there. He decided to pull them together.

Beagle Bros (6215 Ferris Square, Suite 100, San Diego CA 92121, 800-345-1750, 619-452-5500) released details of TimeOut programming at the conference, making it possible for other experienced assembly-language programmers to write TimeOut applications. Interested programmers should call or write Beagle Bros for details about licenses and fees; if you're thinking of joining the APA, you can contact the group at 6531 Lexington Avenue, Los Angeles, CA 90038-1451, (213) 467-6922.

—Paul Statt

SORRY, SPOT.



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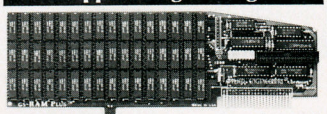

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WHAT'S NEW

TECH NOTES from: KC

The newest **GS/OS**, GS System Version 5.0, was the hottest topic among more than 100 attendees at the first Apple II Developers Conference, hosted by A2-Central in Kansas City, Missouri, this past July. While GS/OS came as no surprise (you may have seen beta versions and demonstrations at AppleFest/Boston last May), the timing of version 5's release created six- to ten-week setbacks in the production of some fantastic new GS products.

Two projects demonstrated at the conference and affected by those delays, however, promise to transform GS desktop programming for the rest of us from a labor of love into a playful enterprise—**CallBox: The Toolbox Programming System** (TPS) by So What Software, and Chris Haun's **Design Master**. Both packages contain powerful, what-you-see-is-what-you-get (WYSIWYG) editors for the GS desktop.

Why WYSIWYG? Until now, you had to create all desktop structures manually—windows, menu bars, dialog boxes, and so on. That usually meant drafting a structure on graph paper and then transcribing it into source code. The drudgery was unbearable; no matter how carefully you planned a screen, design changes were inevitable.

With the WYSIWYG tools, creating and editing Apple's Human Interface Guidelines desktop simply involves selecting desktop elements from pull-down menus and placing them on the 320- or 640-graphics desktop by clicking and dragging with a mouse. The result is source code that's compatible with most of the 65816 assemblers and advanced languages available for the GS, including C, Pascal, and BASIC.

Chris Haun promotes Design Master as a desktop "prototyping" tool. While the terminology sounds like "for pros only," the program looks like "fun," according to its author. "I sometimes will launch Design Master and just play with different desktops—their look and feel—by changing colors, object placement, and so on," Haun says. He defies anyone to try that with conventional desktop programming.

In addition to the aforementioned desktop editors, CallBox TPS also includes a WYSIWYG image editor for creating icons, cursors, and pixel elements for the 320- and 640-mode GS super-high-resolution graphics screen. And if that's not enough, CallBox contains an Applesoft BASIC interface package. Now even the novice programmer can personalize his or her desktop environments and then access them, as well as all GS Toolbox utilities, without ever invoking a compiler.

So let's all stop complaining about how few GS products are out there because it's so difficult to program the machine. Get CallBox TPS (So What Software, 10221 Slater Avenue, Suite 103, Fountain Valley, CA 92708, 714-964-4298, $99) or Design Master (Chris Haun, 4009 Pacific Coast Highway, Torrance, CA 90505; $30 for current System 4; contact the author for System 5 price), or better yet both, and create your own masterpieces.

—Bill Kennedy

Circle 85 on Reader Service Card.

APPLE BITS

•Look for some inexpensive SCSI-drive **tape-backup systems** from companies wondering how to keep busy now that Applied Engineering has cornered the internal hard-drive market.

•Barney Stone, creator of DB Master (Stone Edge, Maple Glen, PA) and publisher of ***II at Work*** claims his newsletter has "the second-highest circulation of any Apple II magazine." Who's on first?

•In June we heard that **Laser Computer** (Lake Zurich, IL) was selling 12,000 Apple II-compatible computers—don't call them clones—a month, a pace that would make Laser a bigger Apple II manufacturer than Apple Computer.

•Rumors that **Laser** would license a **Canadian BASIC** for its ROMs were premature.

•**Apple** says the II is a billion-dollar-a-year business, and that it's sold 5,000,000 Apple IIs.

•Restructuring rumors at Apple center around philosopher/geek **Jean-Louis Gassee**, perhaps soon to become peripatetic.

•Some small Apple product dealers are frustrated with some other **small dealers** who also happen to be newsletter publishers and **self-styled national user groups**.

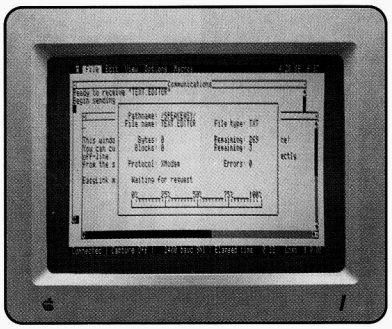
•**The Boston Computer Society**, one of the country's largest user organizations, is struggling to remain a grass-roots group with a national membership run by volunteers.

•Note to **Beagle Bros** and **Applied Engineering**: The bigger you are, the more customers expect of you.

•We hear that **AE** invited a team from one of the big **Macintosh magazines** down to Texas for a "sneak preview" of a new product. PR snafu or marketing about-face?

•Apple's **portable Macintosh** is so expensive—$7000—and heavy—16 pounds—that we can hope Apple won't dare introduce a low-cost Mac anytime soon.

•It looks like **Broderbund** (San Rafael, CA) is slowly easing the **copy protection** on its games. Some new titles will use keyword protection only: The games themselves can be copied to a hard-disk drive or RAM disk.



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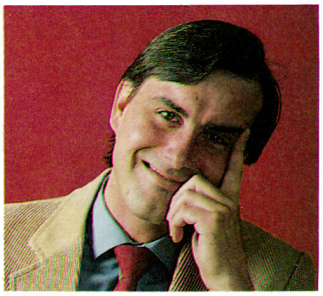

NOT FOR
TECHIES ONLY

EAST OF EDEN

By WILLIAM P. KENNEDY, Ph.D. * TECHNICAL EDITOR

As any Apple grower knows, you don't prune the branches destructively if you intend to share in the fruits.

FOR MOST ATTENDEES, MYSELF INCLUDED, the Software Developers Conference hosted by A2-Central in Kansas City in July was an experience bordering on the religious. Apple Computer sponsors similar conferences; as far as I know, though, this was the first in recent years in which the focus wasn't on the Macintosh but on the Apple II, and Apple representatives weren't revered. Instead, in several sessions and particularly in one called the "Apple II Update and Feedback Forum," beads of apprehension, not halos, encircled the brows of Apple's "evangelists."

What made them squirm? Not one developer in the audience, although listening politely and quite honestly wishing it were true, believes Apple's "knowledge navigation" hype. Actions simply speak louder than words.

The words from Apple are enthusiastic about the future of the Apple computing. And, according to one speaker, Jonathan Eder, and supported by evangelist Jonathan Fader, the Apple II is featured prominently in Apple's vision of that future. Surprised? From the third-party software developer's standpoint, Apple *has* provided system software and tools for the GS that in the words of one representative from Apple II Developer Technical Support, "are better than anything for the Mac." That's true, and that action's pretty loud.

But, as any Apple grower knows, you don't fertilize the roots, then prune the branches destructively, if you ever intend to share in the fruits. Apple marketing has clearly ignored the II. When Apple makes any marketing effort, the Apple II is consigned to elementary education; its great abilities in business and in the home are rarely mentioned. Add to that the price of an Apple II, not to mention the high cost (up to $600 a year) of joining Apple Developer programs.... Those actions are very loud, indeed.

But let's turn the tables. Anyone who thinks the II will ever be a viable alternative to low-priced MS-DOS clones in the business market or rival the Nintendo game machine.... Yet the five millionth Apple II was shipped recently; one million IIs out there are GSes. There's one overwhelming reason why its users have adopted the Apple II so enthusiastically and protected it so jealously: It delivers better than anything else the hard-to-define—but real—experience of "personal" computing. Its systems and software are some of the "friendliest" available, and the Apple II's "open architecture" graciously invites all to savor its fruits.

So what are most folks using to develop their own programs? Applesoft BASIC! Applesoft hasn't been improved significantly since shipping with the original II—yet even the most seasoned programmer will often use it. Why? There's nothing else for the Apple II that provides all the conveniences of an interpreted, easy-to-use programming environment. With Applesoft there's no messy boot process, no compiler to invoke. Your Applesoft program is resident in memory—quick and simple to compose, execute, and debug.

Applesoft is junk compared with current programming environments: It's unstructured; its editor is almost worthless; it's slow; it doesn't access the enhanced features of the IIe, IIc, or GS, and so on and so on. But programming languages, including other BASICs, that can do all those things on 8- or 16-bit Apple IIs are compiled, not interpreted. Programming in one of those languages is considerably more laborious, mostly because of the time spent compiling and linking each version of your source code. And each compiled program update, numbers of which multiply as you debug or change variables, eats up more of the small amount of precious time the casual user has available to invest in programming.

It's to the casual—read *average*—user that Apple's vision of the future is directed. Remember "a computer for the rest of us"? Apple meant the Mac, but in reality it's the Apple II. C'mon, guys, get real. It's okay to keep making tools for the commercial programmer. But if Apple doesn't create easy-to-use environments that personalize the computing experience for the majority of owners—an interpreted BASIC for the II that surpasses Applesoft, say—we'll all be left mired in the hype.□

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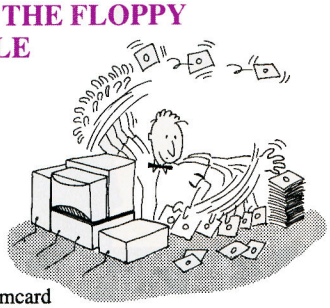

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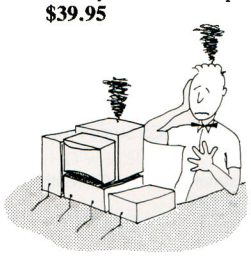

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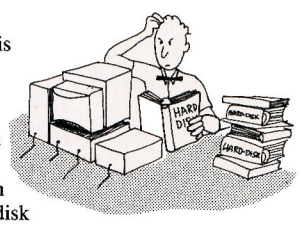

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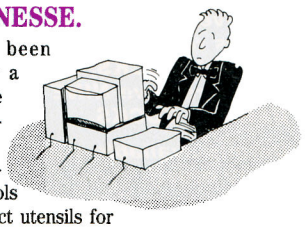

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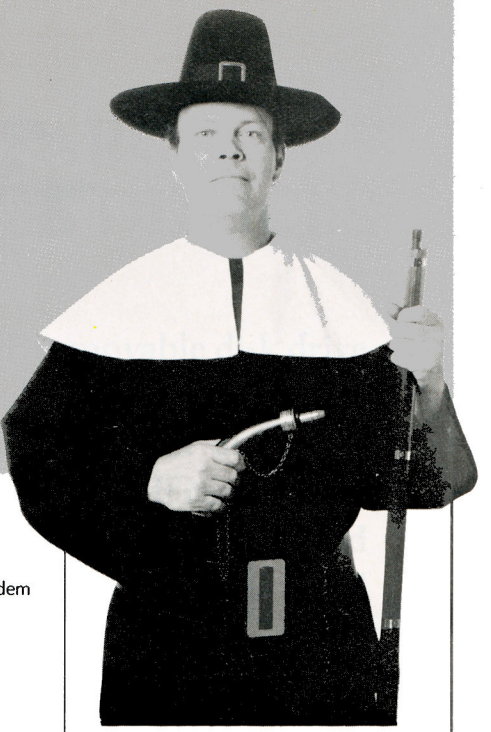

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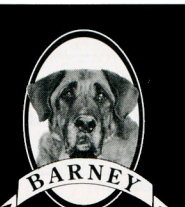

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TIMING IS EVERYTHING

Your drawing software must wait up to three milliseconds before issuing another PDL command—long enough to let the timers "settle down."

By WILLIAM P. KENNEDY, Ph.D.

JOYSTICK WOES

I'VE CREATED AN APPLESOFT PROgram for my IIGS that draws on the high-resolution graphics screen if you use a joystick. It works fine when the speed is set to "normal." But in "fast" mode, the program won't let me draw in the bottom left-hand corner. Is something wrong with my joystick or the computer, or is this a problem with the GS' speed?

Shawn Adamick
Huntsville, TX

As you might already know, Shawn, your joystick is connected via the game-I/O port to two of the four simple analog-to-digital (A/D) converters (timers) built into your Apple II. As you change the joystick's position, internal resistors (0–150 Kohm) vary the voltage (0–5 VDC) applied to those timers. ROM-based software (firmware), which Applesoft's PDL command calls, activates the timers and measures how long it takes them to deactivate. The digital measurement (0–255) returned to your program is directly proportional to the joystick's position and, thus, translated into your high-resolution graphics cursor's vertical and horizontal positions.

The timer circuitry is identical for all Apple IIs. But the firmware is very sensitive to system timing. So, my first reaction to your problem was to question whether Apple's firmware compensates correctly for the speed differences in the GS. And, indeed, it does. Actually, whenever your GS executes a PDL command, the firmware sets the GS speed to normal, obtains a timer reading, and then resets the speed back to its original value.

There's one other wrinkle, however, which I think solves your dilemma: All the game-I/O timers, including the two your joystick uses, are connected to the same "reset" line. Hence, all timers are activated for countdown, even though their periods are determined individually via the PDL(n) command (n = 0–3 for each of four timers). Your software must wait up to 3 milliseconds before issuing another PDL command to let all the timers "settle down." Otherwise, you might get false readings.

In the program listing accompanying your letter, Shawn, you invoked both PDL commands to read your joystick's vertical and horizontal positions, one right after the other, on the same program line and then did your screen-position calculations. As you observed, that's okay at the normal Apple II speed; the timers have sufficient time to settle down. But at the GS' fast speed, Applesoft executes adjacent PDL commands some three to four times faster and, apparently, fast enough to cause false readings.

So, the fix is to read PDL(0), convert its position to your high-resolution screen's coordinates, then read and convert PDL(1). (See ***Listing 1****.) The intervening calculations should take sufficient time to let the PDL timers settle down before you take another reading.*

Listing 1. PDL reading with GS.

```
Bad:    100 H = PDL(0) : V = PDL(1)
        110 REM Convert H and V to actual screen positions
        120 HPLOT(H,V)
Good:   100 H = PDL(0) : REM Convert H to actual screen position
        110 V = PDL(1) : REM Convert V to actual screen position
        120 HPLOT(H,V)
```

LAUNCH PAD

HOW CAN I LAUNCH SEVERAL applications from a single 800K disk? Rebooting my Apple IIe constantly for every application is annoying. But if I copy them to a single disk, only one will boot.

Sally Frank
Beaver, PA

As you've already discovered, Sally, when you start up your Apple II, ProDOS launches automatically the very first application or ".System" (type $FF) file it finds in the volume directory. There are several ways to launch a different file. One is already available to you: Simply exit or quit the booted application. The ProDOS "quit" utility will appear, prompting you to type the prefix and then the pathname of the next application to launch. That way, you can specify and execute any other application besides the one you launched on startup.

Agreed, that option's a pain. It usually takes longer to boot ProDOS and the initial application, quit that program, and select and launch the one you really wanted than to boot the individual applications' disks.

You could install a disk-management program, ►

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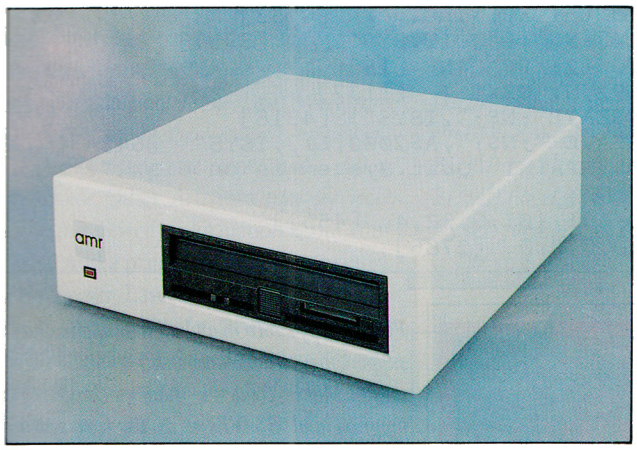

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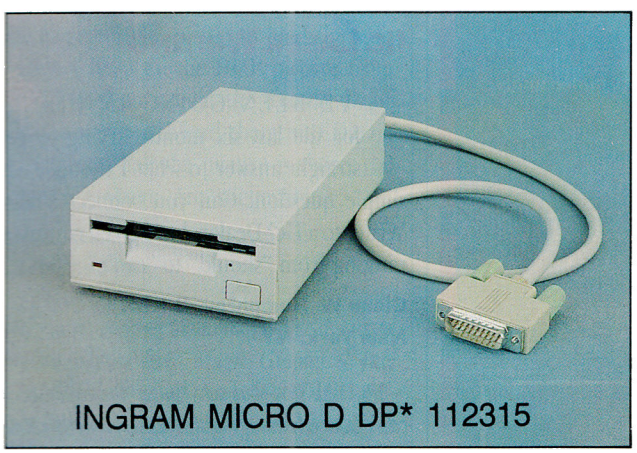

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such as ProSel by Glen Bredon (521 State Street, Princeton, NJ 08540, $40), which, on bootup, displays a menu from which you can choose to launch your selected application. GS owners use a similar product called the Finder. But such management programs also take time to boot and use valuable disk space, if you have only one drive.

Here's a simple and, I think, better solution: Type in and SAVE ***Listing 2*** *as Quit.Maker on a ProDOS BASIC disk. Insert a freshly formatted 3½-inch disk into drive 1; type the command* PREFIX,S5 *to select that disk; and RUN the Quit.Maker program.*

Listing 2. Quit.Maker.

```
10  REM  Quit.System Maker  [3420]
20  REM  by William Kennedy  [3553]
30  REM  Copyright 1989, inCider  [4733]
40 D$ =  CHR$ (4):N$ = "QUIT.SYSTEM"  [3757]
50  FOR I = 0 TO 12: READ N  [1586]
60  POKE I + 8192,N: NEXT I  [1137]
70  PRINT D$;"CREATE";N$;",TSYS"  [4318]
80  PRINT D$;"BSAVE ";N$;",A$2000,L13,TSYS"  [6434]
90  TEXT : HOME : PRINT "Quit.System is on disk.": END
      [6294]
100  DATA  32,0,191,101,6,32,4  [4552]
110  DATA  0,0,0,0,0,0  [2786]
```


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Finally, copy ProDOS and all your applications and support files to that same disk.

Quit.Maker creates a short machine-language program and BSAVEs it as the first system file (Quit.System) on your target disk. When you boot that disk, ProDOS executes Quit.System automatically, which enables the ProDOS quit program discussed above—fast and simple. All you do is boot the disk; press Return when prompted to accept the current prefix; and type the pathname of the application you choose to launch.

A final embellishment to this procedure would be to install a better quit program, such as Bird's Better Bye by Alan Bird (Beagle Bros, 6215 Ferris Square, Suite 100, San Diego, CA 92121) or Squirt by Steve Stephenson (Synesis Systems, P.O. Box 1308, Gilbert, AZ 85234). These utilties display the names of your applications automatically. You simply press a key to select and launch one.

IIc Laser Writing

I'VE BEEN GOING IN CIRCLES for the last six months trying to get a straight answer to what I thought was a simple question: Can you connect a LaserWriter to a IIc? Dealers have given me answers ranging from "should" to "can't."

Glenn W. Humphrey, O.F.M.
New York, NY

Yes, you can, but why incur the expense? You can't take advantage of the LaserWriter's excellent quality from most Apple IIc programs.

Anyway, use a standard IIc printer cable to hook up the LaserWriter's 25-pin RS-232 connector to the Apple IIc's serial port 1 (printer). Make sure the LaserWriter's DIP switches (on the back of the printer) are set for RS-232 operation, 9600 baud, Diablo 630 emulation, and XON/XOFF handshaking.

Each time you start up your IIc, you'll have to

its serial firmware to use XON/XOFF handshaking protocol for printing to the LaserWriter. If your application software allows, either select that protocol from a menu of print options or insert the sequence Control-I<space>XE *as the "startup" code sent to the printer just before your document.*

For example, to print to the LaserWriter from AppleWorks, assuming the hardware connections and DIP-switch settings are correct, add a custom printer: Choose Other Activities *from the main menu first; then* Specify information about your printer(s)*;* Add a printer*; and* Custom printer. *Name the printer* LaserWriter*; select to change* Interface cards*; and enter the control sequence noted above. (Include a space only where <space> is indicated.) Now exit to the AppleWorks main menu; load or create a document; and print it. Voilà! (We hope.)*

FINGERPRINTING

I'M HAVING PROBLEMS LOADING double-high-resolution (DHR) picture files saved with Thirdware's FingerPrint card into Broderbund's Dazzle Draw. I noticed that FingerPrint saves DHR pictures as two files, each 17 blocks long, with an endfile specification of 8192 and subtype of A=$2000. Dazzle Draw requires one binary file with endfile = 16384 and subtype = A$2000.

I've tried using FingerPrint to load the DHR pictures and even modified Michael Ko's "Dazzle Draw Picture Loader" (Hints/Techniques, August 1988, p. 91) to load the split files. Then I BSAVEd the DHR picture from A$2000,L$4000 to mimic the Dazzle Draw specifications. When I load them into Dazzle Draw, however, half the picture is there, the other half is garbage. Any suggestions?

Matt Skipton
St. Louis, MO

Matt, you're working too hard. As I've discussed in previous Clinics (see "Magic Graphics," July 1989, p. 24) double-high-resolution (DHR) pictures use both main and auxiliary-bank memory for high-resolution graphics.

The RAM assigned to DHR in your Apple occurs at locations 8192 (hex $2000) through 16383 ($3FFF) in both main and auxiliary banks. DHR pictures in Dazzle Draw format have the auxiliary-RAM image and append it to the one in the main bank followed by the main-bank one appended and saved as a single file on disk.

As you noticed, FingerPrint doesn't join these images into one file. Rather, FingerPrint BSAVEs the picture as two discrete binary files: one with the suffix .H and another with the suffix .H.A. The former is the 8K image from main memory; the latter is from auxiliary RAM.

To make them into one file you can load into Dazzle Draw, follow this simple recipe (from ProDOS BASIC):

BLOAD file.H.A,A$2000
BLOAD file.H,A$4000
BSAVE file.DHR,A$2000,L$4000

The first command loads the auxiliary image (.H.A) and the second loads the main image (.H) from disk into adjacent RAM in your Apple. The third command then saves the entire picture to disk in Dazzle Draw format. Easy enough?

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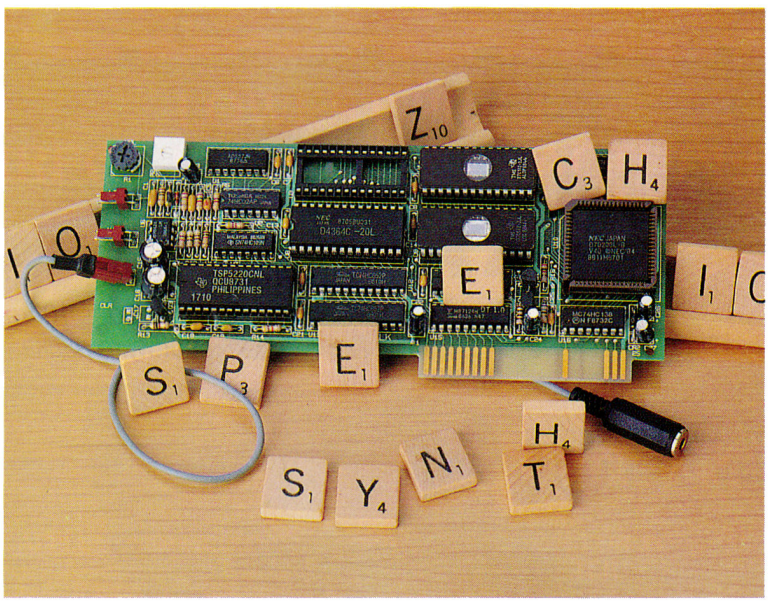

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The DoubleTalk card requires one standard internal expansion slot. It produces two kinds of speech—a built-in robotic voice that can say anything, and high-quality digitized speech with a limited vocabulary.

The idea for DoubleTalk began with the speech option for RC's Slot Buster board. DoubleTalk offers speech in a wider variety of applications, however, and of much higher quality than previously available on an Apple II. DoubleTalk is also compatible with the Slot Buster and Street Electronics' Echo speech synthesizer.

Pop the DoubleTalk card into an expansion slot, and it goes to work in the background. There are no hassles. DoubleTalk will give a voice to programs written for speech synthesis and to any noncopy-protected program that uses a text screen.

Naturally, DoubleTalk will take advantage of programs written specifically for DoubleTalk, Slot Buster, or the Echo speech synthesizer. Such programs include word processors, terminal programs, and a broad range of utilities, educational software, and games. (Street Electronics has a complete list of publishers available.)

By adding a custom printer to your AppleWorks setup, you can listen to your AppleWorks documents. You can also make the AppleWorks word processor pronounce one letter at a time for improved data entry.

The software included with DoubleTalk lets you select Spanish speech; you can create rules to generate speech in other languages, as well. DoubleTalk even has three music generators for creating special effects. Their quality is comparable only to the IIe's natural abilities, but you can team these special effects with other sound products for better results.

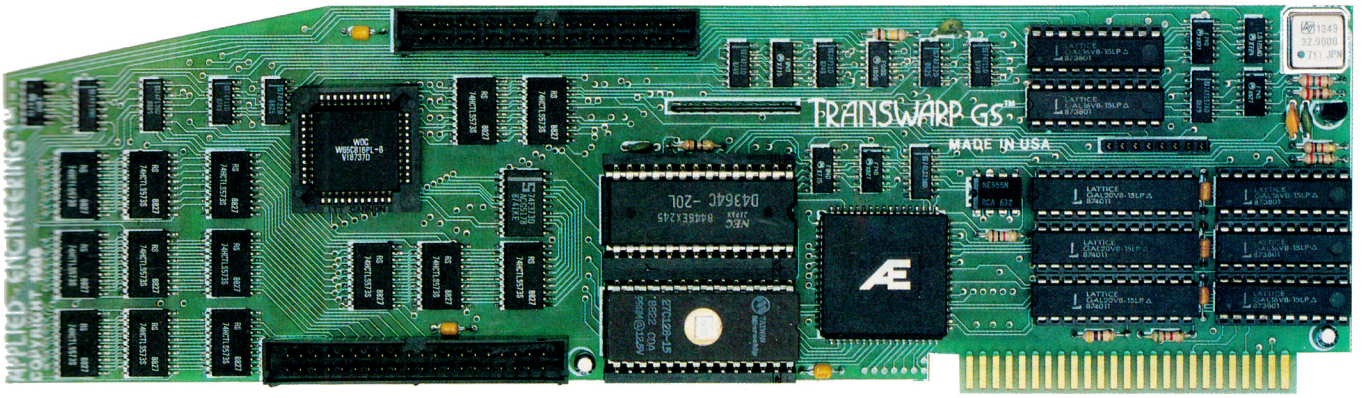
DoubleTalk sends its speech through the built-in speaker or external speakers such as the Bose Roommates (which are popular with the GS crowd), or even headphones. Less expensive monaural speakers work fine, too.

While DoubleTalk works in the background, it also lets those who are so inclined dig in from a technical standpoint. For instance, you can customize the way words are spoken. As a programmer, you can easily add speech to the software you write.

Two modes of speech are available—a text-to-speech synthesizer that can speak any word, or a digitized voice that's confined to words included in the digital sound file. The text-to-speech synthesizer uses several hundred rules to determine how the computer says something. Most common words sound fine, but there are a lot of exceptions. Besides, most people won't want to limit themselves to common words. You can, however, customize and expand DoubleTalk's abilities.

One way to achieve this is by defining rules for the pronunciation of *phonemes*—the basic parts of speech. You might use this capability to define how your II will pronounce a short ►

Photography • Frank Cordelle



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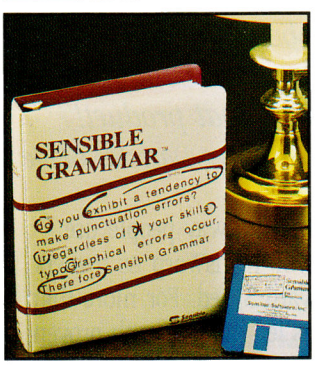
Orange Micro RamPak 4GS *(512k Exp. to 4MB w/Utilities)*	139.
Zip Technology Zip Chip 4 MHZ	***Special*** 129.
Zip Chip 8 MHZ	***Special*** 159.



Sensible Grammar by Sensible Software

A proofreading program that checks ProDos word processing files. Contains a library of over 2,000 commonly misused English phrases. Shows errors in context and suggests alternate wordings for immediate, automatic replacement. Catches many punctuation, capitalization, and other errors such as repeated words. Also hard disk and ram disk compatible; 3.5" and 5.25" disks included. ..... **$59.**

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Applied Engineering Buffer Pro 32K	89.
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Applied Ingenuity GS Juice Plus 1 MB	235.
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Thirdware Finger Print GSi Ver III *(Incl. Desktop Accessories-IIGS)*	***Special*** 89.
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Teleworks Plus *(IIGS)*	66.
Applied Engineering ReadyLink	75.
Beagle Bros. TimeOut TeleComm	45.
Point-to-Point	65.
Checkmate Technology ProTERM *(IIGS,IIe,IIc)*	95.
Compuserve Compuserve Starter Kit	24.
United Software Industries	
ASCII: Express Pro: Prodos	72.
ASCII: Express Mousetalk 1.5	69.

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Absoft AC/BASIC *(16-bit BASIC Compiler for IIGS)*	***Special*** 84.
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PS Lovers' Utility Set *(AP or IIGS)*	29.
Micol Systems	
Micol Advanced Basic *(IIGS) V3.0*	99.
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TML Speech Toolkit *(IIGS)*	49.
Zedcor ZBASIC 4.0 interactive Compiler	39.

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American Micro Research *(Micro Sci)*	
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Transdrive Half Height 360K	109.
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Vulcan 100 *(AP or IIGS)*	1369.
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Inner Drive 20 *(AP or IIGS)*	469.
Inner Drive 40 *(AP or IIGS)*	619.
Chinook CT-20 Hard Drive *(AP & IIGS)*	499.
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CT-40+ Hard Drive *(AP & IIGS)*	669.
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Laser DiskDrive *(IIGS)*	105.
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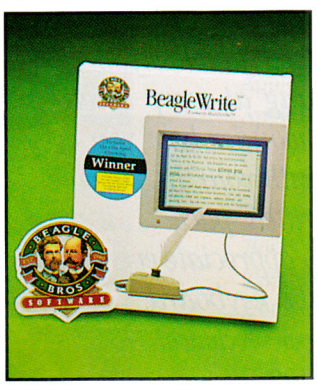

BeagleWrite by Beagle Bros.

BeagleWrite is the best word processor you can buy for your family's Apple IIe, IIc or IIc+. *BeagleWrite's* Macintosh design makes it perfect for the student in your house — fast and powerful, yet simple enough for parents to use! Get eye-catching printouts with *BeagleWrite's* 10 different fonts or design your own with the built-in font editor. The 50,000 word spelling checker finds mistakes before the teacher does. ..... **$52.**

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Beagle Bros. Beagle Draw *(IIGS)*	55.
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Zip Chip by Zip Technology

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Overnight

FingerPrint GSi ver. III by Thirdware

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Applied Engineering TimeMaster II H.O.	79.	New Turbo Mouse *(Reg. or ADB)*	109.
Conserver *(IIGS)*	99.	**Kraft** Universal 3 Button Joystick *(IIe or IIc)*	34.
Sonic Blaster *(IIGS)*	105.	**Koala Technologies**	
IBM Style Keyboard	115.	Koala Pad Plus w/Graphics Exhibitor	84.
Audio Animator *(IIGS)*	185.	**Kurta** IS ADB Tablet w/stylus *(IIGS)*	299.
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Kensington Mouse Pocket *(Reg. or ADB)*	8.	ImageWriter Ribbon-Color	4.
Mouseway *(Mousepad)*	8.	ImageWriter Ribbon-Black six pack	20.
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or Imagewriter I or II Cover	9.	ImageWriter Rainbow Pk. (6 Colors)	20.
Apple Security System	34.	**Street Electronics** Echo IIB *(AP & IIGS)*	109.
Printer Muffler 80	43.	Echo IIC *(IIc & IIc+)*	129.
Printer Muffler 132	58.		

BeagleWrite GS by Beagle Bros.

BeagleWrite GS, the latest in word processor technology, is the closest thing to Mac software you can run on your IIgs. Unleash your creativity with built-in graphics capabilities, or add pictures from any major IIgs graphics program. What you see is exactly what comes out on your printer — Epson, ImageWriter, LaserWriter. Complete with spelling checker and 470,000 word thesaurus makes it the artistic tool for the serious writer. ..... **$65.**

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Applied Engineering		Pro Modem 2400G *(Non Expandable)*	179.
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(Int II+, IIe or IIGS)	135.	Pro Modem 1200A *(Single Card)*	119.
DataLink Modem 2400B		**Supra Corporation**	
(Int II+, IIe or IIGS)	183.	Supra Modem 2400 *(Hayes Compatible)*	129.
Hayes Hayes 1200 Baud Smartmodem	295.	**U.S. Robotics** U.S. Robotics Courier 1200	199.
Hayes 2400 Baud Smartmodem	429.	U.S. Robotics Courier 2400	335.
Practical Peripherals		U.S. Robotics Courier 2400E	379.
Practical Modem 1200 SA Mini	77.	U.S. Robotics Courier HST 9600	689.

Thunderscan by Thunderware

Thunderscan transforms any ImageWriter printer (except the LQ) into an inexpensive, high-quality scanner. All you need is a IIe, IIc, IIc+ or IIgs to turn any printed image into a 16 gray shade, high-resolution Apple II graphic - the highest resolution of any Apple II scanner. And ImageWriter and LaserWriter printer drivers allow for actual size. Now *Thunderscan* offers Apple IIgs specific software. .. **$159.**

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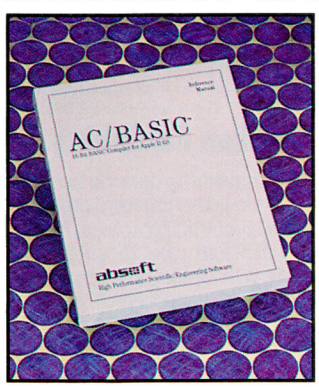
Sony 3.5" DS/DD *(box of 10)*	15.	C. Itoh 3.5" DS/DD Color Disks *(box of 10)*	25.

PRINTERS

Brother M-1109AP *(ImageWriter Comp.)*	249.	KXP-1191I/M2 *(240 cps)* NLQ Mode	269.
Laser Computer, Inc.		KXP-1092I *(240 cps)* NLQ Mode	349.
Laser 190A w/Serial Interface	239.	**Seikosha**	
Panasonic		Seikosha SP 1000	
KXP-1180I/M2 *(192 cps)* NLQ Mode	199.	*(Imagewriter Compatible)*	235.



AC/Basic by Absoft

The ***AC/Basic*** compiler includes a complete developing environment designed for both novice and advanced programmers. Specifically for the IIgs, it is the only compiler to support direct calls (menu, window, ect) to the toolbox. Included are an editor, powerful extensions, graphics and structured features along with over 100 program examples. Stand-alone applications can be easily created without the redistribution runtime fees. .... **$84.**

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AT A GLANCE

The Perfect Career (September 1989, p. 41, by Carol Holzberg), Mindscape, 3444 Dundee Road, Northbrook, IL 60062, (800) 221-9884, (800) 942-7315 (IL); 128K Apple IIe, IIc, IIGS; $39.95
Rating: ❖ ❖ ❖ ❖

The Perfect Career offers personalized assistance in your search for a new occupation—asking questions, analyzing answers, and providing vocational guidance. The program functions as a desktop counselor, helping determine career options best suited to your individual interests and talents. It can advise students with little or no work experience, or guide skilled adults as they explore career changes or re-enter the job market.

Working through The Perfect Career is merely the first step in making employment decisions, though. The software is set up to help you identify careers of interest, offer employment suggestions, and develop a plan for reaching your career goal.

Used in conjunction with the supplemental guidance exercises in the manual, you'll be able to conduct an informed career search.

The Perfect Career won't offer you blind advice. It produces a list of promising career goals by analyzing the interest and ability ratings you obtain through the program's inventory modules.

Certificates and More! (October 1989, p. 40, by Carol Holzberg), Mindscape Inc., 3444 Dundee Road, Northbrook, IL 60062, (312) 480-7667; 128K Apple IIe, IIc, IIGS; printer required; $49.95
Rating: ❖ ❖ ❖ ❖

Just when you thought the Apple II market had an adequate number of low-end desktop publishers, along comes another one that's going to knock your socks off.

This program features all the goodies you'd expect to find in an entry-level design and printing program, plus many

Continued

vowel, for instance, in a given circumstance. You can create general rules, but the diversity of our language demands that most rules be tightly focused, correcting specific words or groups of words that share the same root or pronunciation principle.

You can also define word exceptions. *Phoneme*, for example, will be pronounced *funeem*, unless you define an exception that adds a pause between syllables. Word exceptions are also useful for proper nouns and specialized vocabularies, such as bookkeeping, programming, or teaching terms. One significant limitation with word exceptions is that the DoubleTalk software can't take advantage of extended memory, so you'll have to keep exception lists concise.

Adding speech to programs you've written is also quite simple. DoubleTalk looks like a printer to the software, so your Apple handles speech output just as though it's printing a document. To produce speech, you'd just turn on the "printer" (actually the DoubleTalk card), print the desired text string, then turn off the printer.

You can write one subroutine to use throughout an entire program. By adding a flag that indicates where you want speech, you can write "smart" programs that echo all screen prompts to the speech subroutine, then give voice to the prompt string only if the flag indicates they should do so.

Any programming language that allows direct access to slots and supports a line printer or other communications device can produce speech. In one hour of puttering, I got a speech procedure working in Applesoft BASIC, Micol Advanced BASIC, TML BASIC, and ORCA Pascal. My experiment with AC/BASIC failed, but the testing wasn't rigorous enough to conclude that you can't produce speech with that language.

RC Systems supports programmers by publishing technical notes addressing specific tasks that have proven troublesome in the field. This idea—borrowed from Apple Developer Technical Services—is one from which a lot of companies could benefit.

DoubleTalk is a solid piece of work. Some features could use improvement, however, and there are a couple of operational problems. Although the manual claims you can install DoubleTalk in any slot, I found it reliable only in slot 1. (RC Systems disputes this finding, which I duplicated in two machines.)

Also, if you're using an accelerator, you'll have to turn it off to use DoubleTalk's digital sampling speech mode. RC Systems points out that timing dependencies in the software, not the DoubleTalk card, require this, so it also affects Slot Buster and Echo speech.

It would be nice if the utility disk included more pronunciation rules and word definitions, so that speech might be more realistic without a lot of extra work. Also, the digitized speech would be more useful with a broader dictionary of sampled words. (There are 206 male-spoken words, 35 female-spoken words.)

Individually, these are small complaints. But ultimately, attention to this kind of detail defines brilliance. DoubleTalk includes a surprising number of features and capabilities—just enough to make you yearn for that ultimate elegance.

This system is a curious mixture of the future and the past. It certainly represents an advance in the marketplace and a challenge to its competition. While listening to its output, however, you expect to hear at any moment, "Hello, I'm the Texas Instruments home computer." Yes, this is the same main speech interpreter that the old TI 99-4A used. So, don't go into this expecting to make your Apple sound like Commander Data on the Starship Enterprise. (In all fairness, both Echo and DoubleTalk use this speech chip because Texas Instruments still owns the most sophisticated technology available.)

Even with the state of the art, though, you'd need to digitally sample the entirety of human speech to produce precisely human speech output from a computer. This is ostensibly possible, but highly unlikely. That's what DoubleTalk does—strike a good balance between the possible and the realistic.

DoubleTalk speech is of good quality—better than that of Echo and Slot Buster, the other two speech cards currently available. DoubleTalk is more efficient than Echo (its primary voice is built into the card, so it doesn't require computer memory and disk storage), and it's compatible with more software because of its relation to Slot Buster.

DoubleTalk is a very good value. It's easy to set up, easy to use, and compatible with a much wider range of software than I expected. RC Systems is also generous with technical support. Best of all, DoubleTalk foreshadows an exciting future for the way in which we interact with our computers.

Joe Abernathy
Houston, TX

VIRUS!

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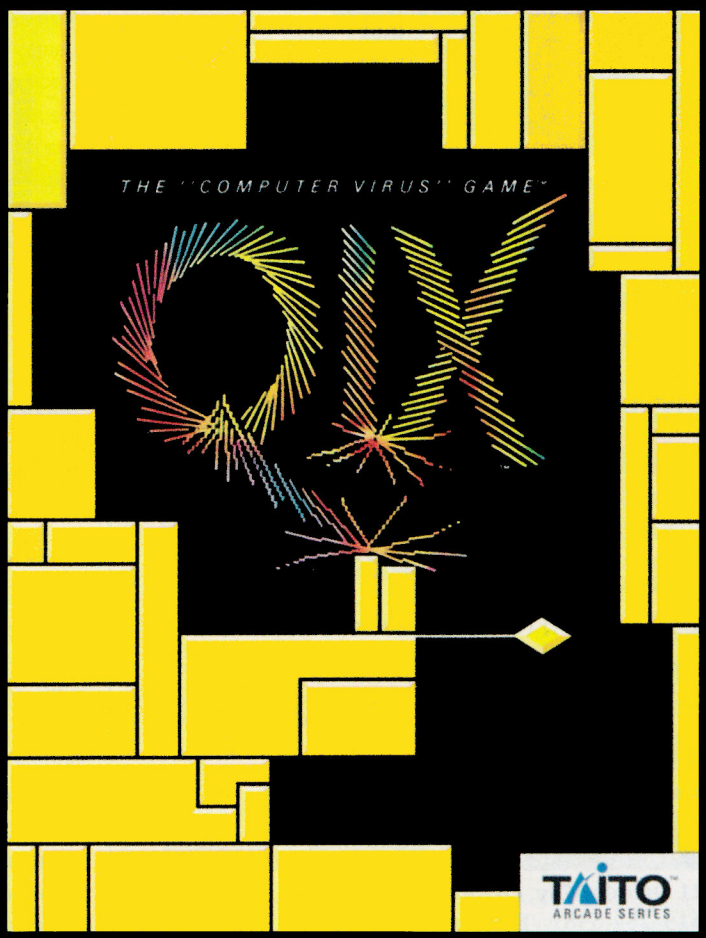

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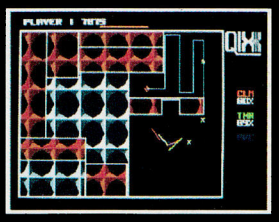
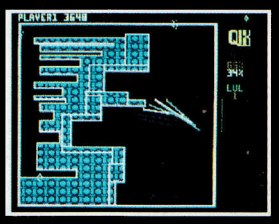
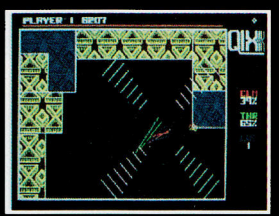


Actual Atari screen.



Actual C/64 screen.



Actual Amiga screen.

Circle 110 on Reader Service Card.

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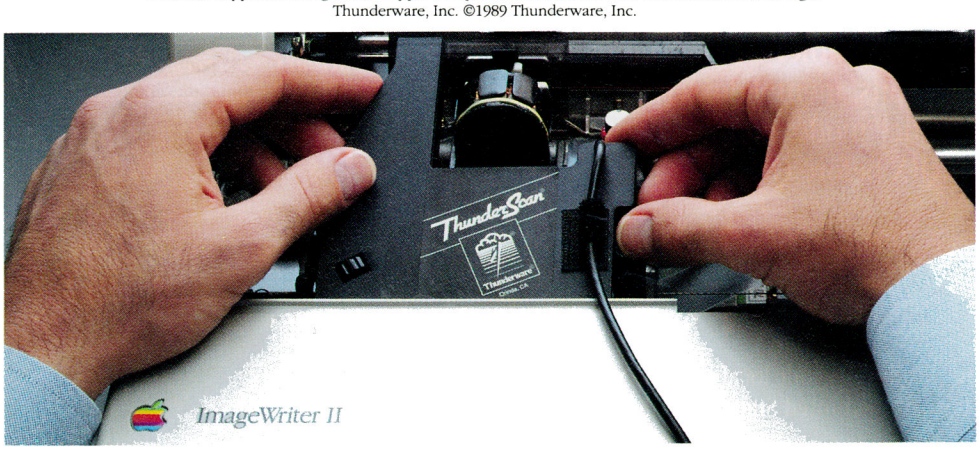

TIMEOUT SPREADTOOLS

BEAGLE BROS, INC.,
6215 Ferris Street, San Diego, CA 92121,
(619) 452-5500

Spreadsheet enhancements for AppleWorks; 128K Apple IIe, IIc, IIGS; AppleWorks 2.0 or later; $59.95

Rating: ❖ ❖ ❖ ❖ ❖

If you're like most AppleWorks users, you've probably come up with a "wish list" of features you'd like to see in the package. Well, thinking along those same lines, Beagle Bros has developed a nifty set of routines that run within the AppleWorks spreadsheet. These enhancements are just what their name implies—tools to make your system more productive.

You begin by adding SpreadTools to your AppleWorks startup disk, so it's always available by pressing Open apple-Escape. When you hit that combination, a menu overlays whatever you're working on and displays the following options: Analyzer, Block Copy, CellLink, Data Converter, Formula to Value, Quick Columns, Rows and Columns, and Utilities.

You can load any or all of these SpreadTool applications into memory to eliminate disk-access time. You'll use only about 20K of working memory if you load them all at once. Let's look at each in more detail.

If you've ever tried to find a circular reference in a large worksheet, you know how difficult it can be. The Analyzer, with its six functions, will seek out and display errors,

Circle 68 on Reader Service Card.

At a Glance

(continued)

more. It offers 20 different border styles suitable for framing awards, notices, greeting cards, invitations, placemats, bulletins, and stationery. You'll also find 200 pieces of clip art organized into 19 categories befitting a variety of home, school, and fund-raising activities. Themes include People, Holidays, Seasons, Banners, Animals, Medals/Badges, and History/Science.

The program's 15 fonts range in size from 10 to 24 points. You can also stylize your text to print in standard, outline, or boldface. A well-written user's manual displays each border style, clip-art graphic, and font for easy reference.

Certificates and More! offers greater flexibility than similar programs when it comes to positioning text and graphics on screen. You can place design elements exactly where you want them. The program doesn't restrict you to preset locations.

TimeOut MacroTools & MacroTools II (October 1989, p. 100, by Robert Tighe), Beagle Bros, 6215 Ferris Square, Suite 100, San Diego, CA 92121, (619) 452-5500; 128K Apple IIe, IIc, IIGS; $25 each

Rating: ❖ ❖ ❖

Beagle Bros has done more than anybody else to bring greater flexibility and power to AppleWorks. The company's UltraMacros system includes many of the features of a programming language in that you can add your own extensions and subroutines to AppleWorks.

Each set of the new TimeOut MacroTools is a mixed bag, serving a wide variety of functions. You'll no doubt find something of value in each, probably enough to justify the cost of both packages. Each set will also contain a number of things that may serve as examples for macros you'll write later yourself.

One of the big advantages of these disks is complete accessibility, so that you can transfer, change, and test applications and use the ideas in your own macros and programs. □

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including forward and circular references, cells that refer to an empty cell, and so on.

The manual's description of this portion of SpreadTools is somewhat confusing. You'll read on page 20 that "Unreferenced values are cells that contain a number without a formula that are not referenced by any other formulas in the spreadsheet. These are not necessarily errors, but may indicate that a value was accidentally left out of another cell's formula."

This error—a cell referring to another cell without a value—appears whenever you refer to a cell containing just a number. I don't see the point of this. Other portions of the Analyzer, especially those that indicate forward references and the number of times you need to recalculate, are much more useful.

SpreadTools will also create a list of cells you're using and any cells to which they refer, as well as a report of each cell in use and what it contains. In addition, the program lets you select one cell and then highlights every other cell to which the original refers—all to help you track down any mistakes that might have crept into your worksheet.

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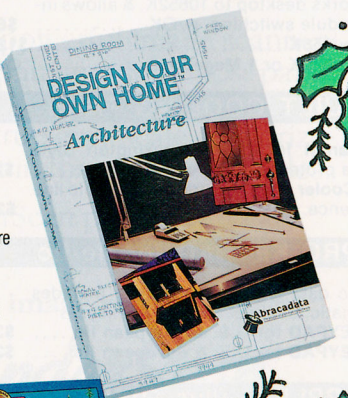

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SpreadTools' Bird's Eye View creates a graphics display of 76 columns of your worksheet, with codes in cell locations indicating what those cells contain. An *at* sign (@) means the cell contains a formula; the pound sign (#) indicates numerical values; a quotation mark represents labels; and a dash signifies repeated labels. These codes make it easy to see just what's where on your grid.

If you work with lengthy formulas, you know they're often bigger than the column widths you've set to display those formulas' results. SpreadTools provides a function that widens each column automatically, so that you can see complete formulas when you press Open apple-Z. With a couple of keystrokes, the program restores each column width instantly to your original setting.

BLOCK COPY & LINKED SHEETS

AppleWorks provides two alternatives for moving your data: You can either copy a section of your spreadsheet and move it to another part, or copy it first to the clipboard and then to another spreadsheet. SpreadTools takes the process a step further in two ways.

First, AppleWorks lets you copy only part or all of any row or column. SpreadTools lets you copy whole blocks of user-defined cells from a spreadsheet to the clipboard. When you insert that block into another worksheet, you can then append the data to the existing material. This lets you take information from one worksheet, copy it to the clipboard, and then add or subtract those data to the numbers already in another worksheet.

SpreadTools' easy-to-use Block Copy is the foundation for CelLink, the function I feel is this program's most powerful one—extracting data automatically from multiple worksheets and combining the information in another grid. If you keep up with advancements in the IBM world, you know that the soon-to-be-released versions 2.2 and 3.0 of Lotus 1-2-3 will be able to link worksheets. SpreadTools does that already for your Apple II.

The process is straightforward. On the worksheet to which you'd like to import data, you indicate in a single column the origin of the information. For example, let's say you're going to extract data from two worksheets—cells B12 and D16 in a worksheet called Qtr3, and cells A1, C2, and H44 in a worksheet called Qtr4. You'd list the cells and worksheet references, and type *Links* at the top and *End* at the bottom of the list as follows:

Circle 286 on Reader Service Card.

Links
312 (Qtr3)
D16 (Qtr3)
41 (Qtr4)
C2 (Qtr4)
H44 (Qtr4)
End

While the CelLink portion of SpreadTools comes configured to work only with active spreadsheets on your desktop, you can also have it pull information from files on a data disk. Owners of TimeOut PowerPack's Triple Desktop can speed up the process, as accessing data from another desktop is faster than from a disk. Within this section you can also instruct the program to recalculate more than once (some spreadsheets need to) and to send calculated results to another worksheet.

One word of advice: When you decide to link files, first spend some time designing on paper exactly what you want to do. SpreadTools makes the process easy, but each reference must be precise to give you the correct result.

SpreadTools' Data Converter lets you send information from a spreadsheet to a database, a database to a spreadsheet, or a word processor to a spreadsheet. It changes the data format automatically, so AppleWorks' other modules will accept the information.

SpreadTools lets you change the width of all or just a section of columns in a spreadsheet quickly. You can even design a set of column widths in a pattern for a particular worksheet.

Finally, SpreadTools lets you switch the information in a row to a column or from a column to a row (by up to 127 cells at one time) quickly and easily. As you'd expect when you make such a change, all formulas convert to values.

SpreadTools comes on nonprotected 5¼- and 3½-inch disks and is designed to work with AppleWorks version 2.0 or later. Its 65-page indexed manual is linked to sample data on disk to help you get started. TimeOut SpreadTools includes a variety of helpful functions. If you use AppleWorks, you need SpreadTools—and you'll use it.

Gregory Glau
Prescott, AZ

MULTIPLE CHOICES

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Test generator; 128K Apple IIs; printer required; $59.95

Rating: ❖ ❖ ❖

I sincerely believe that most teachers enjoy teaching. What they hate is all the paperwork that goes with the job. Multiple Choices can alleviate some of that tedium and free up valuable time by providing a quick and easy way to create puzzles, games, and quizzes for any age or grade level.

The program lets you construct nine different types of word activities. Your choices include word search, scramble, jumble, acrostic and double acrostic, as well as true/false, fill-in-the-blank, multiple-choice, and matching scenarios. The subject matter can come from any discipline and any grade level, provided your questions fit into one of the above formats.

Creating a test with Multiple Choices is ►

Continued on p. 98

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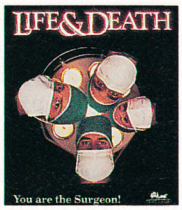

Life & Death is the world's first interactive medical movie. All of the action takes place at Toolworks General, a bustling medical center where you will become a powerful surgeon. In theoperating room, your skill with the scalpel while monitoring on-screen EKG, pulse, blood pressure and other vital signs will determine whether your patient goes to recovery ...or the morgue.

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Great Western Shoot-Out (IIGS)

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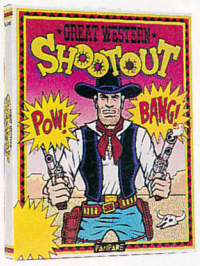

Great Western Shoot-Out is a "rootin-tootin," fun and enjoyable arcade game with action similar to a carnival shooting gallery. The program consists of 10 different screens of a western genre. The player(s) assumes the role of the bounty hunter hired by the sheriff to rid the town of a gang of outlaws that appear at the railroad, bank, hotel, saloon, et al.
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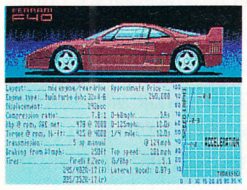

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Golf simulation;
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Rating: ❖ ❖ ❖ ❖

Gnarly Golf is well named—although Bizarre Golf, Insane Golf, or Far-Out Golf would have also described it well. This game is 18 holes' worth of the most outrageous miniature golf you could hope to come across.

Before playing a round of Gnarly Golf, you have to choose the color of your ball. You can pick just about any hue you like, because you get to adjust the amount of red, green, and blue. Be sure to select something bright, though—it'll be much easier to see. (Avoid bright green or bright orange; you'll have an easier time in the pool hall and the dock, respectively. You'll see what I mean.)

Each hole in Gnarly Golf is like a work of art. The prison cell, the dock, the car wash, the café, the tavern—each is spectacularly drawn and animated. The background music, on the other hand, is the same for every hole and can grow a bit repetitive, but you can always turn it off.

For most holes, the toughest part is just *finding* the hole. In the prison cell, for instance, you'd never think that hole would be.... Ha! I bet you thought I was going to give it away. No such luck. You'll have to go exploring in Gnarly Golf yourself. And trust me, it will take some exploring just to figure out where you're supposed to go. Fortunately, each hole is preceded by a hint, and the manual contains additional clues.

I really like the way you hit the ball. First you aim your shot with the cursor. The first click shows a direction indicator, and starts the power indicator swinging back. You can wait for it to come all the way back for a full power swing (which will be pretty powerful, so experiment first), or use your second click to adjust the power. After the second click, the indicator swings back and your third click determines whether you hit the ball straight, or spin it to the left or right.

The 18 holes of Gnarly Golf—Kaleidoscope, Pool Hall, In Prison, The Dock, Skyscraper, Eye, The Maze, Car Wash, The Desert, The Café, The Tavern, The Bathroom, The Hospital, Rumors, Space, Couch Potato, and Toyland—are unlike any miniature golf links anywhere else. My explorations took me as far as The Bathroom, and believe me, I was mighty proud to have gotten that far.

As I said, Gnarly Golf is definitely gnarly. If you're comparing, Zany Golf (from Electronic Arts) is zany, and Gnarly Golf is gnarly. You want me to tell you which one to buy? I'd get both. You'll have great fun exploring the surreal world of Gnarly Golf. It can be frustrating at times, but it'll be a blast.

Lafe Low
***inCider* staff**

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Rating: ❖ ❖ ❖ ❖ ❖

Nike and Converse have sold a lot of sneakers thanks to Michael Jordan, Larry Bird, and Magic Johnson. So it's not surprising that software companies have jumped on the idea of teaming up with celebrity jocks to sell sports simulations. Sometimes, though, you get the feeling the athletes have just stamped their names on the packages. Not Jack Nicklaus. After you've played a few rounds of Jack Nicklaus' Greatest 18 Holes of Major Championship Golf, you'll have no doubt that the Golden Bear himself was very much involved in designing this game.

If you've played Mean 18 (also from Accolade), you'll notice its similarity to Jack Nicklaus' Greatest 18. Mean 18 set the standard for computer golf games, so it only makes sense that Accolade would keep that look and feel while adding features.

One of the things I like best about the package is that you feel as though you're playing Jack Nicklaus' golf game. Between holes a digitized photo of Jack appears, accompanied by a description of the hole you're about to play. Okay, it's a little corny, but I like it.

If you can't find anyone with whom to play Jack Nicklaus' Greatest 18, you can choose from nine computer players (five male and four female). One of them is Jack himself. Jack plays as you'd expect—flawlessly. The other eight vary in skill.

You can also choose between stroke play and skins play. Stroke is the traditional approach to golf—the lowest score for 18 holes. Skins play is a money game—you attempt to win each hole, which has a dollar amount attached to it. Usually the second six are assigned a higher figure than the first six; and the third six even more. I made the mistake of playing a skins match against the electronic Jack Nicklaus himself. As you've probably guessed, I didn't walk away from my GS a rich man.

The only drawback to Jack Nicklaus' Greatest 18—as with just about every GS product—is that patience is a virtue. The screen redraws slowly and you have to wait longer than you'd like between holes.

Sorry, Mean 18—there's a new standard in computer golf games. Jack Nicklaus' Greatest 18 Holes of Major Championship Golf is not only the best golf game for the Apple II, it's the best sports game, period.

Dan Muse
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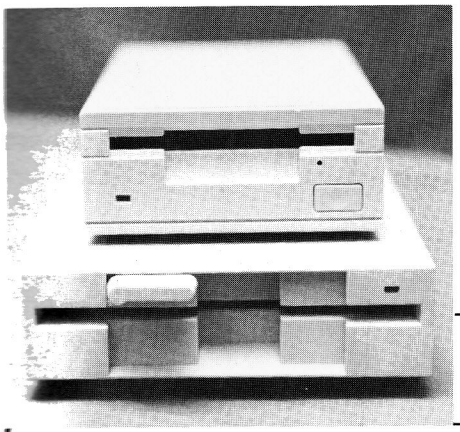

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768K Apple IIGS, $49.95;
64K Apple IIe/IIc, $39.95

Rating: ❖ ❖ ❖ ❖

Tom Clancy's heralded tale of adventure beneath the high seas—*The Hunt for Red October*—has come to life on the Apple II. The game is fascinating to play, but make no mistake—this is animated strategy, not action-adventure.

As Captain First Rank Marko Ramius, a top submarine captain in the Soviet navy's Red Banner Fleet, you've been entrusted with the first field test of a silent means of propulsion that could change the balance of naval power. You take the job, but with a hidden agenda of your own—defection to the West.

Three fleets—Soviet, U.S., and NATO—are looking for you; seabed sensors and other subs are listening for you; and swarms of jets, planes, and helicopters are searching for you from the skies. Your enemies will use torpedoes, rockets, depth charges, and mine fields. The Soviets know you're defecting, so they'll shoot to kill. The Americans know of your plans, but if they come across you while you're engaging Soviet forces, they may also attack for fear you're a rogue captain capable of sparking nuclear war. Your task is to evade the massed navies of the world and find a way to meet secretly with the Americans. The ace you're holding is Red October—a sub equipped with a revolutionary caterpillar drive for silent operation. Using precise navigation, listening devices of your own, decoys, and plain guile, you can succeed.

Track your progress on either a global map or a contour map showing the oceanographic features in your vicinity. The contour map of the ocean's bottom lets you hug the ground to spoil the detection efforts of surface vessels.

Using your periscope, you can observe surface vessels and match them to a recognition chart. With your hydrophonic gear, you can match the engine signature of nearby vessels to the library in your computers. An Electronic Surveillance Monitor lets you intercept messages between ships to help anticipate fleet movements. Perhaps the biggest challenge, however, is plotting a successful course—and for this, you rely on your wits.

The Hunt for Red October is one of the finest simulations in the marketplace. Your control is complete; the tension is real. The drawback is that you're bound to expect this to be Clancy's novel on computer, and it isn't. Read the book, and think about it as you're charting a course across the Atlantic.□

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Houston, TX

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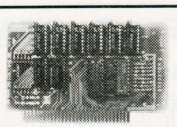

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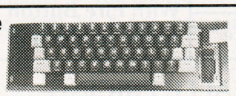

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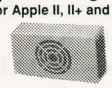

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By RICH JAROSLOVSKY

READY SET BOOT!

You don't have to be a football hero to get along with Apple II gridiron-action games. Get off the sidelines and score! Here's a play-by-play rundown of the hottest pigskin picks.

JUST ABOUT EVERY BOY GROWING UP IN THE 1950s or '60s probably had one of those electric football games at one time or another. You remember—little plastic players on a metal field, and a "football" the size and consistency of a lint ball. At the flick of a switch, the board would start vibrating, sending the players scurrying in all directions. Occasionally, more by accident than design, the vibrations would send the ball carrier over the goal line for a touchdown. Then a catapult-legged player would try to put the lint ball over the goalposts for the point-after.

Football gaming has certainly come a long way since then. Or has it? These days, the action takes place on a computer screen rather than a vibrating board. And the games range from a text-only program that puts you on the sidelines as you coach a famous team from the past, to a graphics-laden package that simulates a bunch of neighborhood kids playing in the middle of the street.

Here's a look at a handful of Apple II football games. Next Sunday, instead of grabbing a cold one and kicking back in front of the TV set, kick back in front of the computer screen and see whether you might have what it takes to be the electronic Dan Marino—or Don Shula.

FIRST AND TEN

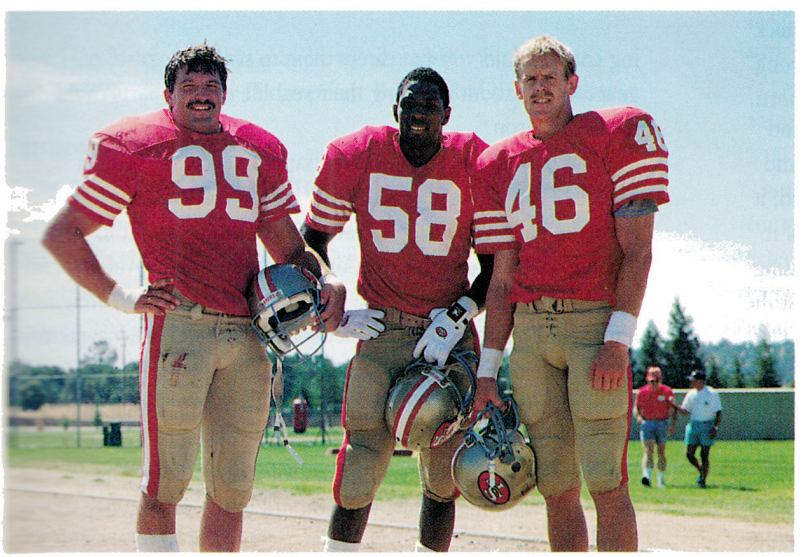
Long expected and eagerly anticipated, Electronic Arts' **John Madden Football** may be one of the most elaborate games ever devised for the 64K Apple II. It even starts promisingly: You hear the noise of someone approaching—and then John Madden himself bursts through the title screen, just like a Miller Lite commercial. From there you have the choice of either playing a quick game, with more limited options and fewer bells and whistles, or going the full nine yards and tapping into the program's true power.

Electronic coaches will find a vast array of plays to call, plus the option of designing your own. You also control such important variables as the weather—deciding whether it will be rainy, cold and snowy, or nice. (Though the weather conditions do affect the play of the game, they don't show on screen.)

Depending on how you want to play, Madden Football can be either a strategy/arcade or a strategy-only game. You choose your play or defensive formation; your opponent (human or computer) does the same; and the players dig in at the line of scrimmage. At this point the choice is yours. If you touch the joystick, you take control of the quarterback, and the play's outcome will depend in part on how skillfully you maneuver your men and execute the play. If you leave the joystick alone, though, the computer itself will execute the play, putting you in the position of pacing the sidelines until you see how your brilliant strategy turns out. GS owners, take note: Madden Football doesn't support the mouse (or, for that matter, the keyboard); you choose all options and execute plays via joystick.

Purists may be disappointed that the teams supplied with the game contain not the names of real players, but jokey variations. That mad-dog linebacker is named "Buttcuss," for instance; a quarterback with the characteristics of Madden's old Oakland Raiders signal caller, Darryl Lamonica, is "Mad Bomber."

On the other hand, some of the supplied teams do reflect the characteristics of real teams, including several Madden coached in his heyday, and there's an option to create your own teams, on which you're free to use real players. Electronic Arts also promises NFL season disks with real teams' and players' statistics. A word about EA's copy-protection scheme: Each copy of Madden Football comes with a cardboard wheel. At the start of each session, the game requires you to align the "section," "box," and "seat" designations a certain way, yielding a number you must then type in to let the program proceed.



Above, Super Bowl champions and Apple II owners Tom Holmoe, Mike Walter, and Keena Turner of the San Francisco 49ers like a good computer game as much as the next guy.

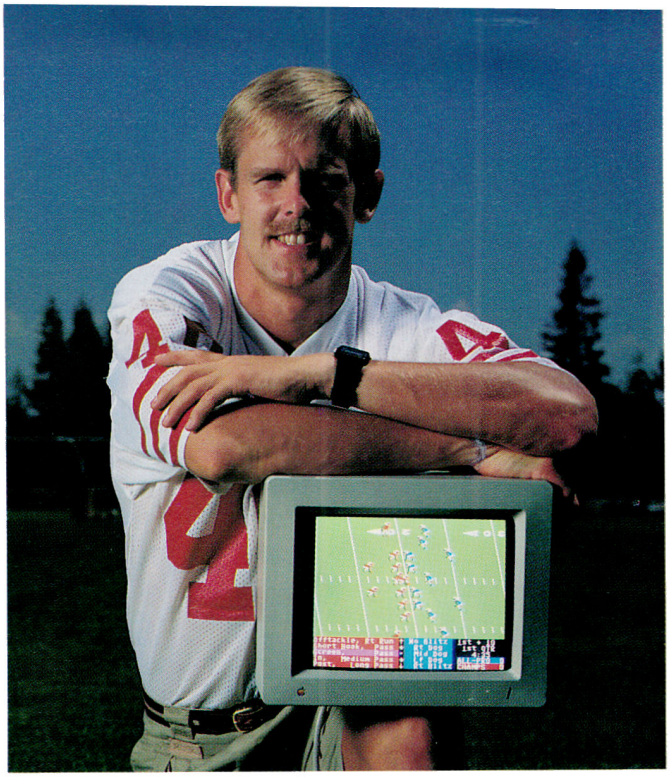
Left, Walter, Turner, and Holmoe fresh (or not-so-fresh) off the practice field at the Niners' training camp in Rocklin, California. When it comes to Apple IIs, these guys aren't just fun and games. To learn how they use their systems and software, see "49ers Team Up with the IIGs," p. 56.

Photography • Mark Johann

READY SET BOOT!

Some users find this scheme a terrific pain. Nonetheless, it's far less of a hassle than other programs that demand that you type in, say, the eighth word of the 42nd line of page 19 of the manual. And Madden Football does then let you make backup copies for archival purposes. On balance, it seems like a fair compromise between the needs of the user and the protection of the publisher.

All in all, Madden Football is well worth the long wait. That Electronic Arts has managed to cram as much as it has into the game is truly astonishing. But because this is a game for the lowest-common-denominator Apple II, users with more powerful Apples, especially the GS, can't help but dream about how amazing the game would have been had EA raised its sights a little higher.



Above, Accolade's 4th & Inches offers pure football fun on your GS—jazzy music and lively animation as players scramble, rush, pass, and just about anything else you can think of.

Top right, Street Sports Football from Epyx is a rough-and-tumble pickup game played on the roadway or in a vacant lot.

Bottom right, a unique perspective: Gamestar's GFL Championship Football lets you see the game through the eyes of a player on the field (here, a receiver).

INCOMPLETE PASS?

Accolade's **4th & Inches** is great fun as far as it goes, though some people are going to wish it went further.

As befits a GS-specific game, 4th & Inches shines in the graphics-and-sound department. Jazzy music greets you on startup; digitized crowd noises accompany plays; the players are well drawn and move naturalistically. Whenever a player scores a touchdown, he does a little version of the Ickey Shuffle, while the nearest defender jumps up and down in vigorous frustration.

Like Hardball, Accolade's baseball simulation, 4th & Inches doesn't use real players. Rather, each of the two teams that come with the game is comprised of made-up players with cute names ("Willie Passe," "Jerry Attric").

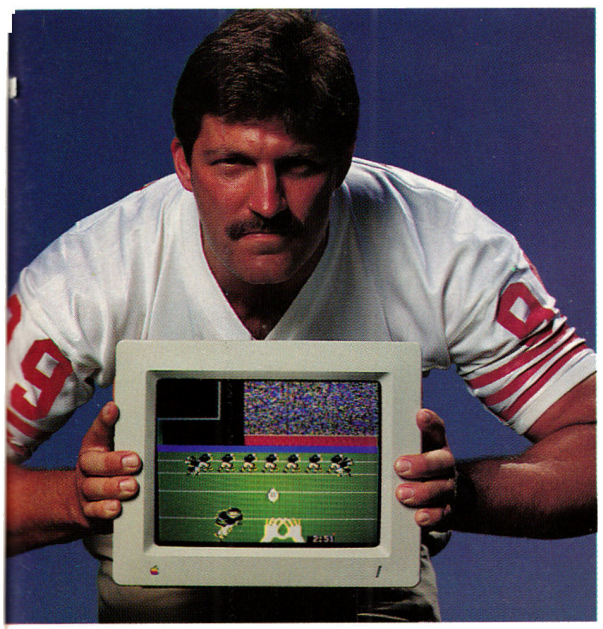
Introducing some variety, each player has a stand-in with somewhat different characteristics, so you can substitute, say, a "quick" quarterback who's more adept at avoiding the blitz for a "strong" one who's better able to reach the receiver running a fly pattern.

You select plays via mouse, keyboard, or joystick. Mouse and joystick users must move the device in a specified direction and click simultaneously to choose a play. For the less coordinated, it takes a while to master the motion, but you'll get the hang of it. For two players, the most likely arrangement is one player using the mouse, the other the keyboard. (You can also play against the computer.)

The offensive coach selects first, choosing from menus of five possible formations, plays, and receivers or ball carriers. The defensive coach then chooses his formation, type of pass rush, and the key player he'll operate. Make sure you hide your selection from your opponent. At the snap, the quarterback and the key defender begin blinking; they're now under control of the opposing coaches, and you can direct them to scramble, rush, pass, and generally do about anything their real-life counterparts could do on the gridiron.

Some players are going to be disappointed at the limited nature of the two teams, with their preset, made-up players. But Accolade has taken a step toward addressing that with its new **Team Construction Disk**. Not only does the disk provide several new teams, but it also lets you design more teams—anything from a made-up team of speedy behemoths to one with the characteristics of your own favorite NFL team.

Unfortunately, neither the game nor the construction disk lets you save or even view the statistics from any game. When the fina gun sounds, the contest disappears without a trace—a bit frustrating if you want to see how well you did in the passing department, for instance.



All in all, 4th & Inches may be the most pure-football fun available for any Apple II computer. But it could still be better.

THROWN FOR A LOSS

Melbourne House's Apple II versions of the popular arcade game **John Elway's Quarterback** have lost something in the translation (IIe/IIc, 128K and joystick required; GS, 512K required, joystick optional for one-player game, required for two-player game). The players (especially in the IIe/IIc edition) look like refugees from an old Atari Space Invaders game, and there are only nine to a side. You must choose from prediagrammed plays, and there are only nine on offense and six on defense (though each offensive play can be run to the opposite side). And, because you're short of pass receivers with only nine men to a side, one of the tackles is eligible.

"ALL IN ALL, MADDEN FOOTBALL IS WELL WORTH THE LONG WAIT. IT MAY BE ONE OF THE MOST ELABORATE GAMES EVER DEVISED FOR THE 64K APPLE II."

There are other significant differences between Quarterback and real football. Quarterback has no penalties—the computer won't let you do anything illegal, such as passing beyond the line of scrimmage. There also are no handoffs in Quarterback; running plays are always keepers.

As the offensive coach, you always control the player with the ball—the quarterback on the snap, and then any receiver or runner who becomes the ball carrier. The defensive coach controls the middle linebacker, or in case of an interception, the player who made it.

In Quarterback as in real football, each player has his assignment and for the most part sticks to it. That makes it both fun—and risky—to improvise. Your quarterback can scramble on a passing play, or find an open man on what had been planned as a run. But because your computerized teammates will continue to run their patterns and execute their blocks according to the play you selected, you're also increasing your chances of being nailed for a loss. The game does keep track of each team's rushing and passing statistics. But because of its built-in limitations and deviations from real football, Quarterback isn't a game for dedicated armchair strategists. Rather, it's aimed at those who are looking for some simple, fast-moving arcade action.

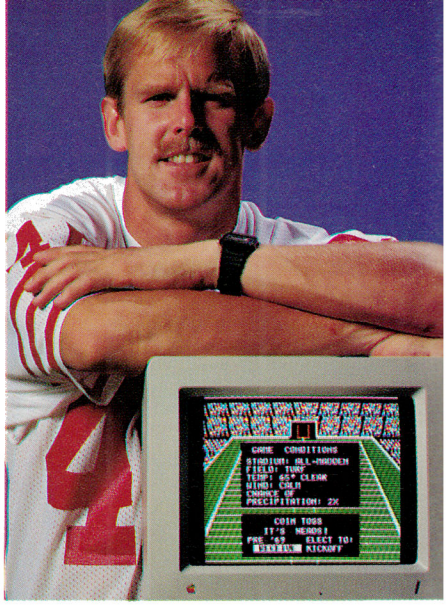
STREET-CORNER QUARTERBACKING

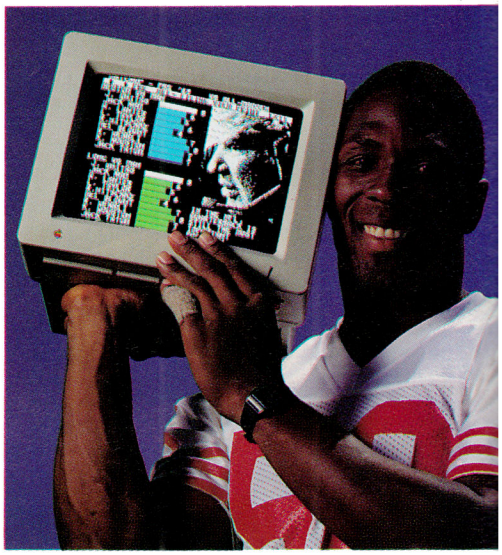
Every kid from 8 to 80 who ever ran a pass pattern between two parked cars will have fun with **Street Sports Football** from Epyx (128K required). No grand strategy or Hall of Fame players here; instead, what you get is a three-member (female as well as male) team, a playbook of bizarre pass routes and unusual plays with names like "Gone Fishing" and "Pigskin Pop," and a choice of two "stadiums"—one the middle of a street, the other a vacant lot.

As in any pickup game, the first step is to select your team. There are several preformed teams, or you and your human or computer opponent can alternate choices among nine street characters, each with different abilities and weaknesses. There's Vic, blessed with a great arm but hands of stone; Melissa, a good athlete whose main drawback is lack of speed; Butch, sure-handed but slow; and six others. The ability to select your team members and the number of characters available make for an excellent antidote to boredom; no two games are the same.

This being a street game, the rules are a bit different from real football's. You choose the number of points needed to win, the number of completed passes needed for a first down, how long ►

READY SET BOOT!





the defenders must wait behind the line of scrimmage before they can rush the passer, and similar restrictions.

Street Sports Football gives you the choice of novice or advanced games. At the novice level, the offensive coach controls the quarterback for as long as he (or she) handles the ball. In the advanced game, though, you can secretly choose one of your receivers to control. In addition to the 32 plays provided, a play editor lets you devise and save your own.

If you're a real football freak, Street Sports isn't going to be the only game you own. There's little strategizing to speak of, and fancy statistics compilers and other bells and whistles are totally foreign to this kind of game. But if you're just looking for a little rough-and-tumble good time on your Apple II, it fills the bill nicely.

THE FIGHTING IRISH! THE BEARS! THE SHOWBOATS?

The *3* in Lance Haffner Games' **3-in-1 Football** dates this program, which is now five years old. It refers to the three different modes of play available in this all-text simulation: college ball, the NFL, and the now defunct U.S. Football League. No, there's no module that lets you play Donald Trump, signing high-priced stars to lucrative long-term contracts—but if you suffer from an insatiable desire to coach the 1985 Memphis Showboats, this is the game for you.

There's nothing glitzy about 3-in-1 Football—no sound or graphics, and your options as coach are limited to six defenses and 14 offensive options. The play of the game is simple and swift-moving. Each player takes turns entering a choice of plays on the keyboard; the computer then reveals the outcome, and it's on to the next play.

The game comes with a team disk that contains scores of choices. Although you're coaching real teams and real players out of the near or distant past, you have no control over such crucial matters as substitutions. You may think that's the '81 49ers' Joe Montana you're instructing to look deep for Dwight Clark—but when the play commences, you may discover it's understudy quarterback Guy Benjamin doing the flinging.

There's a certain randomness to 3-in-1 Football that can make it somewhat unsettling. A game with so little in the way of frills ought to make up for it by allowing you a broad array of strategic options. But 3-in-1 has little of that. It's basically your call versus that of your opponent, and may the best mismatch—finding him in run coverage when you're throwing the bomb—win.

One of this program's best features for numbers fans is its post-game series of player statistics from the just-concluded game. You can display team and individual stats on screen or print them; moreover, 3-in-1 Football has a built-in stats compiler in case you want to compare your computer team's performance with that of its real-life counterpart.

IN THE TRENCHES

Hollywood once made a detective movie in which the audience watches the action totally through the eyes of the protagonist; the only time you see his face is when he looks in a mirror. Gamestar's **GFL Championship Football** is the sports equivalent; your perspective is that of a player on the field, and you see the game exactly as he does.

GFL isn't meant to be a game of grand strategizing or intricate coaching. Games are only 16 or 28 minutes long, depending on the option you choose, and there isn't any way to design your own plays. You and your opponent choose preformed, made-up teams that have characteristics similar to those of real-life teams.

Top left, Electronic Arts' John Madden Football is loaded with options—designing your own plays, determining weather conditions, controlling the quarterback with your joystick, creating your own teams.

Bottom left, the coach himself appears on screen in Madden Football, along with your team's performance ratings.

Above, fast-moving arcade action in John Elway's Quarterback: Improvisation's both fun and risky.

PRODUCT INFORMATION

4th & Inches, $44.95
Team Construction Disk,
$14.95
Accolade
550 South Winchester
Suite 200
San Jose, CA 95128
(408) 296-8400

GFL Championship Football
Gamestar
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John Elway's Quarterback
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Street Sports Football
Epyx
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Redwood City, CA 94063
(415) 366-0606
$19.95

3-in-1 Football
Lance Haffner Games
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"EVERY KID FROM 8 TO 80 WHO EVER RAN A PASS PATTERN BETWEEN TWO PARKED CARS WILL HAVE FUN WITH STREET SPORTS FOOTBALL."

For instance, the best team in the league, the Grizzlies, features a ferocious defense reminiscent of the mid-'80s Chicago Bears; the Miners have a strong offense modeled after that of the San Francisco 49ers. Because the GFL "league" has doormats as well as championship-caliber teams, much of the outcome of the game depends on which teams you and your opponent select; if you're looking for an evenly matched game, one way around that is for both of you to choose the same team.

It's a lot of fun to be the offensive player in GFL Football. You get to hold the joystick (required), and you get that helmet-level perspective on the game. If it's a running play, you take the handoff and see the play developing in front of you, while small arrows at the bottom of the screen cue you as to where to hit the holes.

If it's a passing play, you're the wide receiver; the arrows guide you on your pattern, suggest when and where you make your cuts, and ultimately guide you to the spot where the ball will arrive. It takes a while to get the hang of pass catching; it helps if you know the pattern well enough to anticipate the little arrows on screen by a split-second, and if you aren't precisely where you're supposed to be, the pass will go incomplete.

Perhaps the main problem with GFL Football is that it's almost no fun to be the defensive player. All you do is use the arrow keys and spacebar to select your formation; then, while your opponent works the joystick furiously in an effort to evade tacklers and find a hole, all you do is stand aside and yell, "Get him!" Of course, that's what the defensive coordinator does in real life—but the game's requirement that you switch back and forth between active participation on offense and sideline coaching on defense gives GFL Football a schizophrenic quality.

AWARDING THE GAME BALL

Which game's for you? Just about every hard-core football junkie is going to wind up with a copy of John Madden Football sooner or later. But several of the other games can also find happy homes on your software shelf. GS owners will love the sound and graphics of 4th & Inches; Street Sports Football is great for a quick pickup game. Whatever your choice, it'll be nice to not have to wait for Sunday afternoons or Monday nights for a little on-screen gridiron action.□

RICH JAROSLOVSKY IS AN EDITOR FOR *THE WALL STREET JOURNAL*. WRITE TO HIM AT 7401 SUMMIT AVENUE, CHEVY CHASE, MD 20815. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

By DAN MUSE and JEFF CABLE

49ERS TEAM

A behind-the-scenes look at some of the NFL's San Francisco 49ers as they demonstrate their moves on the Apple IIGS.

WHAT DO THE WORLD-CHAMpion San Francisco 49ers do between practices?

While every player has his own way to relax between grueling double-session workouts, several of these Super Bowl winners dig in for a round of Mean 18, a golf-simulation program from Accolade.

The accommodations at the 49ers' preseason training camp at Sierra College in hot Rocklin, California (just outside Sacramento), aren't designed to rival anything you'd see on *Lifestyles of the Rich and Famous*, but veteran linebacker Mike Walter brought at least one comfort from home—his Apple IIGS. "Our dorm rooms aren't very big," Walter says. "There's just enough room for two beds and a computer." Walter reports that several of his teammates, including fellow GS enthusiast and defensive back Tom Holmoe, unwind with the GS and Mean 18. Cornerback Tory Nixon and linebacker Jim Fahnhorst usually complete the 49er foursome. And after getting in a quick 18 holes, rumor has it that Walter logs onto AppleLink Personal Edition from his dormitory room.

In addition to Walter and Holmoe, defensive standouts Keena Turner, Tim McKyer, and Eric Wright, plus former 49er great Keith Fahnhorst, who retired after the 1987–88 season, also use GSes for home finance, word processing, education, and, yes, entertainment.

While you may have a difficult time picturing professional athletes who make their living tackling the likes of Bo Jackson and Herschel Walker sitting in front a GS running AppleWorks or PaintWorks Gold, a brief discussion with the players reveals that even National Football League stars can get hooked on Apple IIs.

RAVE REVIEWS FROM ROCKLIN

Mike Walter says AppleWorks is his favorite program, because "you can do so much with it." However, "Mean 18 has been the big hit at camp—even though I took last place at our most recent tournament," he adds.

Although professional football players

KEENA TURNER
Position: Linebacker
College: Purdue
Born: 10/22/58
Height: 6′2″
Weight: 222

Hardware: Apple IIGS, 1.25 megabytes of RAM, 3.5- and 5.25-inch disk drives, ImageWriter II

Favorite Software: AppleWorks, AppleWorks GS, Reader Rabbit, PaintWorks Plus

MIKE WALTER
Position: Linebacker
College: Oregon
Born: 11/30/60
Height: 6′3″
Weight: 235

Hardware: Apple IIGS, 1.25 megabytes of RAM, 20-megabyte GCC HyperDrive hard disk, 3.5-inch disk drive, Applied Engineering TransWarp GS accelerator, ImageWriter II printer, Apple joystick, Apple Personal Modem

Favorite Software: AppleWorks, Managing Your Money, Mean 18, PaintWorks Gold, The Duel: Test Drive II, Jack Nicklaus' Greatest 18 Holes of Major Championship Golf, AppleLink communications software, The Print Shop

MUP WITH THE IIGS

must adhere to a rigid schedule during training camp, Walter still manages to spend at least an hour a day at the computer, not including golf tournaments. At home, Walter writes letters with the AppleWorks word processor, keeps a daily journal, and maintains his address list on the database manager. "Right now I'm also experimenting with Managing Your Money [MECA Ventures]," he reports. He says he also "really likes AppleLink Personal Edition" and enjoys "messing around" with PaintWorks Gold (Mediagenic) and playing Tetris (Spectrum Holobyte).

The Walters' GS also helps Mike's wife, Toni, run a local charitable organization. She boots up The Print Shop (Broderbund) to produce banners, receipts, letterhead stationery, and so on.

FAMILY TIES

Tom Holmoe also casts a vote for AppleWorks as his favorite Apple II program. Holmoe says his uses the word processor to prepare speeches he delivers to various youth and church groups. He credits the GS with "giving a real boost" to his writing. AppleWorks also keeps track of his family genealogy, and keeps his will and financial accounts up to date. His next project, he says, is to produce a family newsletter.

His favorite game? Mean 18. He points out, however, that getting a tee time at the 49ers' training camp is difficult. "The guys up there [Nixon, Fahnhorst, Walter] have an exclusive club," he notes. "Pretty soon you'll have to pay greens fees to play, and I can't afford it."

While Holmoe spends a lot of time on the GS, he says the key reason for buying it was his kids (Shannon Renae, 5; Daniel Ivan, 3; and Erik Wright, 1). He adds that he uses PaintWorks Gold with them, because it's good for their creativity: "The kids love to make pictures and print them. They love to see them hanging on the refrigerator.... I'm using the GS as I imagined I would when I bought it. I'm getting everything out of it I hoped I would."

THE HOUSE THAT KEENA BUILT

Ten-year 49er veteran Keena Turner and wife Therese have enlisted AppleWorks to help them track the progress of their new home and its associated expenses; they used the AppleWorks spreadsheet, for example, to calculate the costs of plumbing and fixtures for the kitchen and bathroom.

While the Turners may enjoy AppleWorks (both Classic and GS versions), however, their 5-year-old daughter, Sheena, is a fan of Reader Rabbit (The Learning Company) as well as Stickybear ABCs (Optimum Resources) and PaintWorks Plus.

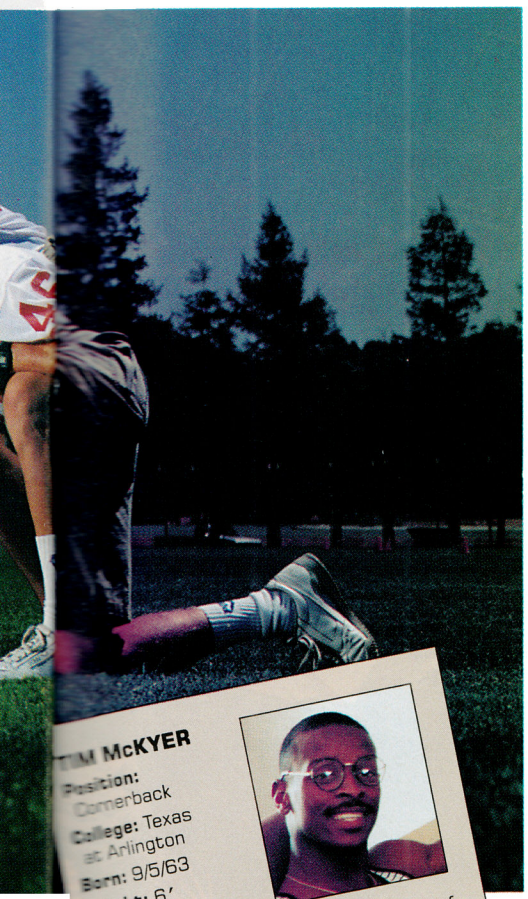
MAN-TO-MAN COVERAGE

Tim McKyer lists his favorite software as Jack Nicklaus' Greatest 18 Holes of Major Championship Golf (Accolade) and AppleWorks GS. A premier NFL cornerback, McKyer says his GS helps him prepare for each week's game. He enters the statistics and tendencies of the wide receiver he'll have to cover and then studies the information and prepares his game strategy.

McKyer reports that AppleWorks also keeps his address list (mostly young, single women) up to date and that he recently used the spreadsheet to help budget for a new car—a Mercedes-Benz 300. The AppleWorks GS word processor handles his correspondence, and he experiments with the program's drawing/painting module "for the fun of it." McKyer also enjoys playing Mean 18, Zany Golf (Electronic Arts), and Wings of Fury (Broderbund).

A WINNING ATTITUDE

The Super Bowl Champion San Francisco 49ers have made winning football games a habit. But man cannot live by football alone, and several 49ers have discovered that when it's time to work with the kids, plan a budget, write a speech, or just relax, there's no beating the Apple IIGS. □



TIM McKYER

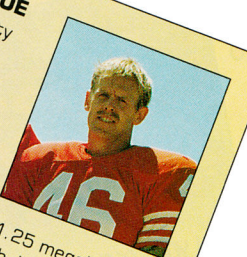
Position: Cornerback
College: Texas at Arlington
Born: 9/5/63
Height: 6′
Weight: 174

Hardware: Apple IIGS, 1.25 megabytes of RAM, 3.5- and 5.25-inch disk drives, ImageWriter II printer, GCC HyperDrive hard disk, TransWarp GS accelerator, Bose speakers, SystemSaver, Gravis Joystick

Favorite Software: AppleWorks GS, Wings of Fury, Mean 18, 4th & Inches, Zany Golf, Chuck Yeager's Advanced Flight Trainer

TOM HOLMOE

Position: Safety
College: Brigham Young
Born: 3/7/60
Height: 6′2″
Weight: 195



Hardware: Apple IIGS, 1.25 megabytes of RAM, 3.5- and 5.25-inch disk drives, RGB monitor, ImageWriter II, Apple joystick

Favorite Software: AppleWorks, PaintWorks Gold, Reader Rabbit, Math Rabbit, Mean 18, Jack Nicklaus' Greatest 18 Holes of Major Championship Golf, Bubble Ghost, The Duel: Test Drive II

Photography • Mark Johann

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DC DATA EAST

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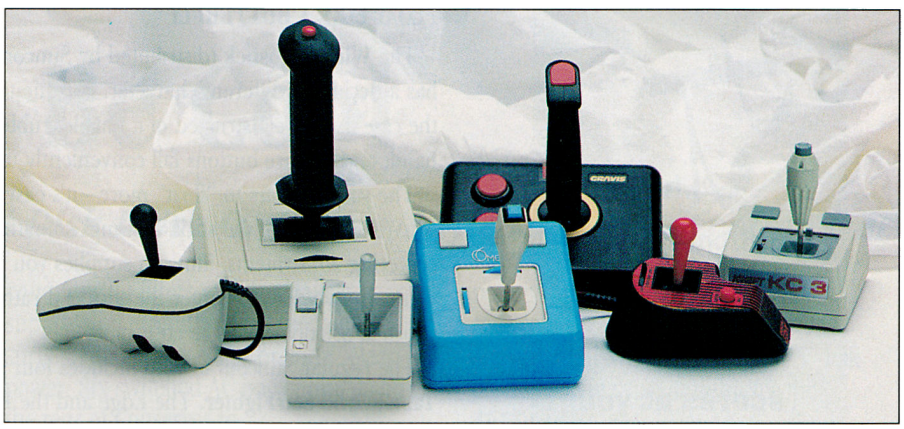
GET ON THE Stick

If you've got the lowest scores in town, maybe the problem's your joystick. Comfort, convenience, and accuracy count—find out which model is best for the games you play.



By LAFE LOW

WOULD YOU DRIVE THE GRAND PRIX IN A YUGO? OF course not. Would you run the Boston Marathon in hiking boots? Not a chance. You want to use the right equipment for the right job. The world of serious computer gaming is no different. Those lightning-fast reflexes that earn you fantastically high scores at your favorite arcade game are wasted if your joystick can't keep up with you. The intense realism simulated in games like Test Drive and Tomahawk are dulled if your joystick has you muddling about on screen, not quite going where you want to. So get on the stick—whether you're slaying dragons, careening around a corner, or trying for that hole-in-one, you've got some strong contenders from which to choose.

UP, UP, AND AWAY

If flying around in the wild blue yonder is how you spend your gaming hours, your choice is clear—the **Flightstick** from CH Products. This joystick definitely comes the closest to re-creating the feel of steering with the yoke of a jet aircraft or helicopter. The fire buttons are located on the stick itself—one on the top (for your thumb) and one on the grip (index finger). The calibration adjustments are right on the chassis, which is wide and stable so that you can place the Flightstick securely on a table. It's also light enough to keep in your hand if you prefer. ►

Photography • Frank Cordelle

GET ON THE Stick

Those lightning-fast reflexes that earn you high scores at your favorite arcade game are wasted if your joystick can't keep up with you.

The stick is styled after the one you'll see in the cockpits of helicopters and fighter jets. If you're going to fly a simulated F-14, you might as well have a stick to match.

HOLD THE TURN

Epyx's **500XJ** is a nice little unit that fits comfortably in the palm of your hand. It's good for driving games or fast arcade-action games. It's responsive, and you can turn automatic centering on or off with the flick of a switch. The fire buttons are located on the lower right-hand side of the case, right where your index finger and middle finger would naturally fall.

What I don't care for is the placement of the center adjustment button. Hitting it by accident during a hard turn to the right or left throws the alignment way out of whack. Other than that, you'll enjoy the Epyx 500XJ for really fast action, the kind for which you want to have all the control right in your hands.

FLOAT LIKE A BUTTERFLY

The **Wico Ergostick** (distributed by Suncom) is similar to the 500XJ in operation, but has a decidedly different character. For one thing, the edges of the case are rounder and the case itself is constructed of a pliable, rubbery material. It's very comfortable in your hand, and the fire buttons fall conveniently under your first and second fingers.

The stick appears to "float" more—it's easy to move about. Although it springs to center when you let go of the stick, it swings smoothly in any direction. I'm not crazy about the centering adjustments. Suncom supplies you with a small plastic screwdriver with which you turn two dials to center the stick. I'd rather be able to do it on the fly, so to speak, which is usually when I need it most.

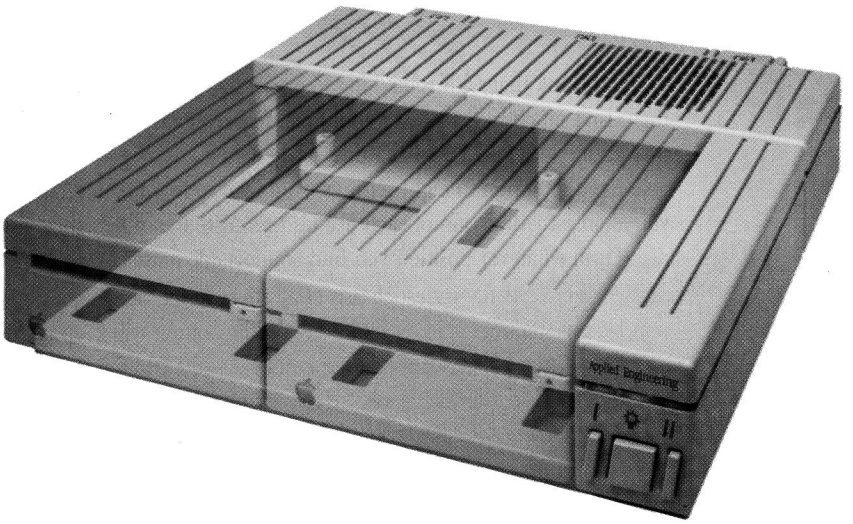
The regular Suncom line-up includes four sticks—the **Analog Plus**, **Analog Edge**, **Tac1+**, and **StarFighter**. The Edge and the Plus are nice units. Both models have two fire buttons on the chassis and one on top of the stick; you can switch their functions with a selector on the bottom of the case. Centering dials are located within easy reach on the side. The Plus adds an extra trick—another fire button right where your index finger falls on the grip. The two chassis buttons and the top-mounted one operate as the same button, with the trigger-finger as the second fire button. The Plus also includes auto fire and auto-fire speed control for the trigger-finger, with a convenient coiled cord and suction cups on the base of the chassis for a firm grip on the table.

The Tac1+ is less fancy, but worth a look. It's similar to the Beeshu Omega, with a sturdy case, two chassis-mounted fire buttons, one stick-mounted button, handy centering dials, and a telephone-style cable. It has a nice, steady feel. The StarFighter's an odd little unit. Right- and left-handed fire buttons are mounted on top of the case, with an alternate fire button on the front—an out-of-the-way location if you need a photon torpedo in a hurry. You can adjust the "throw" (degree of correspondence between stick and screen movement), but the stick itself is rather oddly shaped. Then again, it's one of the least expensive models reviewed here.

STURDY CONSTRUCTION

Of the three Kraft joysticks currently available, I like the **KC 3** best. Although all three perform similarly, the KC 3 has enough bulk to feel as though you could really crank on it, yet it's small enough to hold in your hand. I especially like the placement of the fire buttons—on both sides of the chassis and at the top of the stick. That's nice for people like me who can't decide whether they want to play left- or right-handed.

The Kraft **Premium II** and **Premium III** are a little less fancy than the KC 3. The II is a relatively compact unit with both fire buttons and centering adjustments on the chassis. You can also make the stick free-floating or self-centering. The Premium III adds a heftier stick with a fire button on top—and that makes it exceptional. ►



Be Cool

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Heat is your computer's most insidious enemy. Peripheral cards allow you to do wonderful things with your computer, but they unavoidably produce heat inside your cpu. Load a IIGS with several peripheral cards and that heat is multiplied. Heat-related failures become a real (and devastating) possibility.

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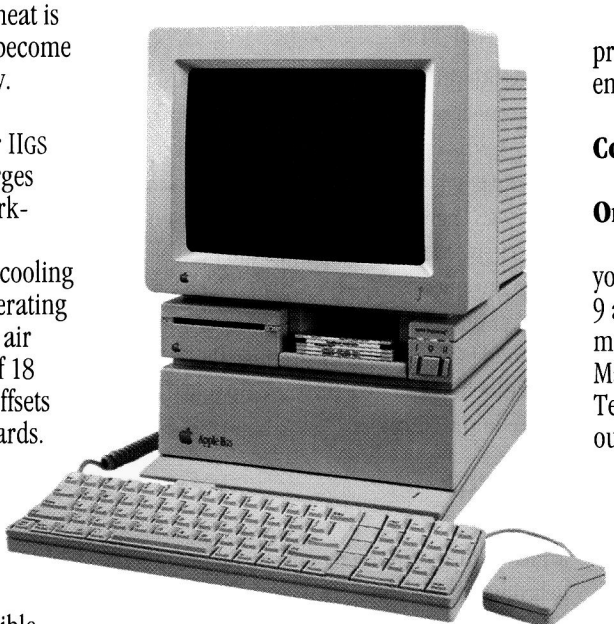
Conserver's quiet but powerful cooling fan efficiently maintains a safe operating temperature at all times. Drawing air from the top of the IIGS at a rate of 18 cubic feet per minute, Conserver offsets the heat produced by expansion cards. In fact, tests show a IIGS operates more than 20 degrees cooler with a Conserver than without. The difference can be critical to the life of your computer.

Power surges are another invisible risk to your computer's well-being. Power surges occur when voltage spikes surge through your wiring looking for a place to dissipate. If that place is inside your computer, you'll very quickly gain a greater understanding of the laws of electricity. It's not a pretty sight.

Conserver incorporates special line conditioning filters and dual surge suppression circuitry to protect against surges, reduce noise and provide "clean " power. Six switched AC power outlets line the rear of Conserver to accommodate your computer, monitor and four other peripherals. Thus protecting your computer and your peripherals from surges. The outlets are conveniently controlled by three front-mounted switches with LED indicators.



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PRODUCT INFORMATION

Analog Edge, $29.95
Analog Plus, $39.95
StarFighter, $24.95
Tac1+, $29.95
Wico Ergostick,
$42.99 analog,
$24.99 digital
Suncom Technologies
6400 W. Grosse Pointe Rd.
Niles, IL 60648
(312) 647-4040

Apple Joystick
Apple Computer Inc.
20525 Mariani Ave.
Cupertino, CA 95014
(408) 996-1010
$59.95

Epyx 500XJ
Epyx
P.O. Box 8020
600 Galveston Drive
Redwood City, CA 94063
(415) 366-0606
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Flightstick
CH Products
1225 Stone Drive
San Marcos, CA 92069
(619) 744-8546
$74.95

Gravis Analog
Advanced Gravis
Computer Technology
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Burnaby, BC
Canada V5J 4M5
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$59.95

KC 3, $29.95
Premium II, $39.95
Premium III, $49.95
Kraft Systems
450 West California Ave.
Vista, CA 92083
(619) 724-7146

Omega
Beeshu Inc.
101 Wilton Ave.
Middlesex, NJ 08846
(201) 968-6868
$29.95

EXTRAS

You'd think that with something like a joystick, it's there and either you like it or not; there isn't much in the way of additional features you can add to it. Advanced Gravis proved me wrong. Notable features of the **Gravis Analog** yoke-style joystick include adjustable handle tension in eight settings from firm to free-floating, and three selectors to let you choose the function of each fire button. Also, the cable's six feet long, which makes using it in whatever position you find comfortable quite convenient.

The Gravis has the widest chassis of all sticks tested here, so it's best to place it on a table and keep it stationary. The rubber feet on the bottom will keep it from sliding, even in the sharpest of turns. The foam-padded handle is quite comfortable in your hand. Two fire buttons are placed on the chassis to the left of the stick, and another button rests on the top of the stick. As the function of these buttons is selectable, you can shoot missiles with the top button and machine guns with the side buttons, or vice versa. I'd recommend the Gravis for just about any type of joystick activity.

NO FRILLS

Would you believe that Apple still has a joystick available for the Apple II? It's true, although it's certainly nothing to write home about. The **Apple** joystick is plain-vanilla compared with the slew of sticks we looked at here.

The case is compact enough to rest in your hand, but solid enough to plant on a table. The fire buttons are positioned on the chassis diagonally in front of the stick. The calibration dials are on the bottom, which is fine if you have it placed firmly on a table, but I'd rather hold a smaller joystick such as Apple's in my hands. More than once in the heat of a dogfight, I realigned the Apple joystick just when I didn't want to. Overall, though, it's a tidy unit. If it's important to you to have all your peripherals finished in Apple platinum, this is the one for you.

SHADES OF FUN

Beeshu wins hands-down for outrageously funky colors: The company's **Omega** joystick comes in vibrant shades of blue, yellow, pink, and green. It features a good, hefty case—sturdy enough to plant on a table, yet not too big to hold in your hand. Fire buttons are conveniently placed in front of the stick on the chassis to facilitate right- or left-handed shooting. There's also a fire button on the end of the stick. Centering dials are on the top of the chassis—right where they should be. The Omega also has an extra-long cable, which adds to its convenience.

Of all the standard-shaped sticks (as opposed to sticks that are curved to simulate a yoke, like the Flightstick and the Gravis), the Omega feels the smoothest. It requires just the slightest effort to move the stick along either axis. The Omega is a nice unit, especially if you're into wild colors.

TEST DRIVE

Take the joysticks you're looking at out for a spin if you can. Go to your local dealership armed with the knowledge of what types of games you like to play. If you're into jets and helicopters, take a long look at the Flightstick. If you're into fast action games where it helps to have all your control in the palm of your hand, try one of the compact joysticks such as the Epyx 500XJ or the Ergostick. If you're going to be using your joystick with a drawing program, look for one with precise pointer control.

Internally, most joysticks operate in a similar fashion, so when selecting a stick, it really comes down to personal preference. You may like the "aircraft yoke" feel of the Flightstick or one of the smaller models designed for the palm of your hand. You may be looking for fire buttons on the chassis of the joystick, while someone else likes them right on the stick. There are a lot of top-notch models on the market today, so regardless of which type you prefer, you'll be in good hands.□

Actual Size

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In addition to its low price, the SupraModem 2400 will save you money by letting you communicate at 2400 baud, thus decreasing your on-line time. The SupraModem 2400 incorporates the advanced Intel 89024MS chip set. This design utilizes fewer parts, assuring operation long after the one-year warranty period.

Easy to Use

The SupraModem 2400 is very easy to use. It features autoanswer and autodial (tone and pulse) for performing phone tasks, and it has a programmable-volume speaker for monitoring call progress. Storing phone numbers and user configurations is also simple because of the modem's programmable nonvolatile memory.

These features and others are explained thoroughly in the comprehensive *SupraModem 2400 Operator's Manual*. Once you understand the basics, the modem's quick-reference card makes finding command descriptions and other modem information quick and simple.

And to make it even easier to begin telecomputing, the SupraModem 2400 comes with introductory packages for several popular on-line services.

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SYSTEM 5.0 UPDATE: *From a Trot to a Gallop*

The old grey GS/OS ain't what she used to be—she's a thoroughbred! Drawing graphics, driving your disks, launching applications, routing information to your printer, Apple's speedy new operating system hangs onto the lead right down to the wire.

IT'S BEEN A LONG WAIT FOR A FASTER Apple IIGS—one that would make programs such as AppleWorks GS and Medley less pokey, one that would let you load programs in less time than it takes to cook breakfast, one that would inspire a better performance from floppy- and hard-disk drives.

The good news is that the waiting is over; the better news is that you don't have to buy a new computer or even upgrade your old one with hardware. The speed is in the *system software*—and Apple IIGS System Disk Version 5.0 costs only $49.95. You get three disks (System Disk, System Tools, Apple II Setup) and manuals. If you don't want to spend the 50 bucks, you can expect to find the software at user-group meetings. If your dealership's worth its Apple authorization, it should make you copies free. (Look for a list of the contents of the System and Tools disks in an upcoming Hints & Techniques article.)

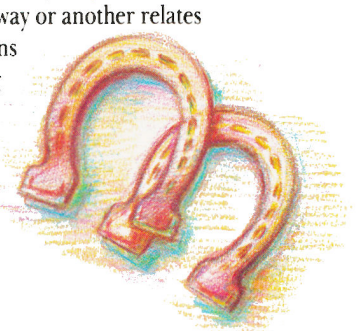
BRAIN VS. BRAWN

There's more than one way to speed up a computer. Apple seems content to let Applied Engineering handle the hardware end of it. Among other things, AE's TransWarp GS card replaces the GS' 2.6-megahertz 65C816 chip with one that runs at about 7 megahertz. Apple's showing no signs of releasing a new GS with more power, so if you want raw processing speed, TransWarp's the best bet. (See "Breaking the Speed Limit," August 1989, p. 50.)

The GS' native 68C816 may be no speed demon, but you don't necessarily need a faster microprocessor to make your machine more efficient. The operating-system software is the brain of your computer. The microprocessor and your peripherals may have all the muscles, but they wouldn't know how and when to flex them without the operating system.

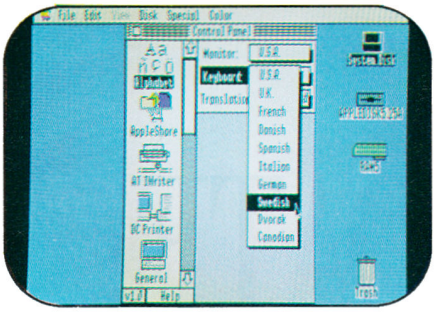
A lot of behind-the-scenes work goes on inside your GS, most of it performed by the operating system. Think of your operating system as a building contractor—he or she makes sure that carpenters, electricians, plumbers, painters, and so on are performing their tasks correctly and in the proper order. You can't have carpenters putting up wall boards before electricians run wiring, or painters showing up to work on walls that don't exist. A good contractor makes sure that the people needed to build and complete the house work efficiently; a good operating system directs the elements of your computer setup to make sure everything works as effectively as possible.

And everything on screen in one way or another relates to the operating system, too. Functions such as printing, disk-drive reading and writing, graphics, and pull-down menus are all affected by the efficiency of the operating system. By changing the operating system you can make your computer work

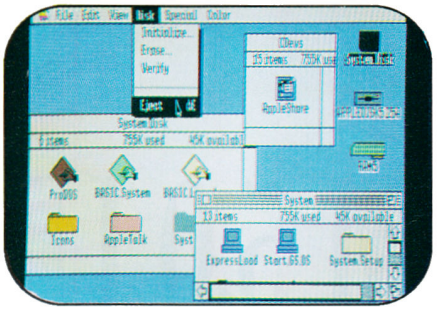


By JEFF CABLE + WEST COAST EDITOR

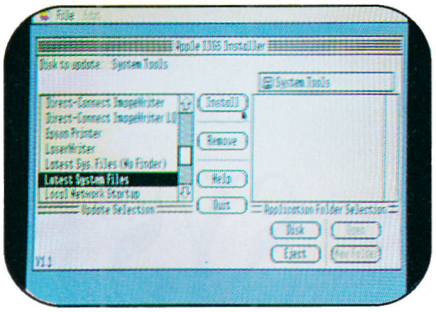
Illustration + Malcom Farley



GS/OS' new Control Panel is now icon-based so options are easy to access and customization is simple.



Disk functions now share their own pull-down along the menu bar of the new Finder.



The System Tools disk's Installer program helps you add or remove GS/OS and other utilities.

smarter and faster, just as hiring a new contractor can make your house go up more efficiently without switching workers. Without altering a thing inside your GS, you can reap the benefits of a better-working machine. System Disk 5.0 is as good as having a new GS.

Three developments are at the heart of version 5.0's outstanding performance: enhanced Toolbox utilities; updated disk-drive controlling software, especially the SCSI *(small-computer systems interface)* manager; and the addition of ExpressLoad, a new feature that launches applications much faster. Let's analyze each aspect in more detail.

HOW FAST CAN IT GO?

The most noticeable difference between your old version of GS/OS (version 4.0) and the new operating system is the speed at which the desktop screen redraws, thanks to improved tool operation in ROM. That means windows open and close much faster; dialog boxes and pull-down menus appear in a flash; and your drawing, painting, and desktop-publishing programs can create and re-create pages and graphics much more quickly. Boot into the Finder under System Version 5.0 and watch the new GS/OS redraw your screen at more than twice the speed of the original 4.0. Depending on your applications, you may see a difference of up to *ten* times.

If you're using an Apple-SCSI-compatible hard-disk drive with your GS you've been shortchanged on speed here as well—until now. The previous version of GS/OS couldn't keep up with fast disks, but Apple has completely rewritten the SCSI drivers and the results will amaze you. The transfer rate (the speed at which information is sent between the hard drive and the computer) has been increased 400 percent; your Apple-SCSI hard drive will now perform as it was designed to—fast. If you own a larger-capacity SCSI hard disk with a high-access speed rate (28 milliseconds or less) you'll be shocked and pleased by the differences between System Disk 4.0 and 5.0. If you haven't added a hard-disk drive to your GS system, the new Apple SCSI driver is a good reason to consider one.

Thirdly, one of the most frustrating aspects of using a GS has been the time it takes to launch a software application. Loading all the pictures and music in a game, for instance, may take several minutes with Apple's older operating systems; loading all six modules of AppleWorks GS takes more than six minutes. Using the new version of GS/OS you'll notice significant decreases in loading time, especially if you're using a hard-disk drive. (See the accompanying **Table** for details.)

It's an impressive difference, but if the software is written to "ExpressLoad," as well, the change will be staggering. ExpressLoad is a new part of the operating system that developers can access through a simple modification in their programs. Without ExpressLoad, the operating system must search repetitively throughout a disk file to find each segment of your program or data to load; if ExpressLoad is enabled, however, it tells the new operating system exactly where to find the information, eliminating time-wasting disk searches. (Note that you must have 768K of RAM or more to implement ExpressLoad; GS/OS won't access it with only 512K.)

At press time, only a handful of programs had been specially prepared for ExpressLoad, but because Apple has made it easy for developers to modify previous software, most of your favorite programs should have updates available soon. Claris' AppleWorks GS is already shipping with the ExpressLoad modification, and as of this writing HyperStudio, from Roger Wagner Publishing, was being rewritten to include it.

Now in addition to revving up System Disk 5.0, Apple has included several other much-needed improvements—making this version of GS/OS much "smarter" than the last one. Read on to discover a world of new options.

MORE THAN SPEED

After two years of living with all caps, for instance, you can finally name folders and files in lowercase text. You can also design scrolling menus. In the older version, if you had more typefaces and print styles in your system folder than you could view under the Fonts menu in AppleWorks GS, for instance, some of those choices were hidden at the bottom of the screen, denying you access to them. The new operating system puts arrows at the top

	FROM A 40-MEG FIXED HARD DISK			FROM DUAL 3.5-INCH FLOPPIES	
Program	GS/OS 5.0 w/ TransWarp	GS/OS 5.0	GS/OS 4.0	GS/OS 5.0	GS/OS 4.0
AWGS (all modules)	18*	25*	205	41*	406
AWGS (no modules)	7*	11*	29	23*	66
Arkanoid	28	34	62	60	80
Draw Plus	13	21	36	31	54
DeluxePaint II	14	23	42	33	58
HyperStudio	16	25	43	39	61

AWGS = AppleWorks GS *ExpressLoad version

Table. Loading times (seconds).

and bottom of any menu that contains more selections than the screen can show. If you drag the mouse to the bottom, the menu will scroll up to show the remaining items.

Another "smart" feature of GS/OS 5.0 is its ability to calculate the size of a particular folder or volume. You can now select *Icon Info* from the Finder's Special option on the menu bar and see the file format, creation date, date of last modification, location, "lock" status, and size. The older operating system showed the size of a folder as 2K—the size of the actual folder, however, not the contents of the folder. With the new operating system, you can click on the little calculator in the lower right-hand corner of the window to show the exact amount of disk space your folders and files have used.

The Control Panel's changed, too—it's now a *new desk accessory* (NDA). Under the older operating system, the Control Panel was a *classic desk accessory* (CDA), which you accessed by hitting the control, open-apple, and escape keys simultaneously; you changed your system's configuration by means of menus and arrow keys. You can still alter it that way in Version 5.0, but there's a better way: Use your mouse to select it from the Finder screen's Apple menu. (NDAs are only one mouse click away from your main program.)

You'll see a number of options; to the left in the Control Panel window are icons for keyboard, mouse, speaker, printer, modem, slots, and other selections. Now it's simpler than ever to adjust the Control Panel as you customize your computer. The greatest advantage is that you can install several devices into the Control Panel and access them readily whenever you need them—printer drivers, say, for ImageWriter, LaserWriter, and Epson models. As in earlier versions, only one is currently active. But, unlike earlier versions, this operating system lets you switch printers with a click on the driver's icon. Before GS/OS 5.0 came along, your application had to let you change printers, or you had to quit and install a different one from the Control Panel.

If you're set up on the AppleTalk network, you can access AppleShare from the Control Panel now, too, as you do with the Macintosh. Apple's new operating system replaces the software you used to need to run on an AppleShare network. GS/OS version 4 didn't work with AppleShare, which was difficult to install and access from a GS. Now putting your GS on an AppleShare network is almost as easy as initializing a floppy disk.

That's particularly important for schools that have been trying to establish complete networks of Macintoshes and Apple IIs. For example, you can now set up a classroom of GSes connected to one host computer on the teacher's desk. Each user can transfer information from one GS to another through the network server, letting you use one hard-disk drive for all computers on the network and giving everyone access to a shared printer or two.

One of the advantages of the Apple IIGS is its compatibility with older software: You can put an original Apple II software program, written in 1977, into your GS and chances are it will run. If you're using GS/OS version 4.0, however, switching to another operating system flushes it out of your computer temporarily. Every time you return from AppleWorks 2.1 (written for ProDOS 8) to GS/OS 4.0, for instance, your machine has to reload the operating system. With the release of version 5.0, GS/OS remains resident in your machine while you work in another operating system. Now when you move from 8-bit AppleWorks to GS/OS, the Finder (your desktop) pops up almost immediately.

One of the most common functions of the operating system, other than launching programs, is copying data. System Disk 5.0 copies information from one volume to another faster than 4.0. Whether you're duplicating from one floppy to another, or from a floppy to a hard disk, you'll notice a difference in speed.

Finally, to make disk functions easier to use, Apple has now moved them into a separate menu on the Finder. Pull down "Disk" and you'll see four options: erase, initialize, verify, or eject.

PRO AND CON

To use the new operating system, you must have ROM version 01 and at least 512K of RAM, but to take advantage of all its features, you'll want 768K or more. Version 5 uses the additional memory to store many of its new ►

Installing System 5.0

For most GS users, taking advantage of the benefits of Apple's new System Version 5.0 (GS/OS v.5) is easy—just make a backup copy of the System Disk and use it to start up your machine; then launch your favorite applications from the Finder desktop. If you own a hard-disk drive, this is a good time to back it up, reformat it to improve its performance, and maybe create a few new partitions before installing the new system software and copying your applications and data back to it. (See "Do You Know Where Your Data Are?" May 1989, p. 54, for more information on hard-disk maintenance.)

Some of you, on the other hand, may want to update your GS applications' boot disks directly—or your current system disk, especially if it contains additional fonts and desk accessories you'd rather not try to identify and copy to your new system disk. Some applications, however, may not accept the update: The disk may be copy protected; there may not be room on the disk for the new, larger system; or the application may not work with GS/OS v.5. (If you've run out of room, try launching the application from the Finder after starting up your system with the new System Disk. Otherwise, contact your local dealer or the program's publisher for an update.)

In all cases, try installing GS/OS v.5 only on *backups* of your disks, including hard drives—never on the original. And unless you really know what you're doing, use the Installer program on the version 5's System Tools disk to add or remove the new GS/OS and other special utilities. Read the system manual's instructions and follow them carefully as you use Installer. Here are the highlights and some additional tips:

- **You can't install GS/OS v.5 on 5¼-inch disks, period.**
- **Don't panic if your hard-disk drive doesn't appear on the Finder desktop when you start up your GS with the System Disk the first time. Just launch the Installer program and select to add the SCSI hard-disk driver to your system boot disk (see below). Then, when prompted, restart the system. If there's still no hard disk, it's now okay to panic.**
- **Launch the Installer program from the System Tools disk. (Double-click the mouse button while pointing to the Installer icon.) Two windows will appear.**

On the left is a list of installation options. Point to your choice (use the scroll bar to move the list up and down to see all options) and click the mouse button to select it. On the right is the destination volume and directory. The destination folders for GS/OS system-related files, such as printers and disk drives, are fixed, so the right window will be empty; you can change only the target disk. Other installation selections are applications; for these, you must use the mouse to select the target folder from a list in the right window. After choosing the target folder, if any, click on the *Install* "button" displayed between the windows. Or choose *Remove* to delete the selected option from the target disk or directory.

- **Use the Installer's *Help* option button liberally; its messages contain warnings about the selected installation/removal option that might help you avoid a disaster or two.**
- **If you have two 3½-inch drives, leave the disk that's being updated in one of them and swap the System and System Tools disks when the Installer program prompts you.**
- **Use the *Latest System Files (No Finder)* option to install GS/OS v.5 on your applications' boot disks. The other option, *Latest System Files*, will replace your startup application if you name it *Start* with the Finder.**
- **Ignore any option that contains *AppleTalk* unless your GS and the indicated device are both connected via an AppleTalk network. If so, you might want to remove *Direct-Connect* devices.**
- **The Apple Disk 5.25 and Direct-Connect ImageWriter are already installed on the System Disk; you needn't re-install them. Remove either or both if you don't have those devices.**
- **The Fonts folder in the System Tools disk is empty; the *Additional Fonts* option is superfluous unless you copy fonts from other sources into that folder.** □

—Bill Kennedy, Technical Editor

functions, such as ExpressLoad.

It's been a year since the release of the original GS/OS software and System Disk 4.0. The improvements in Version 5.0 are dramatic, but the software isn't perfect. Apple still needs to speed up the ImageWriter printer driver, for one thing. It should also supply a "real" ImageWriter LQ driver—one that takes advantage of the printer's highest quality. But System Disk 5.0 certainly addresses the major problems associated with the GS: speed and compatibility with AppleShare.

The big knock against the Apple IIGS has always been its sluggish performance. The new software, however, will perk up your system for little or no investment; and if you really want to make your machine fly, consider a TransWarp GS, too. Then invite your Mac-loving friends to watch your computer break the track record. □

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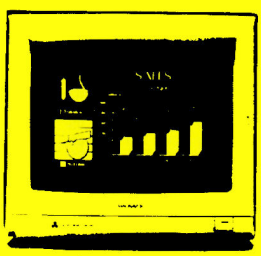

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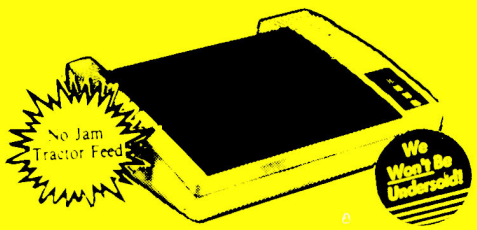

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FOOD FOR THOUGHT 1

Entertain to your heart's delight! AppleWorks' database takes care of the planning, so you can concentrate on holiday fun and festivities.

By RUTH K. WITKIN

HOLIDAY ENTERTAINING—FRIENDLY get-togethers, family dinners, or cozy tête-à-têtes—means frequent forays to the supermarket. If you're like me, and can't afford to spend a lot of time making up lists of items to buy, you'll love this month's shopping-list database. It lets you store the names of items you buy regularly, "check off" those you need, then print a list to take to the store.

In this session, the first of a two-parter, you'll enter records, set a standard value, and learn special sort techniques that make grouping and arranging records infallible. Next month, you'll print several types of shopping lists, including some that show category names and report headings even though you've turned off the AppleWorks header.

When you see such key combinations as OA-Y, hold down the open-apple key and type **Y**. With repeated combinations, such as OA-Left Arrow (3 times), hold down the open-apple key and tap the left-arrow key three times. If you make a typo, hit the delete key to back up the cursor and erase.

DATABASE DEFINITIONS

Database lexicon is distinctive. To understand the instructions fully, bear in mind that an AppleWorks database organizes information by entry, category, and record, as shown in the screen dump in **Figure 1**.

- An *entry* is one piece of information—for instance, a specific shopping item, such as apple juice; its brand name, Mott's; or its price, $1.99.
- A *category* is one type of information—for instance, all shopping items (apple juice, pizza pie, frozen yogurt, American cheese, turkey slices, and so on) or every price in the database.
- A *record* is all the information about one shopping item—for instance, type of item (apple juice), brand name (Mott's), section (BV, for beverage), where it's kept (aisle 7), in which store (Waldbaum's), price ($1.99) per unit (2 quarts), and so on. This database contains three types of records: header, subheaders, and shopping items. You can see all of them in **Figures 1** and **2**. Read on to learn more about them.

HEADER RECORD

The header record, containing only category names, is the first record. You don't need the AppleWorks header (filename, report name, date, and page number) to appear on every page of a shopping list. But when you suppress the header, AppleWorks also suppresses the category names, which can make it tough to understand what's in the categories.

The header record prints these names at the top of each column on the first page only. Leaving spaces before *I T E M* in the ITEM category and *SEC* in the SECTION category ensures a successful sort after you enter new subheader (group) or shopping-item records. More about sorting shortly.

SUBHEADER RECORD

Subheader records (detailed in **Figure 3**) identify groups—for instance, BEVERAGES, CANNED FOODS, CEREALS, and CLEANING—the way most supermarkets display their wares. Subheader records have the following special characteristics:

- A double line in most categories, which makes these records stand out from the rest.
- An asterisk before each group name, which allows proper sorting later on.
- A two-letter code in the SECTION category (for instance, BV in the BEVERAGES group), which lets new records sort properly.

SHOPPING-ITEM RECORDS

The rest of the records are shopping items. A number *1* in the BUY category "checks off" an item to buy. The *AMOUNT* category shows how many, while *BRAND/TYPE* shows which kind. The *SECTION* category contains the group code, while *AISL* pinpoints the location. *STO* shows the store to which the aisle number pertains—in this case *WB* for *WALDBAUMS*, a large supermarket chain. *PRICE* and *UNIT* show the item's price per unit.

'Nuff said, so start up AppleWorks and create a new database file named **SHOP LIST**. You should now see the Change Name/Category screen with the cursor on the C in *Category 1*.

ENTERING THE CATEGORIES

To keep things lean and mean, I've limited this database to 11 categories, two of which are spares. Spare categories are meant to hold data you forgot to include when you first created the database. If you need to insert a category after you've designed screen layouts and report formats, all your custom designs will disappear and you'll have to re-create►

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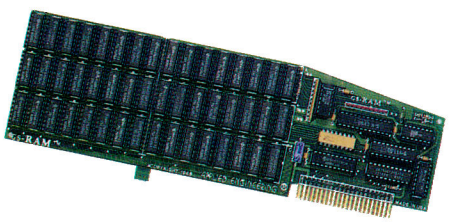

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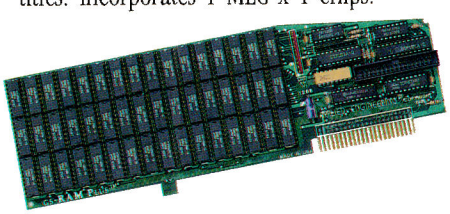

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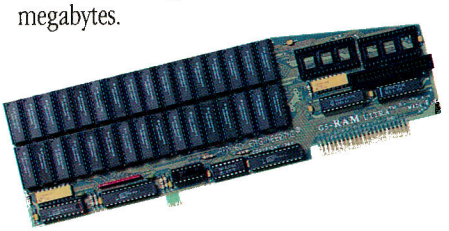

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them. With spares, you can simply name the spare and enter your data without any fuss.

Now press OA-Y to erase *Category 1*. Enter the following category names (in uppercase, to make them stand out), pressing Return after each one:

BUY
ITEM
AMOUNT
BRAND/TYPE
SECTION
AISLE
STORE
PRICE
UNIT
SPARE1
SPARE2

Check to be sure you've entered all 11 categories. If one is missing, place the cursor on the category name immediately below where it belongs and press OA-I to insert a blank line. Then type the category name, press OA-Y to delete the dash at the end, and hit Return.

Press OA-S to store the database on disk. AppleWorks now advises that you'll enter Insert New Records mode automatically. Press Return and an empty Record 1 appears, awaiting your entries.

FILLING THE RECORDS

Referring to **Figure 2**, fill Record 1 only, hitting Return to move to the next entry. Press the spacebar twice before typing **I T E M** in the ITEM category, and press it once before typing **SECTION** in the SECTION category. When you've finished, you should have an empty Record 2 on screen.

Now skip to **Figure 3**, which shows entries in Record 2. In the Buy category, enter three equal signs. In the ITEM category, type *** B E V E R A G E S**, press the spacebar once, hold down the equal-sign key until the sign fills the cell (you'll hear a beep when you run out of space), and hit Return.

In every other category (except *SECTION*, which contains only the group code), fill the cell with equal signs. When you've finished, you should have an empty Record 3 on screen.

SETTING A STANDARD VALUE

Before filling more records, set a standard value in the STORE category: Press OA-V to bring up the Set Standard Values screen. Press the down-arrow key six times to reach the STORE category, type **WB**, and press Return. Now hit the escape key to return to Record 3, which shows the standard entry.

AppleWorks will enter **WB** in the STORE category each time you create a new record, saving you typing time. You can replace a standard value at any time simply by overtyping it with something else. This change affects future records, not existing ones.

Figure 1. Screen dump showing all records.

```
File: SHOP LIST                  REVIEW/ADD/CHANGE                Escape: Main Menu

Selection: All records


BUY ITEM                        AMO BRAND/TYPE          SECT AISL STO PRICE UNIT
================================================================================
BUY   I T E M                   AMO BRAND/TYPE           SEC AISL STO PRICE UNIT
=== * B E V E R A G E S ===== === ================== BV   ==== === ===== ======
1   APPLE JUICE                 1   MOTT'S           BV   5    WB  1.99  2 QTS
1   GINGER ALE                  2   WHITE ROCK       BV   11   WB  1.29  2 LTR
-   ICED TEA MIX                -   TETLEY          BV   5    WB  3.79  53 OZ
=== * C A N N E D  G O O D S === ================== CA   ==== === ===== ======
1   CRANBERRY SAUCE             3   OCEAN SPRAY      CA   2    WB  .59   16 OZ
-   PEAS AND CARROTS            -   NOLIKO (GLASS JAR) CA   7    WB  .73   12 OZ
=== * C E R E A L S ========= === ================== CE   ==== === ===== ======
1   COMMON SENSE OAT BRAN       1   KELLOGG          CE   7    WB  2.35  12 OZ
-   CREAM OF WHEAT              -   NABISCO          CE   7    WB  2.19  12 OZ
=== * C L E A N I N G ======= === ================== CL   ==== === ===== ======
-   FLOOR WAX                   -   MOP & GLOW       CL   9    WB  2.89  32 OZ
-   FURNITURE POLISH            -   LEMON PLEDGE     CL   9    WB  2.49  14 OZ
1   LAUNDRY DETERGENT           1   ALL              CL   9    WB  8.99  20 LBS
--------------------------------------------------------------------------------
Type entry or use @ commands                                    @-? for Help
```

FILLING MORE RECORDS

Now use the up-arrow key to return to the BUY category in Record 3. Referring again to **Figure 2**, fill in the rest of the records. Type each entry and press Return, skipping past the STORE category and SPAREs.

Record 12 is the last record, so hit Return after typing **20 LBS** and leave the cursor in the SPARE1 category. Press OA-S to store the database on disk. AppleWorks saves the database, then displays the records in multiple-record layout.

CHANGING THE LAYOUT

Only the first five categories appear on screen, with some entries (item and brand name) truncated while others (buy, amount, and section) have too much room. To get a better view of things, press OA-L to bring up the Change Record Layout screen with the cursor in the BUY category. Reduce its width by pressing OA-Left Arrow (12 times). As you do, you can see the AISLE category.

Now use the right-arrow key to move the cursor to each of the following categories and press the following key combinations to adjust their widths the same way:

ITEM	OA-Right Arrow (10 times)
AMOUNT	OA-Left Arrow (12 times)
BRAND/TYPE	OA-Right Arrow (3 times)
SECTION	OA-Left Arrow (11 times)
AISLE	OA-Left Arrow (11 times)
STORE	OA-Left Arrow (12 times)
PRICE	OA-Left Arrow (10 times)
UNIT	OA-Left Arrow (9 times)

Press Escape to exit this screen. AppleWorks asks which way the cursor should travel when you press Return. Having it move to the *right* instead of the standard *down* makes entering information easier, so type **2**, and hit Return. The Review/Add/Change screen returns with all categories nicely spaced.

COPYING SUBHEADER RECORDS

This database has only one subheader record so far. Here's an easy way to create three more: Press the down-arrow key to move the cursor to the ** B E V E R A G E S* record, and press OA-C to start the Copy command. Hit Return to confirm *Current record*, type **3**, and hit Return again. You now have four BEVERAGES records.

Press the down-arrow key, hit Tab, then press the right-arrow key twice to move the cursor to the *B* in the second BEVERAGES record. Now press OA-E to switch to the overtype cursor, and type **C A N N E D G O O D S** (two spaces between words). Press the spacebar once and hit Return. Press the tab key twice to move to the SECTION category, type **CA**, and hit Return again.

Press Down Arrow, then move the cursor to the *B* in the next BEVERAGES record (OA-Tab moves the cursor to the left), type ►

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Figure 2. Records in SHOP LIST database.

CATEGORY	RECORD 1	RECORD 2	RECORD 3
BUY:	BUY	S	1
ITEM:	I T E M	E	APPLE JUICE
AMOUNT:	AMOUNT	E	1
BRAND/TYPE:	BRAND/TYPE		MOTT'S
SECTION:	SECTION	F	BV
AISLE:	AISLE	I	5
STORE:	STORE	G	WB
PRICE:	PRICE	U	1.99
UNIT:	UNIT	R	2 QTS
SPARE1:	SPARE1	E	
SPARE2:	SPARE2	3	

CATEGORY	RECORD 4	RECORD 5	RECORD 6
BUY:	1		1
ITEM:	GINGER ALE	ICED TEA MIX	CRANBERRY SAUCE
AMOUNT:	2		3
BRAND/TYPE:	WHITE ROCK	TETLEY	OCEAN SPRAY
SECTION:	BV	BV	CA
AISLE:	11	5	2
STORE:	WB	WB	WB
PRICE:	1.29	3.79	.59
UNIT:	2 LTR	53 OZ	16 OZ
SPARE1:			
SPARE2:			

CATEGORY	RECORD 7	RECORD 8	RECORD 9
BUY:		1	
ITEM:	PEAS AND CARROTS	COMMON SENSE OAT BRAN	CREAM OF WHEAT
AMOUNT:		1	
BRAND/TYPE:	NOLIKO (GLASS JAR)	KELLOGG	NABISCO
SECTION:	CA	CE	CE
AISLE:	7	7	7
STORE:	WB	WB	WB
PRICE:	.73	2.35	2.19
UNIT:	12 OZ	12 OZ	12 OZ
SPARE1:			
SPARE2:			

CATEGORY	RECORD 10	RECORD 11	RECORD 12
BUY:			1
ITEM:	FLOOR WAX	FURNITURE POLISH	LAUNDRY DETERGENT
AMOUNT:			1
BRAND/TYPE:	MOP & GLOW	LEMON PLEDGE	ALL
SECTION:	CL	CL	CL
AISLE:	9	9	9
STORE:	WB	WB	WB
PRICE:	2.89	2.49	8.99
UNIT:	32 OZ	14 OZ	20 LBS
SPARE1:			
SPARE2:			

Figure 3. Entries in subheader (group) record.

```
Record 2 of 2
================================================================================
BUY: ===
ITEM: * B E V E R A G E S ======================================================
AMOUNT: ========================================================================
BRAND/TYPE: ====================================================================
SECTION: BV
AISLE: =========================================================================
STORE: =========================================================================
PRICE: =========================================================================
UNIT: ==========================================================================
SPARE1: ========================================================================
SPARE2: ========================================================================
```

C E R E A L S = = = =, and hit Return. Tab to the SECTION category, type **CE**, and hit Return again.

And finally, move the cursor to the *B* in the last BEVERAGES record, type **C L E A N I N G = =**, and hit Return. Tab to the SECTION category, type **CL**, and hit Return again.

INSERTING NEW-ITEMS RECORDS

When you make this database your own, you'll want to add more items. It doesn't matter where you insert them, so press OA-I to bring up the Insert New Records screen. Now make these entries:

BUY: **1**
ITEM: **CLEANSER**
AMOUNT: **2**
BRAND/TYPE: **AJAX**
SECTION: **CL**
AISLE: **9**
STORE:
PRICE: **.75**
UNIT: **21 OZ**
SPARE1:
SPARE2:

Press OA-S to store the database on disk. And here's the multiple-record screen again.

SORTING RECORDS

Placing new records where they belong involves two sorts—one by item and another by section. To see how this works, first sort by item: With the cursor in the ITEM category of any record, press OA-A to start the Arrange command, and hit Return to confirm *From A to Z*. All header and subheader records cluster at the beginning of the file.

Now sort by section: Press Tab three times to move the cursor to the *SECT* category. Again, press OA-A and hit Return. The screen returns with the header record in first place and all subheader records in their proper places at the beginning of their groups. Magic? Not really.

In the sorting scheme of things, the first character of the entry in the sort category determines the record's position. A space has highest priority. Two spaces precede the word *ITEM* in the header record. So, in the first sort, which takes place in the ITEM category, the header record takes precedence over every other record, ending up in first place. (One space would do as well. The extra space aligns *ITEM* with the group name in the subheader records strictly for aesthetic purposes.)

An asterisk has higher priority than any

alphabetic or numeric character. An asterisk precedes the name of each subheader record, so subheader records appear in alphabetical

SPACE	+	@
!	,	Aa...Zz
"	.	[
#	/	\
$	0–9	]
%	:	^
&	;	_
'	<	`
(	=	{
)	>	|
*	?	}

Table. Sequence of characters determining record sort.

order below the header record. Shopping items, grouped alphabetically according to the first character of their names, end up below subheader records.

In the second sort on the SECTION category, the space before the word SECTION (*SEC* on screen) again invokes the header record's position as top record. Subheader records and item records, grouped alphabetically during the first sort, now merge alphabetically according to the two-letter section code. Simple.

The accompanying **Table** shows the AppleWorks sort order. Read down the first column, then go to the top of the next column and read down. Sorting is an important database feature; you can find more details in your AppleWorks manual.

Sometimes an aberration appears after sorting—for instance, pizza pie in the pet-food category or paper towels with poultry. This usually means you've entered the wrong section code. To correct the situation, simply type in the correct section code, then arrange all records by item and section again.

You'll print several types of shopping lists next time, so don't make any changes in your database between now and then. You can save the database under another name if you like and experiment with that one.□

RUTH K. WITKIN IS THE AUTHOR OF THE POPULAR TEMPLATE/HANDBOOK SERIES *SUCCESS WITH APPLEWORKS (INCIDER*, IDG COMMUNICATIONS/PETERBOROUGH), AS WELL AS *THE BEST BOOK OF APPLEWORKS* (HOWARD W. SAMS & CO.) AND *PERSONAL MONEY MANAGEMENT WITH APPLEWORKS* (JOHN WILEY & SONS). WRITE TO HER AT 5 PATRICIA STREET, PLAINVIEW, NY 11803.

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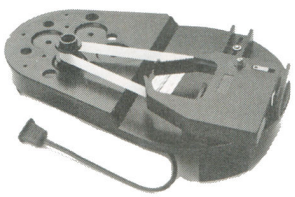

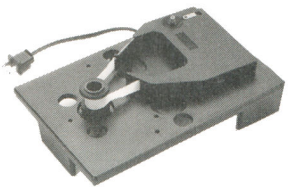

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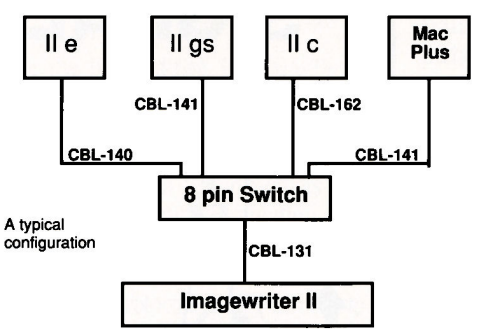

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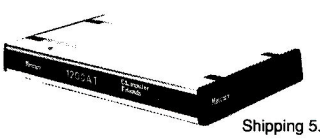

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SETTING SAIL

Combine Publish It! 2 and AppleWorks Classic to create newsletters and pamphlets that'll keep your news afloat.

By CYNTHIA E. FIELD, Ph.D.

"I'LL LET YOU IN ON A LITTLE secret," confides Al Martin, editor of the Hayden Island Yacht Club (HIYC) *Signal*, a booklet-style newsletter he creates with **AppleWorks Classic** and **Publish It! 2**. "I didn't shun the vertical 8½-by-11-inch format; I simply had to adapt to the way the covers have been printed for the past 33 years!"

When Martin acquired the editor's chair at HIYC (he's also publisher of *The Road Apple*, a newsletter for Apple II users), he inherited some 3000 of the *Signal*'s offset-printed, two-color (red and black) covers. Each cover, shown in **Figure 1**, is printed horizontally on 8½-by-11-inch, 60-pound, white card stock.

The right half, with the title and logo, serves as the *Signal*'s front cover. The left half contains the newsletter's mailing panel with the HIYC name, return address, telephone number, and the words *First Class Mail*.

Rather than steer the club's publication off course after its nearly three dozen years afloat, Martin adapted the layout of his newsletter template to the 5½-inch-wide-by-8½-inch-high page format dictated by the cover's design.

THE INSIDE SCOOP

Martin's straightforward solution to his desktop-publishing dilemma is a Publish It! 2 template anyone can use to create not just easy-to-handle newsletters, but small booklets of any kind. Best of all, re-creating the fundamental layout of HIYC's monthly publication won't keep you in dry dock for long. Let's take a look at the steps involved.

Boot up Publish It! 2 (or the original version of Publish It!) and use *Size to Fit* (Open apple-4 or Special menu). With the text tool, rubberband a text area. (Press the mouse button, hold, ►

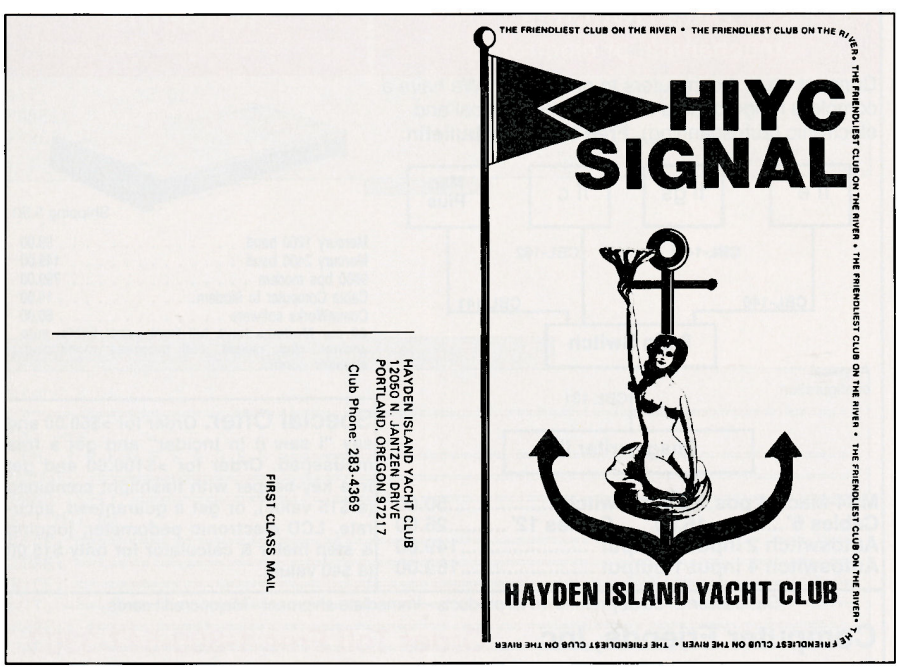

Figure 1. *Signal*'s cover.

Figure 2. Page 1 of *Signal*.

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While most people just plug the DataLink 2400 in and go, advanced users will find a host of sophisticated features like the ability to select firmware defaults of baud rate, data format, parity and control interrupts. Other modems require a set of obscure commands when running from firmware or don't allow you to disable interrupts.

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**OnLine 64* and DataLink have most, but not all the features of *DataTerm* and DataLink 2400 respectively.

drag, and release.) Begin a half inch from the left-hand edge and about a half inch down from the top of the page. Make the text area about 5 inches wide and 5½ inches high. Use Publish It!'s *Show Specifications* feature (Open apple-M or Objects menu) to edit the text area's dimensions to conform to actual specifications listed in the accompanying **Table**.

Besides the main text area, Page 1 (**Figure 2**) contains the newsletter's masthead; a section containing publication data such as the newsletter's official title, place, and frequency of publication; and club officers' names. To create the masthead, begin about 6¼ inches from the top of the page and rubber-band a text area that's 5 inches wide and 1½ inches high. Use *Show Specifications* and the **Table** to define dimensions precisely. Place a border around this area by clicking on the *Frame Border* radio button in the Publish It! 2 *Specifications* dialog. Adjust the border's thickness and offset (the margin *within* the border) via *Frame Borders* options listed under the Page menu.

AT THE HELM

To conserve space in the *Signal* masthead Martin uses the *9-point Desplaines* font (Open apple-W or Font menu). Switch to *Show Full Size* mode (Open apple-1 or Special menu). Place the I-beam inside this area and type the masthead's contents. Save this text along with your basic template to avoid having to re-enter the information for each issue of your publication.

Select the page-numbering tool and click its icon into place about five inches from the left-hand edge of the page, just under the masthead. Use the **Table** for precise placement of page-number symbols on this and all subsequent pages of the newsletter template. With the page-number symbol still selected (it has "handles"), press Open apple-W (or pull down the Font menu) and choose the font with which you want to print page numbers. Name the template-in-progress, and save it on a data disk.

CONTINUED ON...

Click on the right paging arrow at the bottom of the tool palette to add a second page to the template. Rubber-band a 5-by-7½-inch text area on this page. Click on the page-numbering tool, and click its symbol into position just under the text area, about a half inch from the left-hand edge of the page.

Add a third page, then a fourth, a fifth, a sixth, and so on until you have enough pages to accommodate the anticipated size of your newsletter. The *Signal* customarily has ten numbered pages; depending on your Apple II's memory, the length of your publication may be limited to fewer than ten.

Click on the left paging arrow as many times as necessary to return to page 2. With the pointer, select the text area and *Copy* it (Open apple-C or Objects menu) into the computer's memory. Go to page 3 and *Paste* (Open apple-V or Objects menu) a duplicate of the text area onto that page. Continue pasting identical text areas onto pages 4, 5, 6, and so on.

For odd-numbered pages, place page-number icons in the same position as on page 1. For even-numbered pages, place page-number icons in the same position as on page 2. Check the specifications of all objects with the values listed in the **Table**, and save the completed template.

APPLEWORKS ASSIST

Citing the program's sometimes snailish pace, Martin, like other "power" desktop publishers, passionately avoids typing his articles' text directly into Publish It! 2. Instead, he types his newsletter's contents into an AppleWorks word-processing file.

After spell-checking with **TimeOut QuickSpell** and editing for length and readability, Martin imports the AppleWorks file into linked text areas on the pages of the *Signal* template.

In Publish It! 2, select the link tool, then, in proper sequence, click on each text area into which you want imported text to flow. To complete the stream, click on the link-tool icon in the tool palette again. Return to page 1 and place the I-beam in the first linked text area. Choose the font you want to use (Open apple-W or Font menu). Select *Import AppleWorks File* (File menu).

At the data-disk directory, double-click on the appropriate AppleWorks file. Text will flow automatically into the first text area on screen. Go to the second page; text continues to flow. Proceed to the next page and continue this procedure until the file's importation is completed.

In the *Signal* Martin uses various sizes and styles of Publish It! 2's typefaces. For instance, he prints the newsletter's body in 12-point Desplaines. For other projects, including *The Road Apple*, Martin has been exploring public-domain fonts and likes 12-point Bookman in particular.

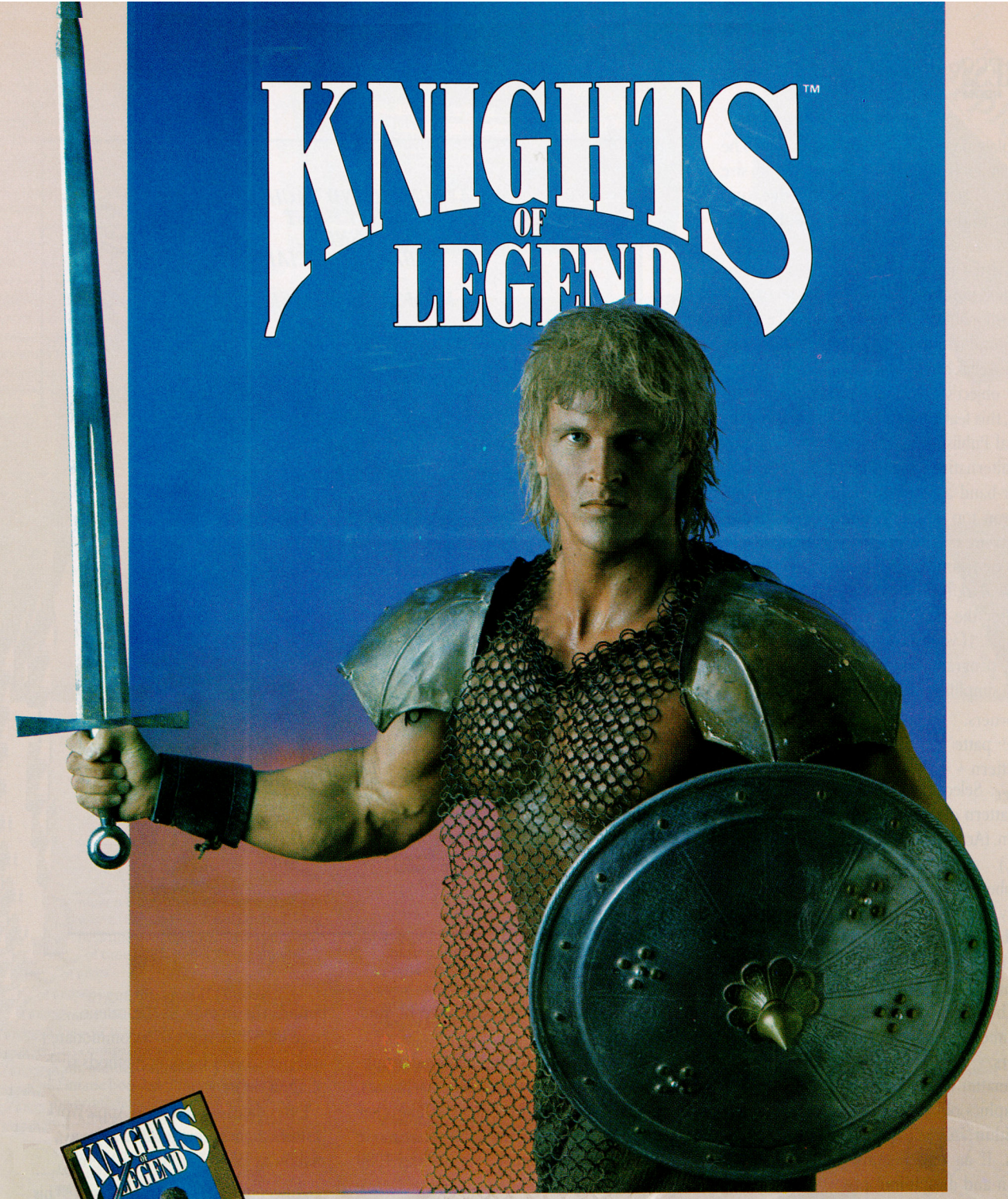
SAILING ALONG

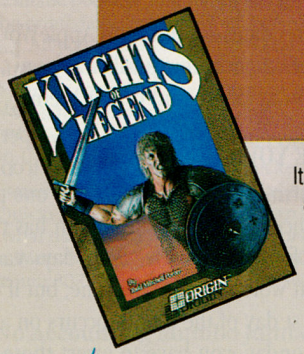
The dearth of nautical-theme computer graphics has prompted Martin to occasionally incorporate illustrations he's acquired from noncomputer sources, including copyright-free **Dover** clip-art books. He uses empty graphics areas to reserve space on Publish It! ►

	Left Start	Top Start	Width	Height
Page 1				
Main Text Area	0.500	0.500	5.000	5.650
Masthead Text Area	0.500	6.325	5.000	1.550
Page #	5.000	8.200	—	—
Pages 2, 4, 6, 8, 10				
Text Area	0.500	0.500	5.000	7.500
Page #	0.600	8.200	—	—
Pages 3, 5, 7, 9				
Text Area	0.500	0.500	5.000	7.500
Page #	5.000	8.200	—	—

Table. Newsletter specifications.

KNIGHTS OF LEGEND™





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2 template pages for these elements, which he then copies from their sources, cuts to size with an X-acto knife and straightedge, and attaches to the final page proofs with a glue stick.

For visual interest, Martin places plain or patterned borders around selected text areas. Unquestionably, the easiest way to place a border around text in Publish It! 2 is to select the area and click on the *Frame Border* radio button in the object's *Specifications* dialog. Unfortunately, this feature isn't available if you use the original Publish It! version.

An alternative for all Publish It! users is to rubber-band a pattern-filled (Objects menu) shape on top of—and slightly larger than—the text area. With the shape (usually a rectangle or round rectangle) selected, click on *Move to Back* (Objects menu). You may have to center the text area within the patterned rectangle. If you're using the current version of the program, the *Align* feature (Objects menu) simplifies this task.

BORDERING ON...

Here's yet a third technique for creating borders: Select the thickest line weight, the pen pattern of your choice, and the white fill pattern. (Access all such options via the Objects menu.)

Rubber-band a rectangle on top of—and slightly larger than—the text area. Select *Move to Back* to place the rectangle behind the text. With this method, Publish It! 2 users can create transparent text areas (click on the *Transparent* radio button in the *Specifications* dialog) and sometimes sidestep having to align text with borders.

No matter what types of borders, text areas, or graphics objects you use, make sure they fall within an area no larger than 5 by 7½ inches. If an object strays "out of bounds," select it and drag it into proper position with the mouse.

When your newsletter's completed, save it under a different name from your original template's. Print all pages of the newsletter in Publish It! 2's double-strike mode.

COMPLETE WITH CENTERFOLD

Any publication worth its salt has a centerfold, right? Martin creates the *Signal* centerfold, which usually highlights an important social event such as a dinner dance or basket social and cruise, as an ordinary (8½-by-11-inch) Publish It! 2 page. You could even make the centerfold layout the last page of your template.

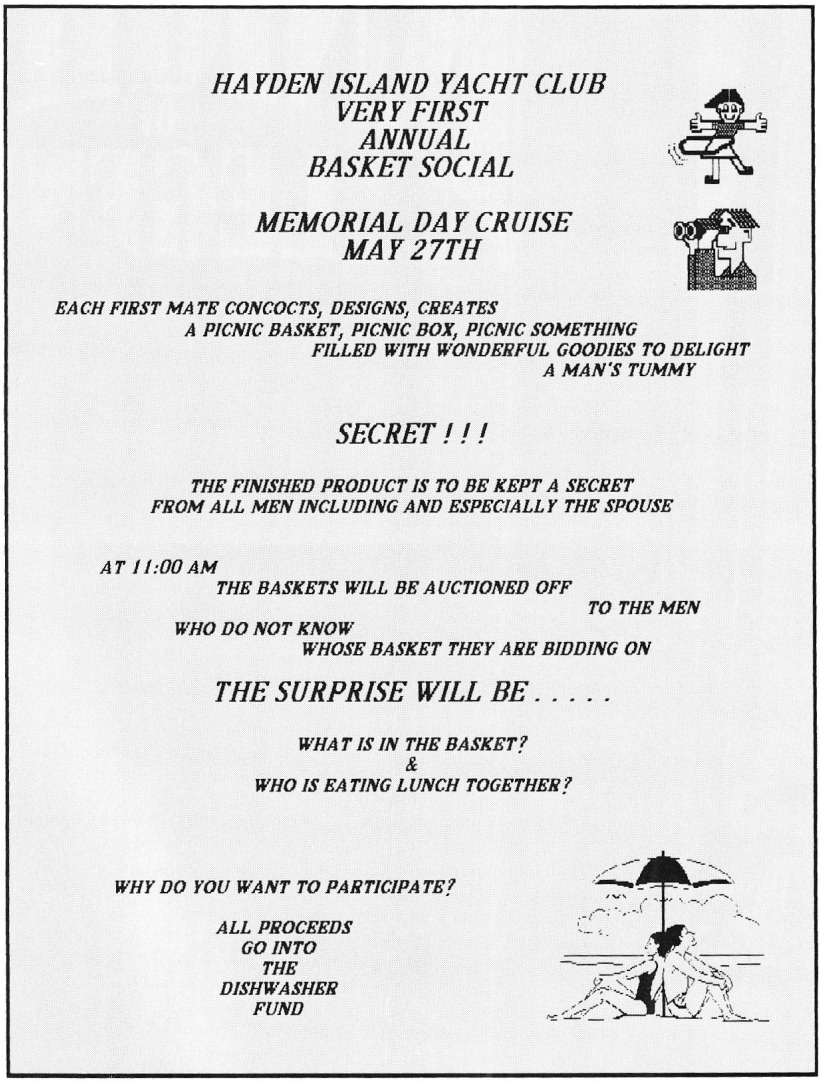


Figure 3. May 1989 centerfold.

Use poster-sized fonts and enlarged graphics to announce club events, business seminars, or special offers. Print the centerfold, like other parts of your newsletter, in double-strike mode for best results. See **Figure 3** for the May 1989 *Signal* centerfold.

CALENDAR OF EVENTS

On the inside-front and -rear cover of the newsletter Martin includes a club-activities calendar. "Out of desperation," he says, he created this "Calendar of Events" as an AppleWorks spreadsheet template. "I couldn't find a calendar program I liked and making a similar calendar with Publish It! would test the patience of a saint."

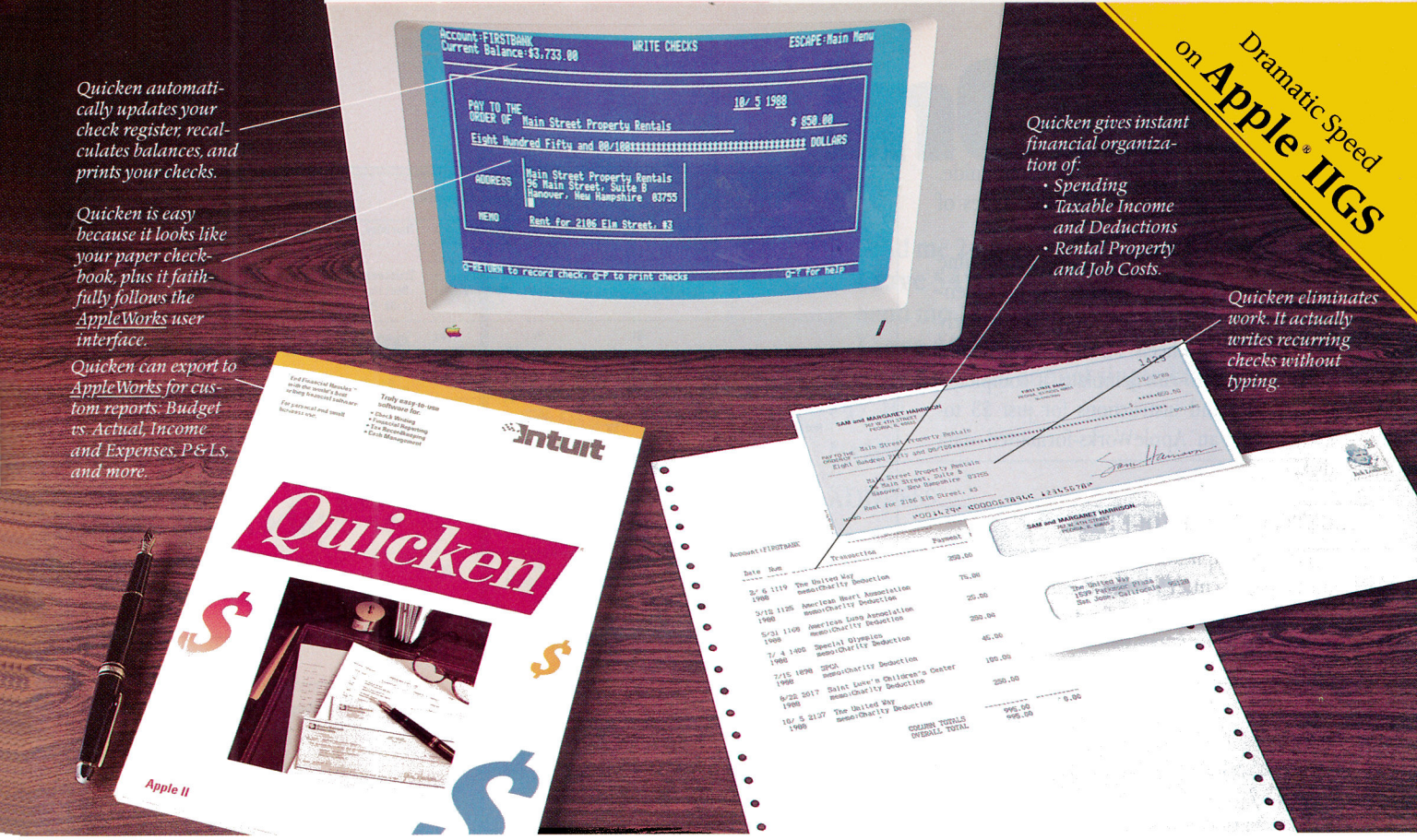
Martin's two-month, 64-line **Calendar Template** (**Figure 4**) fits on a standard 8½-by-11-inch page. Although the *Signal* isn't bound, the middle of the calendar-template page has white space to accommodate folding and permanent binding methods such as stapling, if desired.

Enter dates as values and AppleWorks right-justifies them automatically. Type event information as labels, and center them.

TAKE YOUR TIME

Martin's had to contend with one petty annoyance: Each template month has room for only five weeks with seven days each. This layout works most of the time, but if the 30th or 31st day of the month occurs on a Sunday or Monday, you have to insert those dates at the *beginning* of the template. "Doubling up two days in one small space [at the end of the month] doesn't really work," he says.

To print the completed "Calendar of Events" on an ImageWriter II, adjust the paper's top edge so that it's about an eighth of



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Martin Blumenthal, **inCider Magazine**

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an inch above the red line on the paper guide. Make similar adjustments on other types of printers.

Martin concedes that, investing a little time and patience, anyone could create his Calendar Template. But if you don't particularly like reinventing wheels, Martin says he'll send you the ready-to-run template, a completed sample file, and instructions for just $3 together with an AppleWorks-formatted data disk.

GETTING IT ALL TOGETHER

Prior to duplicating his newsletter, Martin uses a paper cutter to trim the ten small Publish It! 2 pages to their final 5½-by-8½-inch

PRODUCT INFORMATION

AppleWorks Classic
Claris Corporation
5201 Patrick Henry Drive
P.O. Box 58168
Santa Clara, CA 95052-8168
(415) 987-7000
$249

Calendar Template
Al Martin
1121 N.E. 177th St.
Portland, OR 97230
(503) 254-3874
$3 plus AppleWorks-formatted data disk
requires AppleWorks

Dover Publications
180 Varick St.
New York, NY 10014
(212) 255-3755

Labels, Labels, Labels
Big Red Computer Club
423 Norfolk Ave.
Norfolk, NE 68701
(402) 379-4680
$39.95

The Print Shop
Broderbund Software
17 Paul Drive
San Rafael, CA 94903-2101
(415) 492-3500
$49.95

Publish It! 2
Timeworks
444 Lake Cook Road
Deerfield, IL 60015
(312) 948-9200
$129.95

TimeOut QuickSpell
Beagle Bros
6215 Ferris Square
Suite 100
San Diego, CA 92121
(800) 345-1750
(800) 992-4022 (CA)
(619) 452-5500
$69.95

May 1989 — Calendar of Events — Hayden Island Yacht Club

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5	6
	Div 7 7:30 PM		Officers' Meeting 7:00 PM	Trustees' Meeting 7:00 PM	Burgers 'n' Bar 6:30 PM	OPENING DAY
7	8	9	10	11	12	13
Sunday Social 2:00 PM			Flotilla 76 7:30			
14	15	16	17	18	19	20
Mother's Day		NW Sea Ray Ladies 6:30	USPS 7:30 PM	Skippers' Night 6:30 First Mates		Cruise to Hadley's Landing
21	22	23	24	25	26	27
Cruise to Hadley's Landing				General Meeting 7:30 PM		Cruise to Rooster Rock
28	29	30	31			
Cruise to Rooster Rock	Cruise to Rooster Rock Memorial Day					

JUNE 1989 — Calendar of Events — Hayden Island Yacht Club

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
Private Party	Division 7 7:30		Officers' and Trustees Mtg. 7:00			Cruise to Gilbert River
11	12	13	14	15	16	17
Cruise to Gilbert River			Flotilla 76 7:30	Skipper's Night 7:30		
18	19	20	21	22	23	24
				General Meeting 7:30 Summer Bash	Summer Bash St. Helens	Summer Bash St. Helens
25	26	27	28	29	30	
Summer Bash St. Helens						

Figure 4. "Calendar of Events" (AppleWorks spreadsheet).

Commodore's Report, Mike Stansell

I'm writing this before Opening Day and am having a hard time containing my excitement about the event. The job that Arvid Brustad and Mike Chrysler and their committee members are doing is truly excellent.

Arvid's ideas about the participation, formation and decorations are spectacular and unique. He has most certainly taken on a huge task and has made it work. He is a gifted man and his ideas will make Hayden Island Yacht Club the standout flotilla in the parade of boats.

Mike has shown all of us what a bit of creative thinking can do when it comes to yachting clothing. HIYC will be the best dressed club all season long and we have already made expenses so the inventory is clear profit for the club. There is still a wide selection of sizes and styles available for your selection. See the new clothes in our display case in the clubhouse.

If you haven't been at a meeting or on a cruise lately, the next time you do you'll see a lot of new faces. Hayden Island Yacht Club is growing and the newest members attend most all of our events. Come on out and meet these great people; they especially enjoy meeting and talking with folks who have been with HIYC for some time.

The Rosters should be ready for distribution at the May meeting.

Now, let's fire up those engines and go out to bring back some "gold" for Hayden Island.

Vice Commodore's Report, Jess Heitman

Skippers' Night resumes May 18th at 7:30 with the bar open at 6:30. Same menu: steak, vegetable, baked potato, salad and trimmings.

The HIYC skippers are now going out in force for the Cruiser Navigator contests (a.k.a. log races). This last time we nailed down 2nd and 3rd places.

HIYC Wall of Fame

Special thanks to those who made a special contribution to the club during the month of

April, 1989

Mike Chrysler
clothing selections

Dennis and Harlene Austin
Opening Day artists

Brian and Debbie Thom
help in the kitchen

Jack Gold
help in the kitchen

Frank and Amy Sherwood
help in the kitchen

Jack Patton
entertainment

Frank Sherwood
entertainment

Leo Haglund
entertainment

Kathy Henkelman
"Best Actress"

Craig and Barbara Weatherford
cleaning and rehanging the burgee collection

Figure 5. Sample two-page paste-up (proof B).

size. He then glues pages 10 and 1 onto the left and right sides, respectively, of a standard 8½-by-11-inch piece of paper. This pasteup comprises proof A.

Glue pages 2 (left) and 9 (right) onto a second sheet to create proof B (**Figure 5**) and pages 8 (left) and 3 (right) onto a third to generate proof C.

A fourth sheet (proof D) contains pages 4 (left) and 7 (right); a fifth sheet (proof E) joins pages 6 (left) and 5 (right).

Martin hires a local print shop to copy and collate the final newsletter, which consists of three two-sided pages: proof A/proof B, proof C/proof D, and proof E/centerfold. He has the shop copy the "Calendar of Events" onto the back of the *Signal* cover.

LAUNCH IT!

After adding a cover to each set of precollated pages, Martin folds the packet in half vertically, securing its outer edges with a single staple. He uses **Labels, Labels, Labels** from Big Red Computer Club (BRCC) to print standard-sized mailing labels.

An AppleWorks database file contains the newsletter's circulation roster of about 170 individuals and organizations. BRCC's utility reads AppleWorks database files directly and merges black-and-white or multicolor **Print Shop**-type graphics onto each label for a nice effect.

BON VOYAGE

Bowing to tradition can pose temporary setbacks for any Apple II desktop publisher. But thanks to Publish It! 2's flexible design options, supplemented by a few manual cutting and pasting techniques, you can produce a tidy publication like Al Martin's in less than two working days and at a cost of about 35 cents per piece (plus 25 cents postage). Whether you're involved in publishing an employee handbook, a computing newsletter, or a children's storybook, why not take Martin's templates, Appleworks Classic, and Publish It! 2 along on *your* next voyage?□

CYNTHIA E. FIELD IS A FREE-LANCE JOURNALIST SPECIALIZING IN COMPUTER-RELATED TOPICS. SHE'S A CONTRIBUTING EDITOR AND THE AUTHOR OF FIELD TRIP, *INCIDER*'S COLUMN ON EDUCATIONAL SOFTWARE. WRITE TO HER AT 60 BORDER DRIVE, WAKEFIELD, RI 02879. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

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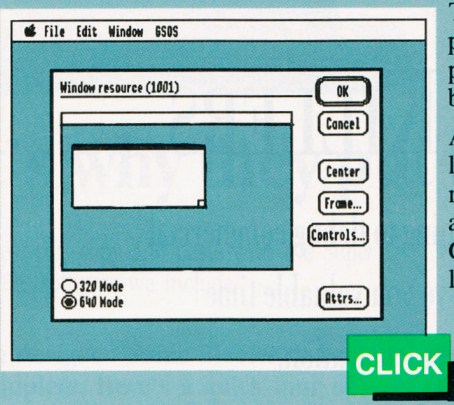
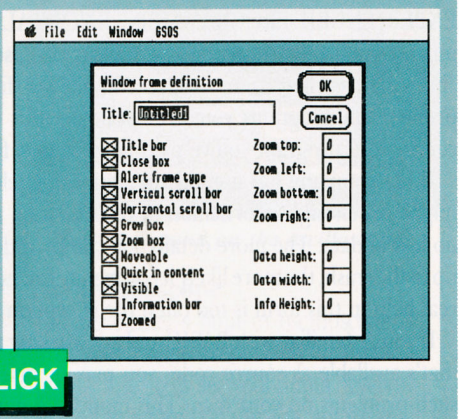


TML Pascal II takes you from product conception to finished product faster and easier than ever before.

A tightly integrated editor, compiler, linker, and debugging environment makes full use of the new features and capabilities of Apple's new GS/OS System Software v5.0 at lightning speeds.

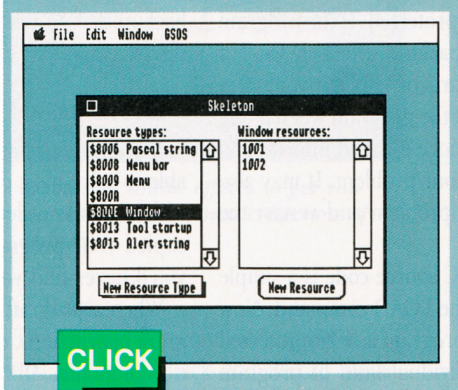
And, with TML Pascal II's new *Resource Editor*, your program's Desktop features (ie. menus, windows, dialogs, etc.) are graphically designed on screen with a click of the mouse. Instantly, your program's user interface takes on all of the features you have come to expect from your favorite IIGS products.

Using the Resource Editor, what would take hours now requires only minutes. And that means more time to dedicate to your application specific code.



Of course your programming efforts are not limited to only Textbook and Desktop applications. TML Pascal II also allows you to create both New Desk Accessories (NDAs) and Classic Desk Accessories (CDAs) with style. All within the same tightly integrated environment.

So, you see, whether you're a beginning or advanced programmer, TML Pascal II makes programming the Apple IIGS incredibly fast and easy. **Remember, you simply Point and Click!** Retail price $125.



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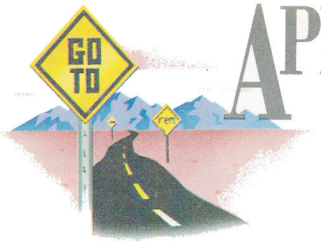

BUG KILLERS

Help yourself! Learning to debug commercial software will save you valuable time and endless frustration.

By DAN BISHOP

EXPERIENCED PROGRAMMERS KNOW ALL TOO WELL HOW much time it takes to track down and kill those pesky programming "bugs." In earlier columns I've emphasized finding and correcting problems in programs you write yourself. But what happens when a commercial program you've paid good money for crashes?

If the company has a good reputation for telephone response, you might get enough information to recover from the crash with little or no loss of data. The more details you can provide about events leading up to the crash, the more likely it is someone can help you. Unfortunately, real help in this form is too often the exception rather than the rule.

If you're familiar with BASIC and are working with a BASIC program that's available as source code, you may be able to locate and correct such problems on your own. This month I'll outline some of the steps you can take when a program decides to go bonkers.

SOURCE-CODE AVAILABILITY

Few people appreciate the difference between programs supplied as "BASIC source code" and those that are copy protected. If the program is in BASIC source code, you can copy it for backup purposes, LIST it to your screen or to the printer, and tailor parts of it to suit your own personal needs. You can also examine parts of the program when a bug crashes it. This last feature lets you provide more detailed information to a computer guru who's assigned to solve your problem. It may also tell you what *you* need to know to solve the problem and restart the program.

Finding out whether a program is in BASIC source code is a simple procedure. Put the program into RAM with the LOAD command. Now type the word LIST and press Return. If the program is in unprotected BASIC source code, you should see the individual lines of program code scroll across your screen. As you'll see shortly, this level of access to the program code is worth its weight in gold.

Unfortunately, to prevent copying and to protect copyrights, many commercial programs are "copy protected." You can run these programs only from the master disk, and you can't interrupt the running program. Such programs won't let you simply LOAD and LIST the program code or break into the program during execution. Most of what follows here deals with programs that do let you create a source-code listing.

Your first step is to anticipate problems before they occur. Few people bother to print the source-code listing when they purchase a new program. Doing so may seem like a needless chore, but if a program crash should occur, that listing can be very useful. If there's any hope of recovering from the crash, you must take care not to alter the contents of your computer's memory except in the most delicate way. You can't load the original program and make a listing at the one time you need it most. So print your program listing, and keep it with your other documentation where you can easily find it.

You should also be very particular about making backups of your disks. Backups made daily or twice daily ensure that you won't have to redo more than one day's worth of data entry to bring your files up to date.

Follow this one simple, yet important, rule with backups after a program crash: As soon as a problem occurs from which you can't recover, requiring you to go back to your most recent backup disks, identify those backup disks with a red sticker. Now say to yourself, "I will not, under any circumstances, use these disks except for making copies." Then copy the disks and use those duplicates. The great temptation following a program crash is to use your original (and only) backup disk to restart the program. If you haven't corrected the bug, the program may crash again, wiping out the backup data files as well.

A LITTLE BASIC KNOWLEDGE

If you're very familiar with BASIC and programming, you may be able to solve most of the program problems that come your way. Even with a basic knowledge of BASIC, there's still a lot you can do. If you've copied your programs and data files and play only with these copies, you'll never find yourself worse off than when you began.

When a program crashes, your Apple merely stops processing program instructions, displays an error message, and waits for you to give it a command. All the variables the program uses up to the time of the crash remain in memory with the values assigned to them when the crash occurred. Furthermore, you can enter several "immediate-mode" ►

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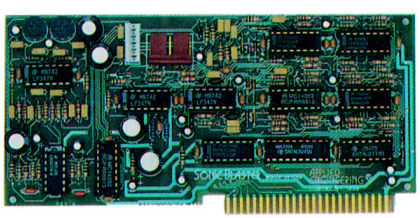


Sonic Blaster's ultra-low-noise digital design is certified by the FCC.

Use your own equipment.

Use the equipment you already have. You don't need special amplified speakers because Sonic Blaster's built-in amplifier works with standard 8 Ohm speakers, small or large, including those monsters next to your stereo. Take sounds from your favorite TV show, album, compact disk, VCR, even a microphone. Then amplify, play backward, create echoes and fades, cut, copy and paste with the Super Hi-Res software we include.

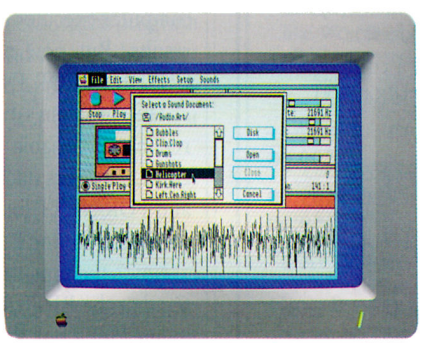
We designed Sonic Blaster to be complete. Here's a quick tour of part of the software screen:

The Buttons

Stop, Play, Pause and Record buttons, perform the same functions they do on a tape recorder. Also included are Single and Continuous Play buttons and a VU Meter to visually represent input levels.

The Sound Graph

The Sound Graph is the waveform at the bottom of the screen. Portions of the Sound Graph are selected with the mouse and then edited using the cut, copy and paste options within the Edit menu.



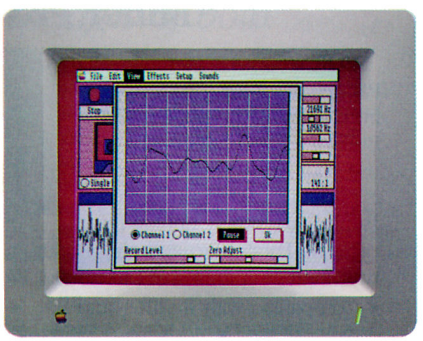
Seventeen sound effects to get you started. Add your own collection of sounds.

The Bars

The Volume bar controls amplitude of the playback. Playback and Record mode sample rates are adjusted with the next pair of bars and the Record Level bar adjusts the level from the source connected to the Sonic Blaster's input connector.

The Blocks

Three blocks give readouts of file length, available memory, bytes selected and resolution ratio.



"See" the sound on the oscilloscope.

The Oscilloscope

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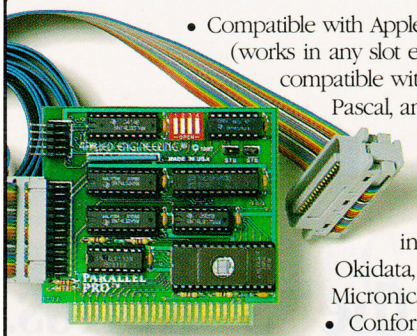
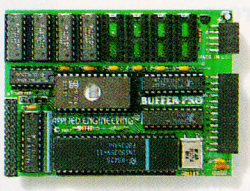


• Compatible with Apple IIe, IIGS, and II+ (works in any slot except 3). • Fully compatible with ProDOS, Dos 3.3, Pascal, and CP/M. • Works automatically with virtually all software. • Supports almost all parallel printers including: Epson, IBM, Okidata, C. Itoh, NEC, Star Micronics, Toshiba, and more.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

Buffer Pro™



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

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commands, such as PRINT, LIST, GOTO, and assignment statements without affecting memory. This gives you some tools for troubleshooting a problem.

The simplest bug to fix is bad data entered via the keyboard. A well-written program contains code that anticipates bad data entry and prints a message with another prompt to re-enter the data. Sometimes the programmer overlooks a particular condition, and improper data entry crashes a program. If this happens and you can determine which variable caused the problem, you can change the variable's value "manually" and restart the program with an appropriate GOTO command.

For example, enter and run the following short program:

```
 10 GOSUB 100
 20 GOSUB 200
 30 INPUT "ANOTHER ROUND? (Y/N)"; X$
 40 IF X$ = "Y" GOTO 10
 50 END
100 INPUT "ENTER TWO NUMBERS: " ; G, X
110 RETURN
200 A = G/X: B = X/G
210 PRINT G"/"X" = "A
220 PRINT X"/"G" = "B
230 RETURN
```

Cycle through the menu several times, entering any numbers you like except zero. When you have a feel for how the program works, enter a zero for one of the numbers. Almost immediately, you get a DIVISION BY ZERO ERROR IN 200 message. The program has crashed.

Enter LIST 200 to look at the line where the problem may have occurred. This line contains two division problems, so the error might be the result of a bad value for either X or G. Enter PRINT X, then enter PRINT G. From the results displayed, you now know which variable is the culprit. If you found that G (or X) equals zero, enter the command G = 1 (or X = 1) and press Return. To demonstrate that you've changed memory, enter PRINT G and PRINT X again.

To restart the program, enter GOTO 200. The program resumes immediately at line 200, maintaining all variable values in memory. The computer executes the two PRINT statements, displaying the calculated results. But now another message appears: RETURN WITHOUT GOSUB ERROR IN 230. What happened?

This problem's related to the previous one. Although your Apple retains all variable values (such as A, B, G, and X) after a program crash, it loses its stack memory, which keeps track of RETURN addresses and FOR/NEXT loops. When the program encountered the RETURN command in line 230, your poor Apple didn't know where to turn.

Now's the time to look at your program listing. In this example, you see that the RETURN in line 230 belongs to the subroutine beginning in line 200. Look through the listing to find the GOSUB 200 command that sent you to this subroutine in the first place (line 20). To resume program execution, enter GOTO 30 (the first line *after* the GOSUB command). You've corrected your first bug "on the fly" (so to speak).

You can correct other similar errors in the same manner. An ILLEGAL QUANTITY error can arise in a number of ways. A negative value for an array subscript or for the argument of a logarithmic or square-root function produces a program crash with this error message. To demonstrate, change lines 200–220 in the example above:

```
200 A = LOG(G): B = SQR(X)
```

```
210 PRINT "LOG OF " G " = " A
220 PRINT "SQR OF " X " = " B
```

Now when you run the program, enter only positive values until you want the program to crash. Then enter a negative value. Use exactly the same procedure described above to recover from the crash and get the program running again.

While dealing with this example, let's do a little innocent program tailoring. Suppose you use this program many hours each day while working with a numeric keypad. You may find that hunting for the *Y* key after each cycle is a real bother, and decide that entering *99* to end the program might might be an easier solution. Simply change lines 30 and 40:

```
30 INPUT "PRESS RETURN (OR 99 TO QUIT)"; X$
40 IF X$ <> "99" THEN GOTO 10
```

Note that you use the "not equal" logic in line 40, consistent with the revised program. If this were an important program you wanted to keep, you'd be sure to SAVE it to record your new changes. *Don't* use the same name as the original program's (or else save it to a different disk). That way, if you've made a serious error, the original version won't be ruined.

TROUBLESOME LOOPS

Loops are essential ingredients in most useful programs, handling a large amount of data automatically with relatively few instructions. Two common errors occur, however, which you can often correct if you handle the error condition properly.

OUT OF DATA occurs when the program executes a READ statement with nothing available for it to read. It would be nice if you could simply supply the missing data and continue. First, PRINT the variables listed in the line containing the READ statement and the lines just before it, to see whether you can determine what might be missing. If possible, enter the missing data with an assignment statement, as you did for G or X in the previous example. Often, you won't know or recognize what's missing, so you can't make corrections this way. In that case, go on to the step described below.

If your program crashed at a READ command within a loop, you want to be sure that the loop doesn't execute again, because the program will crash on the very next loop cycle. If you can find the variables that control whether or not the loop is executed, assign appropriate values to these variables to end the loop. For example, if a conditional test such as

```
IF ND = 200 THEN GOTO 1275
```

controls the loop, you might enter

```
PRINT ND
```

If you find that ND = 127, enter ND = 200. Then enter a GOTO command as above to restart the program. The best line to which to refer is the conditional test that controls the loop. The program assumes the loop is finished and ends. Other types of loops may be more difficult to figure out, but you can control them the same way.

On the other hand, a FOR/NEXT loop loses its loop-controlling information from the stack when a program crashes. You can't restart the loop. If you try, the NEXT WITHOUT FOR ERROR message will appear when the program encounters the NEXT statement at the end of the loop. Enter your GOTO command with the line following the NEXT statement, or treat this the same way as described for subroutines above. ►

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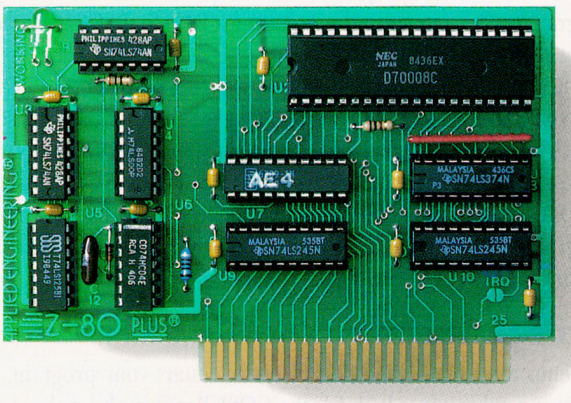

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A BAD SUBSCRIPT error can occur anywhere in a program, but it's most likely to happen within a loop. This error results from an array dimensioned to be smaller than the program requires. For example, a program might dimension AR with a DIM AR(1000) statement. A loop that isn't terminated properly may attempt to cycle to AR(1001). The program crashes immediately, indicating a BAD SUBSCRIPT error has taken place.

When you look at the line, it may refer to AR(M). Enter PRINT M, and you find that M = 1001, explaining the cause of the crash. If you can change M to an acceptable value (such as 1000 in this example), do so and restart the program at the line that crashed. Otherwise, enter a GOTO to a line following this line or, preferably, back to the main program, to the line following the GOSUB call that executed the offending subroutine.

LOCATING THE MENUS

Menus are usually the safest places to restart your program. If the menu is a subroutine, look for the GOSUB call in the main program that calls this menu, and use that line number with your GOTO command. Once the menu display appears, select the option that lets you end the program. Depending on what internal data you may have lost, the program may end smoothly or with a succession of error messages you'll have to deal with as described here. Avoid the temptation to continue running the program just because the menu appears.

With the program ended, make a copy of the disk you just finished working with, set it aside, and try to run the program from the copy disk you just made. With luck, the program will behave normally, most of the data you entered will be intact, and you'll need to make just a few insignificant edits.

SAFETY IN NUMBERS

If you have any hope at all of recovering from a program crash, *don't* attempt to edit the program in any way. If you enter a new line, alter an existing line, delete a line of program code, or even enter a number right after Applesoft's bracket prompt, your Apple assumes you've given up and erases all data in memory. Although the GOTO command will still work, it'll start you up in a fresh version of the program that crashed. Because this new program has no data in memory with which to work, it'll produce only garbage output, and will likely crash with a RETURN WITHOUT GOSUB, BAD SUBSCRIPT, or NEXT WITHOUT FOR error.

As you can see, there's a lot you can do to help save the day when your program crashes. Compare the amount of effort you must exert to fix a problem to the amount of work needed to restart data entry from your freshest backups. If the problem occurred in the first half-hour's work, you're probably better off starting over from scratch, using copies of yesterday's backup disks. If you've entered two or three hours' worth of work, you may be better off trying to recover from the crash. If you've been really naughty and your most recent backup disk is a month old, don't say I didn't warn you!□

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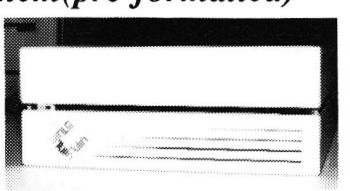

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SPEAKING OF GRAPHICS

LETTERS, WE GET LETTERS

What's on your mind? Sharing questions and ideas helps other Apple II artists enhance their skills.

By ROBERTA SCHWARTZ and MICHAEL CALLERY

A QUARTER FOR YOUR THOUGHTS! Reader response to our column has not only inspired us, but helped generate this month's installment. We're delighted to be receiving so many letters from you. As promised, whenever your questions refer to products or solutions to problems that might interest other readers, we'll address them here. What concerns Apple II artists? Read on.

PHOTOGRAPHING THE SCREEN

After reading "The Medium Is the Message" (August 1989, p. 60) and learning there's an easy way to photograph the computer screen, Robert Ewing of Longmeadow, Massachusetts, asked for specific instructions.

No problem, Robert. Making slides (or clear prints) from your Apple II screen is, literally, a snap. All you need is a good 35mm camera, a shutter release, a tripod, and a little patience. Use whatever type of film you prefer, but consider that Ektachrome-type films stress the blue end of the spectrum, whereas Kodachrome-type films tend more toward the red/yellow.

Place your camera on the tripod, and attach the shutter release. Bring the graphic onto the screen either with a slide-show program, such as John Link's freeware program, **SHOWDIR.GS**, or by loading it into a paint program. If you choose the latter approach, be sure to use the program's "show screen" command to eliminate palettes and menus.

The only problem you might encounter is in framing your shot. You don't want to include the monitor itself—just the screen. If you have a macro or close-up lens, you're all set. The standard 50mm or 55mm lens on most 35mm cameras, however, won't let you get close enough to the screen to eliminate the monitor.

The simplest solution is to use a large sheet of matte-black cardboard, found in most art-supply stores. Use a sharp razor blade to cut out a window the size of your screen, and tape the cardboard to the monitor. Now only the screen should be visible. Darken the room to eliminate glare.

Set your exposure time to greater than $\frac{1}{30}$ of a second. (We usually use $\frac{1}{8}$ of a second.) Use a light meter to determine the proper f/stop. Setting exposure time can be tricky, so allow room for error by "bracketing" your shots. Take three photos for each image: one at the recommended f/stop, one at one f/stop above the recommended, and one at one f/stop below.

If you want overhead transparencies—rather than slides or photographs—of your computer images, you can make them directly on your dot-matrix or laser printer. Simply use transparency film rather than printer paper. If you're using a laser printer, be sure to use the heat-resistant transparency film made especially for copiers and laser printers.

DISTINGUISHING FILE TYPES

Jim Murphy of Cresco, Iowa, asked us to dispel some of the confusion surrounding the numerous file types for Apple II graphics.

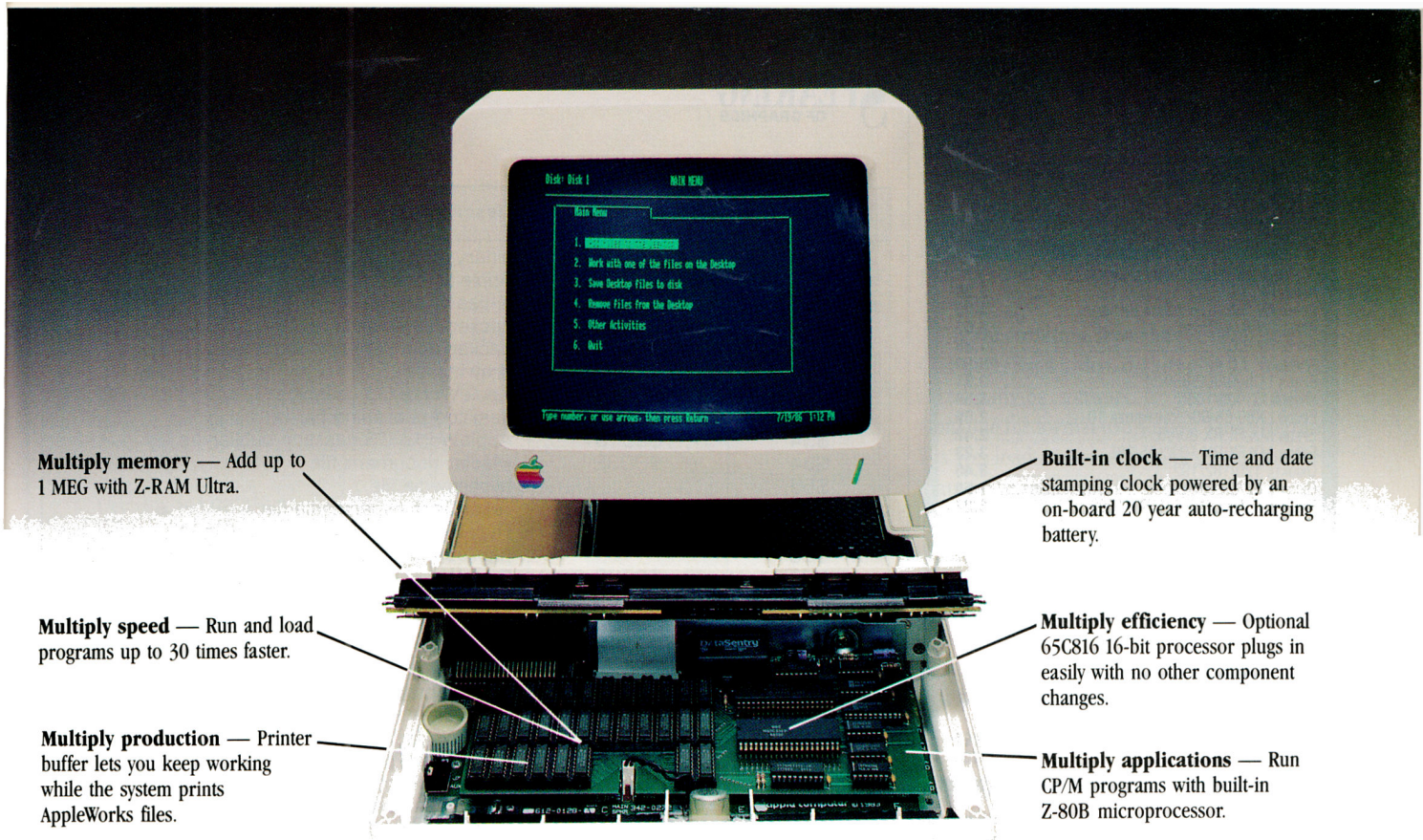
That's a hefty challenge, Jim. In the old days of DOS 3.3, programs stored graphics screens, most of which were standard hi-res, as 34-sector binary files (requiring lots of disk space). A graphics program saved the bit image from screen to disk—all 8192 bytes of it. Then programmers learned you could chop a few bytes off the end of the file with no visible difference in the graphic, and files shrunk to 33 sectors.

One sector fewer may not seem like much, but it lets you store 14 instead of 13 pictures on a 5¼-inch floppy disk. Some confusion ensued, as certain programs saved graphics as 33-sector files, while others saved them as 34-sector files. But to most, the difference was indistinguishable.

The greatest snarl occurred, however, when different paint programs appended various suffixes and prefixes to graphics' filenames. If you named a graphic *TREE*, for example, one program would save it as PIC.Tree, another would save it as PI.TREE, and a third would save it as TREE.PIC. Graphics novices suffered needlessly, before learning they had to rename their pictures only, if they wanted to use them in different paint programs.

As graphics became more important to games and educational software, programmers developed compression schemes to save many more pictures on a single disk. You compress (or *pack*) picture data by translating long sequences of repeated bit patterns into a multiplier-value pair—such as "five green," instead of "green, green, green, green, green."

Unfortunately, there were no standards here, either; every programer followed his or her own rules. We (Michael and Roberta) have ►



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$06		binary
$07		Apple III font
$08		hi-res or double-hi-res picture
$08	$4000	packed hi-res picture
$08	$4001	packed double-hi-res picture
$53		drawing file
$53	$8010	AppleWorks GS graphics
$54		desktop-publishing file
$54	$8010	AppleWorks GS desktop-publishing file
$54	$DD3E	Medley document file
$55		hypermedia file
$55	$8001	Tutor-Tech hypermedia file
$55	$8002	HyperStudio stack
$C0		packed super-hi-res
$C0	$0000	PaintWorks packed picture
$C0	$0001	packed super-hi-res picture
$C0	$0002	Apple Preferred Format picture
$C0	$0003	packed QuickDraw II PICT file
$C1		super-hi-res picture
$C1	$0000	binary screen dump*
$C1	$0001	QuickDraw PICT file
$C2		PaintWorks animation
$C3		PaintWorks palette
$C5		object-oriented graphics
$C5	$8000	Draw Plus document
$C5	$C000	Architecture design document
$C8	$0000	Apple IIGS font (standard QuickDraw II)
$CA		Apple IIGS Finder icon file
$D2	$0000	Art & Film Director film file*

Table. Graphics file types from *Apple II Tech Notes*, May 1989 (* not listed; obtained by cataloging disk).

at least five packer/unpackers. To view a compressed file, you have to go back and decompress it. This can lead to severe problems, if you forget which packer you used. (Michael can attest to the frustration this causes, as he just had to make corrections on screens created and packed in 1982.)

Programmers continued inventing other tricks to reduce valuable disk space when saving hi-res pictures. The most popular was probably Mark Pelzarski's Picture Object Editor in **The Graphics Magician**. The program recorded the moves you made when creating a graphic, then saved those moves—hence the picture—as a text file.

As time passed, along came the Apple IIe, ProDOS, and double hi-res. ProDOS, a much more elaborate operating system than DOS 3.3, includes subdirectories and more sophisticated file typing. Double-hi-res graphics require two 8192-byte bit maps—one in the main 64K of memory and the other in auxiliary memory.

Computer artists switched quickly to ProDOS to use Broderbund's exciting double-hi-res program **Dazzle Draw**. Programs still saved graphics under ProDOS as binary files. Before long, different double-hi-res graphics programs were adding to the confusion by saving images in different ways.

Beagle Graphics, for example, saved the picture in two files: It saved the image in main memory under the filename you selected, while saving the auxiliary-memory portion in a file with the same name plus the extension *.aux*. Dazzle Draw, on the other hand, saved a single file consisting of the auxiliary-memory data followed by the main-memory data. (Because of Dazzle Draw's popularity, many programs such as Publish It! accept this format.)

Next came ProDOS 16, and the Apple IIGS. And finally, a glimmer of light appeared at the end of the file-type tunnel: Apple Computer set—and published—standards for file types. ProDOS 16 and GS/OS not only have file types, they have auxiliary types as well. The file type, which is compatible with ProDOS 8, is 1 byte long, thus supplying 256 different types of files. The auxiliary type is 2 bytes long and can specify 65,536 subtypes.

Developers can obtain a file type from Apple's Developer Technical Support (DTS). DTS encourages developers to make their file formats available as a technical note, so that other developers can read and use their files.

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This information, available from APDA (**Apple Programmers and Developers Association**), is included in the *Apple II Technical Notes* series.

The accompanying **Table** lists the file types that interest most computer artists. The Apple IIGS Finder knows them and will put this information into the Get Info dialog box. The Finder also uses these data to connect an icon with a document.

For super-hi-res graphics, you'll find that some paint programs give you the option of saving files in several formats. The two most transferable types are *screen format* and *Apple Preferred*.

A screen file (type $C1 or PIC, auxtype $0000) is an uncompressed bit map saved to disk and is always 32K long. Save your graphic in this format to use with many slide-show programs, such as SHOWDIR.GS; you can't use screen format with full-page pictures.

An Apple Preferred file (type $C0 or PNT, auxtype $0002), on the other hand, has compressed data and varies in length. Select this file format if you want your graphics to be compatible with a wide range of programs.

Single- or double-hi-res graphics are all binary files, type $06. If the length of the file is 33 or 34 sectors (DOS 3.3) or 16 blocks (ProDOS), it's probably an uncompressed hi-res picture.

You can easily view this type of file with Applesoft BASIC: Enable the hi-res screen by typing HGR (Return), BLOAD (name of picture), A$2000 (Return).

If the file's length is 66 sectors or 33 blocks, it's probably an uncompressed double-hi-res picture. You can view this type of picture without a paint program, only if you know how to move blocks of memory from main to auxiliary memory—that's another story!

THE GS SOLUTION

Sorry, Jim, this is probably still a bit confusing, but if you have an Apple IIGS, there's a simple solution. Rush out to get Roger Wagner's **The Graphics Exchange** or **SHR.CONVERT** by Jason Harper. With these programs you can look at just about any graphic and convert from one format to another.

Another solution, if you have Digital Vision's **ComputerEyes** video digitizer, is to use the accompanying software to convert graphics from one file format to another. This program lets you load and save graphics in all the formats we've mentioned—and more.

SPECIAL DELIVERY

Signed, sealed, and delivered—keep those cards and letters coming. Your correspondence lets us know what projects Apple II artists are working on and what topics we should highlight in future columns.□

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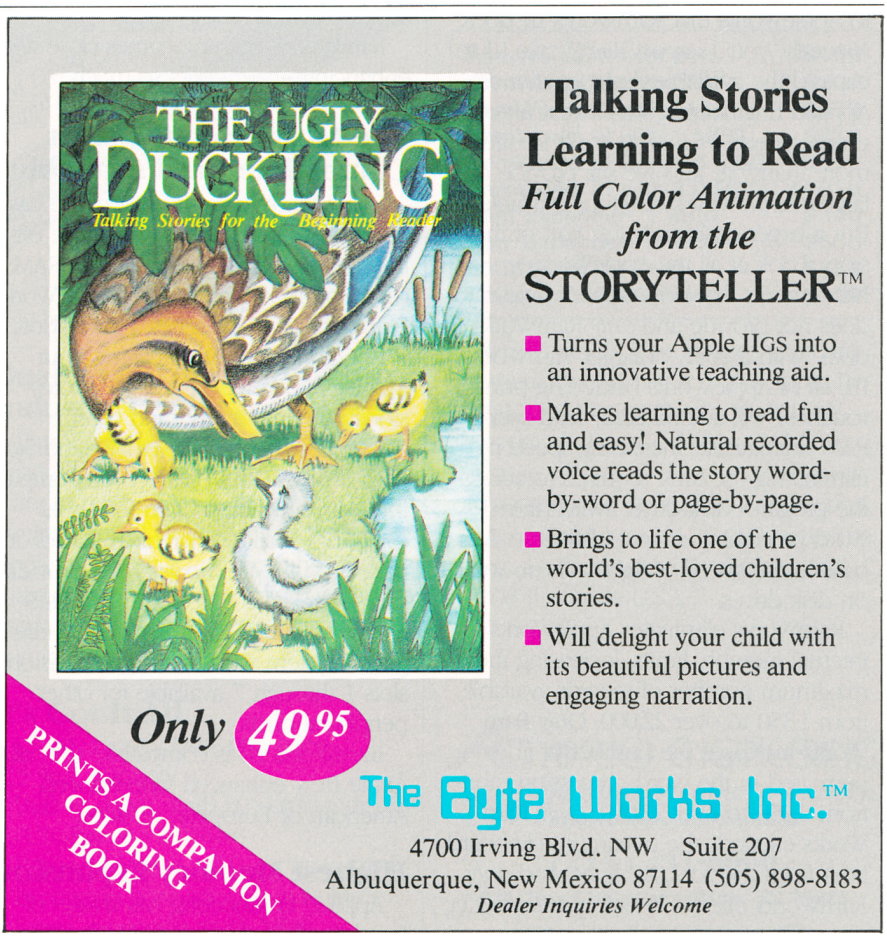

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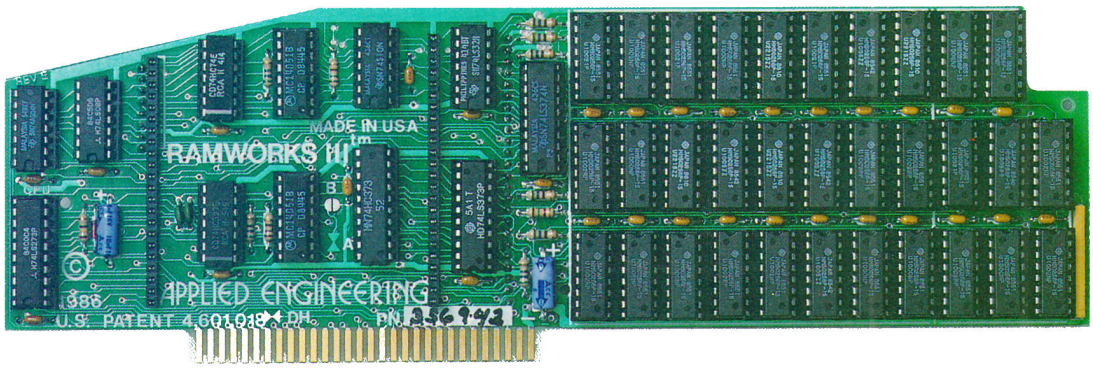

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While RamWorks III is recognized by all memory intensive programs, NO other expansion card comes close to offering the multitude of enhancements to AppleWorks that RamWorks III does. Naturally, you'd expect RamWorks III to expand the available desktop, after all Applied Engineering was a year ahead of everyone else *including Apple* in offering more than 55K and we still provide the largest AppleWorks desktops available. But a larger desktop is just part of the story. Look at all the AppleWorks enhancements that even Apple's own card does not provide and *only* RamWorks III does. With a 265K or larger RamWorks III, *all* of AppleWorks (including printer routines) will automatically load itself into RAM dramatically increasing speed by eliminating the time required to access the program disk drive. Switch from word processing to spreadsheet to database at the speed of light with no wear on disk drives.

RamWorks eliminates AppleWorks' internal memory limits, increasing the maximum number of records available from 1,350 to over 22,000. *Only* RamWorks increases the number of lines permitted in the word processing mode from 2,250 to over 22,000. *Only* RamWorks expands the maximum clipboard limit from 250 to 2,042 lines. And *only* RamWorks offers a built-in printer buffer, so you won't have to wait for your printer to stop before returning to AppleWorks. And auto segments large files so they can be saved on two or more disks. You can even have Pinpoint or MacroWorks and your favorite spelling checker in RAM for instant response.

RamWorks, nothing comes close to enhancing AppleWorks so much.

The Most Friendly, Most Compatible Card Available.

Using RamWorks III couldn't be easier because it's compatible with more off-the-shelf software than any other RAM card. Popular programs like AppleWorks, Pinpoint, TimeOut series, HowardSoft, FlashCalc, ProFILER, Managing Your Money, SuperCalc 3a and VIP Professional to name a few (and most hardware add on's like ProFile and Sider hard disks). RamWorks is even compatible with software written for Apple cards. But unlike other cards, RamWorks plugs into the IIe auxiliary slot providing our super sharp 80 column text (U.S. Patent #4601018) in a completely integrated system while leaving expansion slots 1 through 7 available for other peripheral cards.

RamWorks III is compatible with all Apple IIe's, enhanced, unenhanced, American or European versions.

Highest Memory Expansion.

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

It Even Corrects Mistakes.

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

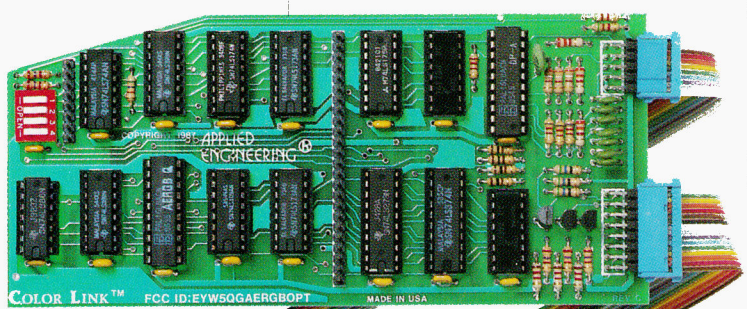
The Ultimate in RGB Color.

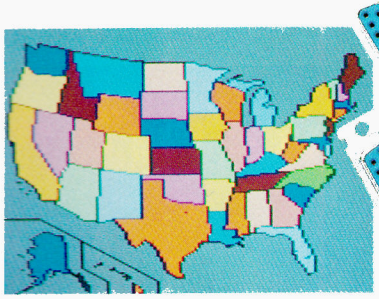
RGB color is an option on RamWorks and with good reason. Some others combine RGB color output with their memory cards, but that's unfair for those who don't need RGB *and* for those that do. Because if you don't need RGB Applied Engineering doesn't make you buy it, but if you want RGB output you're in for a nice surprise because the RamWorks RGB option offers better color graphics plus a more readable 80 column text (that blows away any

RamWorks III and ColorLink are trademarks of Applied Engineering. Other brands and product names are registered trademarks of their respective holders.

composite color monitor). For only $129 it can be added to RamWorks giving you a razor sharp, vivid brilliance that most claim is the best they have ever seen. You'll also appreciate the multiple text colors (others only have green) that come standard. But the RamWorks RGB option is more than just the ultimate in color output because unlike others, it's fully compatible with all the Apple standards for RGB output control, making it more compatible with off-the-shelf software. With its FCC certified design, you can use almost any RGB monitor because only the new RamWorks RGB option provides both the new Apple standard analog and the IBM standard digital RGB outputs (cables included). The RGB option plugs into the back of RamWorks with no slot 1 interference and remember you can order the RGB option with your RamWorks or add it on at a later date.

ColorLink™ RGB Option





True 65C816 16 Bit Power.

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

Endorsed by the Experts.

A+ magazine said "Applied Engineering's RamWorks is a boon to those who must use large files with AppleWorks...I like the product so much that I am buying one for my own system." inCider magazine said "RamWorks is the most powerful auxiliary slot memory card available for your IIe, and I rate it four stars...For my money, Applied Engineering's RamWorks is king of the hill."

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

Steve Wozniak, the creator of Apple Computer

Apple experts everywhere are impressed by RamWorks' expandability, versatility, ease of use, and the sheer power and speed that it adds to any IIe.

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It's Got It All.

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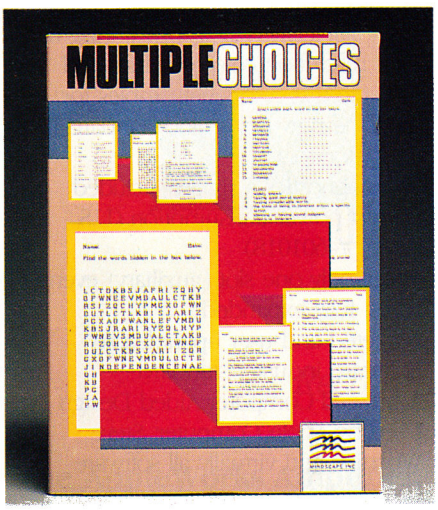
simple. The software provides a work screen for the test you're constructing. Each screen differs, depending on which format you're creating. For instance, when working with Word Search you simply type in the hint followed by the word. In Fill in the Blanks, you must type a sentence with a blank space, then



type opposite your sentence the word that fits in the blank. Eight of the activities let you enter up to 50 questions per test or puzzle; with the multiple-choice test, however, you can enter up to 120 lines.

THE SPECIALIST

What makes Multiple Choices different from an ordinary word processor is the way it manipulates the material you've typed on the work screen. In activities such as Word Search or Acrostics, the program actually constructs the puzzle for you from your input. In activities such as Matching, Multiple Choices saves you time by automatically randomizing the order of the columns that make up the test.

Multiple Choices also lets you transfer data from one type of activity to another—a valuable and time-saving feature. You can transfer the file you created for Word Search to Double Acrostics and Matching, for instance. The end result is that Multiple Choices constructs three different activities from one set of questions.

When printing your test, you can opt to run out hints along with the questions (when applicable), some or all questions included in the test, and an answer key for any of the nine various test formats. The latter feature not only saves time, but also prevents transcription errors. Teachers make mistakes, too, and the automatic answer key is a worthwhile safeguard.

PASS OR FAIL

Unfortunately, there's a flip side that prevents Multiple Choices from reaching its potential. To begin with, different test formats limit the transfer feature. For instance, you can't transfer data between a matching test and a multiple-choice test because the activities' formats are different. Therefore, only certain types of data are exchangeable with other tests. Even then, while answers might transfer, you'll probably have to convert single-word questions to statements.

Another potential drawback occurs when working with puzzle-type activities, such as Word Search and Acrostics. Multiple Choices doesn't use all your words when it constructs the activity.

For example, I typed the titles of 15 novels as clues in Word Search and provided the author's name as the answer. When I printed the 16-by-16 letter block for the first time, the program included only eight of the 15 titles. When I printed it a second time, only five had been worked into the puzzle.

This doesn't indicate a programming error. When randomizing the letter block, the program can arrange only a certain number of answers from the data provided. This limitation may present a problem, however, if a teacher is planning to use Word Search as a 15-point quiz (assuming he or she used 15 words in the work area) and only seven words show up in the puzzle.

This type of selectivity doesn't manifest itself when printing tests such as Fill in the Blank, True/False, or Multiple Choice. Note also that multiple-choice questions let you type in an unlimited number of possible answers for each query, including "none of the above" and "all of the above." Remember, though, the 120-line limit will come into play here.

A matching test consisting of two columns of 20 questions and answers took two pages to print and the answer key took a third page. (The key is a straight line of numbers and letters.) The test consumed so large an area because the program triple-spaced between entries. Admittedly, triple spacing made the test quite readable, but this could be bothersome for the paper-conscious.

Multiple Choices uses a clear, easily implemented interface. You can use either the keyboard or the mouse to make menu selections, activate pull-down windows, and select commands. You can also edit within a specific file with the basic cut, copy, and paste commands. No clipboard option is necessary because of the program's Transfer option.

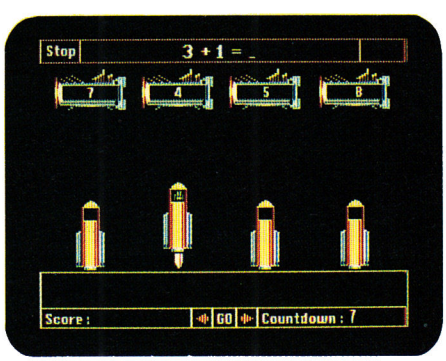
Being able to preview an activity before printing it is a beneficial option. Multiple Choices shows you all selected segments (test, hints, answer key). In cases where you aren't sure what questions the program will include, previewing is a must.

FINAL SCORE

Despite its somewhat restrictive nature, Multiple Choices can provide teachers with an alternative to the laborious and time-consuming process of creating tests. The speed with which Multiple Choices generates an activity makes the program especially well suited for devising short quizzes and puzzle activities—just the types of exercises that help reinforce major concepts, provide practice before comprehensive tests, and give the teacher an escape route when the regular lesson ends 15 minutes before the bell.

James Trunzo
Leechburg, PA

MATH BLASTER PLUS



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Rating: ❖ ❖ ❖

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Enter Math Blaster Plus, cousin to the old Math Blaster. This new version boasts better graphics, more problems (750, compared to 600), five activities instead of four, and new recordkeeping features.

Math Blaster Plus earns an A from kids as an arcade game that lets them blast answers off the screen with rockets. The real targets, though, are the major skill areas of grades 1 through 6—addition, subtraction, multiplication, division, decimals, and fractions.

Subject areas are nicely divided into six stages, with problem difficulty reflecting various grade levels. The fractions module, for instance, covers reducing common fractions, renaming improper fractions, adding and subtracting fractions, multiplying decimals, and finding percentages.

Activities represent a full range of skills, which are reinforced abundantly and presented systematically. That's good instructional design. For this, and the addition of a useful editor (for making student data disks and record disks), Math Blaster Plus gets a B minus from me.

It doesn't earn a higher grade for three reasons. First, I don't agree with its task analysis of skills. Also, though generally effective, the editor doesn't give you enough room to create complex questions. (There's a limit of 15 characters.) Finally, Math Blaster Plus concentrates too much on memorization of facts.

Overall, Math Blaster Plus is instructionally sound. Several different activities introduce, review, and drill the same skills. Pull-down menus let students select options, subjects, and stages from one screen.

Countdown—the easiest activity—presents a problem, then hides it for the student to recall. In stage 1 addition, for example, the problem might be "5 + 4 = 9." The student studies the equation, presses the return key, then tries the same equation with the answer omitted (5 + 4 = ?). That's pretty simple, but if a student hasn't yet mastered the set of skills in any "stage" or level (memorized addition and multiplication facts, for example), Countdown can help him or her do so.

Ignition follows the same format, but leaves out the tutorial step. This activity can test the facts the student previewed in Countdown. At regular intervals (about every five questions), a congratulatory message appears as an astronaut or space ship shooting across the screen.

The third activity, Lift-Off, presents the problem with a different part missing (such as 5 + ? = 9). This activity demands some problem solving. Students could reason that 9 is made up of two numbers—a 5 and another unknown number. If they subtract 5 from 9, the other number is isolated. The child learns to use the inverse method of finding answers (5 + 4 = 9 because 9 − 5 = 4), therefore developing the thinking process.

Orbit, the fourth activity, presents three different equations, which may contain errors. The child's task is to correct any mistakes.

The final activity, a game called Blasternaut, is kids' favorite module. Here they solve equations by firing rockets at one of four possible answers as a clock ticks away the allotted time. The time permitted for shooting off rockets determines Blasternaut's three difficulty levels. Correct responses add to the player's scores, which you can print or record on his or her records disk. Each time you load Math Blaster Plus, the student enters his or her name and the date for recordkeeping purposes; ▶

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student and teacher can evaluate progress (or lack of it) over a period of time.

Blasternaut motivates kids to drill specific facts and processes, but it provides only one perspective on problem solving. To develop more thought, students should have to earn time at Blasternaut by achieving high standards in Ignition, Lift-Off, and Orbit.

My disagreement with Math Blaster Plus concerns the program's presentation of addition, subtraction, division, and multiplication skills. My criticisms are similar in all subject areas—they revolve around the program's definition of skills and its teaching methods.

Consider the skills content for stage 1 subtraction. The focus is subtracting numbers 0–9 from numbers 8–10. The overall system lets students memorize subtraction facts (which is a stated objective), but I don't feel that's the best way to learn mathematics.

Addition facts from stage 1 (equation sums ranging from 2 to 9) reinforce many of the stage 1 subtraction facts, but not if the equations include the number 10, because the first addition set doesn't include 10 + 1, 10 + 2, and so on. This means the student can't solve "10 minus" problems in stage 1 from information mastered (or memorized) in stage 1 addition. One activity should truly reinforce the other. I'm not saying that opposite activities in Math Blaster Plus fail to complement each other. My suggestion is that a more complete set would let equations reinforce each other to a greater degree.

My second complaint involves what you might call a sin of omission. Again, in stage 1 addition, equations presented as the set of numbers with the sum of 7, for example, don't include all equations that equal that sum. To be effective, a program addressing "sums from 2 to 9" should include all equations that equal the target sums.

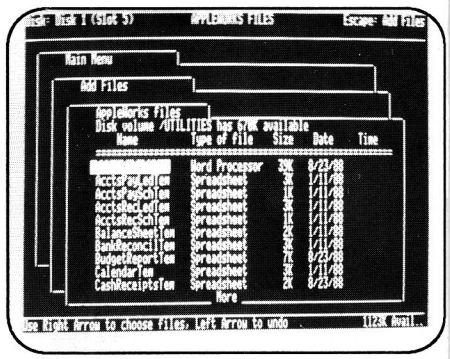
Now back to the good news. Remember that the editor in Math Blaster Plus lets you modify the instructional data. With a little time and effort, you and your students can create exercises and tests to complement a personalized study unit. You can also make up disks to store student records over a period of months, with names, dates, math activities accomplished, and graded performance for later assessment or printing as report cards.

Math Blaster Plus is a popular program in schools for several good reasons—but mainly because kids like it. It also addresses the main math content in schools effectively and manageably. I think the program's breakdown of skills is questionable, but the editor lets you tailor the equations.

Math Blaster Plus comes in the standard Davidson plastic binder. Supplementary workbooks for addition and subtraction, grades 1–4, are available for $4.95 each. The program comes with a five-year warranty, and backup disks (3½- or 5¼-inch format) are available for $10 apiece.

Jack Emberly
Vancouver, British Columbia
Canada

OFFICEWORKS



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The name *OfficeWorks* is something of a misnomer. The 23 AppleWorks templates provided on the OfficeWorks disk cover a wide range in terms of usefulness and practicality for the average business office. A few of the OfficeWorks templates are worthwhile. Many are of minimal benefit, however, and seem more like glorified paper forms than computer worksheets.

The OfficeWorks manual omits just enough information that you have to know much more than you'd expect about AppleWorks and how to customize the templates. It's too bad, because the idea here is good—to provide functional business forms the average small

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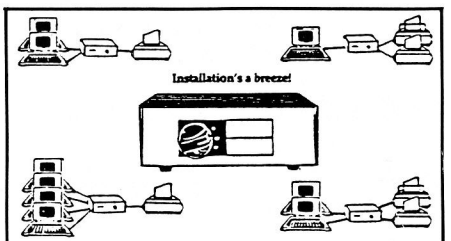

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company can use to help conduct its day-to-day activity. The problem with OfficeWorks isn't its concept, but rather its execution.

OFFICEWORKS FORMS

Each OfficeWorks template loads like any AppleWorks file—just select it to add the form to your desktop. The manual suggests you load a template, customize its headings, then save it on your own data disk. That's a good idea if you make any changes in the templates.

OfficeWorks comes with a double-sided nonprotected disk. K-12 MicroMedia provides two copies of each form on disk: a short template for practice, and a longer form for actual use. For some reason, a copy of the manual is also on disk as an AppleWorks file.

In each form, you have to enter the month as text (Jan, Feb, and so on), and the day as a numerical value (such as 1, 11, 21). There's no protection against typos such as Oct 45. On all forms, the first two lines are "reserved," or so it seems, as they're protected against anything other than a balance-forward type of entry. That's all well and good, but it'd be nice if the manual mentioned that, so that you wouldn't keep trying to enter data where the templates won't accept them.

The package's focus seems logical, and in many cases one form leads to the next. The first template is the Accounts Payable Ledger, where you create a little worksheet for each of the companies to whom your business owes money. The template posts debits and credits automatically to the balance column. The next form, as you might expect, is an Accounts Payable Schedule, which shows the total you owe by vendor account. The next two forms are the same, but Accounts Receivable shows the details for each customer, and the Accounts Receivable Schedule summarizes what all your customers owe your business.

The only problem with all this is that you have to enter every figure manually on every form. One form doesn't "report" or send its data in any manner to another. If you use OfficeWorks to keep track of what people owe you—a series of electronic ledger cards, with one for each customer—you still have to enter all details manually from these customer accounts into your summary sheet.

It seems you could design an AppleWorks worksheet on which you enter customer-account figures and send their totals to another section of that same grid. With a program such as TimeOut SpreadTools (see the accompanying review), you can automatically link worksheets to send data from one to another. Clearly, there are ways to do what OfficeWorks doesn't quite do—automate the process.

To take this a step further, the Balance Sheet, Income Statement, and General Ledger all pull information from sales and expense data, summarize their details, and report them to the business owner.

OfficeWorks provides these forms, already designed for your use, but again you must enter all information manually. Ultimately, you enter the same data in a number of places. OfficeWorks doesn't promise that any of this is automatic, but its literature doesn't indicate that it's all based on individual entries, either.

Some forms, such as the Balance Sheet, simply provide two columns where you enter assets and liabilities. The form then subtracts the latter from the former to calculate your net worth. It's difficult to justify paying for such a template, because if you're using AppleWorks, you should be able to design a similar worksheet in just a few minutes. I suspect the idea behind all this is to provide templates into which anyone, including those folks in your ►

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office who have no understanding of computers or spreadsheets, can enter information.

This line of thinking is true for many—but not all—OfficeWorks forms. The Payroll Register requires you to move the section of the grid that accumulates data to the clipboard before you enter and calculate figures. You then have to move that part of the grid back into the worksheet. This process isn't particularly complicated, but it's also unlikely that you can just hand this payroll section over to someone who'll understand the process immediately.

ON THE PLUS SIDE

One OfficeWorks form you may find particularly useful is the Bank Reconciliation template. It's easier than the ones you'll find on the back of many checking-account statements. OfficeWorks also provides a monthly Calendar with space for appointments you can update and print as required.

The OfficeWorks Income Statement for merchandising companies is nicely detailed and will at least remind you of all the expense and sales categories your business should track. There's room for ten separate operating-expense categories. The Income Statement for a service business is—as it should be—less detailed, but still forces you to put your entries into their proper places.

AND ON THE NEGATIVE

OfficeWorks forms that seem of marginal value include the Cash Receipts Record, which shows the cash your business received and where it came from; you can calculate this information almost as easily on paper. The program has a check register that keeps a running total of your checking-account balance, but it's only one page long. If you write a lot of checks, plan on running out of space. You could copy the formulas to the rest of the worksheet, but isn't that defeating the idea of providing forms that anyone can pick up and use?

OfficeWorks' Expanded Check Register gives you spaces to indicate where your money went—advertising, supplies, and so on. This form also provides a place where, as the manual explains, "a zero at the left indicates that the Expanded Check Register is not in balance. A one indicates that it is in balance." This is a nice touch, but the manual doesn't tell you that the cell in which you should look for the one or the zero is in row 58. Nor does it explain that you must recalculate twice to activate this feature.

OfficeWorks' Inventory template includes item location and the name of the person responsible for each product. Amazingly, though, it doesn't have a space for either a cost or a retail price. Without that, how can you tell the total value of what you have in stock?

A FEW FLAWS

The Payroll Register forces any time over 40 hours into a time-and-a-half column. This means that a company that doesn't calculate its payroll in weekly increments would have to change the form.

Also, this template calculates FICA at 7.15 percent, but the current rate is 7.51 percent. You won't find any instructions on amending this calculation when the government changes its rules. The Cumulative Payroll Report, moreover, doesn't include a field that totals the net pay for each employee.

For the ever-forgetful, OfficeWorks comes with a Daily Reminder form, which you could probably do faster on paper. Here you have to wait to print it.

Finally, the Invoice Form, which you fill out to bill your customers, includes sales tax on the full amount. Keep in mind, though, that in many states you don't pay sales tax for labor charges.

Most OfficeWorks forms are designed to print on a single page. You'll have to split a few into blocks, however, to fit them on a piece of paper.

THE BOTTOM LINE

None of these difficulties is hard to solve, but it seems they defeat the concept of providing easy-to-use AppleWorks templates. OfficeWorks should also provide some assurance you won't enter data in the wrong place. To refine these OfficeWorks templates to a point that will be useful will take some time and effort. If that's the case, you might want to create them yourself.□

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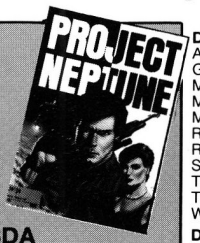

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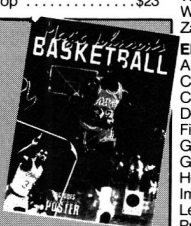

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FREE FOR ALL

Get ready for holiday gift giving by stocking up on high-quality, low-cost educational software—courtesy of the public domain.

By CYNTHIA E. FIELD, Ph.D.

ONLY SIX WEEKS TILL CHRISTMAS AND you haven't even started a list yet? The upcoming vacation presents the perfect opportunity for children to mix the fun of computing with the business of education. But it's not such an auspicious time for parents, whose budgets are stretched to the limit with holiday expenses. Luckily, there's a surprisingly good selection of enrichment software that's nearly free for the asking in the public domain. Programs become *public domain* when authors, many of whom are computer-using educators, create software and donate it to *libraries* for low-cost distribution to the public.

ELF ABC

Mike Culver's electronic alphabet book has everything going for it: high-resolution color graphics, animation, and music. Press the L key to see the chubby ladybug take center stage. A capital *L* and the word *ladybug* accompany the illustration. But Elf ABC is more than just an enchanting introduction to the alphabet; the program helps with numbers, too. Press a number key to display the numeral and its complement of familiar objects, such as televisions, boots, or hearts.

Like some other programs distributed in the public domain, Elf ABC is shareware. You can order it "on approval" from the Florida PC Library for the usual $5 distribution fee. Then, if you decide to keep the program in your software library, send the author (name and address are included on disk) a registration fee (in Culver's case, $17.50). If you decide the program's unsuitable, erase the disk or pass it on to someone else to try.

WHERE'S SANTA CLAUS?

A Bookware Publishing shareware program ($4.99 registration fee), Where's Santa Claus? is one of the nicest surprises I've found in the public domain. Richard O'Donnell wrote and Carol Day illustrated this absolutely charming interactive-fiction story for preschoolers. In this Select-a-Path Adventure (TM) the child chooses responses that may lead to a variety of outcomes.

Animation sequences help this electronic storybook come alive. In one example the word *suddenly* moves *suddenly* down the screen. In another instance your child's name hops down stairs. This storybook-on-disk sports high-resolution color graphics, too, as well as sound effects and music from six popular Christmas carols. Bookware's read-along, sing-along, guess-along program is a real find.

PRESCHOOL FUNPACK PLUS

This disk, like others I've designated *Plus*, contains more than one educational program. At public-domain prices, a multiprogram disk such as this can be a real bargain.

Preschool Funpack by Grace and Dan Fox is just one of three programs you'll find here. Among its highlights are Happy Birthday (displays a cake with your name and plays *The Birthday Song*), ABC (presents the alphabet and plays *The Alphabet Song*), Graphic Typist (lets you type anything you'd like in any of ten colors), and Thumbkin (includes a colorful, animated, sing-along version of the popular children's song).

Alphabet & Sound by Lynn Crawford and Ken Keating offers four learning activities, including Alphabet Review (type the missing letter in a sequence), Seek and Find (count the number of times a given letter appears in a row), Random Typing, and Sing Along. (The computer plays *The Alphabet Song*.)

The third program on this disk, Starts With, helps children practice finding keys on the Apple keyboard. The program presents **Print Shop** graphics in alphabetical order. Your child presses the key that corresponds to the first letter of the object's name.

MATH DRILL 2 PLUS

The first "notable" on this disk, Math Drill 2 by David S. Harned, provides addition, subtraction, multiplication, and division drills. Choose one of four difficulty levels and the number of problems you'd like to attempt. Problems appear on screen in large, colorful graphics numbers.

Estimating fractions has never been so much fun, thanks to Balloon Darts, a game written by the 1982 Advanced Computer Class at Medina Elementary School. The computer places a balloon on a number line. Working at Beginner, Average, or Expert levels, you then try to guess the balloon's precise position. Is it halfway? Or $^{8}/_{11}$? With each of five tries a dart flies across the screen and "pops" the balloon if your "guesstimate" is right on target.

In Taxman you select a range of whole numbers, then choose one specific numeral. Taxman gets to "take away" all its factors. After ►

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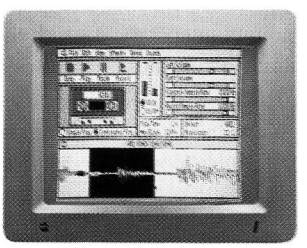
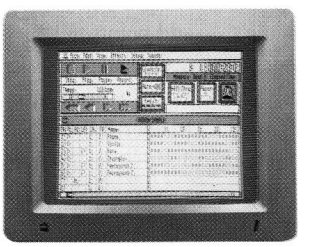
- Editing functions such as fade-in, fade-out, backwards, echo, silence, and amplify
- Compatible with standard MIDI file formats including AIFF (Apple Information File Format)
- Sequencer supports 2:1 and 2.67:1 file compression
- MIDI quantization to 1/32 resolution and transposition





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several rounds, when no factors remain, the program tallies your score. Like the real one, this Taxman is tough to beat.

Color Math goes beyond simple math drills by letting you mix functions in a single game. A smiley face greets each correct answer.

MATH WORD PROBLEMS

This interactive tutorial by Cathy and Jim Barkley provides assistance in solving algebraic word problems. Use pencil and paper to follow along as the program steps through Number Problems; Mixture Problems; Rate, Time, and Distance Problems; Investment/Money Problems; Work Problems; and Geometric Figure Problems.

The program provides a "conversion table" for translating 20 different kinds of English phrases into algebraic statements; for instance, "five more than twice x" is "2X + 5." Hints such as "remove parentheses first" or "be sure the units are the same" will help even the most rusty mathematician get back into shape after his or her holiday sabbatical.

DABBLE PLUS

Donna K. Woody's Dabble is like *Wheel of Fortune*, Hangman, *Boggle*, and English class all rolled into one! The program presents a "riddle" and a series of random letters. Unscramble the letters and figure out the riddle's solution. (To complicate matters, the program gives you more letters than you need.) For example, for the word *mystery* you're supposed to come up with the word *ENIGMA* from the letter sequence *ILNNJAAAPBEZMG*. When you succeed (or cry Uncle), you'll see a sentence using the target word in context.

Word Processor isn't a word processor in the composition sense—but in the Cuisinart sense! A colorful graphics-processing plant (which reminds me of the Word-a-Mat in Sunburst Communications' word-categorization game, **Word-a-Mation**) appears on screen. The Word Processor gives you a word from which you try to make 11 other words of no fewer than four letters each. No cutting corners: You can't include more than one form of a verb, pluralize three-letter words, or use slang terms or proper nouns.

BEST IN EDUCATION

Here's an eclectic melange of music, reading, and geography programs. Music Wars Plus by Christopher Howerton helps you identify the names of musical notes appearing on four clefs. Type the note's name correctly to add points to your score (no pun intended).

One step to watch out for: To run Music Wars, as well as other programs written in Integer BASIC, you need to first boot a DOS 3.3 System Master disk or a public-domain software disk (such as FPCL #3301 or PDE #068) containing this language.

The second program on the disk, Speed Reading, displays a phrase you must recall. Start with a "warm-up" exercise and progress through Beginner, Intermediate, Advanced, and Expert levels. Try to keep step with the ever-increasing speed with which phrases fly by on your screen.

Charles L. Hearn's State Capitals selects states either randomly or alphabetically; you type the names of their capital cities. After two unsuccessful attempts to name the capital, the program comes to your rescue and supplies the correct name. An attractive, low-resolution graphics map of the United States is a program highlight.

APPLE HANGMAN PLUS

Apple Hangman by Paul and Sue Madison plays with words for grades 1–4, 5–8, 9–12, and college at two difficulty levels. Compete with the computer or with a friend.

Bar Graphs #1 and Bar Graphs #2 are simulations developed by the Virginia State Department of Education Mathematics Service. The first draws random bar graphs for demonstration purposes; the second draws graphs that incorporate y-values you enter for a fictitious company's six-month sales figures.

Org.Chem I and II delve into the fundamentals of organic chemistry. These programs review basic theory and display molecular models of organic compounds such as alcohols, amines, carboxylic acids, and aldehydes.

OREGON TRAIL PLUS

If you enjoy geography simulations, try your luck at surviving the rigors of traveling the 2040-mile Oregon Trail!

Not as graphics-oriented or as involved as MECC's **Oregon Trail**, this public-domain version is nevertheless engrossing. You'll need to develop survival strategies: Bring the right supplies, watch your diet, and hunt effectively.

Tired pioneers can try their hands at Scrambled Word (an unravel-the-mixed-up- ▶

PRODUCT INFORMATION

Apple Hangman (PDE #702)
Best in Education (PDE #064)
Integer BASIC (PDE #068)
DNA: Miracle of Life (PDE #087)
Math Word Problems (PDE #504)
Public Domain Exchange
2074C Walsh Ave.
Dept. 678
Santa Clara, CA 95050
(408) 496-0624
$5 each plus $4 shipping/order
$20/year membership

Dabble (FPCL #3186)
Elf ABC (FPCL #3185)
Exploring Your Brain (FPCL #3168)
Griffith Observatory Museum Disk (FPCL #3181)
Preschool Funpack (FPCL #3301)
Where's Santa Claus? (FPCL #3245)
Florida PC Library (FPCL)
P.O. Box 2878
Leesburg, FL 34749
(904) 787-1741
$5 each plus fee

Fingerprint GSi
Thirdware Computer Products
4747 N.W. 72nd Ave.
Miami, FL 33166
(305) 592-7522
$129

Math Drill 2 (BRCC #C10)
Oregon Trail (BRCC #C08)
Science Trivia (BRCC #C31)
Big Red Computer Club
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Norfolk, NE 68701
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(612) 481-3500
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letters word game) or Word Puzzle (a word-search puzzle maker).

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Science Trivia by Michael Monaco reviews facts you may have forgotten during the winter intercession and helps you learn new ones. (For instance, how many sides does a snowflake have? Which fingernail grows fastest?)

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DNA: MIRACLE OF LIFE

Clear language and colorful graphics are hallmarks of these lessons from Educational Media Services. Learn about the double helix, nucleotides, and the genetic code. On my disk, one activity (create a hypothetical chromosome) didn't work properly, and the name of one vital chemical (cytosine) was spelled incorrectly in at least one place. Despite these defects, this introduction to biochemical genetics is well done.

EXPLORING YOUR BRAIN

This outstanding program from the Epilepsy Foundation includes lessons about the "Geography of the Human Brain," "The Brain and Its Circuits," and the results that occur "When Brain Circuits Misfire." Clearly labeled graphics screens help you become acquainted with brain anatomy and physiology. A fourth lesson, "Brain Function and Social Response," teaches you how to offer appropriate assistance to an epileptic.

GRIFFITH OBSERVATORY MUSEUM DISK

Every family's educational-software library should boast this entertaining disk from the Griffith Observatory. Astronomy devotees will want to play the special version of Hangman or take Professor Astro's 25-question, multiple-choice quiz to learn more about out-of-this-world wonders. And I'd wager that practically everyone, Trekkie or not, will enjoy the "Birth Dates" activity.

To learn about *your* place in the universe, just type in the current date, your birth date, and your name. What was the moon's phase on the day you were born? What's your birth date in the Hebrew calendar? Were *you* born in the Chinese year of the ox? What's your current age in *days*?

The program continues with a listing of your age and the date of your next birthday on the eight other planets in our solar system. If you feel old here, imagine living on Mercury or Venus!

Birth Dates would be an excellent alternative to "Pin the Tail on the Donkey" at a children's birthday party. With a screen-printing utility or interface card, such as Thirdware's **FingerPrint GSi**, you can create custom printouts to give to party-goers.

We're even planning this year to enclose personalized printouts in the computer-generated birthday cards we send to our friends and relatives!□

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WIZARDRY·V

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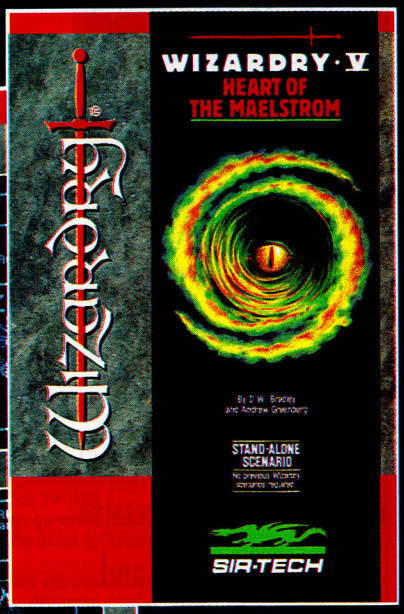

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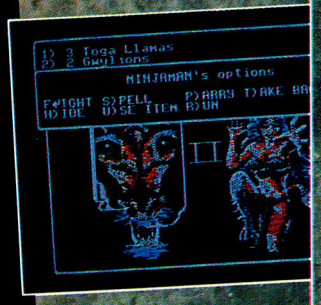

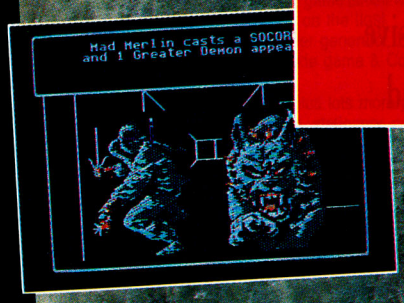

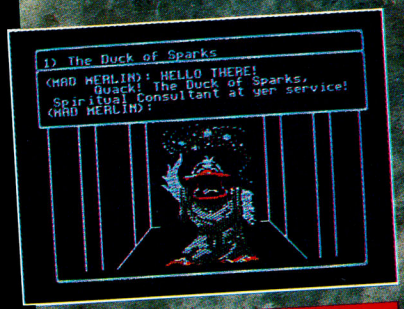

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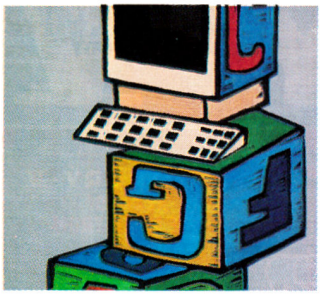

LEARNING CURVE

MEDIUM AND MESSAGE

By DAVID D. THORNBURG, Ph.D.

The classroom computer can become an expressive tool for discovery and true learning—limited only by your imagination.

THE CANADIAN PHILOSOPHER MARSHALL McLuhan spent many years exploring ways in which our media of expression influence the ideas we express. There's a world of difference, for instance, between reading a newspaper for ten minutes and watching a television news broadcast for the same period. The newspaper reader can pick and choose, skim or reflect at will. Those freedoms are lost to the viewer of a TV program, even though that animated, visual medium lends itself to covering material that would be more difficult to convey in print.

That's not to suggest that one medium is somehow better than another, but rather that each has its own expressive power that may suit the needs of some people better than others—and as we look at the computers gracing our classrooms, we might ask what messages are best communicated through that medium, as well.

TEACHING TO THE WHOLE CHILD

Computers are designed primarily to accept mechanical input (keyboard, joystick, touch tablet, and so on) and to provide visual and, to a lesser extent, auditory, output. As a medium of communication it's closer to writing and drawing than it is to using a telephone, for example. If we accept this model of computer/user interaction, then all communication takes place through the software.

Provided that the information in question can be captured through mechanical means and expressed visually, there's virtually no limit to the uses of computers. In the educational domain this means you can, in principle, use computers for all subjects that involve written input and visual output. None of this is new; we've known it for more than a decade now.

Because this model also applies to almost all subject areas taught in a traditional manner, it's surprising that computers have yet to move into the educational mainstream. The flexibility of interaction between you and the computer lets you use a range of hardware and software tools in ways that move far beyond the limitations of traditional lectures and books. The potential of the computer should have evoked an overwhelmingly positive response from the educational establishment. But that response has yet to materialize.

Yes, more than two million computers are now in schools, but that hardly scratches the surface. Furthermore, very few of those machines are fulfilling their greatest potential. Many are used for supplemental activities, most of which can be conducted just as well from traditional workbooks.

As heartened as I am by the many thousands of teachers I see each year who are using classroom computers in innovative ways, most of today's educators have little interest in classroom computing. An unfortunate consequence is that these teachers, many of whom are tremendously effective, are assuming that the quality of their instruction can't benefit from exposure to new technology. As we confront the tragic problem of 700,000 dropouts each year, we need to examine the role of technology as a tool that can help us teach to the whole child.

DO-IT-YOURSELF

Those of you who read this column are most likely among the "early adopters" who've been using computers for years. You've seen a lot of software—both good and bad. But you've also seen some subtle shifts in application as computer technology becomes connected with other media—laser videodiscs, CD-ROM (compact-disc read-only memory), and so on.

In your hands, the classroom computer has become an expressive tool for discovery and true learning. In the process of finding your own best way to approach technology you've also found something else of great importance—that the use of this tool is limited only by your own imagination.

I believe that the educational establishment is stalling so that it doesn't have to confront a basic truth: Deep down, it's afraid to rethink the educational process. Computer equipment may seem expensive, but history has shown us that when our backs are against the wall, we can create excellent

Illustration • Andrea Barret

educational programs that reach across all grades, states, and economic levels, and that the money can suddenly materialize. What's frustrating is that if history is any guide, it will be another country that's responsible for the next overhaul of our education.

If you doubt it, think back 30 years. Before the Russians lauched Sputnik, many highly regarded educators and visionaries were trying to interest schools in new math and science programs, largely to no avail. But within days of the Russian launch, improved education in this country became a major focal point for many prominent leaders. Why do we have to wait for some external event to blast us into action, when all the resources and incentive for transformation are staring us in the face?

The lethargy is phenomenal. Yes, many leaders speak out in an attempt to effect some change. Working at the grass-roots level, many teachers have created marvelous learning environments with their own sweat, tears, and money. Still the public response is to engage in more hand wringing and teacher bashing, because it's always simpler to blame others than it is to grow.

FINDING THE VISION

One of the things I love about educational computing in the past ten years is the number of mistakes we've made. If you aren't failing part of the time, you probably aren't exploring new ground. We've seen pedagogically putrid software climb to the top of the charts while exquisite environments such as the programming language Logo languish, because many educators misunderstand their true power. Some critics of educational computing use the lack of "documented" value as an excuse to constrain teachers to a sheet of slate and a stick of chalk.

The time has come for those of us who care deeply about education to join forces and to speak with a clear voice. We need to rededicate ourselves to our noblest purpose.

Yes, children may represent only 25 percent of our population, but they're 100 percent of its future. Today's society has no room for students who have been failed by a system that doesn't understand the fundamental differences between learning and teaching.

We must return to the Latin root of the word *education*—to *draw out*—and realize that we have invented wondrous tools designed to do just that: to draw out the true love of learning within each of us.

Whether you have a history student creating a hypermedia database connected to a visual library of world events, a fledgling musician crafting harmonies with a rack of MIDI synthesizers, or a poet who chooses a typeface as carefully as each word, today's computers are up to the task. It's vision that's lacking.

We must demand that education be properly funded. We must be on the lookout for sources of money to furnish the software and hardware that can move at least some of our dreams closer to reality. We must commit ourselves to creating schools that use technology and any other tools that make sense to teach to the whole child. Are you prepared to do your part?□

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Apple users know there's always an easier way to get the job done. A shortcut here, an elegant twist there—that's what Hints & Techniques is all about. Bracketed numbers in program listings refer to *inCider*'s Applesoft Proofer Program. For your copy send a self-addressed, stamped envelope to Proofer, c/o *inCider*, 80 Elm St., Peterborough, NH 03458.

MAP MAKER

By Colin Meek

READY FOR A COLORFUL ADVENTURE? MAP MAKER (see the accompanying **Program listing**) will help you draw a map for Labyrinthian Caverns (Applesoft Adviser, December 1989, p. 86) as well as for any games you write yourself.

Instead of drawing a map on paper and adding it to your program with a jumble of DATA statements, use Map Maker to draw a map on your Apple II screen, then save it to disk for later use.

Type in the listing and SAVE it as MAP.MAKER. When you RUN it, use the I, J, K, M, or arrow keys to move the cursor around the low-resolution graphics screen. Use the number (0–9) and minus (–) keys to place objects, portals, and walls on the map. The accompanying **Table** shows the codes and their corresponding meanings. To erase your screen, press *C*.

The program draws a colorful map as you work. Each different-colored pixel or low-res graphics block on screen represents a particular code, which you can see by simply moving the cursor over the block and reading the display at the bottom of the screen.

When you want to save your creation, load a previously stored map, or exit the program, press Escape to get to the Disk Menu. Map Maker names the saved map *LAN*; unless you rename it, you can save only one map on disk. To load LAN into your own game, use the following BASIC statement: ►

Program listing. Map Maker.

```
1  REM  Map.Maker  [1908]
2  REM  by Colin Meek  [2590]
3  REM  Copyright 1989, inCider  [4848]
10  REM  Setup  [1219]
20  HOME : GR  [385]
30  COLOR= 15  [549]
40  HLIN 0,39 AT 0: HLIN 0,39 AT 39  [2383]
50  VLIN 0,39 AT 0: VLIN 0,39 AT 39  [2429]
60  REM  Start  [1184]
70 B =  SCRN( X + 2,Y + 2):X1 = X:Y1 = Y  [2384]
80  COLOR= 15: PLOT X + 2,Y + 2  [2048]
85  IF B = 15 THEN  COLOR= 0: PLOT X + 2,Y + 2  [1893]
90  HOME : VTAB 23: PRINT "pos: "X","Y","code: "B  [5210]
100  GET A$  [664]
110  IF A$ = "I" OR A$ =  CHR$ (11) AND Y
     <  > 0 THEN Y = Y - 1  [4503]
120  IF A$ = "M" OR A$ = "m" OR A$ =  CHR$ (10) AND Y
     <  > 35 THEN Y = Y + 1  [4662]
130  IF A$ = "J" OR A$ = "j" OR A$ =  CHR$ (8) AND X <
     > 0 THEN X = X - 1  [4298]
140  IF A$ = "K" OR A$ = "k" OR A$ =  CHR$ (21) AND X
     <  > 35 THEN X = X + 1  [4448]
150  IF  VAL (A$) <  > 0 OR A$ = "0" THEN  COLOR=  VAL
    (A$): PLOT X + 2,Y + 2:B =  VAL (A$)  [5340]
160  IF A$ = "-" THEN  COLOR= 15: PLOT X + 2,Y + 2:B =
    15  [3820]
170  IF A$ = "C" OR A$ = "c" THEN 10  [2257]
180  IF A$ =  CHR$ (27) THEN 300  [1668]
200  COLOR= B: PLOT X1 + 2,Y1 + 2  [1571]
210  GOTO 60  [537]
299  REM  Disk Menu  [1851]
300  HOME : VTAB 21  [442]
```

Continued

```
305  COLOR= B: PLOT X1 + 2,Y1 + 2  [1975]
310  PRINT "1- Save Map": PRINT "2- Load Map"  [3921]
320  PRINT "3- Return to Editor": PRINT "4- Quit to B
    ASIC ...";  [6422]
330  GET A$  [644]
340  IF A$ = "1" THEN 500  [1736]
350  IF A$ = "2" THEN 1000  [1828]
360  IF A$ = "3" THEN 60  [1391]
370  IF A$ <  > "4" THEN  PRINT  CHR$ (7): GOTO 300  [2525]
380  TEXT : HOME : END  [990]
499  REM  Save Map  [771]
500  HOME : VTAB 24: PRINT "Please wait..."  [2642]
510  CLEAR : DIM LAN(35,35)  [2427]
520  FOR X = 0 TO 35: FOR Y = 0 TO 35  [1952]
530 LAN(X,Y) =  SCRN( X + 2,Y + 2)  [2104]
540  NEXT Y,X  [793]
550  PRINT  CHR$ (4);"STORE LAN"  [1330]
555 X = 0:Y = 0:X1 = 0:Y1 = 0  [2166]
560  HOME : GOTO 60  [478]
999  REM  Load Map  [846]
1000  HOME : VTAB 24: PRINT "One moment please..."  [2529]
1010  PRINT  CHR$ (4);"RESTORE LAN"  [3453]
1020  GR  [374]
1025  COLOR= 15  [479]
1030  HLIN 0,39 AT 0: HLIN 0,39 AT 39  [2229]
1040  VLIN 0,39 AT 0: VLIN 0,39 AT 39  [2267]
1050  FOR X = 0 TO 35: FOR Y = 0 TO 35  [1952]
1060  COLOR= LAN(X,Y): PLOT X + 2,Y + 2  [3014]
1070  NEXT Y,X  [813]
1075 X = 0:Y = 0:X1 = 0:Y1 = 0  [2246]
1080  HOME : GOTO 60  [506]
```

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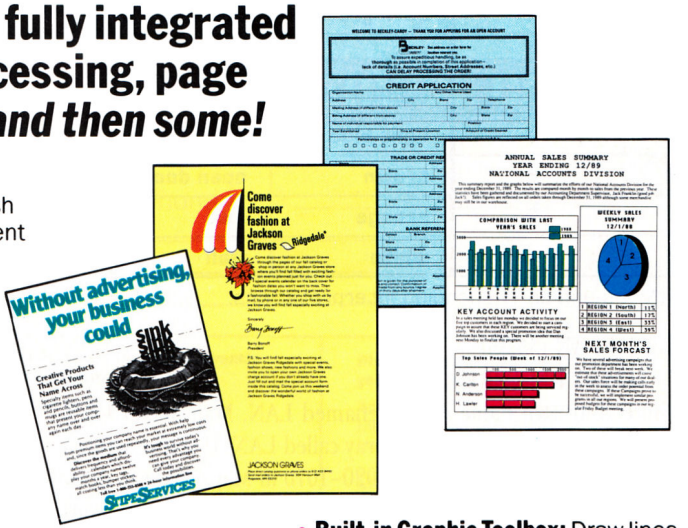

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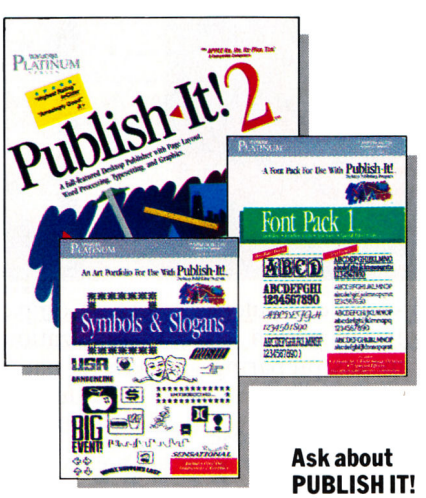

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0	B	black	passageway
1	1	magenta	obstacle #1
2	2	dark blue	object #1
3	3	violet	object #2
4	4	dark green	obstacle #2
5	5	grey	locked door
6	6	medium blue	obstacle #3
7	7	light blue	key
8	8	brown	open door
9	9	orange	exit
15	—	white	wall

Table. Codes and corresponding interpretations.

```
CLEAR: DIM LAN (35,35)
PRINT CHR$(4)"RESTORE LAN"
```

Substitute your own name if you renamed LAN. Map Maker loads the map into memory as a 35-by-35 array called LAN. If you've written your own adventure game, use lines 1020–1070 in Map Maker to draw on screen. Otherwise, go ahead and start chasing all those nasty lions and bats in Labyrinthian Caverns.

Write to Colin Meek at 2756 Deacon Street, Halifax, Nova Scotia, Canada, B3L 3J1.

QUICKIES

Here's a "quick and dirty" way to merge two Applesoft programs. SAVE one on disk and append the following to the second program:

```
0 ?CHR$(4);"OPEN MERGE"
:?CHR$(4);"WRITE MERGE":LIST 1-:?CHR$(4);
"CLOSE":END
```

RUN (line 0 executed only) creates a text-file image of your second program on disk. Then LOAD the first, and EXEC MERGE; the two'll become one. Duplicate line numbers will overwrite, so be careful.

—David Starchman
Purcell, OK

Tired of pressing the open-apple key, especially when using AppleWorks? Put your joystick or paddles on the floor, and simply press "fire" button #0 with your foot. You'll get the same result.

—Terell Smith
Marburg, West Germany

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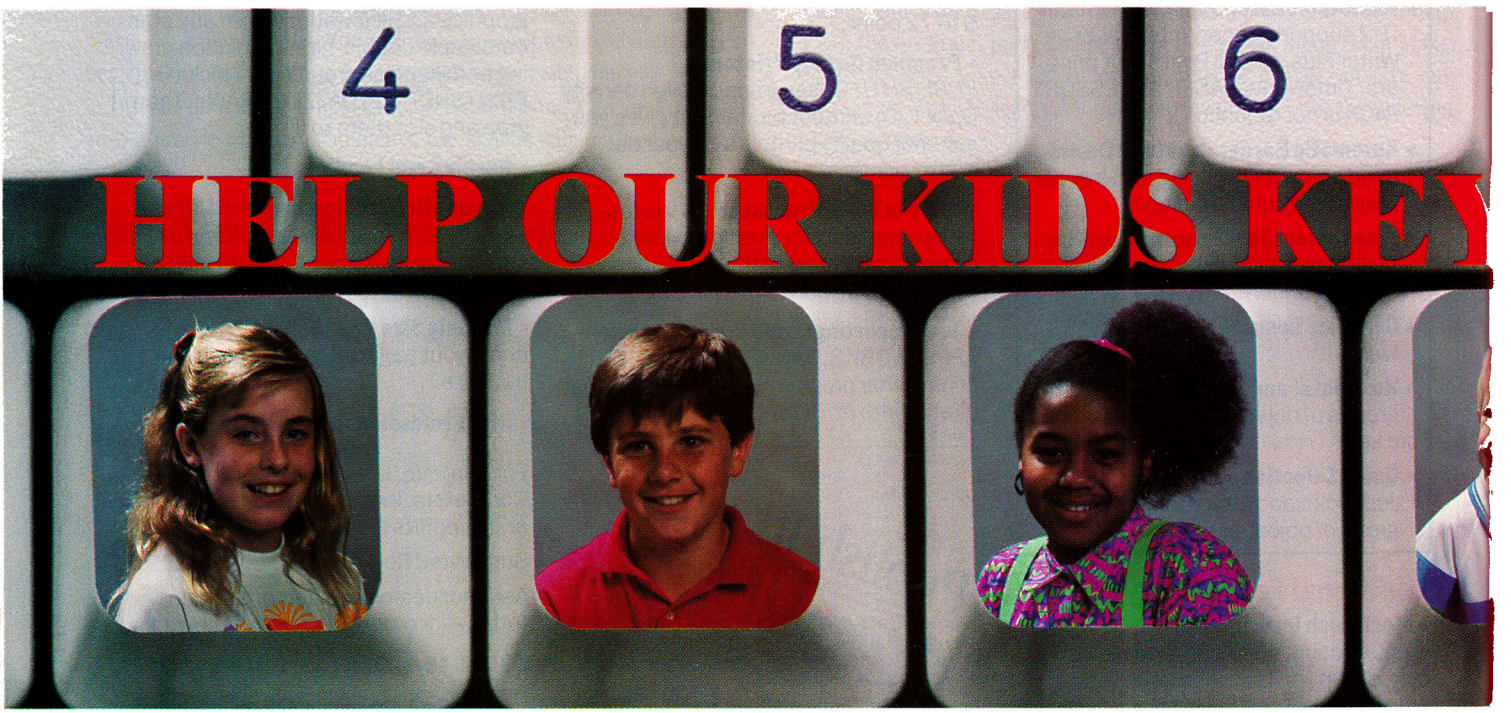

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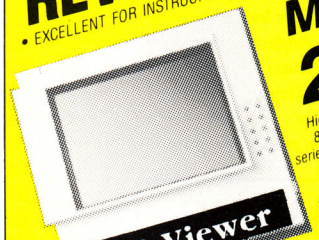

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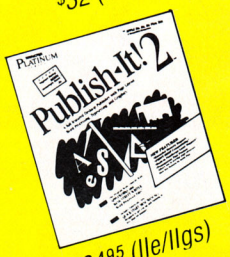

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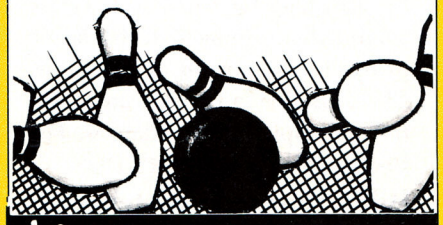

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EDITORS' CHOICE

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Each turn represents a year during the Revolution and takes you through phases of administration, military campaigns, and diplomacy. At the end of each turn, a year-end statement shows you how the Revolution's faring—which areas you control, the number of land forces you have, the number of ships the navy has built, degree of loyalty to the rebellion in various regions, and so on. Map screens give you a full view of what's happening throughout the Colonies. Here you can assign generals; move armies around or leave them to defend a region; and indicate your policies toward Tories, levels of taxation, conscription methods, and use of local militia.

The creator of Revolution '76, Edward Bever, Ph.D., is a historian first and a programmer second—and his background shows: Details are accurate and extensive; game play is loaded with historical information; and the "perspective" manual that accompanies the package is an education in itself. Whether you're into Revolution '76 as an exercise in strategy or as a re-creation of historical events, you'll learn more about our move toward independence.

"Even if you like tea in the afternoon, warm beer, and the Beatles, you can't help but find Revolution '76 entertaining and enlightening," says Review Editor Lafe Low. "It's ironic that a company named Britannica developed this simulation, but it has indeed produced a compelling portrait of the birth of our nation and the struggle for freedom, which I think many of us take for granted today."

Revolution '76 is a GS-only program. It comes on three disks, so it's recommended you have two 3½-inch drives. (One hint: Turn the sound off. Unless you like swapping disks between moves, you'd be much better off firing in silence the shot heard 'round the world.) You'll need 1.2 megabytes of RAM; and if you have a hard drive, you'd be wise to run the war from there. The package sells for $49.95, from Britannica Software, 345 Fourth Street, San Francisco, CA 94107, (415) 546-1866, (800) 572-2272. Re-create the spirit of '76 and see how you might have changed the course of history.□

Illustration • Bob Scott Photography • Frank Cordelle

BIG TALKERS

Street Electronics' Echo® products have set the standard for microcomputer voice output for over eight years. Teachers and parents have found that talking software adds a whole new dimension to computer-based learning. Children not only enjoy the novelty of having their computer talk to them, their attention span is increased, verbal cues and reinforcement keep them motivated as well as assisting non-readers, and learning becomes more personalized and fun.

Although there are a few quality programs which process "software only" voice, it is still necessary to use a dedicated speech add-on peripheral or plug-in board for nearly all of the "talking" educational software. There are over 100 software manufacturers including *Scholastic, Optimum Resource/Weekly Reader, Houghton Mifflin, Hartley Courseware, DLM, Edmark, and Laureate Learning Systems* who presently offer Echo compatible educational and special needs programs, and the number is constantly growing.

Most of the educational programs which are compatible with the Echos take advantage of the high quality female voice output. However, in those programs which require an unlimited vocabulary; for example, a talking word processor, the Echos' text-to-speech capability produces speech in an intelligible robotic-type voice.

The Echos come with a tutorial style manual, an external speaker with a volume control knob and headphone jack, and supporting software. The Echo IIB runs on the Apple® IIe and IIGS, the Echo IIC runs on the Apple IIc and IIc Plus.

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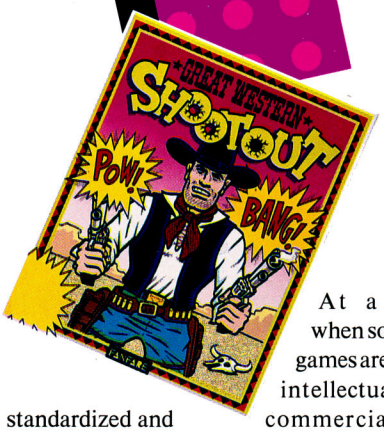

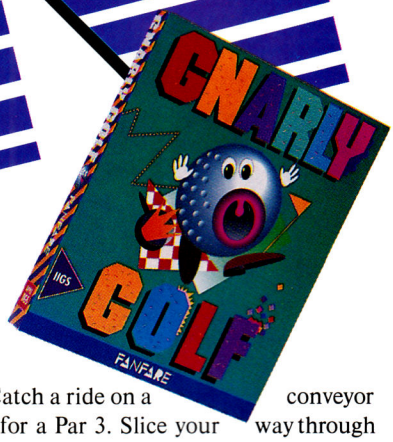

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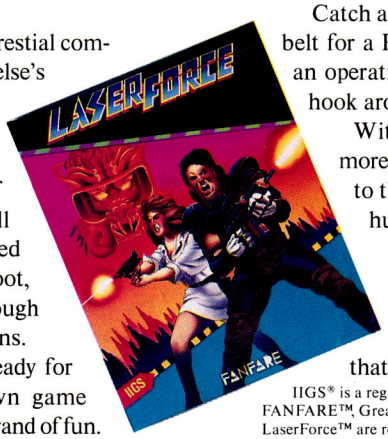

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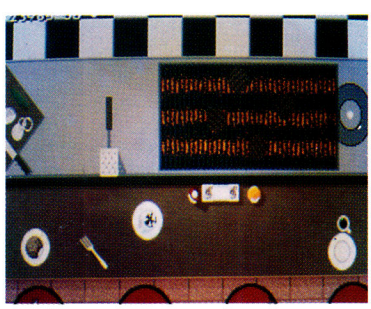

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