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December 1989

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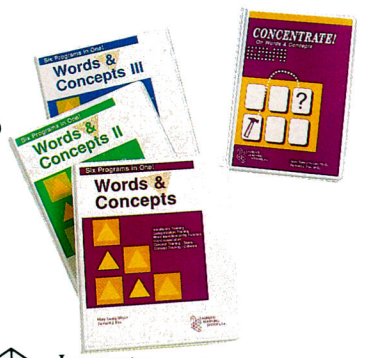

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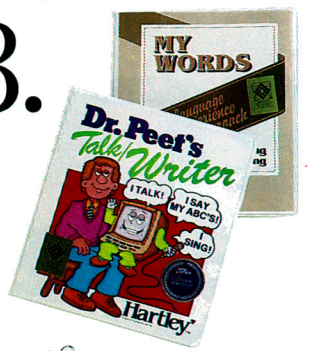

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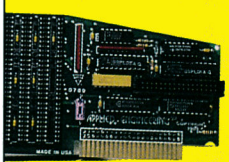

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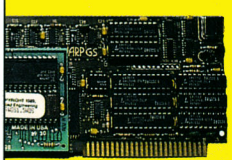

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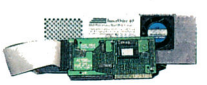

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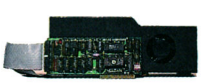

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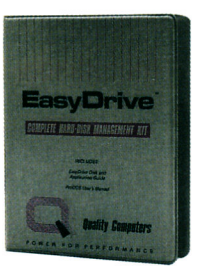

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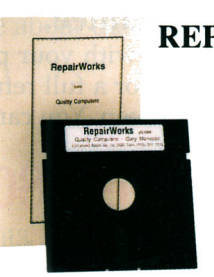

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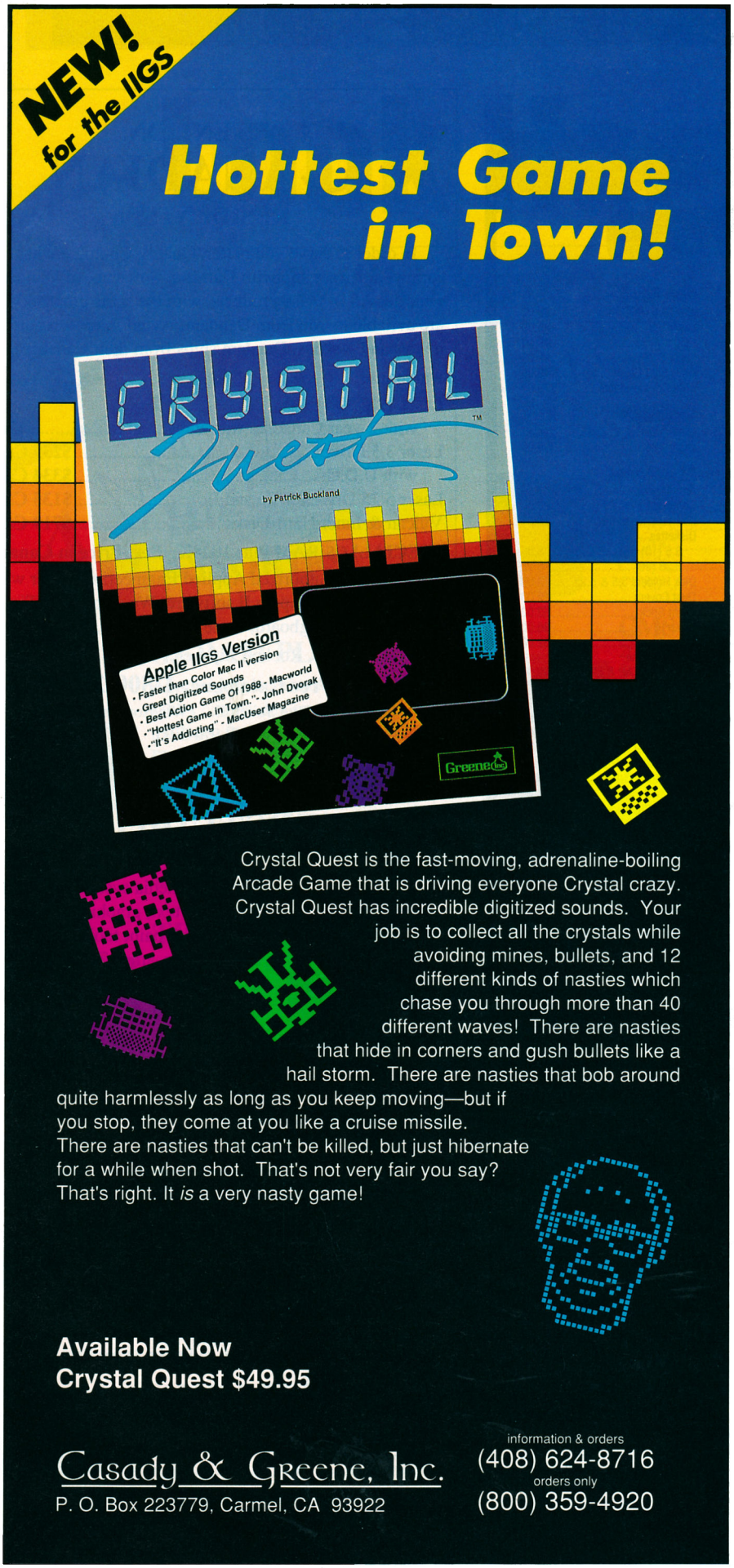

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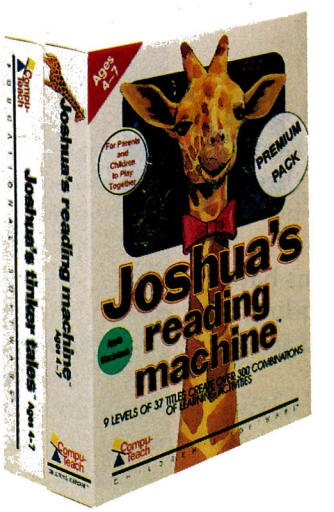

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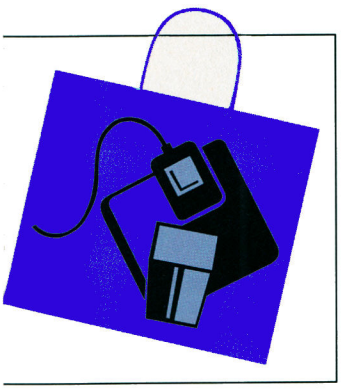
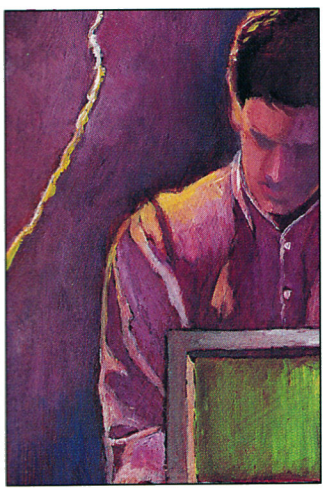
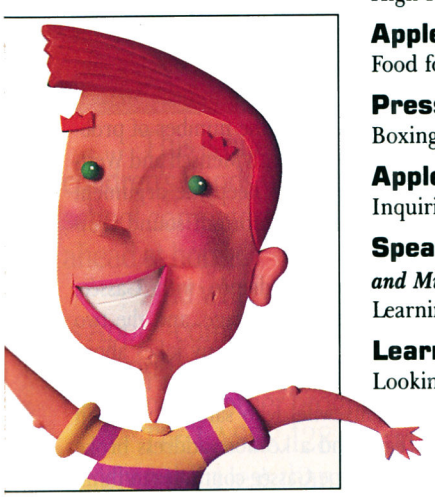


p. 53



p. 68



p. 90

ARTICLES

53 Gadgets and Gizmos for Under $100

The best to you this holiday season—and it won't cost a fortune, either! If you haven't composed your gift list yet, check out *inCider*'s shopper's guide for the ultimate in computer accessories.

68 The Good, the Bad, and the Bow-Wows

As the ball's about to drop in Times Square, *inCider* begins its countdown of 1989's brightest Apple II achievements (and a few distinct disappointments). Looking ahead to 1990, the II begins the next decade as the dominant machine in the nation's classrooms and a strong contender in the home and office, thanks to a new operating system, innovative productivity programs, and a host of exciting games.

- ▶ The Year in Review
- ▶ The Year in Productivity
- ▶ The Year in Technology
- ▶ The Year in Entertainment

90 Life with AppleWorks

If you always thought AppleWorks was perfect as is, wait 'til you see 3.0's new features! Boot up this deluxe 8-bit classic and get ready to swap that Caddy for a Rolls.

COLUMNS

***inCider*'s View** • *Dan Muse*
C'Est la Guerre 8

Stattus Report • *Paul Statt*
High-Rent District 24

AppleWorks in Action • *Ruth Witkin*
Food for Thought 2 94

Press Room • *Cynthia E. Field, Ph.D.*
Boxing Day 100

Apple IIGS BASICs • *Joe Abernathy*
Inquiring Minds 106

Speaking of Graphics • *Roberta Schwartz and Michael Callery*
Learning the Lingo 110

Learning Curve • *David Thornburg*
Looking Ahead 126

DEPARTMENTS

Letters to the Editor 10

What's New
Hardware, Software, Games, Apple Bits . . . 14

Apple Clinic
Clear Image: ImageWriter II Overflow, IIc Text Modes, IIc Port 2 Printer, LaserWriter Connection, Quickies 26

Reviews
Teleworks Plus, Monsters & Make-Believe, Kidwriter Golden Edition, Floating Point Engine, Joshua's Reading Machine, At a Glance 32

Game Room
Great Western Shootout, Jack Nicklaus Presents the Major Championship Courses of 1989, Journey, Tip Sheet, Short Takes 46

Hints & Techniques
Investment Summary, Quickies 130

Editors' Choice
Arkanoid II: Revenge of Doh 144

Cover Illustration • Richard Anderson

INCIDER'S VIEW

C'EST LA GUERRE

By DAN MUSE * EDITOR IN CHIEF

How was this *Macphile* going to stand in front of a couple thousand Apple II fanatics and not get booed back to France?

I USUALLY ATTEND KEYNOTE ADDRESSES only when I have a hangover and need someplace dark to sit and rest.

Last September at AppleFest/San Francisco, however, I attended the opening-day keynote address for a different reason. I was curious to hear what Jean-Louis Gassée, president of Apple Products, had to say about the Apple II. How was this . . . this . . . *Macphile* going to stand in front of a couple thousand Apple II fanatics and not get booed back to France? Hell, I thought, this guy has probably never even used an Apple II. I was wrong. (Yes, again.)

Gassée seemed at ease demonstrating the Apple IIGS, showing off the improvement in speed offered by System Disk 5.0, as well as the operating system's Close View function (not implemented in the original version of 5.0, but included in the next upgrade), which lets you magnify the screen image, a key feature for the visually impaired.

We were most impressed, though, with Gassée's use of Roger Wagner's HyperStudio. He appeared to know the product and moved from stack to stack without a hitch. Gassée's a pro—a smooth marketer who, if he set his mind to it, could probably convince me that the Apple III still had a future.

From what we've heard, though, Gassée is a fan of HyperStudio even when the microphone's off. The story spreading through AppleFest was that HyperStudio wasn't included originally in the Apple booth as part of its "Choices" theme. Gassée is said to have told the appropriate Apple employee that the package *would* be included; he reportedly asked the person responsible for the original decision, "How is not having this product in our booth going to help me sell computers?"

While we've all heard Apple doublespeak before, there seemed to be at least a thread of honesty in Gassée's cleverly orchestrated ensemble of t-shirt, jeans, and sneakers. Discussing the merits of Pascal versus BASIC for beginning programmers, he showed he's no wimp when it comes to computers. A preference for structured programming rather than loyalty to *la belle France* is probably the reason he commented, "BASIC is dangerous to the mind. If you want to program, don't learn BASIC." Whether or not you like Pascal, at least Gassée didn't talk about changing the world.

Gassée also noted that Apple would "continue to develop products for the Apple II hardware and software lines. Rumors that we'll discontinue the Apple II in '92 are not correct." Asked about the II/Macintosh connection, he added that we would continue to see common peripherals and better networking. As far as a "bridge" product, though, he said, "It's difficult," that if Apple tries to make a machine that does everything, it "does nothing well."

Gassée didn't promise the moon or even a faster GS, but somehow we got the impression that he knows Apple needs the II—because if the II were no longer an option, some people would buy an MS-DOS machine rather than a Mac. His talk suggests that Apple may be adopting the pragmatic attitude of car makers: General Motors would prefer you buy a Corvette instead of a Chevette, of course, but it's not going to discourage you from the Chevette and force you to buy a Ford Escort.

The highlight of the keynote, however, was a shouting match between Gassée and Bill Mensch, designer of the GS' 65816 microprocessor. Mensch took exception to a comment Gassée made about a lack of available chips for a faster GS. Mensch reached the floor microphone and said he had chips Apple could use. Gassée responded quickly and emotionally that he was surprised to hear Mensch make that claim, considering the number of problems Apple had had dealing with Mensch and Western Design. Mensch tried to keep the argument going, but the ever-alert auditorium sound crew turned off the mike.

Not to be denied an audience with Gassée, Mensch tracked him down off stage, and the two nearly came to blows. I'm sure many jokes about the incident are circulating, but the best line I've heard came from my wife, who said, "You mean you went to a fight and a keynote address broke out?" Yes, and let's hope Gassée continues to think the II is worth fighting for.□

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Disease of the '80s

I'VE DISCOVERED A NEW AND extremely deadly virus that appears to be terribly contagious and spreads easily. This virus apparently destroys logic and creates mass confusion. There also appear to be two strains. One replicates continually; the weaker strain simply remains infectious.

The one safety net about this deadly virus is that it's easily recognizable. You can spot either strain immediately.

Signs of the more virulent: Someone who's contracted this malaise keeps repeating, "The Apple II is dead and on its way out." You'll also hear comments such as "I know it for a fact," and "I got this information from high up."

Even though this virus is attacking the Apple II world, multiple cases have been discovered in the Macintosh media industry. Many suspect this may also be the virus' origin.

Signs of the weaker strain are much harder to detect. The main problem is that persons contracting it have a tendency to believe statements from the most severe sufferers. Sadly, some of these weaker cases can fester and progress into the more critical stages.

S. Bradley Martin
R.R. 3
Box 133
Monmouth, IL 61462-9804

Hot Rod

IN YOUR EDITORIALS AND LETTERS ("The Price of Power," *inCider*'s View, February 1989, p. 8; Letters to the Editor, June 1989, p. 12, and September 1989, p. 12) you stated that AppleWorks GS is destined to be the Porsche of GS integrated programs. I think the GEOS family of products is destined to be the Porsche of 8-bit Apple II programs.

Sure, GEOS needs more speed and works better with lots of memory, but isn't that what everyone's saying about AppleWorks GS? Berkeley Softworks' GEOS products are outstanding—integrated, graphics-based, and powerful. You can purchase and run them separately, spreading your costs over several months.

GEOS products will be the choice programs for all Apple II users. With continued and future upgrades from Berkeley, these programs will steadily improve and push 8-bit computers to the outer limits. If you want the GS or Macintosh look and feel on an Apple IIe or IIc, combined with the integration and desktop-publishing capabilities of AppleWorks GS, GEOS just stepped into the driver's seat of the 8-bit Porsche.

Michael Smith
74-38 62nd Street
Glendale, NY 11385

Satisfaction Guaranteed?

I'M BECOMING INCREASINGLY dissatisfied with the support that "Authorized Apple Service Centers" now provide to Apple owners.

I'm a member of the Armed Forces and purchased my computer from a local post exchange at a considerable savings. Since then, I've dealt with several Apple dealers who are reluctant to provide the level of support I'd expect from an authorized service center. On several occasions I've requested help from stores in Fayetteville, North Carolina, and Richmond, Virginia. Each time the dealer asked, "Did you purchase your system from us?" I was even refused the free-update service you mentioned in September 1989 ("Get What You Paid For," p. 64).

Does Apple know what's going on out here? Dealerships are employing "strong-arm sales tactics," promoting the attitude that if you don't buy from them, they won't provide you with any service.

Richard Mack
3330 Oakwood Circle
Petersburg, VA 23805

Teachers' Choice

AFTER READING DAN MUSE'S September 1989 editorial ("Those Who Can, Teach," p. 8), I'm heartened to see more and more information on today's technology for education.

As a speech pathologist in the public schools, as well as in private practice, I face the daily challenge of making drills enjoyable. Much of my work involves teaching language concepts and reinforcing them constantly through practice.

Mr. Muse also raises the issue of how and when to use computers. I think that to be prepared for future basic skills, every child should have access to a computer. This machine should augment education, as it's the most novel tool to hit the field. Still, we should exercise caution; the computer should never replace the teacher. I believe there's a consensus among my colleagues that we should use computers in the classroom with a "human touch."

Cynthia Konow-Linehan, M.A., CCC-SLP
22857 Hilton Head Drive, #192
Diamond Bar, CA 91765

Exploring Chaos

LAST WINTER I MADE TWO UNrelated purchases—a IIc Plus and a copy of James Gleick's *Chaos: Making a New Science*. It never occurred to me that these two interests would relate to each other. ▶

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Sensible Grammar is also available in a Mac version ($99.95).

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LETTERS TO THE EDITOR

Of course, as I read *Chaos*, several references to home computers (and specifically the Apple II) created an intense interest in exploring this new science.

Now in two successive issues ("Something Strange," Stattus Report, August 1989, p. 20, and "An Ordered World," Learning Curve, September 1989, p. 110) you've given us a taste. I hope *inCider* will continue to pursue this fascinating subject!

Al Canfield
6 Fenwood Parkway
Old Saybrook, CT 06475

HARD QUESTIONS

I PURCHASED AN 80-MEGABYTE hard disk from Hard Drives International. The drive was created to use with a Macintosh, but because it was a SCSI drive, I though it should work for my IIGS.

Currently, the hard-disk drive won't recognize GS/OS, while the Finder with AppleWorks GS and other programs won't recognize the hard disk.

I've loaded these programs onto the drive with Copy II Plus, and GS/OS won't load. The Apple SCSI board seems to have the correct number on it, so I don't think that's the problem. Any suggestions?

Also, I have 80 megabytes of memory, but I can access only 64 megabytes at a time, unless I use slot 5 and stop using my 3½-inch disk drive. Is there a way to access the other 16 megabytes of memory?

Glenn Proudfoot
527 West Main Street
Richmond, KY 40475

Bill Kennedy's advice is to install SCSI-HD using the System Tools disk's Installer program. Then use the Advanced Disk Utilities on the same disk to format and partition more than 64K. —eds.

SPREADSHEETS REVISITED

I'VE EXPANDED TWO OF RUTH Witkin's AppleWorks spreadsheets that involve interest calculation and loan amortization.

In the amortization schedule ("Borrowed Time," May 1989, p. 68, and June 1989, p. 72), you can now include additional monthly principal payments, beginning in any specified month, to calculate the additional monthly time. This is handy, for instance, if you want to pay off your house when you retire and need to know how much more you'll have to pay each month.

I also changed the interest-rate calculator ("Cashing In," April 1989, p. 68) from yearly to monthly increments. Here you can make additional regular monthly deposits and figure income-tax liabililty and its effect if you pay from the account. I've also added a yearly summary at the end and moved the compound-interest-rate calculation formula, so you don't have to recalculate the spreadsheet twice. I included the schedule in three different sheets (10, 20, and 30 years) because of the time it takes to recalculate.

If you're interested in these spreadsheets, send $10 to cover material and mailing expenses. Be sure to specify your desktop or memory capacity, so that I can send the proper sheets.

Neil C. Heims
2134 Harbor Way
Fort Lauderdale, FL 33326

CORRECTION

In the September 1989 feature "Get What You Paid For" (p. 64) an error appears in our explanation of the procedure for identifying GS-incompatible chips in the Apple II 256K Memory Expansion Kit. The letter A indicates an Apple-manufactured chip; to identify those that are incompatible, run the Memory/Test program that comes with AppleWorks GS 1.0 version 2, or get a copy of the Apple IIgs Memory Test program from On Three Inc., 123 Groveland Avenue, Riverside, IL 60546, (312) 447-3924, $19.95. If you have a RAM problem, notify your dealer.

INCIDER WELCOMES READERS' COMMENTS. WE RESERVE THE RIGHT TO EDIT LETTERS FOR CLARITY, STYLE, AND SPACE. PLEASE ADDRESS YOUR CORRESPONDENCE TO LETTERS, *INCIDER*, ELM STREET, PETERBOROUGH, NH 03458.

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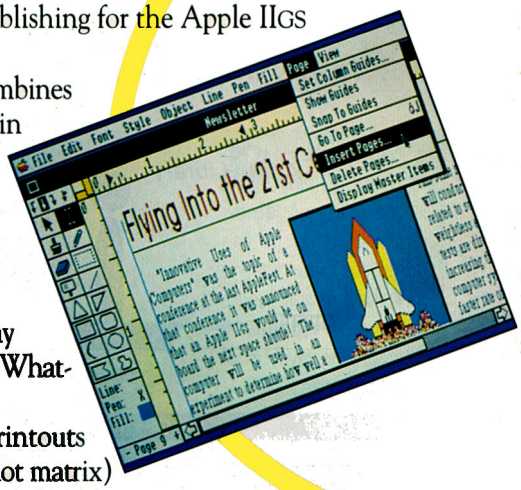

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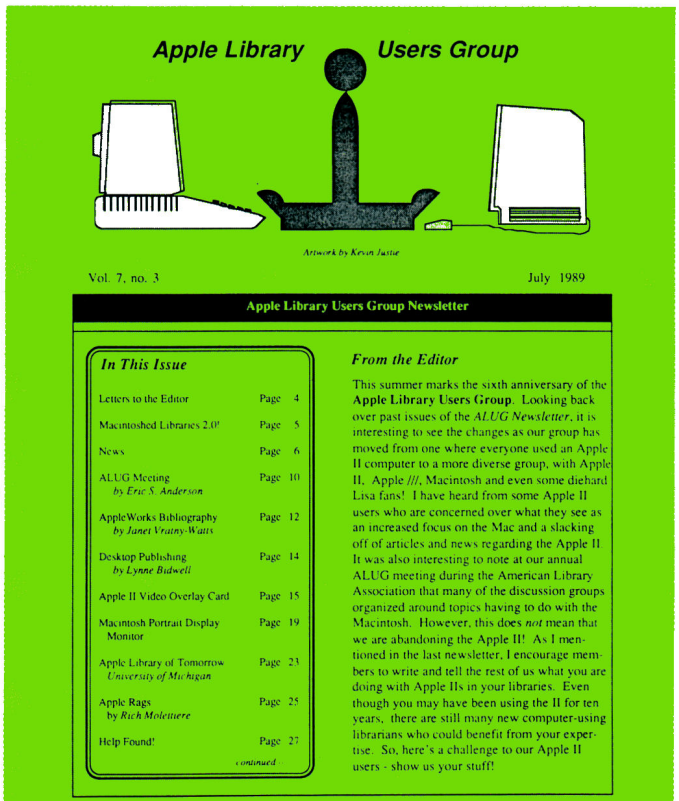
WHAT'S NEW

By the *inCider* staff



Apple Library Users Group

Artwork by Kevin Justice

Vol. 7, no. 3 July 1989

Apple Library Users Group Newsletter

In This Issue

Letters to the Editor	Page 4
Macintoshed Libraries 2.0!	Page 5
News	Page 6
ALUG Meeting *by Eric S. Anderson*	Page 10
AppleWorks Bibliography *by Janet Vratny-Watts*	Page 12
Desktop Publishing *by Lynne Bidwell*	Page 14
Apple II Video Overlay Card	Page 15
Macintosh Portrait Display Monitor	Page 19
Apple Library of Tomorrow *University of Michigan*	Page 23
Apple Rags *by Rich Molettiere*	Page 25
Help Found!	Page 27

continued

From the Editor

This summer marks the sixth anniversary of the **Apple Library Users Group**. Looking back over past issues of the *ALUG Newsletter*, it is interesting to see the changes as our group has moved from one where everyone used an Apple II computer to a more diverse group, with Apple II, Apple ///, Macintosh and even some diehard Lisa fans! I have heard from some Apple II users who are concerned over what they see as an increased focus on the Mac and a slacking off of articles and news regarding the Apple II. It was also interesting to note at our annual ALUG meeting during the American Library Association that many of the discussion groups organized around topics having to do with the Macintosh. However, this does *not* mean that we are abandoning the Apple II! As I mentioned in the last newsletter, I encourage members to write and tell the rest of us what you are doing with Apple IIs in your libraries. Even though you may have been using the II for ten years, there are still many new computer-using librarians who could benefit from your expertise. So, here's a challenge to our Apple II users - show us your stuff!

This month we feature the newsletter of the Apple Library Users Group (Apple Computer, 10381 Bandley Drive, M/S 8C, Cupertino, CA 95014, 408-974-2552 or -3258). The front page hardly does the newsletter justice: In addition to what you see ("Apple Rags" praises *inCider* in this issue) you can read a comparison of FrEdBase and AppleWorks, problems and solutions from readers, and a review of Cartooners, plus learn "Is a Computer for the Home Worth It?" ("I don't mind having a computer at home" is the answer to that question.) Most of all, we hope that any librarians who read *inCider* respond at once to the challenge from the newsletter's editor.

BEAGLE STYLE

Beagle Bros (San Diego, CA) has acquired the rights to the StyleWare (formerly of Houston, TX) software line—with the obvious exception of GS Works, which Claris (Santa Clara, CA) bought and renamed AppleWorks GS.

The big names among the new products are **BeagleDraw** ($89.95), formerly TopDraw, and **BeagleWrite** ($79.95) and **BeagleWrite GS** ($99.95), formerly MultiScribe. Many users considered TopDraw the best object-oriented graphics program written for the Apple IIGS. MultiScribe was a best-selling graphics word processor in both IIe/IIc and GS versions.

Beagle Bros' **GS Desk Accessories** ($59.95), formerly DeskWorks, is an interesting product—the collection includes telephone dialer, keyboard macros, screen preserver, programmable scientific calculator, notepad, and alarm clock, all originally written for StyleWare as programming practice for AppleWorks GS. Clip art and font disks are also available.

Beagle Bros will support older versions of the StyleWare products. The Beagle Bros versions have been improved and updated; upgrading from a StyleWare program costs $10. As always with Beagle Bros software, the new products are non-copy-protected.

Beagle Bros appears determined never to let good software fade away. For information, contact Beagle Bros, 6215 Ferris Square, Suite 100, San Diego, CA 92121, (619) 452-5500, or circle number 350 on the Reader Service card. **—P.S.**

StyleWare

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BEAGLE SCHOOL

Beagle Bros has recognized that many of its products are used in schools and has instituted a site-licensing program for its **TimeOut** series of AppleWorks enhancements, and some other popular software, including the recently acquired **Point-to-Point** telecommunications program.

Beagle offers three types of licenses. A *network license* lets the customer use the Beagle Bros program on a local-area network, and make copies of the manual. (TimeOut programs are compatible with AppleShare, Corvus, Elan, and other networks.) A *lab license* permits a teacher to make copies of the disk and manual for the students in one classroom. A *site license* allows students, teachers, administrators, and staff to use the program at a single school, but nowhere else.

All Beagle Bros licenses are good for 100 years; after that purchasers must renew the license, but during that time may upgrade each package for only $10. For prices and further information, contact Beagle Bros, 6215 Ferris Square, Suite 100, San Diego, CA 92121, (619) 452-5500, or circle number 351 on the Reader Service card. **—P.S.**

BUYING FREE SOFTWARE

Why should you pay $25 for database-management software with a name that means "FRee EDucational dataBASE?"

Perhaps because *FrEdBase* is one of the most widely known simple databases available at any price—its users state that they prefer it to AppleWorks. Or perhaps because FrEdBase 2.0 has fixed many of the bugs in earlier versions, and has improved its listing functions to allow for display of as many as 15 records at a time. Perhaps the best reason to pay $25 for FrEdBase is that it's freely copyable: Buy one, and you can make copies for every teacher, every student, every employee, every secretary, and the custodian with a clear conscience.

SOFTWARE

FrEdBase has more charms for the teacher than its low price, though. Because it's a smaller, less complex program than AppleWorks, it works more efficiently on 64K Apple IIs. It can also figure the highest, lowest, and average of a list of numbers automatically—a must for the overworked teacher computing grades. Like AppleWorks, FrEdBase prints reports in lists or labels on paper, to the screen, or to a text file on disk; unlike AppleWorks, FrEdBase lets you "flip" through a series of records automatically.

If your budget's got you discouraged about quality software, FrEdBase is worth a look. You can find it almost anywhere, but if you buy FrEdBase from the International Society for Technology in Education (University of Oregon, 1787 Agate Street, Eugene, OR 97403, 503-686-4414) you'll receive the latest version and 65 pages of documentation. Or just circle number 353 on the Reader Service card for free information. —P.S.

Desktop video is this year's buzzword at Apple Computer; and Apple II owners can create video shows on any monitor with **The Presenter**, from Proform Development.

The Presenter runs on any Apple, including the 48K Apple II Plus and Laser compatibles. It displays hi-res graphics, charts, titles, spreadsheet files, or word-processing files—anything you can see on your computer monitor can be presented gloriously on a television set, video monitor, or video projector.

Teachers can use The Presenter to create imaginative lessons, and businesspeople can spruce up dry reports. The Presenter includes something called List Management Environment—LiME for short—a BASIC-like programming language that allows for hypermedia effects such as looping, branching, and linking among screens. It's also a quick-and-dirty introduction to the principles of programming.

The Presenter sells for $44; a classroom package of five disks and teacher's guide is $94; and a demonstration disk costs only $5, from Proform Development, 65 Washington Street, Suite 50, Santa Clara, CA 95050, (800) 628-2828, extension 500. Pick number 352 on the Reader Service card for more information. **—P.S.**

PUBLISH ◂ IT!2 AGAIN!

inCider readers know Cindy Field's name—she's the author of Press Room and a contributing editor in desktop publishing. Since she opened her Press Room in April 1988, she's concocted more desktop-publishing projects than we care to count.

But C.E. Field Enterprises cared enough to collect 16 of her best **Publish It! 2** templates into **Business Pack 1** for $19.95. (Not all these projects appeared in *inCider*.) The 16 files on the Business Pack 1 disk cover five small-business applications: name badges, business cards, coupons, gift certificates, and postcards. "Only minimal experience with Publish It! 2 is required," according to the author—and if her careful, step-by-step instructions in *inCider* are any indication, that's certainly true.

C.E. Field Enterprises also markets Publish It! 2 single-project disks ($10 each) with templates, tutorials, clip art, fonts, and ready-to-use stationery forms, so you can create your own calendars, bumper stickers, badges, and more.

If you own Publish It! 2 and are serious about your work, send for a free catalog from C.E. Field Enterprises, 60 Border Drive, Wakefield, RI 02879-3802, or circle number 355 on the Reader Service card. **—P.S.**

UPDATES

•Thirdware Computer Products (Miami, FL) has announced the release of **FingerPrint GSi version III**. The greatly enhanced screen-printing utility card sells for $149; current owners can upgrade for $35.

•The **William K. Bradford** Company (P.O. Box 1355, Concord, MA 01742) will award as many as ten software grants, each worth $10,000, to selected schools equipped with an AppleShare/Appletalk network. The winners will receive software from **D.C. Heath**, as well as William K. Bradford's Explore-a-Classic.

•**Springboard Software** (Minneapolis, MN) has dropped prices on some of its early-learning software: Early Games for Young Children and Easy as ABC are only $29.95 each; Piece of Cake Math and Fraction Factory have been reduced to $12.95.

Continued on p. 20

Simplify Your Holiday Shopping

Apple Computers

Apple IIGS 1 Meg	$ 895
Apple IIc Plus	$ 499

Monitors

AppleColor RGB	$ 465
AppleColor Composite IIe	$ 339
AppleColor Composite IIc	$ 312
Apple Monochrome	$ 135
Magnavox RGB/Composite	$ 299

Floppy & Hard Drives

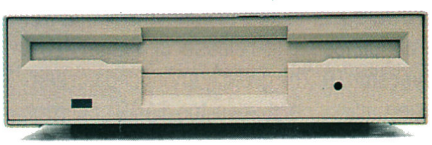
Apple 3.5 Disk Drive	$ 349
Apple 3.5 UniDisk IIe/IIc	$ 319
UniDisk 3.5 Controller	$ 59
Apple 5.25 Disk Drive	$ 259
Apple 5.25 Controller	$ 59
Laser 5.25 Disk Drive IIe	$ 89
Laser 5.25 Disk Drive IIc	$ 89
CMS 20 Meg w/SCSI	$ 579
CMS 30 Meg w/SCSI	$ 659
CMS 43 Meg w/SCSI	$ 786
CMS 60 Meg w/SCSI	$ 839

Vulcan Hard Drives

by Applied Engineering

Vulcan high-speed internal hard drives for the Apple IIGS, IIe, II+ and II, offer a reliable and affordable way to store large files while speeding boot up time and saving wear on your disk drives. One year warranty.

year warranty	**Vulcan HD/20**	**$ 529**
	Vulcan HD/40	**689**
	Vulcan HD/100	**1299**



SystemGate 800K Drive

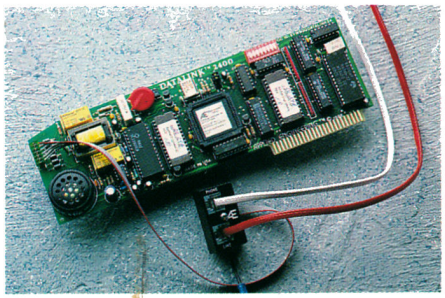
The SystemGate disk drive provides reliable 800K storage in an extremely compact unit – 1" high x 4" wide x 7.8" deep – 50% smaller than the Apple 3.5 disk drive. It can be daisy chained to other disk drives for convenience. An ideal choice for those who want an additional 800K drive at an affordable price. One year warranty.

(for Apple IIGS) **CDA Price $189**

External Modems

Practical 1200 SA Mini	$ 85
Practical 2400 SA	$ 185
Modem Cable	$ 19

Order Toll Free 800-526-5313
NJ/Outside US 201-832-9004



DataLink Modems

by Applied Engineering

The Datalink 1200 and 2400 internal modems fit neatly into your Apple II, IIe or IIGS. The Datalink 1200 operates at 300 or 1200 baud. The Datalink 2400 operates at 300, 1200, or 2400 baud. DataLink lets you track the progress of calls either electronically or via an on-board speaker. With built-in error checking you are guaranteed accuracy of data transmission. Includes easy to use communication software, two modular phone jacks, an extra long phone cable, manual and five year warranty. **DataLink 2400 - $175**
DataLink 1200 - $132

Printers

ImageWriter II w/Cable	$ 459
Olympia NP-30 w/Cable	$ 289
Epson LX-810	$ 209

Printer Interface Cards

Apple Super Serial	$ 109
Orange Grappler C/MAC/GS	$ 79
Orange Grappler Plus	$ 89
Thirdware Fingerprint GSI Plus	$ 95

Memory Upgrades

We sell factory sealed Applied Engineering Memory Cards complete with 5 year warranty.

GS-RAM ØK	$ 89
GS-RAM 256K	$ 129
GS-RAM 512K	$ 169
GS-RAM 1 Meg	$ 249
GS-RAM 1.5 Meg	$ 319
GS-RAM Ultra 256K	$ 179
GS-RAM Ultra 512K	$ 209
GS-RAM Ultra 1 Meg	$ 289
GS-RAM Ultra 2 Meg	$ 439
GS-RAM Plus 1 Meg	$ 289
GS-RAM Plus 2 Meg	$ 439
RamKeeper	$ 142
RamKeeper Slot Mover	$ 32
RamWorks III 256K	$ 159
RamWorks III 512K	$ 189
RamWorks III 1 Meg	$ 269
RamFactor 256K	$ 189
RamFactor 512K	$ 229
RamFactor 1 Meg	$ 299
RamCharger Backup	$ 145
Ram Exp. Clock Option	$ 49
Apple Memory Card 256K for IIGS	$ 129
Applied Ingenuity Extended 80 Column Card w/64 IIe	$ 49

Upgrade your Apple or Applied Engineering Memory Card!

• 256K Chip Set 120ns	$ 49
• 256K Chip Set for RamPak & GS-Ram Ultra	$ 59
• 1Mb Chip Set GS-Ram Plus	$ 129

PC Transporter

PC Transporter 768K	$ 389
IIGS Installation Kit	$ 45
IIe Installation Kit	$ 39
Single 360K Drive	$ 219
Dual 360K Drive	$ 329

Time & Accelerators

SMT No Slot Clock	$ 39

Transwarp GS

by Applied Engineering

The Transwarp GS accelerator allows your IIGS to rip along at 7MHz, compared to its regular 2.8MHz speed. It is completely compatible with all standard hardware and software and is simple to install. Just plug in one connector, then insert TransWarp GS into slot 3 or 4 (the board will not overide either slot's function), set the control panel and take off. Switching back to normal speed is as easy as accessing the control panel.

Transwarp For Apple IIe/II Plus

Speed up your IIe/II Plus from 1 MHz to 3.6 MHz. When used with a II Plus it gives you 128K of memory and ProDos compatibility. Five year warranty.

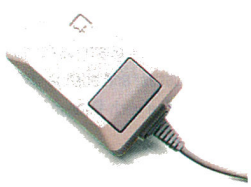
Transwarp GS	**$292**
Transwarp IIe/+	**$175**

Power/Surge Protection

Curtis 6 outlet Surge Protector	$ 29
Applied Heavy Duty Power Supply for IIe/II+	$ 59
Kensington System Saver IIe	$ 68
Applied Engineering Conserver Surge Protector	$ 92
APC 330 Watt UPS Battery Backup	$ 299

Desktop Devices

Kensington Turbo Mouse/GS	$ 109
Mach IV Plus Joystick	$ 54
Koala Pad Plus Graphics Tab.	$ 78
Kurta IS/GS Tablet (IIGS)	$ 269
Apple IIc Mouse	$ 79
Apple IIe Mouse w/card $119	



Order via Electronic Mall "Go CDA!"

CDA Delivers Apple Hardware,

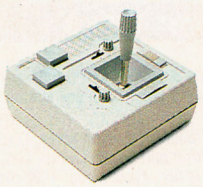
System Saver IIGS
by Kensington

Extend the life of your computer! The System Saver IIGS is a cooling fan and surge protector in one compact unit. It draws 17 cubic feet of air per minute through the computer to keep the components free from excessive heat. The built-in surge supressor protects your computer from damaging electric spikes. Provides four outlets and an 8 foot power cord. The perfect gift for any IIGS owner! **CDA Price $75**

Holiday Gift Giving Ideas!

Sony Diskettes

3.5" DSDD (10)	$15
5.25" DSDD (10)	$ 8



CH Joysticks for IIe, IIc+, IIGS

Mach III	$34
Mach II	$28
FlightStick	$48

Kalmar Teakwood Storage Boxes

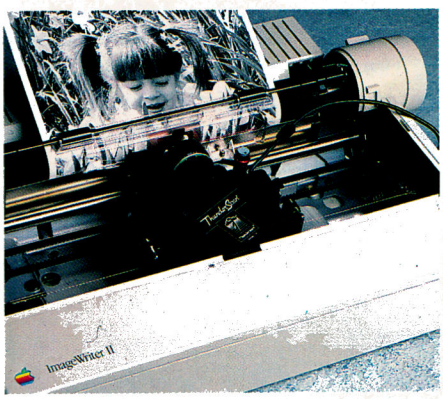
3.5"-Holds 45 Disks	$18
5.25"-Holds 50 Disks	$24

ImageWriter Ribbons

Rainbow Ribbon	$11
Black Ribbon	$ 4
Red, Green or Blue	$ 5

Mouse Pad $ 9

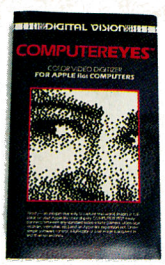
Surge Protector
Safe-Strip by Curtis $26



ThunderScan *by Thunderware*

ThunderScan is an economical yet powerful scanner for the Apple IIGS, IIc Plus, IIc and IIe. It replaces the ribbon cartridge of ImageWriter I or II and connects to the joystick port so it's easy to install. The scanner zips back and forth, digitizing the image in 16 levels of gray. Its innovative design makes high resolution scanning affordable. ThunderScan images can be saved for use with paint and desktop publishing programs. **ThunderScan $189**

ComputerEyes
by Digital Vision



ComputerEyes allows you to digitize images from any video source and use them on your Apple II computer for graphic arts, desktop publishing, picture databases, education or entertainment applications. It consists of a single board that plugs into any slot of the IIe or IIGS and system software. 1 year warranty.

ComputerEyes/2 for Apple IIe $109
ComputerEyes Color for IIGS $209

Sound and Music for Your Apple

Music Starter Package

This complete music package includes everything needed to get started in computer based music composition, recording and sequencing at an affordable price. *An exciting gift for the MIDI enthusiast.*

Package Includes:

- **Casio's New MT 640 Keyboard** features 20 preset sounds, built in drum pads, and a dynamic bass speaker system.
- **Passport's Master Tracks Jr. Software** package features a 64 track sequencer which is easily controlled by conventional tape recorder type functions.
- **Passport's Serial MIDI Interface** features one MIDI in and one out.

List - $580
CDA Price -$379
Save Over $200
Package #8914

MIDI Interfaces

Apple MIDI (1 in/1 out)	$ 82
Opcode Pro Plus (1 in/3 out)	$ 99
Passport MIDI (1 in/1 out)	$ 79

MIDI Software

Master Tracks Jr (IIGS)	$ 89
Master Tracks Pro (IIGS)	$239
Music Writer-Limited (IIe/IIGS)	$ 89

MIDI Keyboards

Casio MT 640	$229
Casio PMP 300	$239

Call for special holiday prices on Roland, Kawai and other MIDI keyboards. Toll Free 800-526-5313

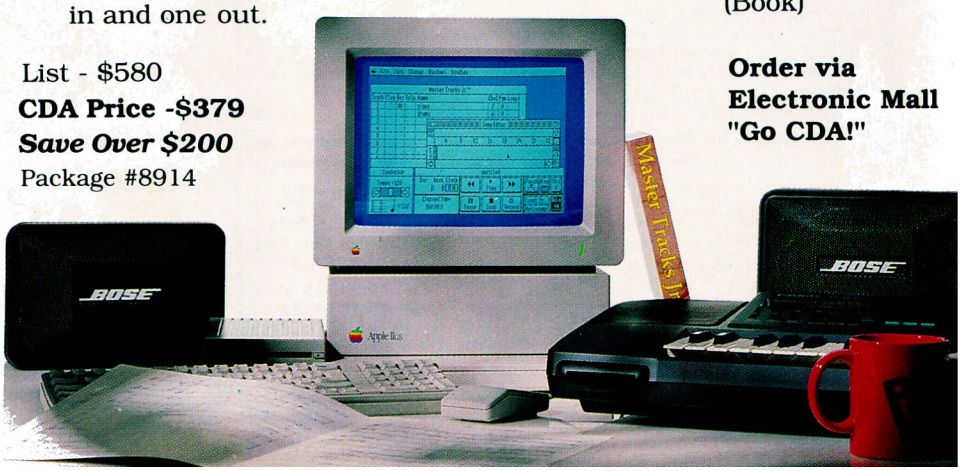
Sound Enhancements

Sonic Blaster (IIGS)	$ 98
Phasor (II+, IIe, IIGS)	$128
Bose Pro Roommate Speakers (set of two)	$279

MIDI Accessories

Set of 2 MIDI cables	$ 15
Universal Keyboard Stand	$ 39
"A Guide to Computer Music" (Book)	$ 17

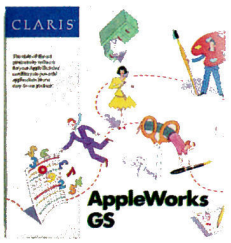
Order via Electronic Mall "Go CDA!"



Software and Accessories!

BUSINESS SOFTWARE

AppleWorks GS *By Claris*



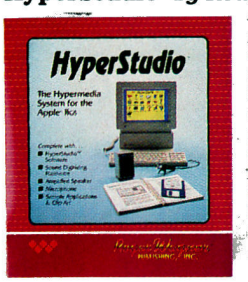
AppleWorks GS delivers six of the most powerful and popular Apple IIGS software applications—word processor, spreadsheet, database, page layout, graphics, and communications—in one easy-to-use program.

Appleworks GS	$205
Appleworks V3.0 (3.5&5.25)	$175
BERKELEY SOFTWORKS	
GEOS (3.5&5.25)	$44
MANZANITA	
Businessworks Bundle (3.5&5.25)	$265
TIMEWORKS	
Publish It! V2.0 (3.5&5.25)	$79
WORDPERFECT	
Word Perfect V1.1 (3.5&5.25)	$98
Word Perfect GS V2.1	$98

UTILITY SOFTWARE

BEAGLE BROTHERS	
Timeout Desktools (3.5&5.25)	$29
Timeout Programwriter (3.5&5.25)	$29
Timeout Quickspell (3.5&5.25)	$39
Timeout Reportwriter (3.5&5.25)	$44
Timeout Sidespread (3.5&5.25)	$29
Timeout Telecom (3.5&5.25)	$39
Beagle Write (3.5 & 5.25)	$48
Beagle Write (IIGS)	$58

HyperStudio *by Rodger Wagner*



A great way to integrate text, graphics and sound on your IIGS. Based on the hypermedia concept, HyperStudio provides you with a complete package for instantly creating your own hypermedia applications or editing existing ones.

HyperStudio (for IIGS-requires 1.25Mb)	$75
Softswitch (for IIGS)	$38
Macromate (for IIGS)	$32
CHECKMATE TECHNOLOGY	
Proterm V2.1 (5.25 & 3.5)	$79
TML SYSTEMS	
TML Basic (IIGS)	$79
TML Pascal (IIGS)	$79

ENTERTAINMENT SOFTWARE

ACCOLADE	
Test Drive II (IIGS)	$27
ACTIVISION	
Music Studio (IIGS)	$44
BRITANNICA	
Great Western Shoot Out (IIGS)	$17
CINEMAWARE	
Defender Of The Crown (IIGS)	$29

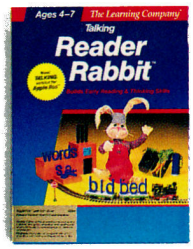
Print Shop IIGS *by Broderbund*

Create your own holiday greeting cards, personal letterhead, signs, banners, and more—all in vivid color. Print Shop IIGS includes over 120 unique designs and takes full advantage of the IIGS high resolution performance. Print Shop IIGS $37

DATA EAST	
Bad Dudes (5.25)	$22
EPYX	
California Games (5.25 or IIGS)	$15
LA Crackdown (5.25)	$12
Streetsports Football (5.25)	$12
MICRO REVALATION	
Xenocide (IIGS)	$32
TAITO	
Arkanoid II (IIGS)	$22

HOME/PERSONAL SOFTWARE

ACTIVISION	
Paint, Write, Draw Bundle (IIGS)	$79
ADDISON WESSELY	
Wordbench (3.5 & 5.25)	$89



Reader Rabbit *by The Learning Co.*

Talking Reader Rabbit helps build your child's early reading and spelling skills. Each word is clearly pronounced to help recognize, remember and spell words. The enhanced graphics will motivate and delight your childs learning process.

Talking Reader Rabbit (IIGS)	$33
Reader Rabbit (5.25 version)	$24
ELECTRONIC ARTS	
Deluxe Paint II (IIGS)	$65
Mavis Beacon Teaches Typing (5.25)	$29
EPYX	
Home Video Producer (5.25)	$34
Print Magic (3.5 or 5.25)	$28
INTUIT	
Quicken (3.5 or 5.25)	$38
MECA	
Managing Your Money (3.5&5.25)	$92
Bank Street Writer Plus (3.5 or 5.25)	$49

EDUCATIONAL SOFTWARE

BRITANNICA	
Designasaurus (IIGS)	$28
Jigsaw (IIGS)	$24
BRODERBUND	
Where In The USA Is Carmen SanDiego? (3.5 or 5.25)	$29
DAVIDSON	
Talking Math and Me (IIGS)	$28
Talking Reading and Me (IIGS)	$28
Talking Math Blaster Plus (IIGS)	$28
LEARNING LAB SOFTWARE	
Monsters and Make Believe (5.25)	$27
Monsters and Make Believe (3.5 & 5.25)	$30
WEEKLY READER	
Stickybear ABC's (5.25)	$24
Stickybear Spellgrabber (5.25)	$28
Talking Stickybear Opposites (IIGS)	$28
APPLE COMPUTER	
GS/OS Version 5.0	$39

Why Should You Buy From CDA?

Wide Selection, Low Prices, Prompt Delivery!

CDA offers Apple computers, complete ready-to-run systems, add-on hardware, software and any accessory you may need—all at an affordable price.

At CDA we offer a wide selection of top name brand items, each carefully selected for quality and reliability.

30-Day Satisfaction Guarantee

If you're not 100% satisfied with your purchase simply return the purchased goods within 30 days of receipt for a quick, courteous refund (some items excluded).

Service and Support

After the 30-day satisfaction period we continue to provide free repair services for an additional 60 days. Our excellent in-house service center and trained technicians provide a speedy turn-around time for your convenience.

Shipping Information

UPS Ground - add 3% ($3.50 min)
UPS 2-day service - add 5% ($5.50 min)
Alaska, Hawaii, PR - add 6% ($6.50 min)
APO/FPO shipping - add 8% ($8.50 min)
Orders over $2,000 please call for discount rates. Foreign orders ship via DHL, please call or fax for rates and more info. DHL

Visa, MasterCard, Discover & Amex Accepted. Personal checks are held 10 days for clearing. No CODs please.

All prices subject to change. Apple, IIGS, & ImageWriter are registered trademarks and UniDisk is a trademark of Apple Computer Inc.
Please be advised - CDA is not an authorized Apple dealer, therefore during the 90-day warranty period Apple items must be returned to CDA..

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featuring a complete line of Apple Systems, Hardware, Software and Accessories.

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Circle 8 on Reader Service Card.

Complete Ready-to-Run Systems

"We Make It Easy for Santa to Deliver"

CDA's Affordable Apple IIGS System

Complete system includes:

- Apple IIGS 1 Meg CPU w/Keyboard & Mouse
- Magnavox RGB Monitor
- SystemGate 3.5" Disk Drive
- Olympia NP-30 Printer w/cable
- 3.5" Diskettes - Box of 10
- Dust Cover for CPU & Printer
- Computer Paper - Pkg. of 500
- Mouse Pad

List $2234 **CDA Price $1699**

Save Over $850 Package #8916

Apple IIc Plus Color System

Complete system includes:

- Apple IIc Plus Computer w/built in 3.5" Disk Drive
- Apple Color Composite Monitor
- Olympia NP-30 ImageWriter Compatible Printer
- Printer Interface Cable
- 3.5" Diskettes - Box of 10
- Computer Paper - Pkg. of 500

List $1599 **CDA Price $1095**

Save Over $500 Package #8921

Apple ImageWriter II Color Printer Package

Package includes:

- ImageWriter II 220 cps Printer
- Extra Black Ribbon
- Rainbow Color Ribbon
- Printer Dust Cover
- Computer Paper - Pkg. of 500

CDA Price IIc/IIGS $475
IIe $549

Apple IIGS/IIc Plus - package #8922
Apple IIc - package # 8923
Apple IIe - package # 8924
(The IIe pkg. includes printer interface card.)

Olympia NP-30 Printer Package

Package includes:

- Olympia NP-30 Printer
- Printer Cable
- Extra Printer Ribbon
- Printer Dust Cover
- Computer Paper - Pkg. of 500

List $444 **CDA Price $299**

Save Over $140 Package #8915

Apple IIGS Color System

Complete system includes:

- Apple IIGS 1 Meg CPU w/Keyboard & Mouse
- Apple RGB Analog Monitor
- Apple 3.5" & 5.25" Disk Drives
- Apple ImageWriter II 220cps Printer w/cable
- Color Rainbow Ribbon
- 3.5" & 5.25" Diskettes - Box of 10 each
- Dust Cover for CPU & Printer
- Computer Paper - Pkg. of 500
- Mouse Pad

List $3257

CDA Price $2399

Save Over $850

Package #8920

Apple IIGS Power System w/20 Meg Hard Drive

Complete system includes:

- Apple IIGS 1 Meg CPU w/Keyboard & Mouse
- Applied Vulcan 20 Megabyte HD
- Apple RGB Analog Monitor
- Apple 3.5" Disk Drive
- Apple ImageWriter II 220cps Printer w/cable
- Color Rainbow Ribbon
- 3.5" & 5.25" Diskettes - Box of 10 each
- Dust Cover for CPU & Printer
- Computer Paper - Pkg. of 500
- Mouse Pad

List $4,104
CDA Price $2679
Save Over $1400
Package #8918

Order Toll Free 800-526-5313
NJ/Outside US 201-832-9004

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Software Stuffers Under $10!

APPLE IIGS 3½" DISKS

Print Shop™ Holiday Graphics

☐ **GS61,62** 200+ **holiday** color & b/w graphics & borders for Print Shop™ (2 DISK SET) **$18**
☐ **GS30** Color **holiday pictures** for Print Shop™ plus customize startup screens . . . **$9**

Desk Accessories/Fonts

☐ **GS2,GS3,GS4** DAs: Picsaver, Notepad, Calendar, melting screen! (3 DISK SET) . . **$27**
☐ **GS14,GS71** 82 fonts including Candy Striped and Toyland (2 DISK SET) **$18**
☐ **GS85** Control Panel NDA: Get to Control Panel from Apple menu, + 20 other DA's **$9**

Education

☐ ***NEW* GS115** Colorful, animated quizzes from Newton's Apple Education Series: tooth decay, neon lights, tension and compression, dangers of cocaine **$9**

Mean 18™ Games

☐ **GS36,GS37** Play the treacherous fairways of 12 courses (REQ. MEAN 18™) (2 DISK SET) . **$18**
☐ **GS102,GS103** Play 12 Oregon golf courses (REQUIRES MEAN 18™) (2 DISK SET) **$18**

Games

☐ **GS27** Bounce-It!: IIGS adaptation of the Little BrickOut™ game (SHAREWARE) **$9**
☐ **GS58** F1 Race: Formula one racing game (SHAREWARE), Mastermind **$9**
☐ **GS86** Wheel: Vanna's game is now on the IIGS! **$9**
☐ ***NEW* GS104** Lotto.GS lottery number generator, Poker and Monte Carlo **$9**
☐ ***NEW* GS106** Play Quadomino arcade game & Colossal Caves adventure game . **$9**

Graphics/Graphic Utilities

☐ **GS7,GS8,GS9 Santa**, Enterprise, plus lots more pictures* (3 DISK SET) **$27**
☐ **GS45** Borders to frame **Xmas cards**, stationery, certificates plus color pictures* . **$9**
☐ **GS63** Cheap Paint—full-featured color painting program (768K REQ.) (SHAREWARE) . . . **$9**
☐ **GS88** Viewer: View super hi res graphics quickly and easily. Convert Print Shop™ graphics from the Apple II to the IIGS version, ***Incider Editor's Choice*** **$9**

Music

☐ **GS10** "Jingle Bell Rock" + 25 more **Xmas songs** for use w/Music Construction Set™ . **$9**
☐ **GS64** Rock n Roll Gold: Self-running demo plays 14 songs, ***Incider Editor's Choice*** . **$9**

Utilities

☐ **GS87** Iconed: Design, edit, and color your own icons (SHAREWARE) **$9**
☐ ***NEW* GS107** MicroEMACS—extremely powerful text editor for advanced users . . **$9**

*Needs application, i.e. PaintWorks Gold, Deluxe Paint, or GS63 Cheap Paint to print.

☐ ***ANY 10 DISKS FOR ONLY*** **$59.95**

APPLE II 5¼" DISKS

Designing Your Own Greeting Cards is Easy!
10 Print Shop™ disks (req. Print Shop™) w/over 800 pics.
☐ 10 Black/White 5¼" disks **$39.95**

Business

☐ ***NEW* 846,847,850** Appleworks™ templates: 32 spreadsheets & dbases for home/biz/sports (3 DISK SET) . . **$15**
☐ **861** Desktop Publishing program for Publish It!™ **$5**
☐ **866** Friendly Check—easy checkbook organizer . **$5**
☐ ***NEW* 869** Mail.List, catalog books, print labels . . **$5**

CAD/Communications

☐ **310,311,312** CAD & graphing package (NEED YOUR OWN PRINTING PACKAGE) (3 DISK SET) **$15**
☐ **854** ZLINK Term. emul. for IIc, IIe, or IIGS with 80-column card & Super Serial Card (SHAREWARE) **$5**

Education

☐ **062** Games that make spelling an adventure . . . **$5**
☐ **194** Genealogy program: Trace your Family Tree . **$5**
☐ **518** History, vocabulary, math, astronomy (SHAREWARE) **$5**
☐ ***NEW* 863** Aircraft almanac with full-color hi res graphics **$5**
☐ ***NEW* 872** Play Name the States; learn periodic table **$5**
☐ ***NEW* 879,880,881,882** Newton's Apple color animated quizzes: tooth decay, neon lights, cocaine dangers, tension and compression (4 DISK SET) **$20**

Games

☐ **750,751** Fireground—fight fires and save lives (JOYSTICK REQ.) (2 DISK SET) **$10**
☐ ***NEW* 813** Pinball games: Flip-It, Super Blast plus 2 more **$5**
☐ **814** Monopoly: Apple II version of the popular board game **$5**
☐ **841** Tomb of Doom: Battle spiders, bats and rats while trapped in dark caverns! . . **$5**
☐ ***NEW* 871** Play North American Stock Exchange or relax with mini golf **$5**
☐ ***NEW* 874** Make your own Search-A-Words, prints puzzle and answers **$5**
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WHAT'S NEW

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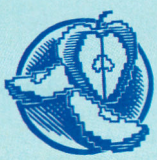
HARDWARE

Responding to the popular demand for more and more storage capacity, Chinook Technology has announced the release of another 40-megabyte hard-disk drive, the *CT40c*. But between your "ho" and "hum," notice that the CT40c plugs directly into the Apple II SmartPort—and that means the CT40c and its sibling, the CT20c, are the only hard drives you can use with a IIc or IIc Plus.

The CT40c is "plug and play" complete, including cabling for attachment to the IIc external disk-drive port, to the GS SmartPort connector, or to a UniDisk 3.5 controller card (IIe); a daisychain port for additional hard or floppy drives; and preformatting into two 20-megabyte ProDOS-compatible partitions, with a bootable, Pro-Sel-like (Glen Bredon) program selector and repartitioning utilities. It's fully compatible with all Apple floppy disk drives, accelerators, and RAM and multicache cards, and you can upgrade it to work with Apple SCSI.

For $979, the CT40c competes well on a dollar-per-megabyte basis with other Apple-compatible hard drives, and its IIc compatibility is no contest. For more information contact Chinook at 1811 Left-hand Circle, Suite B, Longmont, CO 80501, (303) 678-5544, or circle number 356 on the Reader Service card. —W.K.



APPLE BITS

■Quantum Computer Services (Alexandria, VA) and Apple are having words about **AppleLink**. Quantum wants more control; Apple doesn't want it called *Apple*Link if Quantum is calling the shots. Not as many Apple owners are using AppleLink as expected; look for Quantum to re-introduce AppleLink as a telecommunications service for MS-DOS, Macintosh, and Apple II computers.

■**Hayes Microcomputer Products** (Atlanta, GA)—the company that is to modems what Kleenex is to tissues—has purchased **Practical Peripherals** (Westlake Village, CA). With the acquisition, the two companies have ended their litigation over the patent for a "modem with improved escape sequence."

■Stan Roach, vice president of Presentation Tools at **Activision/Mediagenic** (Mountain View, CA) has praised the Apple IIGS in two different Apple press releases. Does this mean we can expect more products from Activision?

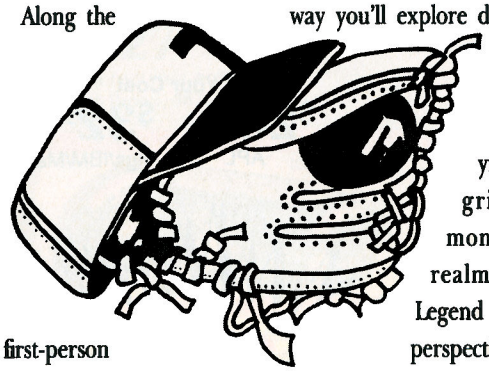
Circle 269 on Reader Service Card.

IN THE OFF-SEASON

GAMES

It's deep fantasy adventure or hard-hitting baseball action—take your pick. Epyx continues to expand its collection of Apple II entertainment titles with **The Legend of Blacksilver** and **The Sporting News Baseball**, adding to both its noteworthy lines—the Masters Series and sports simulations.

The Legend of Blacksilver takes to you to the fantastical world of Thalen, where the evil Baron Taragas is seizing control of the land. Taragas has kidnapped the king, but—worse than that—he has found traces of the malevolently powerful mineral blacksilver. The Princess needs to find one warrior willing to risk life, limb, and anything else to save the king and the land of Thalen. Any guesses who that might be?



Along the way you'll explore dungeons up to 12 levels deep; a haunted fortress known as the Labyrinth, guarded by grisly, ghostly demons; and the other realms of Thalen. The Legend of Blacksilver uses first-person perspectives and 3-D effects to make your heroic quest as realistic as possible.

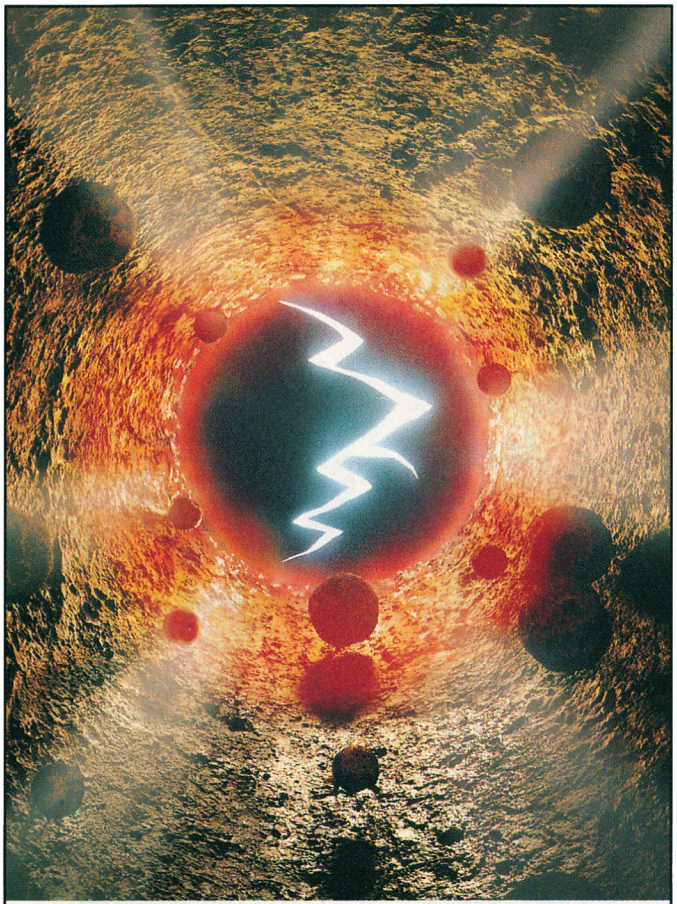
And remember, if you get stuck somewhere in Thalen, you can always consult Epyx's *Masters Collection Hint Book* ($7.99). Besides helping you get out of sticky situations in The Legend of Blacksilver, the *Hint Book* will also lend a hand with Sub Battle Simulator and L.A. Crackdown.

If sports are more your game, Sporting News Baseball takes you out to the diamond for statistical strategy and baseball action. You can choose players from any of the 26 1987 major-league teams, or from a roster of Hall of Fame players. The performance of each individual player is based on actual MLBPA (Major League Baseball Players Association) statistics—hitting percentages, stolen bases, fielding ranges, and earned run averages.

You can play and manage games against the computer or a human opponent in a purely statistical game, where the computer plays out the game, or control the action yourself. Sporting News Baseball gives you a split-screen view, with a player's perspective and an overhead. Ballpark sound effects and animation enhance the experience.

Each of these new Epyx titles will retail for $39.95. For more information contact Epyx at 600 Galveston Drive, Redwood City, CA 94063, (415) 368-3200, or circle number 357 on the Reader Service card.

—L.L.



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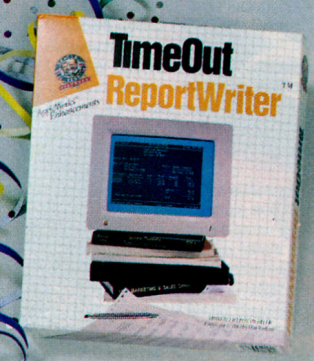

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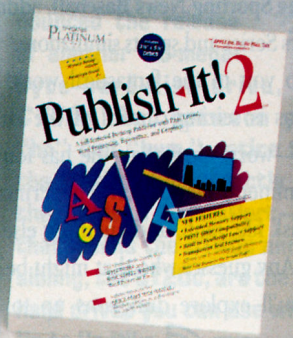

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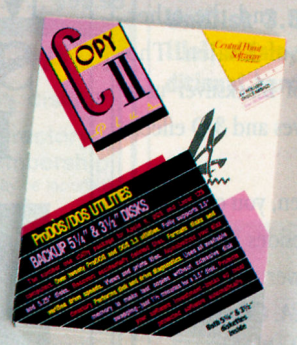

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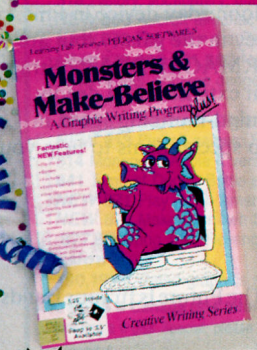

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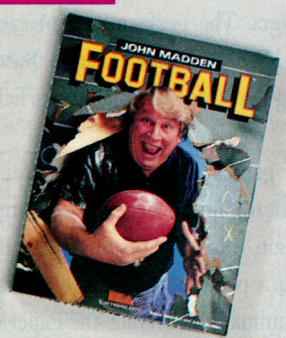

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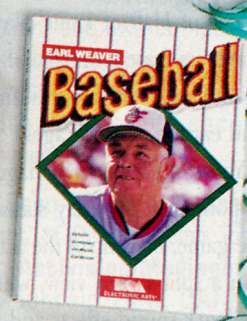

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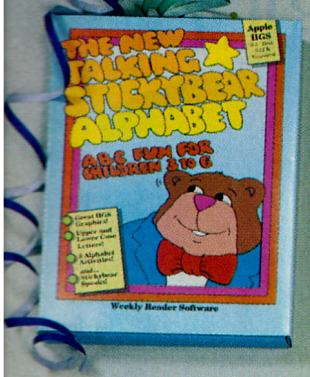

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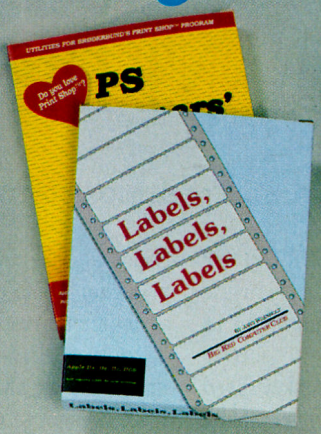

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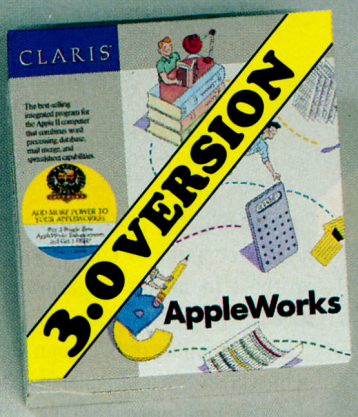

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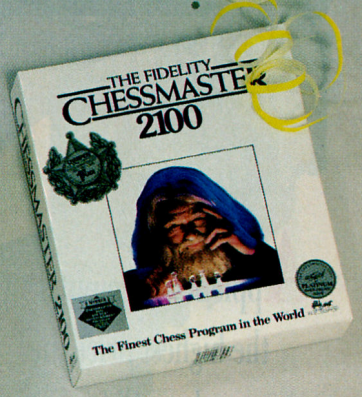

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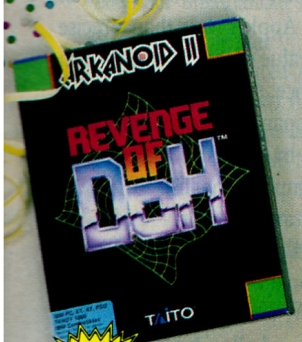

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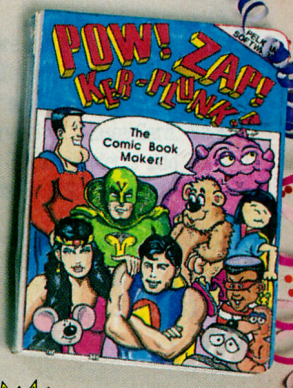

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STATTUS REPORT

HIGH-RENT DISTRICT

By PAUL STATT * SENIOR EDITOR

Apple sells computers at the highest price the market will bear. Wall Street loves it. You pay for it.

"SPEAKING OF *INCIDER*," THE USER-GROUP newsletter wants to know, "why does *every* article on the IIGS in this magazine complain about its speed?"

Sorry, but if we didn't moan about the slow speed of the GS once in a while, we'd be forever grumbling about its high price. Dull, but why *do* Apple computers cost so much?

Because Apple computers are so valuable, according to Apple. We build so much into our products, the company says, they're a bargain at any price. You pay a lot because you get a lot.

I'm not convinced. In 1979 I could have bought an Apple I—seven slots and a 6502 microprocessor—for $666. The Apple IIGS—seven slots and a 65816—costs $729 today. Compare the price of a personal stereo system, such as the Sony Walkman. It's a third of what it was in 1979.

"We want to do for computers what McDonald's did for hamburgers," says Apple CEO John Sculley. Can he mean that? Does he want to sell computers *cheap*, sell *only* computers, or sell them *fast*?

No, Sculley forgets that what made McDonald's *insanely great* and allowed McDonald's to *change the world* was selling *only* hamburgers fast *and* cheap. The hamburgers taste better than foul and less than delicious—consistently mediocre everywhere. Apple isn't famous for selling computers just good enough at prices just low enough for everybody.

Apple's been building IIs for ten years. Memory chips are cheaper now; the Apple II factories are built; the author of the firmware has been paid. The chip count is smaller than it was in 1979. The mortgage is up on the Apple II. Why are Apple II customers still forking over such high rent?

Henry Ford, still remembered in Europe and the Soviet Union as the founder of Fordism, didn't invent the mass production of automobiles, although he sure took advantage of it. His radical notion of industry was that every *worker* could also be a *consumer*.

Combining high wages and low prices, Ford eventually put a car in every American garage. Apple pays pretty well, I hear, and sells its computers cheap to its employees. Are the computers too pricey for Apple employees? That's no way to put a computer on every desk. That's only half a notion.

Apple still has the idea it's a "counterculture" company—an alternative to the Peace Corps for hackers eager to save the world. It isn't. Apple sells computers at the highest price the market will bear. That's capitalism. Wall Street loves it. You pay for it.

Apple could truly build a computer for the rest of us, and could make lots of money selling lots of computers, but that kind of logic is too simple for today's business. A business needs expensive stock, not good products. Apple "keeps its margins high." I'll translate for those who flunked economics: Apple sells computers for much more than it costs to build them. That makes Apple stock desirable. It doesn't make Apple computers innovative, interesting, or cheap.

I think Apple has a problem. Call it a vision problem if you will, but don't sign up its employees for a workshop, commission a video, or order new t-shirts. A computer for the rest of us is a fine idea. But the Apple II costs more than many people, schools, nonprofit organizations, and even businesses can afford.

Apple recently sold "10,000–80,000 Macintosh II-based A/UX workstations" to the Department of Defense, according to Apple's less-than-precise press release. "The total value of the contract, which includes computers, service, support and software, is $164 million." The department that once paid $99 for a hammer has, by my quick calculation, just paid $16,400 for a computer that lists for $9799. That's a lot of software and support. A $16,000 military computer is hardly a computer for the rest of us. It's hardly a personal computer.

Apple started with a vision—personal computing—that looks more like a hallucination today.

A man believes he's the emperor Napoleon. I convince him he's not; now he pretends to be Kaiser Wilhelm. Have I helped him? A new vision is a new suit of clothes for the emperor. Apple needs to look up, raise its eyes, and drop its prices.□

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CLEAR IMAGE

The GS is supposed to be Super Serial Card compatible, but that's not completely true. So, give your GS the CE command.

By WILLIAM P. KENNEDY, Ph.D.

IMAGEWRITER II OVERFLOW

OUR SCHOOL'S IMAGEWRITER II, connected to a GS, is driving us crazy. LISTed BASIC program lines longer than 80 characters print the excess on top of the beginning of the line. So do Applesoft PRINTed messages. When a similar problem occurred with a IIe, we used the command PRINT CHR$(9);"80N": PRINT CHR$(9);"C". When the ImageWriter reached 80 characters, it would invoke a carriage return and drop down a line. Is there a similar command for the GS? We can't find one.

Frank Walter
Syracuse, NY

Frank, use the command PRINT CHR$(9);"CE" with the GS. It isn't your ImageWriter, but the serial-printer firmware (printer software in ROM) that's creating the problem. The GS is supposed to be Super Serial Card (SSC) compatible; the difference between "C" and "CE" shows that's not completely true. (I'm assuming you had an SSC installed in the IIe and connected to the ImageWriter.)

The "80N" command you used is correct and selects a printed line width of 80 characters. You can also preset that value in your Control Panel printer-port line-length option, so you needn't invoke the command each time you start up your GS.

If the number of characters exceeds 80, however—or whatever length you set—the firmware still won't "format" the line until told to do so with a second command: "C" for the IIe equipped with an SSC, or "CE" for the printer port on the GS. Only when the overflow occurs will the firmware insert the proper codes to start a new line.

IIc TEXT MODES

HOW CAN I GO BACK AND forth between 40- and 80-column text mode on my IIc? PR#3 works fine to enable 80-column mode, but PR#0 doesn't reset it to 40 columns.

Joseph Gordon
Bradenton, FL

Now that is a simple question, Joseph. But there are several answers—several ways to switch between 40- and 80-column text modes on your IIc. Some are easy; others are esoteric, cumbersome, or both. I'll stick to the simple ones you're probably most interested in.

When in BASIC command or "direct" mode (program not "RUNning," BASIC bracket prompt displayed on screen) or in monitor mode (asterisk prompt displayed), simply press Escape once, then type 4 to enable the 40-column text screen, or 8 to enable the 80-column.

Note that when you switch from 40- to 80-column mode, anything appearing on screen shifts automatically into the left-hand 40 columns, and the right side will be clear. But when going from 80 to 40 columns, the half that was on the left side will shift to fill the screen, and the text on the right half will disappear. You can't retrieve that lost half easily.

Similarly, the command PRINT CHR$(17) enables 40-column text mode, and PRINT CHR$(18) enables 80-column. Although you can use them directly, you'd use them most often "indirectly" within a RUNning Applesoft BASIC program.

To erase the screen after enabling either mode, use the Applesoft HOME command directly or indirectly. CALL −936 performs the same function. From the monitor, use FC58G or JSR $FC58 from a machine-language program. The keypress sequence Esc-@ *(Escape-shift 2) also clears the screen.*

As you mentioned in your letter, the PR#3 command (use PRINT CHR$(4);"PR#3" as the indirect command) simultaneously enables and erases the 80-column text screen. Unfortunately, no single command will do the same for 40 columns.

But the PR#0 command doesn't work like PR#3 for good reason: Applesoft generally uses the PR# slot command to redirect your Apple's PRINT output to the firmware (software in ROM) that exists on the interface card installed in the specified expansion slot.

For example, Applesoft PRINTs messages on a printer installed in slot 1 or a modem in slot 2 after invoking the proper PR# command. PR#0 thereby is reserved to redirect that PRINT output back to the screen; nothing more. You can easily see that programs could get quite messy if you wanted to print messages on screen while printing text on a printer, and the PR#0 command kept clearing the screen.

IIc PORT 2 PRINTER

CAN I USE SERIAL MODEM PORT 2 in the IIc Plus to add a second printer? I currently have an ImageWriter II connected to printer port 1 and want to connect a daisywheel printer, as ►

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well. If I can't connect it to port 2, can you suggest a hookup, so that I don't have to plug and unplug the connectors constantly?

Ronald Newhouse
Itasca, TX

Electrically, port 2 is identical to port 1 in the Apple IIc and IIc Plus, Ron. And the connections are simple: Use the same cabling—as if you were plugging that second printer into printer port 1.

The serial firmware (ROM software) that manages those ports, however, is factory-preset to operate with a printer in port 1 and a modem in port 2. Some applications—the latest version of AppleWorks (3.0), for example—reset port 2's configuration automatically to suit a printer. Most don't, so you need to reset the port manually each time you start up your IIc Plus.

If your application(s) won't change the port 2 settings, I recommend you use the Apple II System Disk (version 3.1) that came with your IIc. The Set Serial Ports *option from the System Utilities' Other Options menu lets you configure port 2 for a printer.*

Common settings for a daisywheel are 1200 baud, 8 data bits, 1 stop, no parity, with line feed. XON/XOFF protocol also might be required. Then choose to save those changes on disk. Thereafter, boot that System Disk at the beginning of each session on the IIc, and launch your application(s) that will use the serial port 2 with a printer.

If you need to customize some of your own programs, get a copy of the Apple IIc Technical Reference Manual *(Addison-Wesley, Reading, MA) and read chapter 8, which covers serial I/O port 2. Or refer to Vincent O'Connor's excellent contribution to Hints/Techniques, "Setting IIc Ports" (December 1987, p. 164).*

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LaserWriter Connection

OUR SCHOOL DISTRICT JUST purchased a LaserWriter NTX, which we've connected to two GSes using AppleTalk. How can we get AppleWorks 2.1 to print to that LaserWriter? We've used AppleWorks GS to print documents on the LaserWriter, but "importing" all those files is a pain.

Joseph Karwoski
Johnstown, PA

Printing your AppleWorks documents on a LaserWriter, Joseph, requires some setup time and effort. And there are two methods to consider. You can use one procedure with a IIe equipped with an AppleTalk Card, as well; the other involves using the new GS operating system (GS/OS) software, version 5.0. I prefer the latter method, so I'll describe it in depth. GS/OS is easier to use and more versatile. Get a copy for $49.95 from your dealer, or perhaps free, depending on the goodwill of your dealer or a friend—particularly if you supply fresh disks.

First make backup copies of the new GS/OS disks. Then boot one of your GSes into the Finder from the new System Disk and select the new desk accessory (NDA) Control Panel *from the apple pull-down on the Finder's menu bar. Using the mouse pointer and button, select the slots icon and set slot 1 or 2 to* Your Card, *depending on the port to which the AppleTalk cabling is connected, and slot 7 to* AppleTalk. *Use that NDA to make those same slot assignments on your other GS, or use the classic desk accessory Control Panel (Open apple-Control-Escape).*

Use a "lukewarm" boot to restart your GS and Finder (press Open apple, Option, Control, and Reset simultaneously, then Open apple-Control-Reset); insert the System Tools disk; launch the Installer program; and select to install the LaserWriter on your System Disk. If you've also got an ImageWriter and an ImageWriter LQ connected

Circle 297 on Reader Service Card.

to the AppleTalk network, you might now install those drivers on the System Disk. When you're done, the Installer will insist that you start your GS again.

Re-access the Control Panel NDA, select the LaserWriter icon you've just installed; highlight the LaserWriter name, which appears in the adjacent window; and, finally, click on the ImageWriter Emulator *button in the center of the same window. Window messages will tell you the system is checking for, and then downloading, the ImageWriter emulator (IWEM) program to the LaserWriter.*

Close the Control Panel window, and insert and "open" your AppleWorks program disk. Trash ProDOS, if it's the old version 1.1.1, and copy P8 from the System folder on your System Disk to the AppleWorks disk. Rename that copied P8 to ProDOS. Now either launch AppleWorks from the desktop or use the Open apple-Control-Reset sequence to "warm-boot" your AppleWorks disk.

In AppleWorks, select to install a new printer from the Other Activities Printer Options menu. Choose the ImageWriter, although you might name it AppleTalk, *and choose to print from slot 7, not slot 1 as you might have when using a directly connected ImageWriter.*

You're done. When you print a document with AppleWorks, just select the AppleTalk printer, and AppleWorks will print on the LaserWriter in Courier font at 12 characters per inch. The IWEM program you sent to the LaserWriter also enables all other standard features, including boldface, underlining, superscripts, and subscripts, available for the ImageWriter I and II printers. The proportional-1 and proportional-2 print options use Times Roman and Times Bold fonts, respectively.

You need to install the drivers on the System Disk and set up the AppleTalk printer in AppleWorks only once: Simply make copies of the modified disks for distribution to other GSes. Thereafter, however, you must start up your GSes with the modified System Disk to enable AppleTalk, then launch AppleWorks from the Finder desktop. You needn't select LaserWriter *from the Control Panel or download IWEM if you haven't turned off the LaserWriter between sessions.*

Finally, if you have other AppleTalk printers connected to the system, install their AppleTalk drivers as discussed earlier and switch to them from the Control Panel. Then, without further modification, printing to AppleTalk, assigned to slot 7 in AppleWorks, will send your document to the alternate printer automatically.

Too bad enabling an AppleTalk printer from AppleWorks isn't a bit easier. I'll leave it to you to decide whether it'll be easier to print to the LaserWriter from AppleWorks than to import your files into AppleWorks GS and use the LaserWriter printer option.

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QUICKIES

Save your GS' power switch by using a "lukewarm" instead of a "cold" boot on your GS: After making changes in the Control Panel, being stymied by a Fatal System Error, or experiencing any other condition that requires a "cold" restart, press the open-apple, option, control, and reset keys simultaneously to enable the built-in GS diagnostics. Then press Open apple-Control-Reset to reboot.

—Ellen Otilow
Weston, MA

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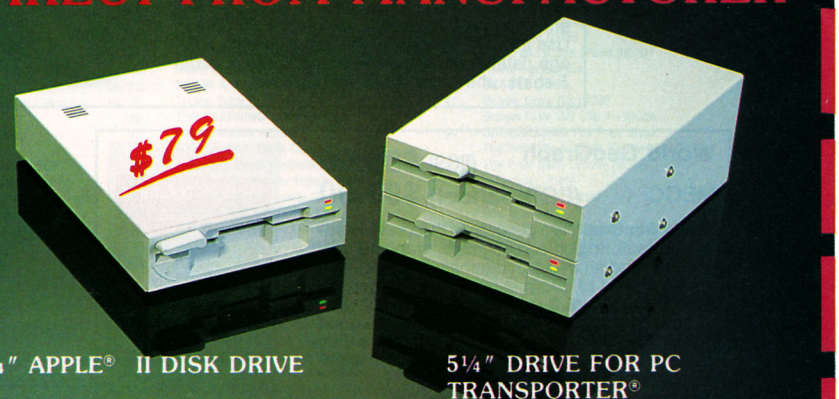

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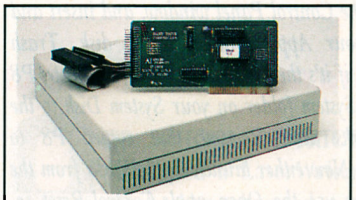

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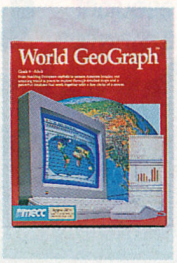

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External Disk Drive (5¼" Laser) 90.
External Disk Drive (3½" Laser) 185.
Universal Disk Controller 45.

MODEMS

APPLIED ENGINEERING Datalink 1200 132.
Datalink 2400 178.
SUPRA 2400 External 130.

COMPUTERS

LASER COMPUTER Laser 128E 375.
Laser 128EX 440.
Laser 128EX/2 (3½" Drive) 500.

MONITORS

LASER COMPUTER
Color RGB Monitor 298.
Amber, Green Monitor ea. 105.
MAGNAVOX
RGB/Composit (CM8762) 285.

MEMORY & INTERFACE

APPLIED ENGINEERING
AUDIO ANIMATOR 180.
Conserver 88.
Ram Factor 512K 242.
Ram Factor IMB (II+, IIe, IIGS) 345.
Ram Works III 512K (IIe) 205.
Ram Works III IMB (IIe) 308.
Ram Works III OK 106.
GS-Ram 1MB (IIGS) 286.
GS-Ram PLUS OK 125.
GS-Ram PLUS 1MB 308.
GS-Ram PLUS 2MB 492.
GS-Ram Ultra 1MB 301.
Trans Warp (II+, IIe) 125.
Ram Express 256K (IIc+) 198.
Ram Express 1MB (IIc+) 352.
Serial Pro (II+, IIe, IIGS) 105.
Parallel Pro, Timemaster HO ea. 73.
PC TRANSPORTER 768K 367.
RamKeeper 139.
Sonic Blaster 95.
TRANSWARP GS 294.
APPLIED INGENUITY GS Juice 2MB 350.
Juice Plus 1MB (IIGS) 250.
GS Juice 4MB 750.
C Keeper 256K (IIG) 155.
C Keeper 1MB (IIc) 312.
BITS & PIECES
ROCKET CHIP 10MHz 199.
MEMORY Ram's Call
ORANGE MICRO Hotlink (IIc) 49.
Grappler C/MAC/GS, Prograpler ea. 74.
STREET ELECTRONICS Echo IIB 96.
Echo Plus 122.
THIRDWARE Fingerprint GSI (IIGS) 79.
ZIP TECHNOLOGY Zip Chip 8MHz (IIe/IIc) 167.

ACCESSORIES

APPLIED INGENUITY GS Keyboard 150.
BLANK MEDIA (Bulk) Call
CH PRODUCTS Flight Stick 50.
Mach III w/fire Button (IIe/IIc, IIGS) ea. 34.
Mach IV Plus (IIGS/IIc) ea. 59.
KENSINGTON System Saver 64.
Turbo Mouse ADB (IIGS) 115.
SYSTEM SAVER IIGS 69.
Mousepad 8.
Anti-Glare Filter (IIGS) 34.
KURTA IS/ADB Tablet w/styles (IIGS) 289.
LASER COMPUTER Mouse 45.
Expansion Box 55.
Cables - Parallel, Serial, RGB, Modem ea. 16.
RIBBONS Imagewriter II, (4 Colors) 8.
Imagewriter (Black, Red, Brown, etc.) ea. 4.

PRINTERS

LASER COMPUTER
190A (IMAGEWRITER I COMPATIBLE) 240.
PANASONIC KX P1124 (80cps/24pin) 340.
KX P1180 (192 cps/38 cps NLQ) 195.
KX P1191 (240 cps/48 cps NLQ) 259.
STAR MICRONICS NX-1000 195.
NX-1000 Rainbow (Color) 265.
SEIKOSHA 1000AP (Imagewriter I) 235.

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Jack Nicklaus Golf (IIGS) 32.
Test Drive II (GS), Hardball (GS) ea. 30.
Test Drive (IIe/IIc), Bubble Ghost (IIGS) ea. 23.
California Challenge (IIGS) 16.
The Super Cars (IIGS) 16.
4th & Inches, Serve & Volley (IIGS) ea. 27.
4th & Inches Team Construction (IIGS) 14.
BRITANNICA Charley Golf (IIGS) 20.
Laser Force (IIGS) 20.
Great Western Shoot-Out (IIGS) 20.
BRODERBUND Wings of Fury 23.
Downhill Challenge (IIGS) 23.
Space Rogue 32.
Wind Walker 27.
Ancient Art of War at Sea 27.
Ultima Trilogy, Ultima IV, V ea. 40.
Tangled Tales (IIe/IIc) 20.
CALIFORNIA DREAMS
Vegas Gambler (IIGS), Vegas Craps (IIGS) ea. 27.
CINEMAWARE King of Chicago (IIGS) 32.
Defender of the Crown (IIGS) 32.
Rocket Ranger (IIGS) 32.
THREE STOOGES 32.
DISCOVERY Sword of Sodan (IIGS 768K) 32.
ELECTRONIC ARTS Bard's Tale 17.
Cribbage King/Gin King (IIGS) 40.
Reach for the Stars (IIGS) 27.
Cartooner (IIGS) 40.
Zany Golf (IIGS) 26.
Bard's Tale II (IIGS) 32.
Bard's Tale II, III ea. 32.
Chessmaster 2100 32.
Hunt For Red October (IIGS) 32.
Hunt for Red October (IIe/IIc) 27.
John Madden Football (IIe/IIc) 32.
KEEF THE THIEF (IIGS) 33.
Tomahawk (IIGS) 27.
Halls of Montezuma (IIGS) 30.
Marble Madness (IIGS), Yeager's AFT Skate or Die (IIGS) ea. 17.
Chessmaster 2100 (IIGS) 32.
Life & Death (IIGS) 32.
AAARGH! (IIGS) 27.
EPYX World Games, Winter Games ea. 14.
World Games (IIGS), Winter Games (IIGS) ea. 14.
California Games (IIGS) 30.
Technocop (IIe/IIc) 27.
F.T.L. Dungeon Master (IIGS) 27.
MASTERPLAY Star Saga I 53.
MASTERTRONICS
John Elway's Quarterback ea. 27.
War in Middle Earth (IIGS) 32.
Barbarian (IIGS) 27.
MEDIAGENIC/ACTIVISION
Last Ninja (IIGS) 26.
Black Jack Academy (IIGS) 27.
Neuromancer (IIGS) 30.
Battlechess (IIGS) 32.
Zork Zero (IIGS) 40.
GBA Championship Basket (IIGS) 16.
MICROPROSE Pirates (IIe/IIc, IIGS) ea. 26.
Silent Service (IIGS) 25.
MICRO REVELATIONS
XENOCIDE (IIGS) 32.
MINDSCAPE Balance of Power (IIGS) 32.
Gauntlet, Paper Boy, Paper Boy (IIGS) ea. 25.
Gauntlet (IIGS) 29.
Super Star Ice Hockey (IIGS) 29.
Captain Blood (IIGS) 30.
Uninvited (IIGS), DejaVu I, II (IIGS) ea. 32.
Hostage (IIGS) 27.
PBI SOFTWARE (All IIGS)
Sea Strike, Monte Carlo ea. 26.
Tower of Myraglen, Alien Mind ea. 33.
Cavern Cobra, Strategic Conquest ea. 32.
PELICAN Pow! Zap! Kerplunk! 32.
SIERRA ON-LINE King's Quest I, II, III ea. 31.
Gold Rush (IIGS), Black Cauldrun (IIGS) ea. 27.
Thexder (IIe/IIc, IIGS) ea. 24.
King Quest I, II, III, IV (IIGS) ea. 32.
Space Quest I,II (IIGS) ea. 32.
Leisure Suit Larry (IIe/IIc, IIGS) ea. 26.
Police Quest (IIGS), Manhunter NY (IIGS) ea. 32.
Silpheed (IIGS) 33.
SIR-TECH Wizardry, Wizardry 5 ea. 32.
Knight of Diamonds, Legacy of Llylgamyn ea. 32.
Return of Werda 39.
SPECTRUM Tetris (IIe, IIGS) 25.
SSI Pod of Radiance
Adv. D & D - Pool of Radiance (IIGS) 32.
Adv. D & D - Pool of Radiance (IIe/IIc) 30.
Adv. D & D - Curse of Azure Bonds (IIe/IIc) 30.
Adv. D & D - War of the Lance (IIe/IIc) 30.
Adv. D & D - Dungeon Master Asst. I, II ea. 30.
SUBLOGIC Flight Simulator II 32.
Scenary Disks 1 thru 6 ea. 16.
TAITO Arkanoid II (IIGS) 24.
Bubble Bobble (IIe) 24.
THREE-SIXTY SOFTWARE
DARK CASTLE (IIGS) 27.
Warlock (IIGS) 30.

EDUCATION

BARRON'S Study Program For SAT V2.0 32.
BRITANNICA Jigsaw (IIGS) 25.
Algebra 1, First Semester 32.
Algebra 1, Second Semester 32.
Writing Skills 1-5 66.
BRODERBUND Science Tool Kit 49.
Science Tool Kit Module 1, 2, 3 ea. 27.
Science Tool Kit 49.
VCR Companion 33.
Where in Europe, Where in USA ea. 27.
Where in Time 29.
Where in the World (IIGS) 30.
Where in the World 24.
Geometry (IIGS) 53.
DAVIDSON & ASSOCIATES
Read & Roll, Word Attack Plus ea. 29.
Word Attack Plus - Spanish, French ea. 29.
Math & Me, Reading & Me ea. 24.
Math & Me (IIGS), Reading & Me (IIGS) ea. 29.
Spell It Plus, Grammar Gremlins ea. 29.
MATH BLASTER MYSTERY 29.
Math Blaster Plus, Alge Blaster Plus ea. 29.
DESIGNWARE Spellicopter, Math Maze ea. 26.
Designasaurus (IIe/IIc) ea. 25.
Designasaurus (IIGS), Revolution 76 (IIGS) ea. 32.
Grammar Examiner, States & Traits ea. 25.
The Body Transparent, European Nations ea. 25.
ELECTRONIC ARTS
Mavis Beacon Teaches Typing (IIGS) 32.
Mavis Beacon Teaches Typing (IIe/IIc) 25.
FIRST BYTE (for IIGS) (768K Req.)
Mathtalk, First Shapes, Kidtalk ea. 27.
Speller Bee, Smoothtalker ea. 27.
The Rhyming Notebook 27.
Mathtalk Fractions, First Letter & Words ea. 27.
HARDCOURT, BRACE, JOVANOVICH
Computer Prep for the SAT 26.
ILS SOFTWARE
Computer Preparation SAT, GRE ea. 33.
MECC World Geograph (IIGS) 86.
Oregon Trail (IIe/IIc) 20.
OREGON TRAIL (IIGS) 23.
MINDSCAPE Crossword Magic 33.
PASPORT DESIGN Master Tracks 165.
Master Track Pro (IIGS) 260.
Master Track Jr. (IIGS) 100.
PYGROPHICS
Music Writer Level 1 (IIGS) 80.
Music Writer Level 2 (IIGS) 210.
Music Writer Level 3 (IIGS) 425.
SIMON & SCHUSTER
Typing Tutor IV (IIGS) 27.
THE LEARNING COMPANY
Reader Rabbit (IIGS) 36.
Writer Rabbit, Think Quick, Rocky's Boots (IIe/IIc/IIGS) ea. 30.
Math Rabbit, Reader Rabbit, Gertrudes Secrets, Magic Spells (IIe/IIc/IIGS) ea. 26.
CHILDREN'S WRITING PUBLISHING CENTER (IIe/IIc, IIGS) 40.
UNICORN SOFTWARE (IIGS Only)
All About America, Read A Rama ea. 40.
Math Wizard, Animal Kingdom ea. 33.
WEEKLY READER Sticky Bears - ABC's, Basketbounce, Bop, Math, Math II, Numbers, Shapes, Opposites, Reading ea. 24.
Sticky Bears - Basics, Drawing, Music, Music Library, Parts of Speech, Printer, Reading Comprehension, Spellgrabber, Town Builder, Typing, Word Problems ea. 30.
Car Builder, Codes & Hyphens, Exploring Tables & Graphs-Level I, II, Map Skills, Math Word Problems, Punctuation Rules, Reading Comprehension, Vocabulary Devel. ea. 30.
Shapes (Talking, IIGS) 30.
Opposites (Talking, IIGS) 30.
ABC's Talking (IIGS) 30.

BUSINESS

BEAGLE BROS. BeagleWrite GS 62.
BeagleWrite Picture Manager GS (IIGS) 31.
BeagleWrite Font Library GS (IIGS) 25.
BERKLEY SOFTWORKS GeoPublish 66.
GeoFile, GeoCalc ea. 46.
BRODERBUND Bank Street Writer Plus 47.
On Balance 39.
CLARIS Appleworks GS 205.
APPLEWORKS V3.0 175.
DAC SOFTWARE DAC-Easy Accounting 60.
ELECTRONIC ARTS Delux Write II (IIGS) 53.
Delux Write II/Paint II Combo (IIGS) 89.
MANZANITA
Business Works (ProDos, 2x3½" Drives) 267.
SENSIBLE SOFTWARE Sensible Writer 62.
Sensible Speller IV (PRO DOS) ea. 68.
Sensible Grammar Checker 55.
SOFTWARE PUBLISHING
PFS: File & Report (128K PRO DOS) 66.
PFS: Workmates (128K PRO DOS) 110.
PFS: Write w/Speller (128K PRO DOS) 65.
STONE EDGE DB Master Version 5 117.
DB Master Professional 190.
TIMEWORKS Publish It 2 74.
Graph It! 47.
Font Pack I, II, Symbols & Slogans, People, Places & Things ea. 27.
WORDPERFECT
WORDPERFECT (IIGS), (IIe/IIc) ea. 93.

HOME/PERSONAL

ABRACADATA Design Your Own Home Architecture (IIGS), Interior (IIGS) ea. 59.
Landscape (IIGS) 59.
BAUDVILLE 816 /Paint (IIGS) 46.
Award Maker Plus 24.
BEAGLE BROS.
Beagle Draw GS (IIGS) 53.
Beagle Draw GS Clip Art (IIGS) 31.
BRODERBUND The Print Shop 29.
The Print Shop (IIGS), Fantavision (IIGS) ea. 37.
The Print Shop Library (IIGS)- Sampler, Party ea. 23.
The Print Shop Library 1, 2, 3 ea. 15.
Dazzle Draw 40.
ELECTRONIC ARTS Deluxe Paint II (IIGS) 65.
INSTANT SYNTHESIZER (IIGS) 56.
INTUIT Quicken 35.
MECA Managing Your Money 89.
MECC Calendar Crafter 33.
MEDIAGENIC/ACTIVISION
Paintworks Plus (IIGS) 46.
Paintworks Gold (1.25MB Req.) 66.
Draw Plus (IIGS), Music Studio (IIGS) 59.
Paint, Write, Draw Bundle (IIGS) 80.
NOLO PRESS Willmaker 39.
OLTRAD Graphics Images (IIe/IIc) 20.
Graphics Images (IIGS) 33.

UTILITY/LANGUAGE

BEAGLE BROS. Timeout Graph 52.
Designworks Accessories (IIGS) 35.
Timeout-Superfonts, Quickspell, Telecom ea. 45.
Timeout-Filemaster, Sidespread, Power Pack, DeskTools II, Thesaurus Desktools ea. 31.
Timeout-Reportwriter 48.
Timeout-Ultramacros, Spreadtools ea. 35.
Timeout-Macrotools, Macrotools II ea. 18.
Point to Point 68.
GS Font Editor, Program Writer ea. 31.
BIG RED COMPUTER
PS LOVERS (IIGS,IIe/IIc) ea. 27.
Labels, Labels, Labels 27.
BYTE WORKS ORCA/C, Pascal (IIGS) ea. 88.
ORCA/Desktop (IIGS) 38.
ORCA/M 1.1 42.
CENTRAL POINT Copy Two Plus 25.
CHECKMATE TECHNOLOGY Proterm 79.
MICOL Advanced BASIC (IIGS) 95.
ROGER WAGNER Merlin 8/16(PRO DOS) 79.
Softswitch (IIGS) 40.
Graphix Exchange (IIGS) 32.
HYPER STUDIO (IIGS) 92.
Macromate (IIGS) 33.
TERRAPIN Logo Plus 90.
TML Pascal (IIGS), Basic (IIGS) ea. 83.
Source Code Library (IIGS) 32.
Speech Toolkit (IIGS) 46.
VERSACAD CAD Apple IIc/IIe 66.

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Excellent—remarkable ◆ ◆ ◆ ◆ ◆ Very good—impressive ◆ ◆ ◆ ◆
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Tap into the world of telecommunications, and you'll find Apple II users enjoying such varied pursuits as sharing programs, matchmaking, and tracking the stock market.

Telecommunications has also enabled the physically challenged to venture into new areas, and last summer Chinese students in America went on line to participate in the pro-democracy movement.

Activision's contribution to telecommunications is an ambitious software package. Teleworks Plus is the first product to marry Apple IIGS Finder technology with the modem. Although it's a successful effort, the product falls short of what Activision had hoped. Nevertheless, Teleworks could advance the state of Apple II telecommunications.

Going on line with your computer requires only a phone line, modem, and software with which to manage the communications session. The modem translates your typing into phone signals. The software, or *terminal program*, simply lets your Apple react to a remote telecommunications host, much like someone at work using a terminal connected to a central host computer located elsewhere in the building or city.

Teleworks Plus is the only terminal software designed specifically to exploit your GS' capabilities. It operates completely under the standard IIGS desktop, and you can manage an entire on-line session with the mouse and pull-down menus.

The ultimate test for productivity software such as this is whether it can actually save you time. The answer for Teleworks is a crystal-clear maybe. Teleworks is one of the few programs that has merged itself cleanly into my work routines, without requiring that I change my schedule to meet its expectations. As you'll see, however, Teleworks does present some functional difficulties that must be solved for it to truly succeed.

THE PLUS

The magic of Teleworks Plus is that Activision kept *you* in mind when it was designing the software. Setup and use are both friendly, and Teleworks offers some features unchallenged by other terminal programs.

The built-in scripting language is particularly strong. An auto-learn scripting feature lets you record procedures to manage an entire session or selected parts.

An obvious use for this is to record the dialing and log-on process for any bulletin board you call regularly. You might also want to scan your mail and save it to disk, or do a keyword search for all new messages you might find interesting, and save those to disk to read later.

The scripting language also lets you write procedures directly. Because of the strong ►

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Affordable

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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auto-learn feature, though, I've yet to find a reason to write a procedure myself. The scripting commands let you define any procedure as a default to be active when you boot Teleworks.

Another strong feature is the ability to define 16 macro commands. Combined with the scripting and your smarts, the macros could make Teleworks the closest you'll get to hands-off telecommunications.

GET THE MESSAGE

A big part of any on-line session is message handling, and Teleworks includes a number of features to help you with this task. Use the window scroll bar to page through all the text that's come across your screen. You can manipulate all or part of the text with the standard cut, copy, paste, edit, clear, and save commands. You may print the entire scrollback or just part of it, print a file, or dump everything continuously to a printer.

Use standard ASCII, XModem, and YModem file-transfer protocols to upload and download files. XModem and YModem save time during transfers, but there's nothing exceptional in this area. The only praise here is that Teleworks does have file-transfer capability.

The software sports a number of features that make using commercial on-line services less expensive and less troublesome. These include the scripting language and an on-line time counter, as well as the ability to send a BREAK code (to get you out of trouble when you get lost) and automatic hangup after a certain time on line.

PACKAGED GOODS

For the most part, Teleworks Plus has an enviable set of features. Some, such as macros and scripting, represent a true advance that will challenge other publishers to improve their offerings. These features collectively create one of the easiest-to-use terminal packages available.

Two other goodies come with the Teleworks Plus package—subscriptions to CompuServe and AppleLink Personal Edition. This is a $79.90 value, although you're not required to use either of these services, which charge a fee for each hour spent on line.

AND THE MINUS

With all its impressive features, Teleworks Plus does have a number of operational problems, as well as a couple of features that could have been better designed. Activision has a reputation for fine product support, but the Teleworks Plus product manager knew of no plans to revise the software. In other words, you'll have to live with the problems—at least for now.

The most critical bug is that you can't upload to a bulletin-board system that runs on GBBS Pro—the *de facto* standard for Apple II BBSes. The scarcity of advanced file-transfer protocols is a related design weakness. There's ASCII, XModem, and straight YModem—period.

The most serious design weakness is that you can't run at any speed greater than 2400 bits per second. Although this is currently the most common speed, nearly one-quarter of Apple II owners now own 9600-bps modems. As prices drop, 9600 will replace 2400 as the preferred rate of operation.

BAD CONNECTION

After downloading a file, the program asks you for a name under which you'll save it. No matter what you type, the software rejects the name at first; try the same name again, and it works.

When uploading a file, a nice vertical scroll bar comes up on screen showing the progress of the file transfer. The dialog box is laid out wrong, however, so the scroll bar obscures the filename.

One of the so-called standards for squeezing files—Binary II—is built into Teleworks. This lets the program group large numbers of files into one compact file for easy transfer. Teleworks ignores two competing standards, however—both of which are now more widely used than Binary II.

The menu function itself will hang your computer if you attempt to work on a file that isn't in Binary II format. This is important when you consider there isn't any message to alert you to which files are saved in Binary II and which files aren't.

When reading on-line messages, text scrolls by in a window, which makes it easy to use the scroll bar to go back and reread something. But the scroll bar—which overlays the last few characters on the right side of the screen—flickers on and off constantly to let you read the full line. That made me nervous.

Another problem with the screen display is that Teleworks drops characters regularly, so some of what you see will be garbage. Likewise, anyone who types with more than two fingers ►

AT A GLANCE

Multiple Choices (November 1989, p. 41, by James Trunzo), Mindscape, 3444 Dundee Road, Northbrook, IL 60062, (312) 480-7667; 128K Apple IIe, IIc, IIGS, printer; $59.95
Rating: ❖ ❖ ❖

Multiple Choices lets you construct nine different types of word activities—word search, scramble, jumble, acrostic and double acrostic, true/false, fill-in-the-blank, multiple choice, and matching. The subject matter can come from any discipline or grade level, provided that your questions fit into one of those formats.

You can enter up to 50 questions per test or puzzle, except for multiple choice, which takes up to 120 lines. In activities such as Word Search or Acrostics, Multiple Choices takes your input and actually constructs the puzzle for you. In activities such as Matching, Multiple Choices saves you time by automatically randomizing the order of the columns that make up the test.

OfficeWorks (November 1989, p. 102, by Gregory Glau), K-12 MicroMedia Publishing, 6 Arrow Road, Ramsey, NJ 07446, (201) 825-8888; 128K Apple IIe, IIc, IIGS, AppleWorks; $49.95
Rating: ❖ ❖

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.

The OfficeWorks manual leaves out just enough information that you have to know 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 that the average small company can use to help conduct its day-to-day activity. The problem with OfficeWorks isn't its concept, but its execution.

Continued

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Circle 68 on Reader Service Card.

PROGRAMS & PERIPHERALS

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Great Western Shootout puts you in the wild, wild west. You're the sheriff - it's high noon - and those bandits are *everywhere!* Fast paced arcade action. ***Gnarly Golf*** puts you in the middle of the funniest fairways. Defy gravity, get flipped over tall buildings and die laughing. The wackiest golf game ever! From FANFARE the entertainment people of Britannica Software. ... **$18 ea.**

EDUCATIONAL SOFTWARE

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Britannica Designasaurus .....24.
Designasaurus *(IIGS)* or Revolution '76 *(IIGS)* .....28.
Algebra 1 First Semester or Algebra 1 Second Semester .....29.
Broderbund Geometry *(IIGS)* .....55.
Science Tool Kit Master Module .....50.
Science Tool Kit Module I, II or III .....26.
Type! .....19.
Where in the World is Carmen Sandiego? .....25.
Where in the USA is Carmen Sandiego? .....29.
Where in Europe is Carmen Sandiego? *(AP or C+)* .....29.
Where in the World is Carmen Sandiego? *(IIGS)* .....29.
Where in Time is Carmen Sandiego? *(AP or C+)* .....***Special*** 29.
ByteWorks Ugly Duckling *(IIGS)* .....32.
Coda Music Class Courses 1-5 *(Bundle)* .....149.
Compu-Teach Once Upon A Time II .....25.
Joshua's Reading Machine *(AP or IIGS & C+)* .....25.
See the U.S.A. .....30.
Once Upon A Time *(IIGS Talking)* .....30.
Davidson & Associates
Math Blaster Plus *(IIGS)* or Word Attack Plus *(IIGS)* .....29.
Alge-Blaster Plus *(AP or IIGS)* or Math Blaster Plus .....***Special*** 29.
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Talking Math Blaster Plus *(IIGS)* .....29.
Word Attack Plus Spanish or French .....29.
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Mavis Beacon Typing .....30.
Mavis Beacon Typing *(IIGS)* .....37.
First Byte/Electronic Arts
The Rhyming NoteBook .....29.
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Grade Busters 1, 2, 3 .....57.
Grade Busters 4, 5, 6 .....42.
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Kidstime II *(IIGS)* .....24.
Learning Company
Reader Rabbit *(IIGS)* or Writing and Publishing Center *(AP or IIGS)* .....36.
Writer Rabbit *(IIGS)*, Think Quick *(IIGS)* or Rockys Boots *(IIGS)* .....30.
Magic Spells *(IIGS)* or Math Rabbit .....24.
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Think Quick, Writer Rabbit or Rocky's Boots .....30.
Reader Rabbit, Magic Spells or Math Rabbit *(IIGS)* .....24.
Mindscape Crossword Magic .....34.
Orange Cherry *GS Talking Series:*
Animals, Dinosaurs, Numbers, First Write, First Reader, School Bus, Alpha Chimp, Colors & Shapes, Reading Railroad, Addition & Subtraction, ABC's, Speller, Clock or Money .....42.
Pelican Software Dinosaur Days .....24.
Monsters & Make Believe Plus .....29.
POW! ZAP! KER-PLUNK! .....***Special*** 29.
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Sensible Software
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Speed Reading Tutor IV or Typing Tutor IV .....27.
Typing Tutor IV *(IIGS)* .....34.
Spinnaker Kidwriter Gold *(IIGS)* .....31.
Facemaker: Golden Edition .....27.
Kidwriter .....27.
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Tom Snyder Productions
Reading Magic Library: Jack and the Beanstalk or Flodd, the Bad Guy .....25.
Weekly Reader
Stickybear Series: Sticky Bear ABC (5¼), Basket Bounce (5¼ or 3½), Bop (5¼), Math I (5¼ or 3½), Math II (5¼ or 3½), Numbers (5¼ or 3½), Opposites (5¼ or 3½), Reading (5¼ or 3½), or Shapes (5¼ or 3½)*(ea.)* .....24.
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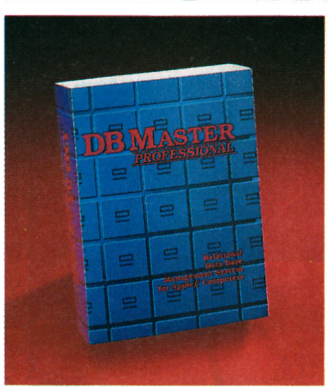

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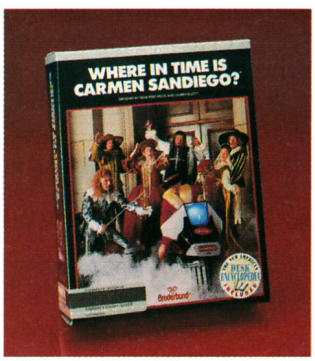

Where in Time is Carmen Sandiego? by Broderbund

Unlike your typical fly-it, drive-it, stomp-it game, this brand new release in Broderbund's award winning series relies on your most important reflex: your nimble mind. As a detective in ***Where in Time is Carmen Sandiego*** you must solve ingenious crimes that have been committed by the devious and cunning Carmen Sandiego gang. They can be anywhere in the last 1,500 years. .. **$29.**

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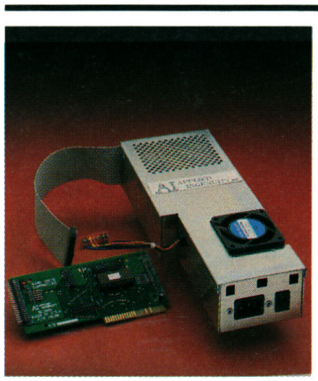
Activision
Teleworks Plus *(IIGS)* .....66.
Applied Engineering
ReadyLink .....75.
Beagle Bros.
TimeOut TeleComm .....45.
Point-to-Point .....59.
Checkmate Technology
ProTERM *(IIGs,IIe,IIc)* .....78.
Compuserve Compuserve Starter Kit .....24.
L & L GBBS .....79.
United Software Industries
ASCII: Express Pro: Prodos .....72.
ASCII: Express Mousetalk 1.5 .....69.



InnerDrive by Applied Ingenuity

InnerDrive is the original internal hard disk for the IIgs. It comes with a heavy duty power supply, cooling fan and controller card. Already formatted, it requires about 5 minutes to install and it's ready to run. The leader in performance and affordability, it's the fastest and the lowest cost hard disk system. Uses standard GS/OS. Also available for the IIe. ***InnerDrive 20 ($455), InnerDrive 40 ($599).***

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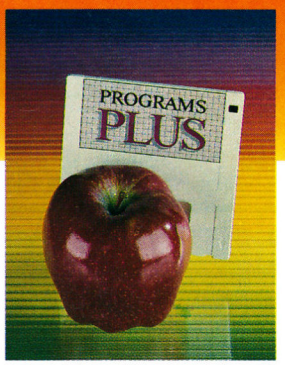

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Spell-It Plus/Alge-Blaster by Davidson & Assoc.

These new easy-to-use programs help students of all ages improve their grades. And they're fun to use! With ***Spell It Plus***, you can choose from 5 spelling activities — including an arcade-style game — covering over 1,000 commonly misspelled words. ***Alge-Blaster Plus*** helps you master 1st and 2nd semester algebra in one program and includes a challenging graphing game! ..... **$29.**

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Hayes Hayes 1200 Baud Smartmodem.....295.
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U.S. Robotics Courier 2400E.....379.
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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Apple Super Serial Card.....119.
Applied Engineering Buffer Pro 32K.....85.
BufferPro 128K.....125.
Serial Pro *(II+, IIe, IIGs)*.....109.
Parallel Pro *(II+, IIe, IIGs)*.....77.
Applied Ingenuity
GS Juice Plus 1 MB.....235.
GS Juice Plus 2 MB.....415.
GS Juice Plus 4 MB.....745.
Orange Micro
Grappler C/Mac/GS.....79.
ProGrappler *(Apple IIe or IIGs)*.....84.
Serial Grappler Plus.....62.
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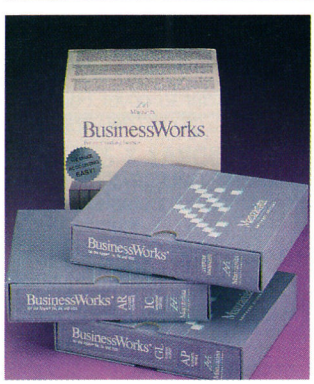
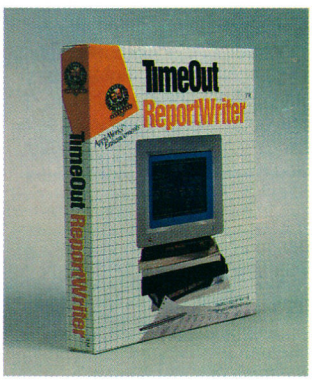
Thirdware Finger Print GSi Ver III *(Incl. Desktop Accessories-IIGs)*.....89.
Finger Print Plus *(Specify Cables: Parallel, Serial or ImageWriter II-II+ & IIe)*.....89.



BusinessWorks by Manzanita

BusinessWorks is the accounting package for small and medium size businesses. Combining G/L, A/P, A/R and inventory control in one flexible package. *BusinessWorks* lets you set up your accounts the way you want. Customize your reports to display the information you want displayed. *BusinessWorks* looks and acts like AppleWorks. *BusinessWorks* is the accounting solution for the Apple II. ..... **$269.**



TimeOut ReportWriter by Beagle Brothers

TimeOut ReportWriter is a relational report generator that turns AppleWorks into a powerful business tool! Generate invoices, billing statements, order forms and more, right inside AppleWorks. Information from up to 11 different database, spreadsheet, and word processor files can be used by a singel report - no more limitations because AppleWorks is too small! And your reports will print out exactly how they look on the screen. ..... **$48.**

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Verbatim DS/DD *(box of 10)*.....15.
3M 3.5" DS/DD *(box of 10)*.....20.
C. Itoh 3.5" DS/DD Color Disks *(box of 10)*.....25.

Medley by Milliken Publishing

Medley, a powerful desktop publishing program gives you word processing, page layout, and graphics. Twenty fonts, a dictionary and thesaurus are available with Medley's word processor. Medley's page layout program automatically wraps text around any object. Artwork and digitized pictures import easily into *Medley*, or create original art using Medley's powerful art tool. For the IIGs. ..... **$79.**

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1) No purchase necessary to win. **2)** Prize will be one gift certificate only. **3)** Original entries only. **4)** All entries must be received by December 31, 1989. Sponsor not responsible for late, lost or misdirected mail. **5)** Winner selected by Independent Certified Public Accountant for Programs Plus in random drawing. All decisions are final. **6)** Odds of winning depend on number of entries. **7)** Winners responsible for taxes. **8)** Programs Plus will announce winner on or about January 5, 1990. **9)** Winners notified by mail. **10)** If unable to contact winner, an alternate will be selected by random drawing. **11)** Contest is open to U.S. residents except where prohibited by law. **12)** Employees of Programs Plus and suppliers are not eligible.

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will outrun Teleworks' buffer, forcing a lot of corrections. Also, the Edit Memo command, which lets you edit text files, sometimes hangs the system.

DIALING DILEMMAS

Some marginally Hayes-compatible modems didn't want to work. The solution is to include the characters *ATDT* at the beginning of each phone number you dial. (Use *ATDP* if you have old-fashioned pulse dialing.)

Finally, auto-dialing has only rudimentary support—you can auto-dial only four times without having to start the process over. Getting through to a popular BBS can sometimes take an hour, so that's 60 minutes wasted with Teleworks.

WHO'S CALLING?

Despite its numerous operational troubles, I came away liking Teleworks. In the middle of a work session at the IIGS, going on line doesn't seem as big an interruption if you stay in the same desktop environment. Teleworks is the only terminal software to offer the IIGS desktop, and it's a friendly implementation overall.

Will I use Teleworks every day? Not likely—not now. Activision needs to turn a crack programmer loose on it for a couple of weeks. Teleworks would then get a full recommendation. What comes to mind is Activision's release of the original Paintworks back in the early days of the GS. You couldn't get a lick of serious work done with the program, but everybody bought it because nothing compared.

This won't suffice with telecommunications. Four years ago, ASCII Express had more power than Teleworks does now. And today's ProTERM is just as laden with features. Telecommunications has always been a strong suit with the Apple II, and the leading terminal programs—ProTERM, MouseTalk, Talk Is Cheap—are quite mature. Therefore, you can't really pit the current Teleworks Plus against those competitors.

CLOSE CALL

The features that count most—elegant message handling and file transfer—are troubled. Teleworks Plus is tantalizingly close to breaking new ground, but for now the ball is in Activision's court.

Joe Abernathy
Houston, TX

MONSTERS & MAKE-BELIEVE

LEARNING LAB SOFTWARE PUBLISHING, 21000 Nordhoff, Chatsworth, CA 91311, (800) 247-4641, (800) 222-7026 (CA)

Graphics writing program; 128K Apple IIe, IIc, IIc Plus, IIGS; color monitor and printer recommended; $39.95 non-talking version; $49.95 talking version

Rating: ◆ ◆ ◆

Monsters are make-believe, right? If creative writing is "make-believe" writing, then the two seem to fit together quite naturally. Monsters & Make-Believe provides a way for children to exercise their imaginations while learning to write. The cheerful little monsters that children create with the program will stimulate their young minds and motivate them to imagine stories about their creatures.

Monsters & Make-Believe was written with the needs of children in mind. The manual, for example, has one section headed "For Kids Only." Third-graders, who should have no trouble with most of the program's operations, can easily understand these chapters. Within minutes of receiving this package, my 9-year-old daughter was already in the drawing routine. She finished her first monster by adding a speech bubble containing some witty saying. Without any confusion, she sent it to the printer and went on to another drawing.

Monsters & Make-Believe lets children design and build monsters from the wide variety of bodies, heads, legs, arms, eyes, noses, and mouths displayed on screen. Children can select any parts from the assortment, and only their imaginations limit how they should arrange the pieces. Kids can put their monsters together against several backgrounds, including a scary castle and a blank screen.

Kids move the monster parts around on screen with the arrow keys. One nice feature here is variable speed; press the *9* key before ►

AT A GLANCE

Continued

TimeOut SpreadTools (November 1989, p. 38, by Gregory Glau), Beagle Bros, 6215 Ferris Street, San Diego, CA 92121, (619) 452-5500; 128K Apple IIe, IIc, IIGS, AppleWorks 2.0 or later; $59.95
Rating: ◆ ◆ ◆ ◆ ◆

Add SpreadTools to your AppleWorks startup disk and it's always available when you press Open apple-Escape. When you do, 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.

TimeOut SpreadTools includes a variety of useful functions. Block Copy is a wonderful addition to AppleWorks, and the ability to link worksheets and extract data from several grids is alone worth the price of SpreadTools.

Math Blaster Plus (November 1989, p. 98, by Jack Emberly), Davidson & Associates, 3135 Kashiwa Street, Torrance, CA 90505, (800) 556-6141; 128K Apple IIe, IIc, IIGS; $49.95
Rating: ◆ ◆ ◆

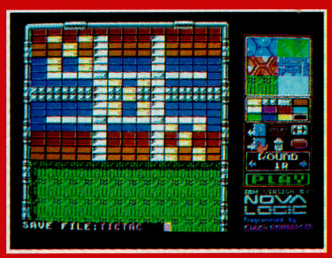
Math Blaster Plus, a big cousin to the old Math Blaster, boasts better graphics, more problems, five activities instead of four, and new recordkeeping features. It earns an A from kids as an arcade game that lets them blast answers off the screen. The real targets, though, are the major skill areas developed in grades 1–6: addition, subtraction, multiplication, division, decimals, and fractions.

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

RAGE!

DOH Rages On In Arkanoid® II!

Arkanoid was never like this! Arkanoid II is here with more menace and explosive action than ever. Loaded with powerful weapons, 67 outrageous force barriers, and intense graphics and animation, it takes lightning-fast reflexes and superior strategy to survive! But survival is just the beginning.



With the Arkanoid Construction Set, you create the game! IBM EGA/VGA screen.

You Take Control!

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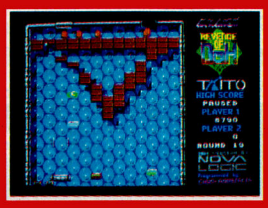
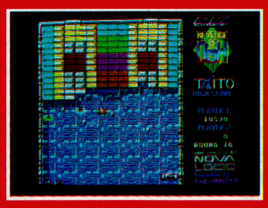


Smash 67 action-packed levels. IBM EGA/VGA screen.

Power up with super-charged energy capsules. Apple IIGS screen.



Blast through the force of DOH. Tandy 1000 screen.

TAITO™

If you cannot find this product at your local retailer, Visa/MasterCard holders can order direct anywhere in the United States by calling toll free 1-800-663-8067.

Taito,® Arkanoid,® Revenge of DOH® and Arkanoid Construction Set™ are trademarks of Taito America Corporation.
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Circle 110 on Reader Service Card.

the arrow key and the part will move fast. Press *1*, and the part moves in tiny steps for precise positioning.

Each part a child selects, however, covers up any previous pieces placed on screen, so monster assembly can easily go awry. A face placed on screen, for example, will hide a pair of eyes that were on screen first. This can be discouraging for young designers. Part of the problem is that the menu of part categories is alphabetical—arms, bodies, and eyes are listed before heads. A child will tend to choose the first part listed, although the manual suggests beginning with the body.

A two-sided, full-page *Contents at a Glance* sheet shows all parts and props available. This quick-reference card makes selecting parts easy, and a fast review will give a good idea of how the monster should look.

You'll see only one arm, leg, and ear of each design on screen. Pressing either *H* or *V* will flip the part horizontally or vertically; then kids can place them in the right location. This way, both right and left parts are available.

After a child has completed a monster, he or she may select one of several speech bubbles. Once the bubble's in place, kids can type a message within that space. They may also enter text on the blank background for use in picture storybooks. Youngsters can make text changes and corrections with the mini word processor. When satisfied with their creation, they can save the final versions of their monster drawings and stories to disk for future use.

It's not exactly Boris Karloff, but with an Echo Board or a Cricket speech syntheizer and Monsters & Make-Believe Plus, a speaking version, you can make the program say the on-screen words. Just remember it's synthesized speech; your Apple may have trouble pronouncing new words. You can encourage children to hear it as "monster talk."

Parents may have to help kids with the talking version. Sections of the manual guide you through the routines and utilities that may be confusing to children. The most complicated part is controlling the speech routines. You may have to enter some words into the program phonetically to ensure proper pronunciation. Basically, though, you can hand Monsters & Make-Believe to your children without a whole lot of help. If they understand the basics of how to load and start the computer, it should be no problem.

Monsters & Make-Believe includes utilities to format data disks and delete files. The program disk also contains the usual setup options that let you customize the program to suit your needs. You can specify the type of printer, interface, and interface slot. The software supports 53 printers with 68 interfaces.

Learning Lab recommends a printer; it's certainly a must. Printing a child's work is so important that you're not taking full advantage of the program without a printer. You can print completed designs in one of several formats, including a reduced size and a full-page size.

What I especially liked about Monsters & Make-Believe is that it encourages children to use their creations after printing them. For example, kids can use the printed pictures for coloring sheets. Reduced drawings placed on a sheet of paper make unique stationery. Kids can also mount their little monsters on stiff cardboard to make mobiles, puppets, or posters. The manual explains how to cut out printed monsters and use cotton and paper

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KEY FEATURES:
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cups to turn them into "Fuzzy Friends."

The program comes on one 5¼-inch double-sided disk. If you have only one drive, the occasional need to flip the disk may irritate you. It bothered me until I found that you can duplicate side 2 (the Art Disk) with any copy routine such as Copy II Plus or the special Apple utilities. The manual fails to mention this. Side 1 is copy-protected, but side 2 isn't. Save yourself some trouble—make a copy of the Art Disk and place it in drive 2 before you start. If you have a 3½-inch disk drive, you can exchange the 5¼-inch disk for a 3½-inch at no cost.

Any parent who wants to further his or her children's interest in writing should consider Monsters & Make-Believe. Monsters motivate young minds, and the stories your kids can come up with may amaze you. The price is fair and the program is easy for children to use. While it won't make every child a creative writer, Monsters & Make-Believe will stimulate the urge to write and help develop a flow of ideas in imaginative children.

Jerry D. Greer
Park City, UT

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SPINNAKER SOFTWARE,
One Kendall Square, Cambridge, MA 02139,
(617) 494-1200

Children's graphics word processor;
768K Apple IIGS, printer required; $49.95

Rating: ❖ ❖ ❖ ❖

Kidwriter Golden Edition is more than just a word processor for children. It lets them design colorful storybooks complete with backgrounds and illustrations, as well. Youngsters aged 6–10 can print individual pages or entire books, or present the pages as a colorful slide show with musical accompaniment.

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After finding a suitable picture, make your selection by clicking on it in the preview window. Then you can move your picture around the scene until you're satisfied with its location. Another click freezes the image in position.

When the cursor's in the shape of a pointer, you can reselect the picture, move it to a new location, or drag it completely from the screen. If the cursor's in the shape of a box, you must first click on the ABC icon at the bottom of the screen to switch to image-grabbing mode. ►

Continued on p. 118

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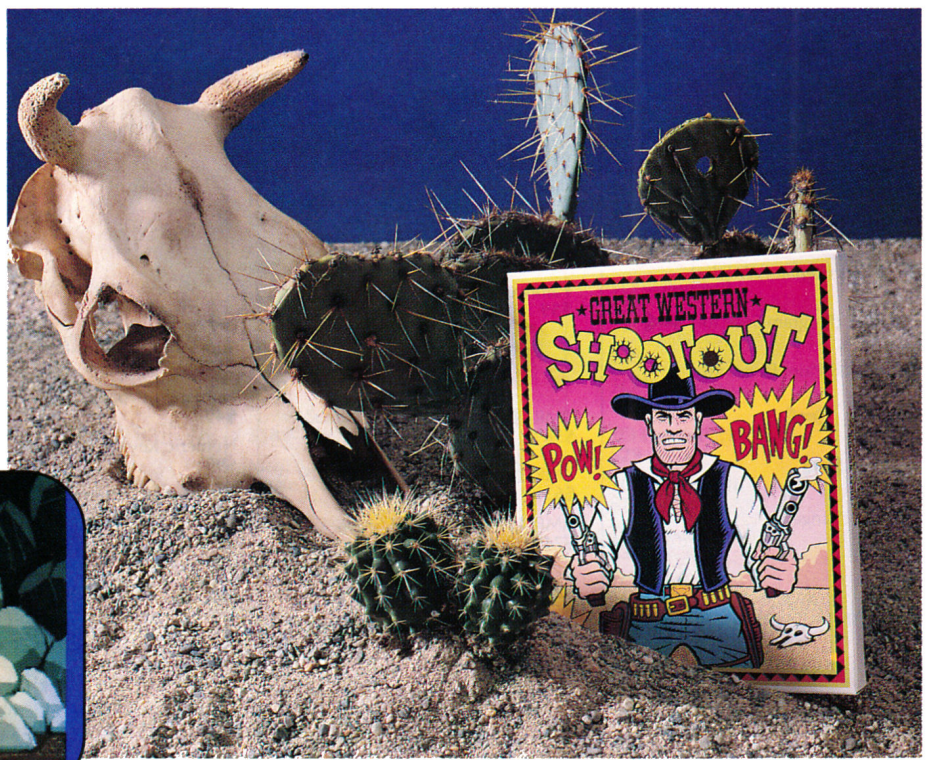
Britannica Software,
345 Fourth Street, San Francisco, CA 94107,
(800) 572-2272

Arcade action;
512K Apple IIGS, 3½-inch drive; $29.95

Rating: ❖ ❖ ❖ ❖



I have mixed emotions about reviewing Great Western Shootout. My Massachusetts-liberal, Kennedy-generation background forces me to think there's something nasty about a game in which your only goal is to shoot people. Then again, you *are* aiming only for the bad guys; if you hit an innocent bystander you lose points. And the setting *is* the Old West—after all, John Wayne didn't hesitate to waste a few dozen desperadoes when necessary.

Britannica's Shootout (from its Fanfare line) is a simple-but-fun arcade game. You don't waste any time reading documentation, assigning attributes to characters, or doing any of those other things that make a lot of people (myself included) avoid fantasy role-playing games. If you can point and click with a mouse, you'll be blowing away bad guys in minutes.

After you select a one- or two-person game, you're greeted by Sheriff Oldswell, who gives you background on your upcoming showdown. After each round (if you survive) you return to the sheriff's office. He continues to send you on suicide missions until the inevitable happens and you're pushing up daisies on Boot Hill. After you take a few rounds of buckshot in your hide, you'll start to wonder why the sheriff isn't out there with you. If you do tire of Sheriff Oldswell's words of wisdom, you can bypass them by pressing the escape key when he appears on screen.

As you confront outlaws, you have only three things to worry about:

- Make sure you're not killing innocent people. (The bad guys wear black hats.)
- Monitor your supply of ammunition, which isn't a problem until you get into the later rounds.
- Stay alive. The best way to do that is to shoot the bad guys before they shoot you. A thermometer lets you know when you've been hit; when it runs out of red, you're dead. Periodically, a little red cross appears on screen; clicking on it boosts your health.

Great Western Shootout isn't a complicated game by any means. You're probably not going to want to play it for hours on end—but if you've had a bad day and just want to blow the heads off of a few dozen hooligans, this game is worth a shot.

Dan Muse
***inCider* staff**

Photography • Frank Cordelle

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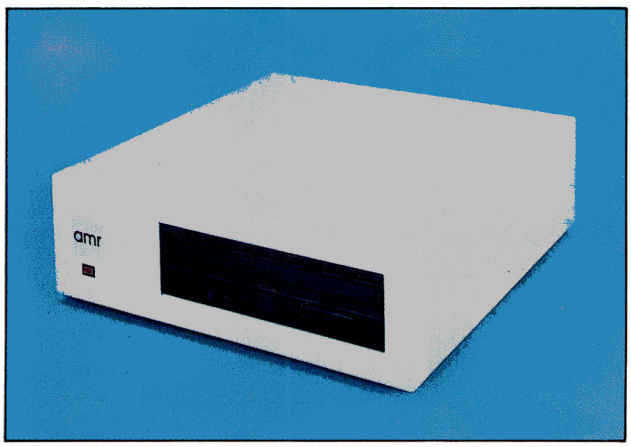

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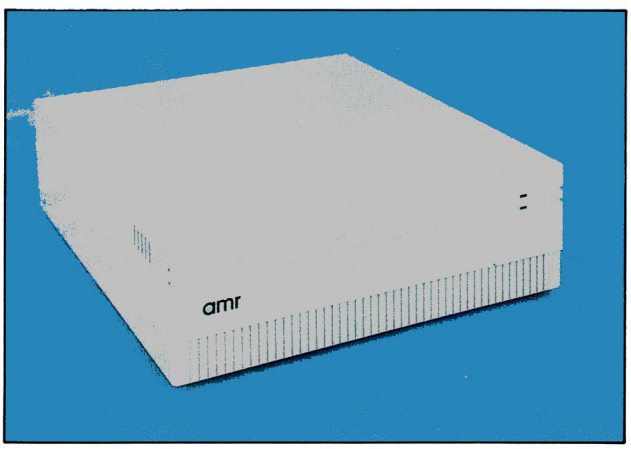

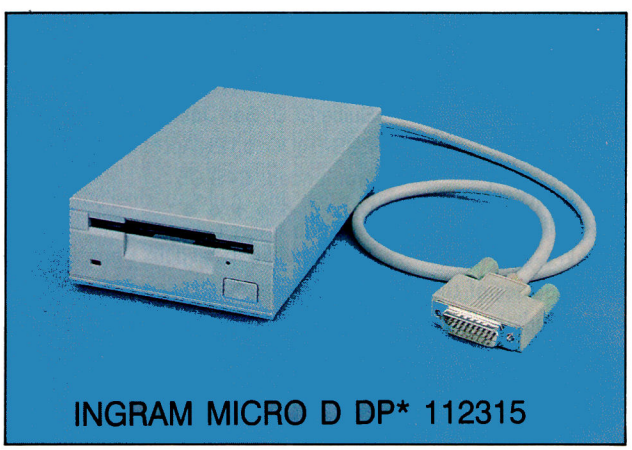

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Tip Sheet

This month we've got a few tips for using that all-important peripheral, the joystick. When driving a Porsche 959 (as in Accolade's **The Duel: Test Drive II**) or flying an Apache AH-64A attack helicopter (as in **Tomahawk** from Datasoft), it pays to center your joystick.

Games that include joystick-centering routines can help. Titles from Epyx (**California Games**, **The Games: Winter** and **Summer Editions**, **Final Assault**, and others) include sequences that take care of your stick for just that game. What that means is that the game asks you to push the stick to the upper left, center, and lower-right corner and click a button. You don't touch the alignment adjustors. This helps for the game you're playing, but may not do the trick for the next one you boot up.

Ski Crazed, from Baudville, has a centering procedure that shows you a diagram and the spot where your joystick is pointing. If it's off, correct it by aligning both vertical and horizontal adjustments. This is the most functional joystick first-aid I've found built into a game.

Joel Llacar of Foster City, California, has this tip for adding more firepower to your Hellcat dive bomber in Broderbund's **Wings of Fury**. Using the joystick to choose your weapons, move it all the way to the upper left-hand corner while pressing the left-arrow key continuously. This mixes up the weapon-selector box and the indicator (which shows your chosen weapon) in the lower left-hand portion of the screen.

If you've timed it right, the bomb symbol will appear in the selector and indicator boxes, but the program will choose 30 rockets instead of bombs. The same procedure works when the indicator symbol is a bomb and the selector symbol is a rocket: You'll get 30 torpedoes. Timing this wrong could give you one rocket, one bomb, or 15 torpedoes, so it takes some practice.

Remember, keep those hints coming. Write to Tip Sheet, c/o *inCider*, 80 Elm Street, Peterborough, NH 03458. □

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Accolade,
550 South Winchester Boulevard, Suite 200,
San Jose, CA 95128, (408) 985-1700

Golf-simulation supplementary disks; 512K Apple IIGS, Jack Nicklaus' Greatest 18 Holes of Major Championship Golf; $19.95

Rating: ◆ ◆ ◆ ◆

Golf is a great sport because you're outside walking around in a pastoral landscape. Computer golf lacks the fresh air, the exercise, and the scenery, so why do people like it as much as the real thing?

For one thing, it's easier. Any honest person who has ever tried to whack a 2-inch ball 400 yards into a 4-inch hole will admit that the last entertainment we need is a "realistic" golf simulation, thank you very much.

Computer golf's real charm, though, is that it gives us the simulated chance to play courses where we couldn't dream of even caddying in real life. Jack Nicklaus Presents the Major Championship Courses of 1989 invites us to play the Oak Hill Country Club (Rochester, New York), the Royal Troon Golf Club (Scotland), and the Kemper Lakes Golf Club (Hawthorn Woods, Illinois)—the sites of the U.S. Open, the British Open, and the PGA Championship in 1989.

The price is right. The Public Domain Exchange (Santa Clara, CA) sells 24 courses for Mean 18 for $36, but they don't work with the superior Jack Nicklaus' Greatest 18 Holes of Major Championship Golf. (Are programmers at Accolade paid by the word?) If you like Greatest 18, and have $20 to spare, why not take a swing at this year's championship courses?

Paul Statt
***inCider* staff**

Short Takes

The Duel: Test Drive II (October 1989, p. 42, by Lafe Low), Accolade, 550 South Winchester Boulevard, Suite 200, San Jose, CA 95128, (408) 296-8400; 512K Apple IIGS, joystick recommended
Rating: ◆ ◆ ◆ ◆

This is the long-anticipated sequel to the original Test Drive, and it was well worth the wait. The Duel takes you on a white-knuckle drive down twisting highways in a Ferrari F-40 or a Porsche 959. Everything's improved over the first version, especially when you add the supplemental disks The Supercars and California Challenge.

Bad Dudes (October 1989, p. 44, by Tim Moore), Data East, 1850 Little Orchard Street, San Jose, CA 95125, (408) 286-7080; 128K Apple IIe, IIc, IIGS; joystick required; $34.95
Rating: ◆ ◆

Bad Dudes is another of the arcade-game conversions that have made a name for Data East. The graphics and animation could be crisper, but it's challenging enough to keep your interest.

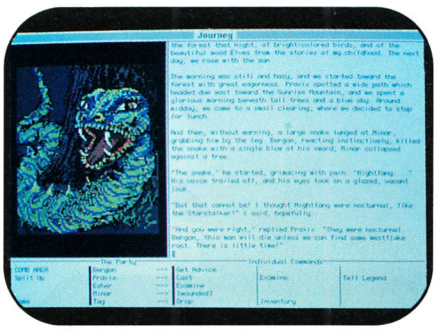
Jack Nicklaus' Greatest 18 Holes of Major Championship Golf (November 1989, p. 46, by Dan Muse), Accolade, 550 South Winchester Boulevard, Suite 200, San Jose, CA 95128, (408) 296-8400; 512K Apple IIGS; mouse recommended; $49.95
Rating: ◆ ◆ ◆ ◆ ◆

The new standard in computer golf games: Select either of two Nicklaus-designed courses, or choose Jack's 18 favorite holes around the world. It's similar to Mean 18, but features a number of additional challenges. You can even play a round with the Golden Bear himself.

The Hunt for Red October (November 1989, p. 48, by Joe Abernathy), Software Toolworks, 19809 Nordhoff Place, Chatsworth, CA 91311, (818) 885-

Continued ►

JOURNEY



INFOCOM,
3885 Bohannon Drive, Menlo Park, CA 94025,
(415) 329-0800 (distributed by Mediagenic)

Interactive fantasy adventure;
128K Apple II, two 5¼-inch disk drives
(or 3½-inch or hard drive); $49.95

Rating: ◆ ◆ ◆ ◆

Even though Journey contains some all-too-familiar Tolkienish overtones, you can't help but like Infocom's otherwise ground-breaking adventure game. Journey has all the elements that make you feel like a true participant. The engrossing story line is told masterfully; the role-playing elements let your characters take on individual personalities; and the rapid pace of the game forces you to make constant decisions.

The plot is typical fantasy fare. An unknown evil pervades the land; disease and starvation prevail over the once-prosperous countryside. One party has already failed to find the wizard Astrix, and now a second party must embark on the same mission. That's the group you control.

That somewhat vague background is actually a plus because it lets the details and subplots of the story unfold as you delve further into the game. Another refreshing attribute of Journey is the makeup of the group itself. The characters are more human and less heroic than you might expect and are therefore more believable and sympathetic.

Bergon, the leader, is a strong man and a carpenter by trade. Esher is a physician of some note. Praxix is the local wizard. Tag, a merchant who also acts as a scribe, is the last character. It's through his eyes that the story's told. The characters are well drawn—complete with distinctive personalities and quirks.

The interface is a thing of beauty. The only words you need to type are those that label the game files you save. All other actions—whether selected via mouse, joystick, or keyboard—are activated from five panels that run along the bottom of the screen.

The first panel lists generic commands, such as Game, which activates your Save, Restore, and End Game commands. This panel changes to a directional panel with commands such as Proceed, Back, and Enter once the game begins. The second panel lists the four members of your party and any others you may have met along the way. Interacting with the many people you'll encounter in Journey and deciding whether or not to accept their aid is a major factor in your success.

To the right of each character are three more panels, containing the main actions and all subsequent actions that each character can perform. For example, in the third panel opposite the wizard Praxix, you might find a Cast command, while in the fourth panel you might see Examine. Activating either of those words will call up any additional information needed to complete the action. Regardless of which method you use to select them, commands are easy to access.

A number of actions are available to the various characters with each "turn" (for want of a better word, because the game flows from one scene to the next and actions change on the fly), and each action you choose can change the course of the adventure.

Journey contains multiple endings, and there are various ways to reach each of them. The game boasts more than 100 hi-res graphics scenes, displayed clearly in the upper-left third of the screen above the panel line. The remainder of the screen is used for text.

Journey contains several other helpful options, as well. Infocom fans will be familiar with the Script command, which lets you send the text appearing on screen to a printer.

On-screen hints—another Infocom feature—are handled a little differently here. Should you meet with failure or want to "give up" at some point, select Musings from one of the Command panels. You'll be able to read the narrator's comments on the game you've just played and receive hints and guidelines referring to specific points that occurred during your adventure.

Journey's hallmark as an adventure game is its manner of presentation. With so many fantasy games looking like die-cast versions of each other, it's refreshing to find something that's just a little different.□

James Trunzo
Leechburg, PA

SHORT TAKES

Continued

9000, distributed by Electronic Arts; 768K Apple IIGS; $49.95
Rating: ◆ ◆ ◆ ◆

One of the finest simulations on the market. Your control is complete; the tension is real. This game is fascinating to play, but make no mistake—it's animated strategy, not action adventure.

Gnarly Golf (November 1989, p. 44, by Lafe Low), Britannica Software, 345 Fourth Street, San Francisco, CA 94107, (800) 572-2272; 512K Apple IIGS; $29.95
Rating: ◆ ◆ ◆ ◆

This is miniature golf with a gnarly twist. You'll have a blast exploring 18 of the weirdest holes imaginable—a prison cell, a pool table, a dock, a lunch counter, a tavern—just to name a few.

Crystal Quest (September 1989, p. 98, by Lafe Low), Casady & Greene, P.O. Box 223779, Carmel, CA 93922, (408) 624-8716; 512K Apple IIGS; $49.95
Rating: ◆ ◆ ◆ ◆

It's an intensely addicting arcade game—that may be a frequently abused cliché, but it describes Crystal Quest perfectly. Crisp graphics and sounds you won't hear anywhere else keep you coming back. We bet you can't play just one game.

Deja Vu II: Lost in Las Vegas (September 1989, p. 98, by Lafe Low), Mindscape, 3444 Dundee Road, Northbrook, IL 60062, (312) 480-7667; 768K Apple IIGS, ROM version 01 or higher, system disk version 3.2 or higher; $49.95
Rating: ◆ ◆ ◆

The sequel to Déjà Vu starts you off equally clueless, only this time you're in Las Vegas and you owe the mob 100 grand. Good luck finding your way around—you'll need it. At least you'll enjoy the scenery, though, even if you can't get the mob off your back.□

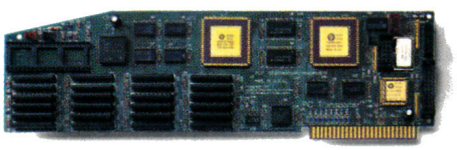
Now Apple speaks IBM. Three times faster than IBM.

PC Transporter,™ the Apple II expansion board that lets you run MS-DOS programs, now at a lower price.

Now your Apple II can run over 10,000 programs you could never use before. Like Lotus 123, dBASE III PLUS, Symphony, Microsoft Works, even Flight Simulator.

With PC Transporter, MS-DOS programs run on your Apple II like they do on IBM PCs or compatibles. With one important difference. PC Transporter runs most of those programs *three times faster* than an IBM PC/XT.

Plus, to speed through number-crunching tasks, you can use our optional 8087-2 math co-processor chip. It plugs into a socket on the PC Transporter.



Much less expensive than an IBM clone.

PC Transporter costs less than even a stripped-down IBM clone. And when you add the host of expensive IBM-compatible peripherals you'd need to get the clone up and running, you're left with an expensive, cluttered desktop.

You don't have to buy new hardware to use PC Transporter.

Works with the hardware you already own.

With PC Transporter, MS-DOS programs actually see your Apple hardware as IBM hardware, so you can use the same hardware and peripherals you have now.

With IBM software, your Apple hardware works just like IBM hardware. Disk drives, monitors, printers, printer cards, clock cards, serial cards and even hard disks look like IBM type hardware whenever the PC Transporter is activated.

You can use your IIe or IIGS keyboard with IBM software. Or use our optional IBM-style keyboard (required for the II+).

You can use your Apple mouse. Or an IBM compatible serial mouse.

Plenty of power.

PC Transporter gives you 640K of user RAM and 128K of system RAM in the IBM mode.

PC Transporter works like an Apple expansion card, adding 752K of extra RAM in the Apple mode. The 752K is useable as a RAMdisk or as memory expansion to any program that follows the Apple Memory Expansion Card protocol (most do). The Apple memory expansion alone is a $500 value.

PC Transporter taps into the world's largest software library. Now your Apple can run most of the software you use at work. And it opens a new world of communications programs, games and bulletin boards.

Easy to install.

You can install PC Transporter in about 15 minutes, even if you've never added an expansion board. You don't need special tools. Simply plug it into an Apple expansion slot (1 through 7, except 3), connect a few cables, and go!

A universal disk drive controller.

PC Transporter will run 3.5" IBM disks from your Apple (or compatible) 3.5" drive. And even if you want to run 5.25" IBM disks you can get our versatile 5.25" drive system and still run Apple 5.25" disks from an Apple 5.25" drive. In other words, when running 3.5" disks, your Apple 3.5" drive will run *both* Apple and IBM disks.

No matter what your drives, you can shift instantly between Apple ProDOS and IBM MS-DOS.

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

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

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

Versatile data storage.

You can store IBM programs and data on any ProDOS storage device including the Apple 3.5 Drive, Apple UniDisk 3.5, Apple 5.25 drive, SCSI or ProDOS compatible hard drives.

You can even use our 360K PC compatible drive for ProDOS storage and a 143K Apple 5.25 drive for MS-DOS storage.

Make your Apple speak IBM.

PC Transporter w/768K	**$499**

Note: 768K RAM in Apple mode translates to 640K RAM in the IBM mode because PC Transporter uses 128K for system memory.

IIGS Installation Kit	**$49**
IIe/II+ Installation Kit	**$39**

Optional 5.25 IBM Format 360K Drive Systems

Single-Drive System	**$259**
Dual-Drive System	**$389**

What the experts say:

"Gives Apple II users the best of both worlds ...an impressive engineering feat."
—A+

"It's ingenious...a remarkable success!"
—InCider

"When you buy a PC Transporter, you're not just giving your Apple the ability to act as a PC clone, you're upgrading your computer in a big way for all your Apple II computing."
—Nibble

"An excellent solution for at least half a million people who enjoy Apple II computing at home and endure MS-DOS at work."
—MicroTimes

"Extremely versatile...one of the most ingenious and exciting products we've seen." *—Classroom Computer Learning*

"PC Transporter has created quite a stir. It's accuracy guarantees a whole host of uses...a masterpiece of engineering."
—Apple Soft

*When purchased from Applied Engineering or thru a participating dealer.

Prices subject to change without notice. Brands and product names are registered trademarks of their respective holders.
Apple II+ must be FCC certified.

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

Created by Apple's original designers.

The brains behind PC Transporter were also behind your Apple II.

The PC Transporter design team includes the former project managers for the creation of the Apple IIe and IIc. The co-designer of the Apple II disk controller. And the author of the ProDOS operating system.

So you know the PC Transporter and your Apple were made for each other.

Support and service from the leader in Apple add-ons.

Applied Engineering sells more Apple peripheral boards than anyone else—including Apple Computer. So you know we'll be around after the sale.

PC Transporter comes with a 15-day money back guarantee.* If you're not fully satisfied after using it, return it for a full refund. PC Transporter also comes with a 1 year warranty.

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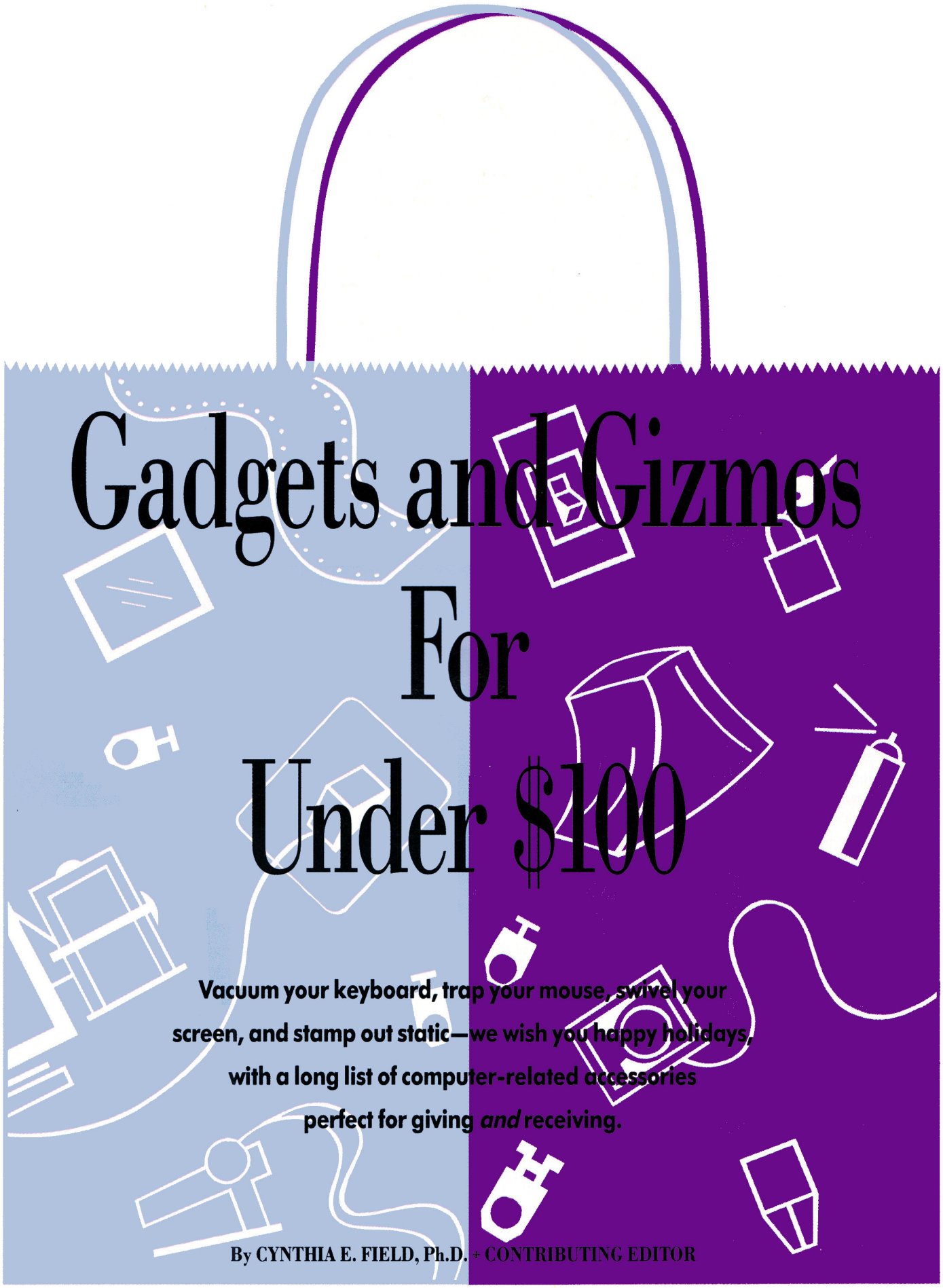


Gadgets and Gizmos For Under $100

Vacuum your keyboard, trap your mouse, swivel your screen, and stamp out static—we wish you happy holidays, with a long list of computer-related accessories perfect for giving *and* receiving.

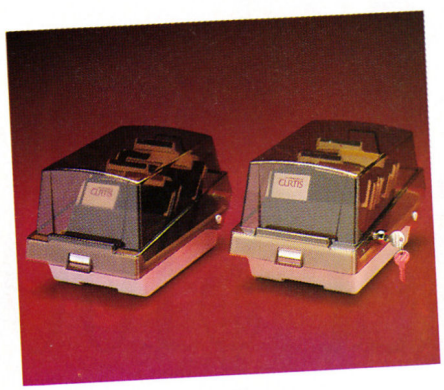
By CYNTHIA E. FIELD, Ph.D. • CONTRIBUTING EDITOR

Illustration • John Pirman

DON'T JUST DECK THE HALLS THIS holiday season—deck your Apple II system with accessories that protect your investment, organize your work space, and ensure your personal comfort. From mouse houses to static mats, computer-related gadgets that combine form and function are perfect excuses for buying yourself a present—or better still, hang a copy of this article and its accompanying buyer's guide on your Christmas tree to make Santa's job easier.

Our guide doesn't pretend to be an exhaustive compendium; we couldn't possibly list the estimated thousands of purveyors of computer accessories. Also, we don't include computer-security products here, as *inCider* covered those in July ("Lock It Up!" p. 56).

Apple dealers and department stores probably carry many of these accessories. If you decide to order directly, check out the tips and information in "The Software's in the Mail" (September 1989, p. 66), and join the ranks of smart shoppers who like to save time and money.



"Conserve your desktop space."

Curtis Manufacturing's disk file

BASIC HOUSEKEEPING

If your Apple system doesn't exactly pass muster in the white-glove department, add cleaning accessories to your holiday wish list. Assorted fluids, aerosol dusters, and miniature vacuum cleaners help you spruce up your monitor screen and printer platen and tidy up your disk drives and keyboard.

Frequent cleaning is no fun, so cover your system's components between work sessions. Dust covers, available in a variety of materials and colors, help keep out damaging dirt.

If your motto is "a place for everything and everything in its place," this Christmas could be your best yet. You'll relish the variety of disk-storage files available. Try teak or plastic (see-through or color-coded); in sizes to acccommodate 5¼-inch floppies or 3½-inch mini-disks; with locks and without; stackable or not.

While "portable" disk holders may accommodate fewer than ten disks, some desktop models can hold more than 100. Still cramped for data-disk storage space? Disk notchers make your floppies "flippies": You can store data on both sides.

When your mouse oversteps its bounds, corral the critter with a "pocket," "pouch," or "trap." These inexpensive holders attach to the side of your monitor. Some mouse garages provide additional compartments for storing disks or other supplies, too.

When desktop acreage is woefully inadequate, there's nowhere to go but up! Literally. At least one company makes a monitor tray that turns the space on top of your monitor into a handy "in" box. A variety of manufacturers offer stands that elevate your printer to create space underneath for stacking paper.

A MATTER OF ERGONOMICS

Unless your name is S. Claus, each holiday season finds you a year older. Notice an occasional stiff neck or irritated eyes after a long AppleWorks session? As the song says, "Don't worry; be happy." Explore some of the inexpensive accessories designed to relieve eyestrain, sluggish circulation, and muscle fatigue.

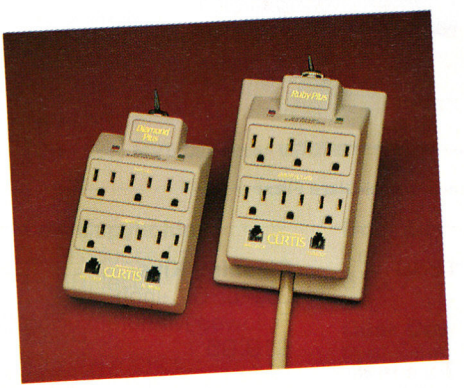
Look into (pun intended) an antiglare screen, one of those reflection-reducing filters that fit over your monitor screen and attach with Velcro tape.

If you're habitually craning your neck to see the monitor or the printed document you're typing, it may be time to do more than adjust your computer chair. Invest in a monitor stand and copy holder. Some stands swivel and tilt to afford maximum viewing comfort. Copy holders come in desktop models, but if space conservation is your aim, a "clip," "hinge," or "bar" holder may be your best bet: They attach to your monitor via double-sided adhesive or Velcro tape.

Clicking and dragging got you down? Try using a mouse pad to reduce friction. While you're at it, why not give yourself a lift with an adjustable footrest?

Add a "muffler" to your printer to reduce its clackety-clack assault on your eardrums. Who knows? You may be able to talk comfortably on the phone again—even while printing a Print Shop banner!

No one this comfy wants to fool around with swapping cables, right? If you have two printers, an inexpensive data-switch box lets you select one or the other by turning a single knob. Using both a mouse and a joystick with your IIc? You're a prime candidate for a joystick/mouse interface.



"Protect your sensitive electronic equipment."

Curtis Manufacturing surge protectors

ENERGY CRISES AND INK SPOTS

They say it can be neither created nor destroyed. But energy in all its forms is a power to be reckoned with—especially when it comes to sensitive electronic equipment. Cooling fans and surge suppressors (some models combine both functions) are *de rigeur* for most Apple II systems, particularly those stuffed with extra circuit boards or located in places prone to lightning strikes and transient power problems.

Worry warts (myself included) will probably want to go all out and install a Halon fire extinguisher, which can douse a fire without harming electronic gear. And every Apple system is a potential victim of yet another form of energy: static electricity. Antistatic sprays and static-dissipative mats reduce the danger of giving your Apple the computer equivalent of a stroke.

Concerned about the physical effects of computer-generated energy? Investigate Ramstar Group's Body Shield garments, which claim to protect computer users from electromagnetic radiation.

Every elf knows that many Apple II users are gadget fiends. Without risking technical overload, Christmas goodies for the Apple II tinkerer include not only computer toolkits but ribbon re-inkers, as well. With one of these nifty devices, you can tend to a whole batch of ribbons in a single morning. Special adapters let you re-ink ImageWriter II four-color ribbons, too.

For those who eschew this level of "hands-on" experience, at least two companies offer black-ribbon cartridges with re-inking reservoirs built in.

STUFF THOSE STOCKINGS

With the holiday season upon us, isn't it time to indulge yourself? Often for less than the cost of a pound of gourmet chocolates or a bottle of imported wine you can unwrap no-cal computer accessories to enjoy (without guilt!) the whole year long. Season's Greetings, everybody!□

CYNTHIA FIELD IS THE AUTHOR OF PRESS ROOM, *INCIDER*'S COLUMN ON DESKTOP PUBLISHING. WRITE TO HER AT 60 BORDER DRIVE, WAKEFIELD, RI 02879. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

PRODUCT INFORMATION

ANTI-GLARE SCREENS

Anti-Glare CRT Visor
Global Computer Supplies
$19.70

Anti-Glare Filter
Apple beige or platinum
Kensington Microware Ltd.
$49.95

Anti-Glare Filter CP-50
minimum protection (70%) against low-level radiation
Polaroid Corp.
$49.95

Anti-Static Anti-Glare Filter CP-50SC
maximum protection (98%) against low-level radiation
Polaroid Corp.
$69.95

Anti-Glare Glass Filter
Curtis Manufacturing Co.
$59.95

Anti-Glare Screen
Fellowes Manufacturing
$24.95 9- to 12-inch &
12- to 13-inch screens
$29.95 14- to 15-inch screens

Antiglare Screen IIGS
Data Spec
$23.95

Sunflex SuperScreens
Sun-Flex Co.
$29.95 monochrome
$34.95 color

CLEANING ACCESSORIES

Anti-Static Screen Cleaner TX1261
pump spray
Texwipe Co.
$5.95

Compuduster TX1212
compressed gas cleaner with valve
Texwipe Co.
$35.95

Compuduster Refill TX1213
Texwipe Co.
$6.50

Dot Matrix Cleaning Kit TX1270
Texwipe Co.
$29.95

Kleen and Dry CRT Screen Cleaning Pads TX1205
10 twin packs
Texwipe Co.
$5.75

KeyboardKleen Kit TX1263
cleaning solvent, swabs, compressed air
Texwipe Co.
$15.95

Kensington Microware Anti-Glare Filter

Platen Kleen TX1268
Texwipe Co.
$7.95

Read/Right CRT Terminal Cleaning Pads TX1308
80 pads/box
Texwipe Co.
$19.50

Read/Right One-Step CRT Terminal Cleaning Pads TX1308
8 pieces/box
Texwipe Co.
$19.50

BP Multipurpose Super Mini Cleaner
battery-operated vacuum cleaner
Fordham-Scope Catalog
$16.95 direct
$24.95 list price

Cleaning Kit
Check-Mate
Computer Products
$19.99 5¼-inch
$24.99 3½-inch

Two-Timer Head Cleaner
5¼-inch
Check-Mate
Computer Products
$4.99

Cleaning Kits
3½- or 5¼-inch
Fellowes Manufacturing Co.
$19.95

Computer Cleaning Kits
CK-1 5¼-inch
CK-2 3½-inch
Curtis Manufacturing Co.
$19.95 each

Computer Vacuum MV5
Data Spec
$18.95

Deluxe Computer Care Kit
Inmac
$48.69

Mouse Cleaning Kit #7938
Inmac
$19.95

Disk Drive Head Cleaning Kit
National Computer Accessories
$2.99 5¼-inch
$3.99 3½-inch

Mini-Vacuum
National Computer Accessories
$5.99

Dust-Off II
Falcon Safety Products
$31.95 can and nozzle
$8.50 can refill

Falcon Anti-Static Computer Cleaner
Falcon Safety Products
$2.95 1 oz. spray
$4.50 4 oz. spray
$5.25 8 oz. refill

Falcon Print Element Cleaner
Falcon Safety Products
$10.50

Falcon Platen Conditioner and Cleaner
Falcon Safety Products
$7.50 4 oz.
$10.50 8 oz.

FloppiClene
Tech-Sa-Port
$34.95

MicroClene
antistatic cleaner
Tech-Sa-Port
$24.95

Head Cleaner
5¼- or 3½-inch
Precision Data Products
$2.99

Head Cleaning Diskette Kit
3M
$24.99 5¼-inch
$19.95 3½-inch

Platen Cleaner and Restorer Kit
3M
$6.95

Screen Cleaner and Restorer Kit
3M
$9.95

Head Cleaning Kit
Verbatim
$22.50 5¼-inch
$31.50 3½-inch

LaserKleen
cleaning and maintenance kit for laser printers
PerfectData Corp.
$39.95

MacPack
3½-inch disk-drive maintenance kit
PerfectData Corp.
$34.95

Personal Computer Care Kits
specify drive size
PerfectData Corp.
$49.95

Metro Data-Vac
vacuum cleaner
CompuAdd Corp.
$39

Mini Vacuum Cleaner
Price Busters
$9.95

PC/Printer Vacuum
Lyben Computer Systems
$31.95 direct
$39.95 list price

System Sweeper
hand-held vacuum cleaner
Corporate Data Products
$39.95

COPY HOLDERS

Copy Hinge
D.L. West Manufacturing
$9.95 letter, legal-paper size
$12.95 data-processing form size

Curtis Clip
Curtis Manufacturing Co.
$6.95

Decorator Color Copy Holders
DeVoke Co.
$16.95 letter size
$29.95 data-processing form size

Desk Clamp Copyholder
Fellowes Manufacturing Co.
$52.95 letter size
$95 15 inches wide

Desktop Copyholders
Fellowes Manufacturing Co.
$16.95 letter size
$31.95 data-processing form size

Space Saver
flat-base copy holder
Fellowes Manufacturing Co.
$44.95

Weighted Base Copyholder
Fellowes Manufacturing Co.
$46.95

Desktop Copy Holder
National Computer Accessories
$7.99

Grip Clip Copy Holder
National Computer Accessories
$3.99

Grandstand Copyholders
Rubbermaid Office Products
$26.70

Data Spec MV5 Computer Vacuum

Holdit Copyholder
RDA Products Ltd.
$39.50, letter size, 9½ by 12 inches
$40.50 legal size, 9½ by 14 inches
$44.50 wide size, 14 by 12 inches

Tabletop Copyholder
Wilson Jones
$17.95

Universal Copy Stand
Kensington Microware Ltd.
$29.95

COVERS AND CARRYING CASES

Antistatic Vinyl Dust Covers
Corporate Data Products
$11.95–$19.95

Apple IIc Carrying Case
Alltech Electronics Co.
$29

Cloth Dust Covers
Global Computer Supplies
$16.95–$28

Computer Dust Covers
National Computer Accessories
$2.49 and up

Dust Covers
Computer Cover Company
$3–$30

Dust Covers
Kensington Microware Ltd.
$13.75

Dust Covers
Precision Data Products
$8.95–$17.95

Fabric Dust Covers
Co-Du-Co
$1.50–$29.95

Key-Flex Keyboard Protectors
Source System
$19.25

SafeSkin Keyboard Protector
Merritt Computer Products
$29.95

IIGS Dust Cover
Computer Covers Unltd.
$22.95

IIGS Soft Keyboard Protector
Computer Covers Unltd.
$29.95

Two-Ply Nylon Dust Covers
Two Guys F.T.V.
$12.95–$20.95

Vinyl Dust Covers
Computer Coverup
$6.95–$16.95

Water-Resistant Packcloth Dust Covers
ABCOM
$6.95–$24.95

DATA SWITCHES AND ADAPTERS

A-B Switch DS-1
connects two printers with one computer
Curtis Manufacturing Co.
$49.95

A-B Switch DS-2
connects two computers with one printer
Curtis Manufacturing Co.
$49.95

Data Switch Boxes
Price Busters
$29–$39

Four-Port Game-Port Extender
Price Busters
$14.95

Data Switches
Data Spec
$49.95–$59.95

Modunet
Appletalk Network Adapter
Data Spec
$37.95–$47.95

Data Switches
two-way
Global Computer Supplies
$19.95–$59.95

Data Switches
National Computer Accessories
$9.99 and up

Data Switches
VSI
$24.95–$39.95

Gameport Adapters
SCRG
$29.95

►

Moustik Switch IIc
plugs joystick and mouse into IIc
SCRG
$29.95

Mirage
joystick/mouse interface
CH Products
$54.95

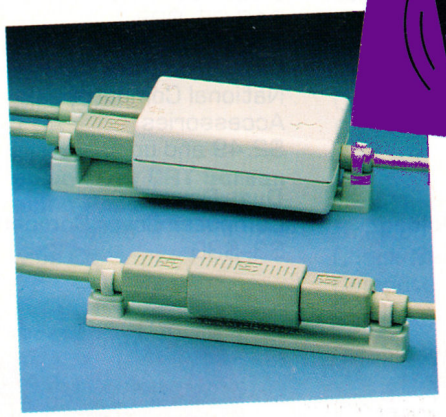
Switch Boxes
TCX Ltd.
$30–$45

DISK ACCESSORIES

BP Deluxe Floppy Diskette Storage Case
holds 85 5¼-inch disks with lock
Fordham-Scope Catalog
$24.95

Color Coder Library Case
SRW Computer Components
$17.95, holds 50 5¼-inch disks in 5 color-coded library cases
$19.95, holds 50 3½-inch disks in 5 color-coded library cases

Library Case
holds 10 5¼-inch disks
SRW Computer Components
$3.95



"No one wants to fool around with cables—keep them connected."

Kensington's AppleTalk Clips

Micro Disk Cube
holds 25 3½-inch disks
SRW Computer Components
$10.95

SRW Disk Files
hold 50 3½-inch or 60 5¼-inch disks
SRW Computer Components
$12.95 each

Curtis 5¼-Inch File
holds 50 disks
Curtis Manufacturing Co.
$9.95 without lock
$12.95 with lock

Disk Notcher
Educational Resources
$3.95

Disk Notcher
Learning Services
$4

Disk Notcher
Memory Plus Distributors
$4.50

Disk Notcher
Price Busters
$4.95

Disk Storage MM3
holds 30 3½-inch disks
Hunt Data Products
$9.95

Disk Storage MM5
holds 50 5¼-inch disks
Hunt Data Products
$10.95

Disk Valets
Ricks Ramstar
$5, holds 3 3½-inch disks
$8.50, holds 6 3½-inch disks
$13.50, holds 12 3½-inch disks

Meeting Folder
nylon folder holds writing pad and four 3½-inch disks
Ricks Ramstar
$17.50

TEN HEALTH TIPS

No, we're not about to classify using a computer as a strenuous activity. Sure, maybe your eyes tire and itch occasionally, or maybe your neck stiffens, but you don't climb into the whirlpool after making entries in your database or doing calculations in your spreadsheet. Yet complaints of headaches, dizziness, blurred vision, and hand cramps have become more common among even part-time users. The following tips can help make computing less stressful and, consequently, more enjoyable:

1. Give your hand a break. Carpal tunnel syndrome, which paralyzes the fingers, occurs when the main nerve running from the arm into the hand is pinched off at the wrist. This condition can result from extended typing, and even more frequently, from extended use of joysticks. Take a break every 15 or 20 minutes. Flex and stretch your arm and wrist by shaking them and opening and closing your hands slowly. Make sure the keyboard is low enough that your hands don't get tired, and keep your wrists from resting on the sharp edges of your desk.

2. Keep the screen clean and static-free. Because a dirty screen is more difficult to read, it increases the chance of eyestrain. In addition, evidence suggests that chronic exposure to dust can cause rashes.

By cleaning the screen with an antistatic wipe, you can reduce static buildup caused by the high-voltage electron beams striking the screen internally. Reduced static buildup will lessen the amount of dust on the screen (static attracts positively charged dust particles) and the amount bouncing off the screen toward you. (Static repels negatively charged dust particles.)

3. Purchase a glare deflector for your monitor. While your brain's concentrating on the information on screen, your eyes are filtering out glare. You can reduce the consequent eyestrain with any of a variety of transparent panels you can place over your monitor's screen. The least expensive option is a black nylon mesh, resembling a silk stocking, stretched over a plastic frame. Using Velcro strips, you can attach it easily to the monitor and remove it for cleaning. Mesh-type deflectors average $20 to $40.

Some mesh screens are coated with conductive carbon, which absorbs static. These have a special cable, which, when attached to a valid ground, drains the static away from the screen. If you do use a mesh glare deflector, you'll need a special screen cleaner to remove the dust that'll collect on it. Such cleaners are usually adhesive rollers, priced from $5 to $10.

A second option is polarized glass screens, which will usually set you back no more than $50–$90. These work something like polarizing filters for cameras or polarized sunglasses—they let light of only a certain frequency pass through the filter to your eyes. These screens don't always fix the problem, however, because the reflections are often transferred to the polarizer's surface.

Finally, check out glass screens with antireflective coatings. These deflectors have multiple coatings: Light bouncing off the uppermost layers interferes with the light bouncing off lower layers, effectively destroying the glare. You'll need special cleaners for this deflector as well. Standard screen cleaners will slowly remove the antireflective coating, rendering the glare screen useless in a short period of time.

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When playing games, you may want to remove the glare shield on your monitor. In addition to reducing reflections from the screen, the shield also reduces light radiating from it, making it more difficult to follow fast-moving objects.

4. Position the monitor correctly. Place your monitor 18–24 inches from your eyes, and make sure neither outside nor indoor light falls directly on your Apple II, to alleviate eyestrain and reduce the amount of glare on the screen. Mounting the monitor on a tilt-and-swivel base will make adjusting it for the best viewing conditions easier.

5. Blink every three seconds. If you work at your computer for a significant amount of time, you're probably not blinking often enough to keep your eyes as moist as they should be.

Under normal conditions, we blink about once every five seconds, but in front of the computer, you may go as long as one minute without doing so. As a result, dust particles settle on the eye's cornea, causing discomfort. The problem's even worse for contact-lens wearers.

6. Make sure you have proper lighting. Because your monitor produces its own illumination, you need to rely less on room light than if you were, say, reading a book. In addition, readability of the monitor requires contrast, so less light is preferred. Finally, keeping a room less bright reduces the amount of adjustment your eyes have to undergo when you look away from the screen.

Normally, the light from your monitor is equivalent to a dimly lit bulb. When you're looking at your screen, your pupils relax and expand to let in more light. Turn away from the screen, and your pupils must then adjust to the higher level of brightness in the room.

To obtain the happy medium of seeing your work without shining light on your monitor, avoid overhead lighting in favor of a desk lamp. The light may be either incandescent or fluorescent, but should be between 60 and 75 watts.

7. Check with your ophthalmologist about special glasses and contacts. If you wear contact lenses, special nondrying types require much less moisture to function properly. There's also good news for bifocal wearers. Standard bifocals are designed to provide correct vision at roughly one foot, the normal distance at which you hold printed material. Also, because the far-sighted corrective lens is placed lower than the rest of the bifocal lens, wearers have to tilt their heads backward to view the computer screen, which often leads to neck cramps and back pain. Now you can get specially designed bifocals that provide correct vision at computer distances (18–24 inches).

8. Position your work correctly. Place your printed material close to the monitor and at the same distance as the screen. Take a look at the variety of copyholders that hang onto your document. Choose one that attaches to your monitor, rests on the table like an easel, or clamps.

9. Use a proper chair. While good chairs are expensive, they're worth every penny. Remember, an uncomfortable chair is the biggest cause of computer-related neck and back problems. Pick a chair you can adjust for height. When seated, you should be able to place your feet firmly on the floor. The height of the seat back should correspond to your lower back and adjust to your spinal contours. Arm rests shouldn't interfere with free movement.

10. Take breaks. Take a break every hour or two. Get up from your chair, walk around, stretch your arms and legs, shrug your shoulders, shake and nod your head. Your break should last 10–15 minutes. Look away from the screen every 15 or 20 minutes. Look at distant objects, then at close objects, then at distant objects again to exercise your eyes.

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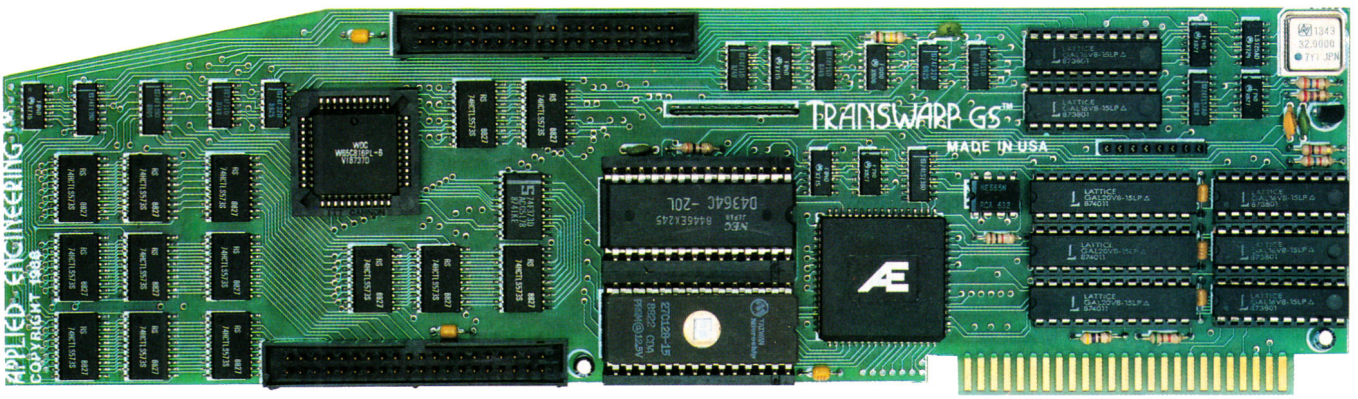

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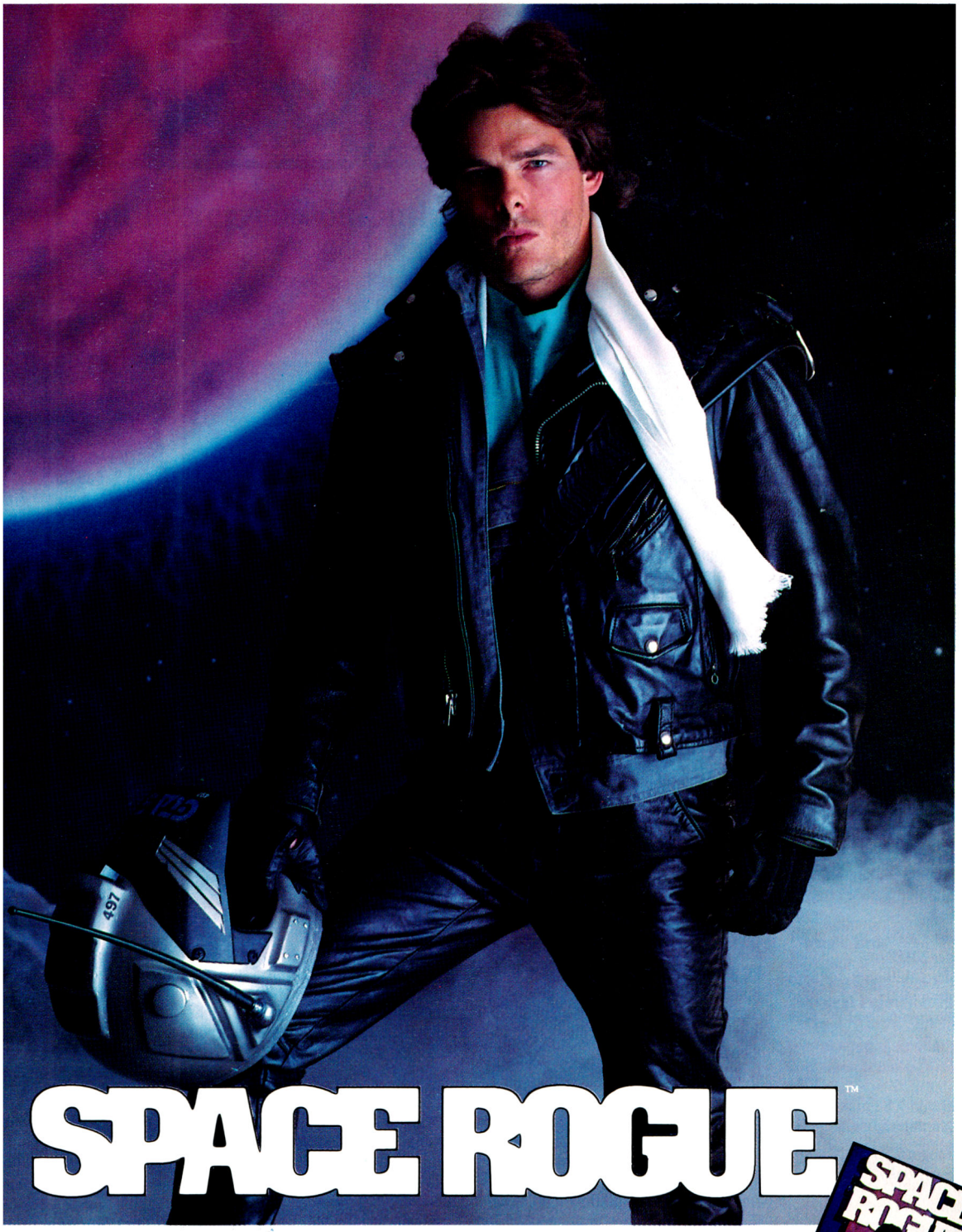

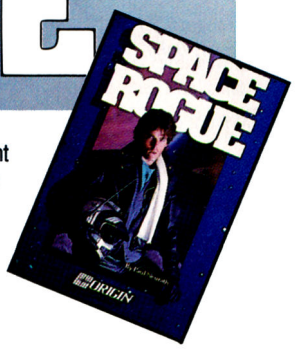

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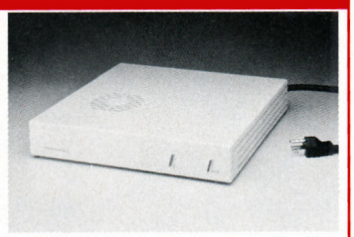

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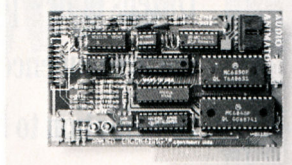

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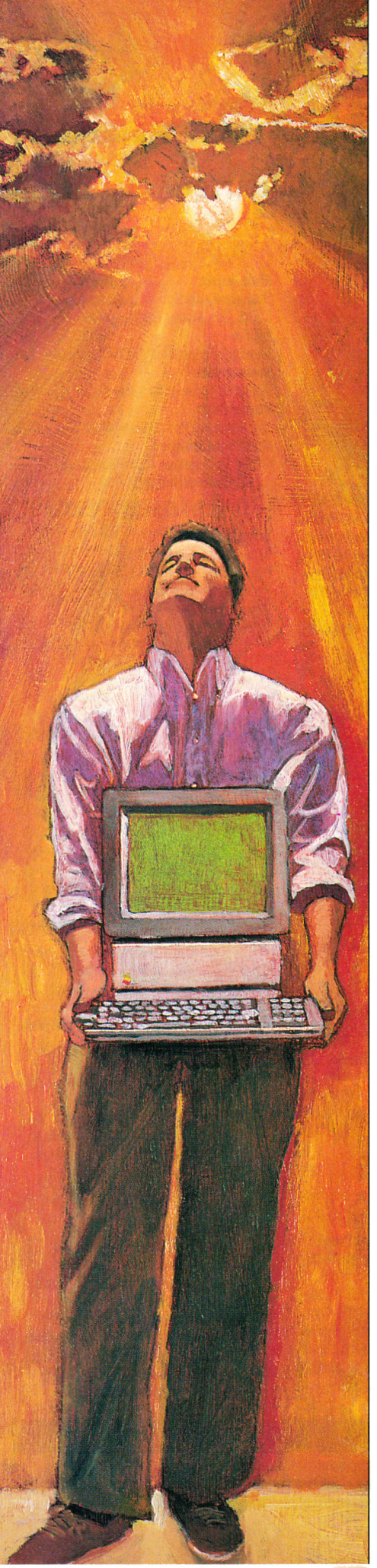


The Good,

Dozens of new products and technological developments in 1989 mark the preeminence of the Apple II in education and its increasing contribution to home, school, and small-business applications.

By DAN MUSE * EDITOR IN CHIEF

PESSIMISTS WOULD SAY THAT THE APPLE II MARKET TOOK A TURN FOR THE worse in 1989—that Apple itself continues to abandon the II in favor of the Macintosh, and that software publishers are turning their attention and resources toward developing products for MS-DOS machines as well as the Mac.

Optimists would disagree completely, however, and argue that the II line remains the dominant computer in the nation's classrooms, and that the GS is also gaining strength as a machine for both home and small business.

Whether you're an optimist or a pessimist, though, there's no arguing that Apple IIGS owners had more to get excited about in 1989 then did IIe or IIc owners. GS enthusiasts were encouraged by the introduction of four major products: System Disk 5.0, TransWarp GS, AppleWorks GS, and HyperStudio; IIe and IIc owners had only one cause for celebration, but it was a big one: AppleWorks 3.0.

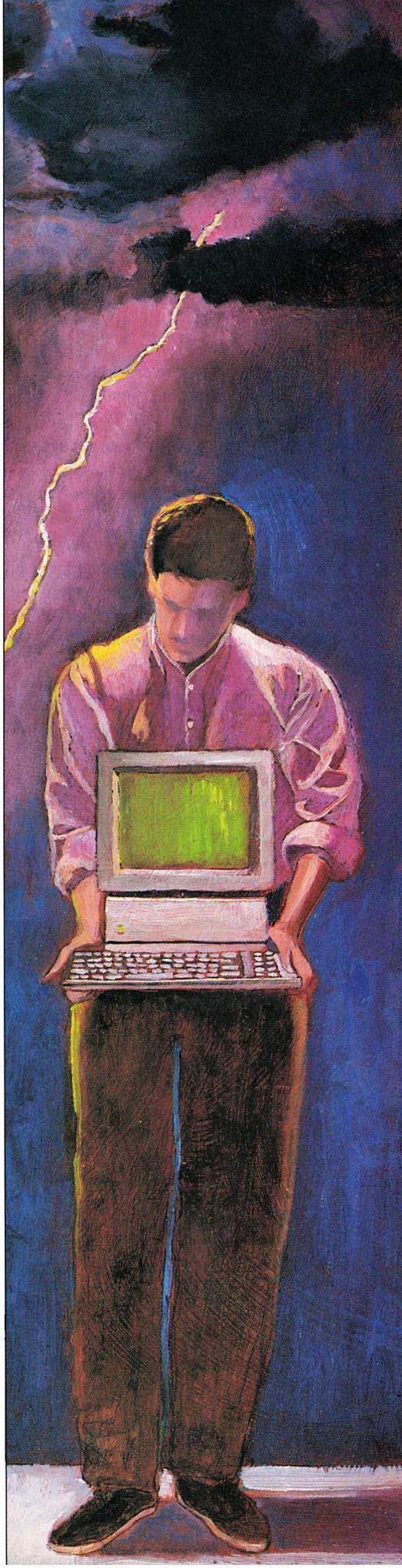
And despite attacks from IBM, Apple still owns the education market in 1989. According to LINK Resources, a New York-based market-research firm, Apple controls more than 60 percent of the K–12 segment. And of that, the Apple II makes up 93 percent. While the GS is gaining rapidly, the IIe and IIc add up to 71 percent of those Apple computers in schools. Teachers refuse to give up their IIes and IIcs, so it's not surprising that developers continue to release new 8-bit products and upgrades to older programs—even that venerable workhorse, AppleWorks.

Optimists saw 1989 as a good year, thanks to a new operating system, innovative programs, and the evolution of a package they thought already perfect.

How can you improve on the most popular Apple II program ever? Claris, in conjunction with Beagle Bros, found dozens of ways. AppleWorks has been a fixture in classrooms across the country for years—but teachers have wanted more: a spelling checker; more math and trigonometic functions; better integration among the word processor, spreadsheet, and database manager. **AppleWorks 3.0** delivers in all those areas and dozens more. (See "A New Classic," August 1989, p. 44, and "Life with AppleWorks," this issue, p. 90.)

And although AppleWorks 3.0 is by far the most exciting news of the year for educators and other IIe/IIc owners, **Publish It! 2** and the latest version of The Print Shop are also major upgrades. **The New Print Shop** was announced last summer and as of this writing wasn't shipping yet. (It's expected in December.) Timeworks' upgrade of its popular desktop-publishing program has been available since early in the year, however. It offers several important features the original version lacks, such as recognition of extended memory and compatibility with Print Shop graphics. (See "Publish It! in Business," February 1989, p. 36,

the Bad and the Bow-Wows



and "The Best Gets Better," What's New, August 1989, p. 17.)

Apple itself made a token effort to show support for the older II line at the end of last year with the introduction of the **IIc Plus**—definitely a case of too little too late. (See "A Little More for a Little Less," November 1988, p. 50.) In 1989, software companies that promoted products for the IIc Plus learned an expensive lesson about listening too closely to Apple's overly optimistic marketing rhetoric.

The company also announced the **Apple II Video Overlay Card**, an impressive genlock board that lets you superimpose graphics on a video image. (See "Roll Video," May 1989, p. 42, and "Reel-World Images," July 1989, p. 40.) The Overlay Card appeals mostly to educators, however, and has only a narrow range of potential uses even in the classroom.

What about the company's 16-bit machine? Given that Apple itself did little to promote the II line—no pricing incentives, no promotions, no advertising—the GS continues to sell well, a popular choice for home education and home-office applications.

Apple seems to finally recognize that the GS can co-exist with the Mac and that in some cases the GS may actually be a better solution. While it's clear to us that the GS is more than a teacher's aid, however, don't expect to hear or read much from Apple touting the GS as anything but an education computer. In lieu of a low-priced color Mac, the GS fits into the company's plan to introduce young people to the Apple "look and feel" at an affordable price (relatively speaking, of course).

Pessimists felt frustrated in 1989. They saw an obvious lack of Apple II development from software publishers, and even less enthusiasm from Apple.

The GS is finally shaping up as a "serious" computer after three years. System Disk 5.0, TransWarp GS, AppleWorks GS, and HyperStudio make it a worthy competitor to MS-DOS systems and the Macintosh in the classroom, the home, and even the office. But, more importantly, each of the four products in its own way makes the GS a more productive worker.

SMOOTH OPERATOR

If you own a GS and use AppleWorks 3.0, Publish It! 2, and other 8-bit products, you probably don't need to worry about accelerating the rate of that production. But if you crave true GS software, there's no getting around the GS' speed problem: It doesn't have any. In 1989 two remedies for this GS affliction emerged—one's a software cure, and the other's a hardware supplement.

On the operating-system end, **System Disk 5.0** adds speed as well as better network compatibility, plus consistency with Apple Human Interface Guidelines (that is, the Macintosh ►

Illustration • Mark Moscarillo

look), for little or no investment. (The disk with manual costs $49, but you can get 5.0 free from authorized user groups and dealers.) It's a shame GS owners had to wait so long for System Disk 5.0—but the waiting's over in more ways than one. The screen redraws more quickly, programs load faster, and the GS works on the AppleTalk network as it should. (See "From a Trot to a Gallop," November 1989, p. 64, for details.)

The new operating system's no panacea, though—while System 5.0 goes a long way toward making the GS a better performer, some tasks simply require a faster CPU. If you work with large databases, for example, you need more processing speed than the GS' 2.6 megahertz. It's obvious by now that Apple has no plans to produce a GS with a more powerful microprocessor; Applied Engineering's **TransWarp GS**, however, gives GS owners a much-needed speed option. (See "Breaking the Speed Limit," August 1989, p. 50, for more information.)

To most people, Apple's lack of insight and investment in the Apple II is frustrating; to Applied Engineering it's a business opportunity. The dominant Apple II peripheral maker has made a profitable habit of scoring touchdowns after Apple has dropped the ball. Applied Engineering literally couldn't make TransWarp GSes fast enough in 1989.

Looking at a steep $399, you might think GS owners wouldn't rush out for a product that merely adds speed. But users' response proves that you can't put a price tag on the frustration of waiting for a display to redraw or a spreadsheet to calculate. System Disk 5.0 makes TransWarp GS less necessary than it seemed last spring, but combined, this software/hardware duo turn the GS from a jogger into a sprinter.

APPLEWORKS FOREVER

Ironically, another of the year's five most significant products, **AppleWorks GS**, made the need for System Disk 5.0 and TransWarp GS so obvious. While AppleWorks GS is an impressive integrated package featuring a word processor, a spreadsheet, a database manager, a page-layout program, painting/drawing software, and a telecommunications module, its bulk and sophistication also magnify some of the inherent shortcomings of the IIGS. (See "AppleWorks GS: Worth the Wait?" March 1989, p. 34, and "Ten Tips and Hints," June 1989, p. 52.)

The machine's limitations as well as some flaws in the original version of the six-part package produced an angry mob of users ready to attack ►

inCider's Doghouse

CLARIS CORPORATION
Missing one AppleFest (May in Boston) was bad, but missing two (September in San Francisco) is inexcusable. Claris: You've done a great job with AppleWorks 3.0, and AppleWorks GS has potential. Why hide?

APPLE COMPUTER INC.
Did you know that if your son or daughter wins a contest through Computer Learning Month or the Apple Computer Clubs, he or she can't win a GS? It's a Macintosh or nothing. We know the Macintosh is the system Apple recommends for business, but *education-oriented* contests that don't even give students a choice between the Mac and the GS?

LASER
We were excited when we previewed the Laser 128EX/2 along with the IIc Plus in our November 1988 issue. But it's September 1989 as we write this, and we still haven't seen a production model of the EX/2.

MEDIAGENIC
Paintworks Gold is one of the best GS programs around, as is Music Studio. But it was annoying that they didn't work with GS/OS on System Disk 4.0, and there's no indication they'll work with GS/OS on System Disk 5.0. Mediagenic: If you're not going to update your software to take advantage of System 5.0, at least have the good sense to not have your executives make statements like this in Apple press releases: "We're very happy that Apple continues to invest in software that improves the capabilities of the Apple IIGS and makes the IIGS an even more attractive choice for home and education users" (July 1989).

JOHN SCULLEY
John Sculley deserves a spot in our Doghouse for several reasons, but we settled on this inane comment published in *Apple INK*, a magazine for Apple employees: "Essentially, what we want to do for computers is what McDonald's did for hamburgers. . . . When you go into McDonald's you know what the experience is going to be." We have nothing against McDonald's, John, but the McDonald's experience is mediocre food, fast, at low prices. How about great computers at reasonable prices? And don't forget to keep the Apple II on the menu. Of course, if you did it your way, you could call Apple dealers MacDonalds.

PRODUCT INFORMATION

Apple II Video Overlay Card, $549
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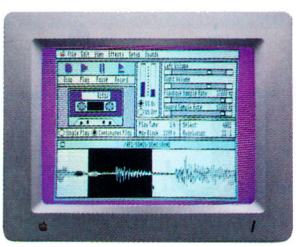

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Claris' California headquarters earlier this year. The company has been working steadily on upgrades that address the program's difficulties, however (see "AppleWorks GS Upgrade," June 1989, p. 54), and System 5.0 has turned out to be of more help than any other fix.

In many ways the jury is still out on AppleWorks GS. The release of AppleWorks 3.0 certainly won't help the bigger program's sales; the sheer size and ambition of the product, however, make it significant. All signs points to the success of AppleWorks GS.

HOW DOES THE GS STACK UP?

Apple II users haven't been exactly screaming for HyperCard for their machines. Perhaps GS owners were too concerned with things like speed and memory to get caught up in "hypermedia." Apple II users don't live in a vacuum, though—they couldn't help but hear Mac enthusiasts talking about "stacks," "buttons," "cards," and so on, as well as the concept of programming without *really* programming.

In 1989, Roger Wagner's **HyperStudio** hardware/software system answered a question many GS owners had but didn't know how to ask: They wanted a way to make painting and drawing programs work with sound products. HyperStudio is the medium that lets you tie together the GS' sound and graphics capabilities. In short, it lets you create integrated, infinitely detailed audiovisual databases called *stacks*. You can link each stack to others to produce applications of endless variability. (See "Hypertext for Your GS," Editors' Choice, August 1989, p. 108, and "Does HyperStudio Stack Up?" September 1989, p. 44.)

For example, one stack might illustrate and discuss the human body. Clicking on a *button* (an icon) on the heart shown on an initial *card* (a screen) could send you to another stack that details the functions of that organ. As with HyperCard on the Mac, you can either create your own stacks (using HyperStudio's built-in text, graphics, and sound software, or importing files created with other programs) or boot up a stack designed by another user. As HyperStudio catches on, expect to obtain stacks from a variety of commercial and public-domain sources.

MORE ON 1989

System Disk 5.0, TransWarp GS, AppleWorks 3.0, AppleWorks GS, and HyperStudio may have been the year's dominant products, but they weren't the only significant events. For more insight into developments in 1989, Senior Editor Paul Statt discusses the year in productivity (p. 72), while Technical Editor Bill Kennedy looks at the year in technology (p. 78) and Review Editor Lafe Low runs down the year in entertainment (p. 84).□

The Year in Productivity

By PAUL STATT • SENIOR EDITOR

STOP WISHING—IF YOU'RE WAITing for word from Apple Computer that the Apple II is a serious productivity machine, every year is, as the American writer Ambrose Bierce defined it, a period of three hundred and sixty-five disappointments.

But even without Apple's help, 1989 wasn't a bad year. No bad spreadsheet, word processor, or database manager; in fact, only three significant new productivity programs for the Apple came out in 1989. All are good, and some helpful new hardware and support software arrived, too.

AppleWorks tells most of the story. Claris launched AppleWorks 3.0, with a big boost from Beagle Bros ("A New Classic," August 1989, p. 44, and "Life with AppleWorks," this issue, p. 90); Stone Edge finished DB Master Professional, its relational database manager ("DB Master Pro: In a Class by Itself," March 1989, p. 39); and Beagle Bros released TimeOut ReportWriter, a relational report generator for AppleWorks that challenges Stone Edge.

To support the big three new products, the new **Apple IIGS** (see "More for Your Money," What's New, October 1989, p. 16) has enough memory—1 megabyte—and a faster operating system in the new **System Disk 5.0**, if you ever need it. (See "From a Trot to a Gallop," November 1989, p. 64, for more information.) **TransWarp GS** ("Breaking the Speed Limit," August 1989, p. 50, and Editors' Choice, March 1989, p. 104) makes the machine fly at 7 megahertz—at least twice the old speed—and prices of hard-disk drives came down as more manufacturers built them. (See "Which One to Buy? Drives: Part 2," April 1989, p. 47, for details on the leading contenders.)

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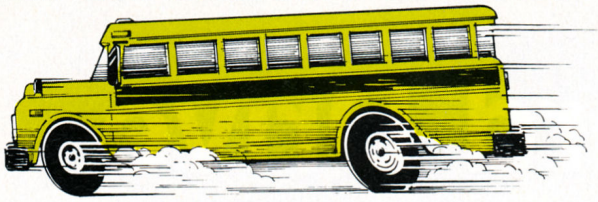

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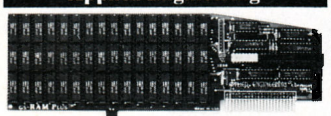

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relational database has branches—sons and daughters branching out from parents. But families aren't simple. Your mother, for instance, may also be somebody's sister-in-law. If your mother were a record in a database file, she'd need to be in at least two places at once—the file of her family members, and the file of her husband's family.

The file with the records of your mother's family, for instance, could be linked with the file of your father's people, through your mother's record. It's a simple enough idea, but try to do it with AppleWorks. With **TimeOut ReportWriter**, though, you can link AppleWorks word-processing and spreadsheet files as well as database files.

Stone Edge's relational database manager, **DB Master Professional**, not only links separate files, but also performs those two other basic functions: Its simple text editor is all a small company needs to write dunning letters, for instance, and its calculated fields can handle inventory as well as a spreadsheet. You may not want or need a fully integrated relational database, spreadsheet, and word processor.

How do DB Master and ReportWriter compare? The TimeOut product turns your AppleWorks database into a relational reporter; if you really want integrated software and relational reporting, AppleWorks and ReportWriter are a good choice. But DB Master is better for business because it's easy to set up as a "point of sale" computer. You can even enter information with a bar-code reader, in addition to printing invoices and tracking inventory.

A major difference is that DB Master works with records on disk, while AppleWorks works with records in memory. This means that DB Master can handle unlimited numbers of records—that's why it's perfect when you can't know in advance how many records you'll need—while AppleWorks is limited by the amount of random-access memory (RAM) in the computer. It also means that for DB Master conventional methods of revving up your computer don't speed things up as much as a disk accelerator, such as Ohio Kache Systems' **Multi-Kache Card**. (See "Breaking the Speed Limit," August 1989, p. 50, for more information.)

NEWEST AND GREATEST

AppleWorks 3.0 has a spelling checker and real tabs in the word processor. It's better integrated than its predecessors, and adds 26 new functions to the spreadsheet. Even though it runs on 8-bit Apples (as do ReportWriter and DB Master Professional), AppleWorks 3.0 is best suited for use with a GS with a 3½-inch disk drive. The new AppleWorks is too big to fit on a 5¼-inch disk, and you'll want extra memory for a RAM disk.

AppleWorks 3.0 almost does it all. But it lacks *macros*—the ability to automate jobs. Look to **TimeOut UltraMacros** (Reviews, May 1989, p. 34) and **MacroTools I** and **II** (Reviews, October 1989, p. 100). Cleverer people than we have written many useful shortcuts—one may do just the billing job you need, or the gradebook. A good place to find them is the **AppleWorks Programmers Association**. (See "Two New Developer Organizations," What's New, November 1989, p. 18, for more information on this recently formed group.)

AppleWorks 3.0 still lacks graphics and a thesaurus, and can't print spreadsheets sideways. Programs like **Graph It!** (Reviews, October 1989, p. 30) and **Sideways** (Reviews, February 1987, p. 26) can pick up the slack, but, again, the easiest way to integrate extra functions into ►

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AppleWorks is with Beagle Bros' **TimeOut Thesaurus**, **Graph**, and **SideSpread** (Reviews, May 1988, p. 29).

PICK SIX

Another major 1989 release, **AppleWorks GS**, doesn't need software support; its advantages over AppleWorks 3.0 are that it has built-in telecommunications, graphics (painting and drawing), and desktop publishing, in addition to the word processor, database, and spreadsheet. (See "AppleWorks GS: Worth the Wait?" March 1989, p. 34, and "Ten Tips and Hints," June 1989, p. 52.) The three main functions are noticeably slower than their text-based AppleWorks 3.0 analogues; you'll need TransWarp GS to use AppleWorks GS seriously.

PRODUCT INFORMATION

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Just about anything AppleWorks GS can do, AppleWorks 3.0 can be made to do: AppleWorks GS has its own telecommunications module, for instance; AppleWorks 3.0 doesn't. But this year Beagle Bros cornered the Apple II telecommunications market. It bought the popular **Point-to-Point**, which works just like AppleWorks, and introduced **TimeOut Telecomm**, which works within AppleWorks.

AppleWorks 3.0 also can't print anything but text. Some projects require pictures and fancy type—sometimes called desktop publishing. The bare minimum for an Apple II desktop publisher is **TimeOut SuperFonts** (Reviews, May 1988, p. 33): It prints AppleWorks files in different type styles on a dot-matrix printer. For page layout, Timeworks' **Publish It! 2**, the most popular Apple II desktop-publishing program, imports AppleWorks files. AppleWorks users who want to publish may like the AppleWorks GS alternative, but if you don't want to publish, you'll be giving up a lot of speed.

And to create pictures of your numeric or financial information, Timeworks' Graph It!, as mentioned above, produces charts from AppleWorks spreadsheet data; TimeOut Graph from Beagle Bros offers fewer choices for types of charts, but works within AppleWorks.

TALKING TO OTHER SYSTEMS

It's a fact that most offices use IBM-compatible MS-DOS computers; many Apple Macintoshes are found in businesses today, too. But you can still work on an Apple II. Apple has made the II-to-Mac connection especially easy—in fact, you can network IIs to AppleTalk, the Apple network that requires a Mac file server. It's surprising that more businesses don't use many cheaper, easier-to-use Apple IIs as workstations, networked to a few faster, more powerful Macs, especially useful for desktop publishing. *inCider* does. **Apple File Exchange**, found on all Mac systems, makes it easy to convert from ProDOS to Macintosh files. If your Mac uses **Microsoft Works**, **Works-to-Works Transporter** from Productivity Software makes it even easier. This software uses the Apple File Exchange program, but lets you convert AppleWorks files directly to Microsoft Works and vice versa. Otherwise you must convert Works or AppleWorks files to ASCII text first.

If you need MS-DOS compatibility, Applied Engineering's **PC Transporter** (see June 1988, p. 77) lets your Apple II run IBM software—that makes it practical to have an Apple II at home and an IBM PC at work. A software utility called **Cross-Works** (Reviews, July 1989, p. 36) makes transfer of files easy without additional hardware.

IBM types also like to talk about the business advantages of math coprocessors. Fanatic Apple II spreadsheeters can get a taste of this technology with the **Floating Point Engine**, an ingenious device that speeds up mathematical operations in the Apple IIe and GS. It doesn't do much for word processing, but it really makes spreadsheet calculations fly. (See "Breaking the Speed Limit," August 1989, p. 50, plus our review in this issue, p. 118, for details.)

THE DREAM MACHINE

If I were dreaming up an Apple II office, I'd start with an Apple IIGS; in its new standard 1-megabyte configuration, and running twice as fast as an Apple IIe, it's plenty. I'd use a couple of 3½-inch disk drives, unless I grew to have so many records I needed a hard-disk ►

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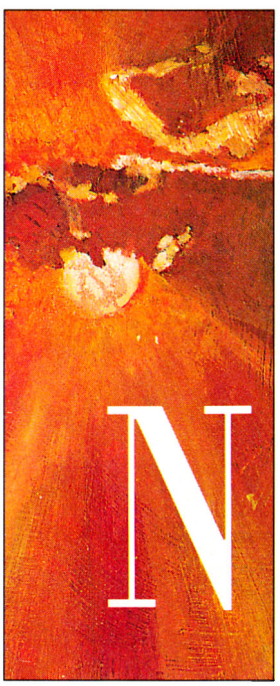
drive. I'd run AppleWorks 3.0 for word processing, database management, and spreadsheet manipulation, with a little help from TimeOut ReportWriter and a lot from TimeOut UltraMacros. I'd either write or buy macros that took most of the drudgery out of my work.

If I ran a business for which I needed invoices, inventory control, or a point-of-sale computer, I'd have to pick DB Master Professional for my database work. If attractive presentations or a newsletter were important, I'd use Publish It! 2. If I decided to do some desktop publishing on a regular basis, I'd also save myself a lot of time and headaches with TransWarp GS, but if not, I wouldn't need the accelerator.

The word *mature* describes computers as it describes women—it sounds like something unattractive, but it's not. The Apple II is a mature machine: It's trouble-free; there's a big group of users willing and able to help; and you can be sure it'll be good for ten years because it has already passed that test. Together with AppleWorks or DB Master—two examples of mature software—the GS can run almost any business elegantly.□



The Year in Technology

By WILLIAM P. KENNEDY • SENIOR TECHNICAL EDITOR

NINETEEN EIGHTY-NINE WILL be remembered as the year the Apple II family matured technologically: Several products, some not even new, surfaced in 1989 to rejuvenate the tired 8-bit Apple IIe and IIc and thrust the IIGS into the arena of "serious" machines.

PRESS IT TO THE FLOOR

Speed is the first and perhaps most apparent technological innovation to accelerate in 1989. Speed is the foundation for building your Apple II into a computer for the 1990s. And speeding up your II is easy as well as fairly inexpensive. But what's the rush?

The 6502 or 65C02 microprocessor—the "brain" of your Apple II Plus, IIe, or IIc—operates at about 1 million cycles per second (1 megahertz, or MHz). That may sound incredibly fast, but remember that virtually all activities your Apple II performs involve the microprocessor—and even the simplest task, such as adding 2 and 2 and displaying the result on screen, can require thousands of machine cycles to complete. It's not surprising, then, that the more complex the task, the more cycles required and, consequently, the more time it'll take to happen.

Software for the Apple II has evolved exponentially over the last 11 years from simple text screens of information that require on average, say, slightly fewer than a million cycles to display, into elaborate, graphical "desktop" environments that take tens of millions of cycles to produce. And that's only what you see. Commands or data you used to type on the keyboard are now selected from nested menus, or icons you point at and choose at the click of a mouse button. Such innovations in software have caused an equally exponential demand on your Apple system's software—the collection of rudimentary software utilities known as the *operating system* (OS), which manages screen displays and data input and output from keyboard to printer and disk drive.

Apple recognized the pressure for a more sophisticated Apple II system and, in 1986, introduced the GS. It not only has the electronics for a richer graphics display (super high resolution) and a special chip for exceptional sound synthesis (the Ensoniq), but it contains a microprocessor better designed to operate such an elaborate system: the 65816, which can directly access more memory, operates about 2.5 times faster, and can handle twice as much data at one time (16 versus 8 bits) than its predecessors.

Unfortunately, when introduced, the GS' operating system wasn't optimized for the hardware's capabilities. Some aspects, including the original disk OS, were simply reworked versions of old 8-bit programs. Nor could the GS' increased speed and data size compensate for the massive amounts of data overhead required to operate the desktop environment, dictated by Apple's own Human Interface Guidelines.

So while the GS ran with IIe or IIc software such as AppleWorks, it crawled like a baby when attempting to execute programs meant to take advantage of its native capabilities. Even booting into its own operating system was excruciatingly lethargic, prompting some critics to lament that *GS* stood for not *graphics and sound*, but "go slow."

CAUGHT SPEEDING

The GS' faster speed, however, did whet appetites for faster IIes and IIcs. The **TransWarp** card makes a IIe operate slightly faster than a ►

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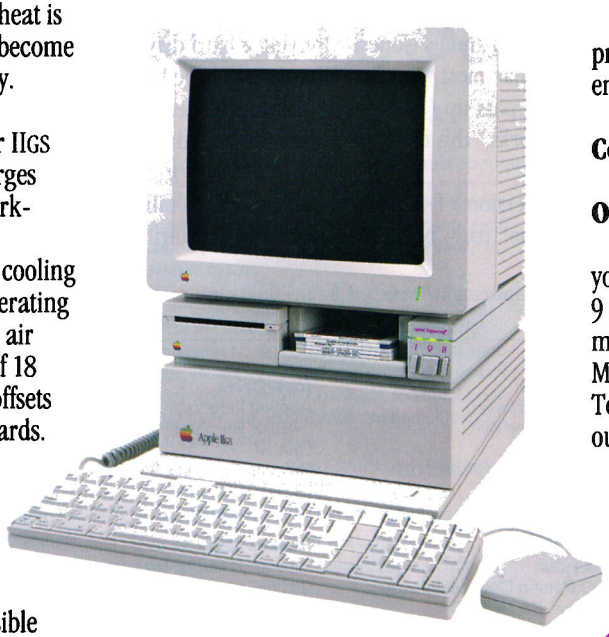

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GS when inserted into an expansion slot; it substitutes its microprocessor without physically replacing the original 65C02. Although introduced before the GS, TransWarp probably enjoyed enhanced sales after the appearance of the GS.

The importance of speed and its benefits also made overnight successes, late last year, of the **Zip Chip** and the **Rocket Chip**, which do physically (and less expensively) replace the IIe's or IIc's microprocessor. Apple even took the cue and brought out the **IIc Plus**, which contained, among other, less-exciting innovations, a 4-MHz 65C02. Those successes prompted the development of even faster 8-bit chips, released this year; from 4- to 5-MHz originals into 8- to 10-MHz speed demons.

The speed snowball is unlikely to stop. The 7-MHz **TransWarp GS** expansion card was introduced this past spring at Boston AppleFest to a crowd that seethed like sharks in a feeding frenzy. And you can almost drown in the collective sweat of anticipation for a Zip or Rocket replacement microprocessor for the GS' 65816. (See Reviews, September 1988, p. 28; Editors' Choice, March 1989, p. 104; "Breaking the Speed Limit," August 1989, p. 50; and "A Little More for a Little Less," November 1988, p. 50, for more information on the products discussed in this section.)

GO SLOW NOW HAS *GOT SOMETHING*

The addition of a faster microprocessor to the IIe and IIc dispelled criticisms that those 8-bit machines are antiquated. In fact, AppleWorks, operating at 10 MHz, can easily outperform similar contenders operating on a Macintosh Plus or the 8086/88-based IBM PC and its clones. The newest **AppleWorks, version 3.0**, has made that most popular program into an integrated package no one should pass up ("A New Classic," August 1989, p. 44, and "Life with AppleWorks," this issue, p. 90). But what about the GS?

This past summer, Apple finally introduced a version of the GS' operating system, **System Disk 5.0** (GS/OS v.5), that truly befits its hardware host ("From a Trot to a Gallop," November 1989, p. 64). The first version with the moniker GS/OS (v.4) was released in 1988 and principally updated the disk OS, but barely addressed the aforementioned lack of speed when dealing with desktop environments. (See "GS/OS," November 1988, p. 56.)

In GS/OS v.5, the Apple II engineers overhauled the system's software and added both speed and performance. For example, desktop windows snap open and closed four times faster than in earlier versions. And the new ExpressLoad feature, which manufacturers may append to their GS software products, can speed the booting of applications by a factor of 10 or more.

GS/OS v.5 is software, but it makes the GS into an all-new machine—all for just $49 (free if you supply the disks for copies). **AppleWorks GS** is no longer that desktop behemoth; under GS/OS v.5, it operates quite comfortably as an excellent desktop-publishing tool if not more simply as the GS version of the original ("AppleWorks GS: Worth the Wait?" March 1989, p. 34, and "Ten Tips and Hints," June 1989, p. 54).

And if the IIe or IIc with a TransWarp, Zip, or Rocket Chip has you excited, you ought to see the 16-bit machine operate with a TransWarp GS. Was I speeding again, Officer?

SERIOUSLY HARD-HEADED

The disk drive wasn't neglected in this year of speed, either. But why in 1989 did almost every Apple II owner at least think seriously about buying a hard drive if he or she didn't actually purchase one? After all, hard disks have been around almost as long as the Apple II itself.

Although there aren't any marketing data to support the premise, many in the industry believe that most of those hard disks sold to Apple II owners are probably attached to GSes. That's because without one, launching applications, even with GS/OS v.5, is a time-consuming chore, sometimes requiring several disk swaps. And using the Finder desktop ►

PRODUCT INFORMATION

Apple II Video Overlay Card, $549
Apple IIc Plus, $1099
System Disk 5.0, $49
Apple Computer Inc.
20525 Mariani Ave.
Cupertino, CA 95014
(408) 987-7000

AppleWorks 3.0, $249
AppleWorks GS, $299
Claris Corp.
5201 Patrick Henry Drive
Santa Clara, CA 95052
(408) 727-8227

CallBox TPS
So What Software
10221 Slater Ave.
Suite 103
Fountain Valley, CA 92708
(714) 964-4298
$99

Design Master
Chris Haun
4009 Pacific Coast Highway
Torrance, CA 90505
$30 for GS/OS v.4
contact for GS/OS v.5 price

HyperStudio
Roger Wagner Publishing
1050 Pioneer Way
Suite P
El Cajon, CA 92020
(619) 442-0524
$129.95
$65/system site license
$35/system
software-only site license

InnerDrive
Applied Ingenuity
14922 Ramona Blvd.
Unit M
Baldwin Park, CA 91706
(818) 960-4415
$499 (20MB), $650 (40MB)

Rocket Chip
Bits and Pieces Technology
31332 Via Colinas
Suite 112
Westlake Village, CA 91362
(818) 706-7932
$189 5 MHz
$219 10 MHz

Sider D9
First Class Peripherals
3579 Highway 50 East
Carson City, NV 89701
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Sonic Blaster, $129
TransWarp, $169
TransWarp GS, $399
Vulcan, $649 (20MB), $849 (40MB), $1795 (100MB)
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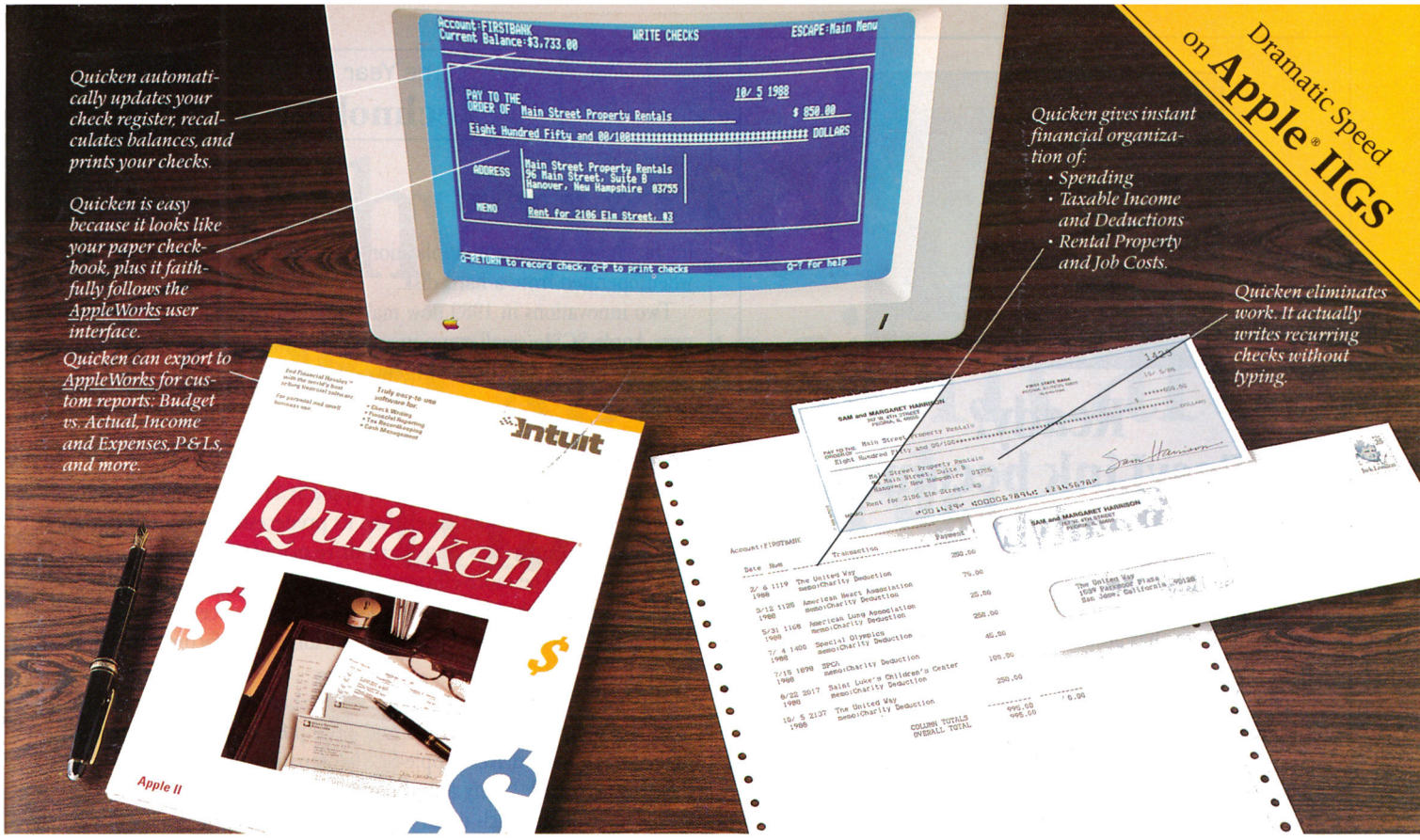

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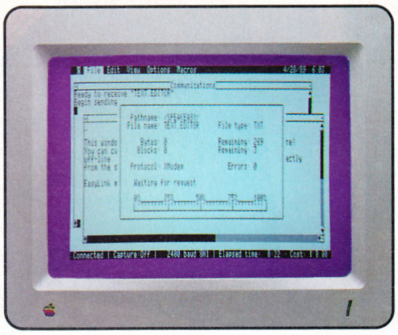

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for file management and application launches really makes sense only when operated from a hard disk.

Two innovations in 1989 now make hard disks even more useful: a new Apple-SCSI (small-computer-systems interface) driver included with GS/OS v.5, and the emergence of drives storing more than 64 megabytes.

BREAKING THE SPEED BARRIER

Once the slowest interface in town, Apple SCSI under GS/OS v.5 now performs some four times faster than its predecessor—about as fast as the proprietary interfaces many hard-drive manufacturers include with their packages. The more-efficient Apple SCSI also opens the Apple II market to the plethora of hard disks previously concentrated on the Macintosh. Let's hope the competition will force manufacturers to lower prices.

Also, GS/OS v.4 broke the 64-megabyte barrier (two 32-megabyte partitions) imposed by ProDOS and prompted companies to release high-storage hard drives. Apple-SCSI-compatible drives can now use the Advanced Disk Utility found on both GS/OS versions to create up to seven partitions, each up to 32 megabytes in size.

First Class Peripherals, a company often first with innovations in the Apple II market, was indeed first to introduce a 90-megabyte drive (**Sider D9**) early in 1989. Several other manufacturers have since offered even 200-megabyte systems.

A final note on hard drives: Internal hard disks for Apple IIs in 1989 include the **Vulcan**, from Applied Engineering, and the **InnerDrive**, from Applied Ingenuity. (See "Which One to Buy? Drives: Part 2," April 1989, p. 47.) They're surprisingly easy to install, and they enhance your entire system by replacing your Apple's power supply with a better one, including a fan.

ROUNDUP

Several other 1989 products are worthy of mention as technological innovations for the Apple II, as well. **HyperStudio**, from Roger Wagner Publishing, is perhaps the most exciting software to emerge this year. Similar to HyperCard for the Macintosh, HyperStudio merges text, graphics, and sound with a database-like logic system ("stacks") for the creation of GS software without programming in the traditional sense. (See Editors' Choice, August 1989, p. 108; "Does HyperStudio Stack Up?" September 1989, p. 44; and "In the Cards," Speaking of Graphics, October 1989, p. 94, for details.)

For programmers, the most intriguing software developed in 1989 are the WYSIWYG (what you see is what you get) prototyping tools for GS-desktop software developers. With Chris Haun's **Design Master** or So What Software's **CallBox: The Toolbox Programming System**, creating and editing Apple's Human Interface Guidelines desktop simply involves selecting desktop elements from pull-down menus and using a mouse to place them onto the 320 or 640 graphics desktop with clicks and drags. (See "Tech Notes from KC," What's New, November 1989, p. 20.) The result is source code that's compatible with most of the 65816 assemblers and the advanced languages available for the GS, including C, Pascal, and BASIC. Now even the novice programmer can create personalized desktops easily. ►

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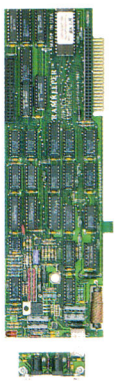

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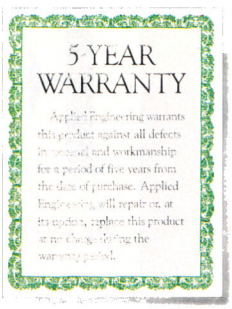

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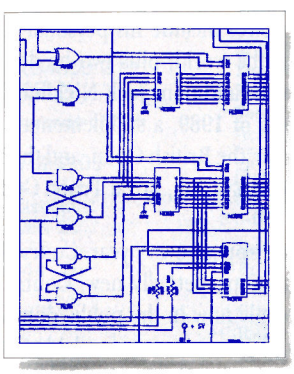

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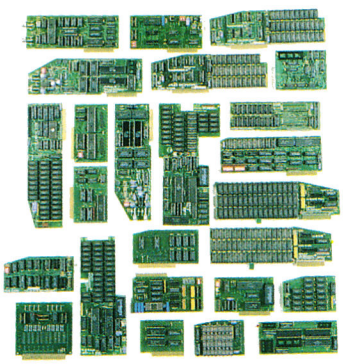

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On another note, the "genlock" video technology used by the **Apple II Video Overlay Card**, introduced with great fanfare in 1989, isn't new. (See "Roll Video," May 1989, p. 42, and "Reel-World Images," July 1989, p. 40.) But if you believe all the PR, it just might revolutionize the machine.

The Overlay Card acts by superimposing Apple IIe or GS video text and graphics on top of images from another source, such as a videotape recorder or camera. Hence, you can introduce titles into your favorite home videos, or produce elaborate educational and training products that might highlight "real" pictures with computer-generated pointers or diagrams, and so on.

Finally, Applied Engineering's **Sonic Blaster** stereo sound card adds a whole new dimension to the GS. The machine's own Ensoniq sound chip is quite exciting, but lacks the "back end" electronics to produce high-quality stereo audio output. Sonic Blaster provides that, loud and clear, and more: Its audio-digital recording system can't be beat. (See Reviews, June 1989, p. 36, and "Face the Music," October 1989, p. 54.)

THE NEXT GENERATION

The innovations of 1989 are impressive. If such speed and performance milestones are surpassed in 1990 as they were in 1989, Apple itself might begin to consider the Apple II a "serious" computer again. We certainly do, and we hope that revelation doesn't remain a secret known only to diehard enthusiasts. MS-DOS machines, eat our dust!□

The Year in Entertainment

By LAFE LOW • REVIEW EDITOR and PAUL STATT • SENIOR EDITOR

THIS MAY SOUNDS TRITE, BUT IT'S true—game graphics and animation get better with every new release. At the risk of sounding like a blurb-o-mat, we note that Apple IIGS games feature crisper graphics and more fluid animation than ever this year, and even IIe/IIc games have improved. That over with, let's say that games are serious fun, and the people who make them are serious about making simulations of reality—in sports, battle, history, and politics—as realistic and challenging as possible.

GOOD SPORTS

Game aficionados will remember 1989 as the year of the sports simulation: baseball, football, tennis, skiing (downhill, cross-country, and jumping), luge, ice hockey, mountain climbing, karate, auto racing, bicycling, pole vaulting, gymnastics, archery, track, figure skating, and speed skating. We're exhausted, and we haven't even mentioned the *newest* opportunity for a relaxing round of miniature golf: **Gnarly Golf**.

Golf, in both miniature and frustrating versions, has proven to be a hole-in-one in the computer-game business. Simulated mini-golf is more bizarre, thanks to computer graphics and imaginative programmers, than its resort-town cousin, and simulated real golf makes us all feel like good golfers.

Speaking of which, Accolade this year released the sensational **Jack Nicklaus' Greatest 18 Holes of Major Championship Golf**. The company's Mean 18 has long been the standard to which other golf games are compared; now it will be Jack's Greatest 18. The Golden Bear himself helped design the game that bears his name, and his attention to detail shows.

The three course choices include his personal favorites from championship links all over the world, plus two he designed—Castle Pines and Desert Mountain. In addition, **Jack Nicklaus Presents the Major Championship Courses of 1989**, a supplementary disk, lets you play the sites of the U.S. Open, the British Open, and the PGA Championship this year—Oak Hill Country Club, Royal Troon Golf Club, and Kemper Lakes Golf Club.

Let's hope these disks appear every year. Course disks for golf games keep your original game perpetually new. Course disks for Mean 18 are even available cheaply now in the public domain.

Course disks of a different type are available for Accolade's driving simulation, too. **Test Drive II: The Duel**, the long-awaited sequel to the original game, rolled out this year. The detailed display of the cockpit (when driving a car like a Porsche 959 or a Ferrari F-40, *cockpit* is more appropriate than *interior*), the view through the windshield, your perspective from the rear-view mirror, and smoothly scrolling animation make Test Drive II as realistic a driving simulation as we've ever seen.

Accolade simultaneously released two add-on disks for Test Drive II, as well—**The Supercars** and **California Challenge**. The Supercars gives you a set of five rocket sleds from which to choose—the same basic models from the first Test Drive—Lotus Esprit, Ferrari Testarossa, Porsche 911 RUF, Lamborghini Countach, and Corvette ZR1. California Challenge lets you see the Golden State from top to bottom as you zip

by in a supercar. Accolade is promising even more GS titles before year's end—conversions of **Fast Break** and **Grand Prix Circuit**; **Heatwave: Offshore Superboat Racing**; **Blue Angels** (a formation-flying simulation); and **The Muscle Cars** and **European Roadways**, more add-on disks for Test Drive II. That's a serious commitment to the Apple IIGS, and to longer-lasting games with the idea of add-on disks.

WAR—AND PEACE

If sports make you sore, you can simulate the Revolutionary War, war in Middle Earth, star wars, the war on drugs, the ancient art of war (on sea and on land), gang war, even nuclear war—or nuclear peace, if you can manage it.

Balance of Power has finally appeared in its GS version, challenging players *not* to destroy the planet in a nuclear holocaust, by clever diplomacy. (That old standard of diplomacy, **Risk**, also appeared in computer clothing this year.) Like Balance of Power in its size, complexity, and fidelity to history is **Revolution '76**, a game that asks the question: "It's 1776 in Britain's American colonies—what will *you* do?"

Teachers will like Balance of Power and Revolution '76—they combine fun with learning, as *Gone with the Wind* or *Doctor Zhivago* did for movies, or, perhaps better, as **Carmen Sandiego** does for computer games. That raven-tressed sleuth, by the way, appeared this year on the Apple IIGS, in Europe, in history from 1492 to 1956, and in North Dakota, of all places.

Broderbund also finally released Apple II versions of its popular **Ancient Art of War** and **Ancient Art of War at Sea**—war simulations for people who don't like war simulations. Playing is like reading one of those Japanese military manuals recommended to American businesspeople.

Sierra On-Line and Icom Simulations both continued to release graphics adventures; the "Leisure Suit Larry" and "Déjà Vu" interfaces both have their fans.

The Sierra style showed up in **Space Quest II**; it's a more animated way to move characters. The Icom look appeared in **Uninvited**, **Shadowgate**, and **Deja Vu II**. It's more obviously based on Apple's standard Macintosh interface. ►

PRODUCT INFORMATION

Ancient Art of War, $44.95
Ancient Art of War at Sea, $44.95
Where in Europe Is Carmen Sandiego? $44.95
Where in Time Is Carmen Sandiego? $44.95
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Where in the World Is Carmen Sandiego? GS, $44.95
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$34.95

Balance of Power GS
Mindscape
3444 Dundee Road
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ONE MORE TIME

A fair share of unbelievably addicting arcade-action games appeared in our offices over the course of the year—one we'd been anticipating eagerly and two that were pleasant surprises.

Arkanoid II: Revenge of Doh (this month's Editors' Choice) arrived this summer and some *inCider* editors haven't done a lick of work since. The sequel is even more amazing than the original game, and that's no small praise coming from this magazine. If you buy only one game this year, this is it.

Two games for which we weren't prepared—**Crystal Quest** and **Xenocide**—have also taken their toll on office productivity.

Crystal Quest sports a series of infinitely more difficult "waves" in which you must collect all the glowing crystals you can while avoiding collisions with a steady stream of "nasties." The thing about Crystal Quest is that you figure you can always do better next time. Maybe, but by the time you figure that out it's 2 in the morning.

Xenocide is your basic "kill the aliens" game, but it features some of the finest graphics and absolutely the finest scrolling and animation of the year. You have to blast your way through four levels on each of three moons to rid the universe of the alien scourge, but you'll have to log some serious hours of practice to get that far.

Both Xenocide and Crystal Quest also feature some amazing sounds and music. You've got that beautiful RGB monitor—now you might want to think about adding a sound amplifier or stereo board and a couple of those Bose Roommate speakers.

Owners of IIes or IIcs also have new arcade games to choose from: **Bubble Bobble**, **Rampage**, even **Bad Dudes**. But arcade games are really much stronger on the GS; 8-bit Apples seem better designed for fantasy role-playing games.

And speaking of those, fantasy fans have seen the greatest old games move onward, such as **Wizardry V**, as well as backward—**Zork 0**. Nineteen eighty-nine was the year that even hidebound Infocom added graphics to its text adventures: Zork, **Shogun**, and **Journey** all use pictures. Once you start playing, you're hooked.

LET THE GOOD TIMES ROLL

Game developers have definitely been hard at work this year creating some impressive Apple IIGS entertainment software. Graphics screens are becoming works of art brought to life by better scrolling and smoother animation. Sound effects and music have developed at an equal pace: If you close your eyes while putting for a birdie on the fourth green of Royal Troon, you'll swear the gallery's right behind you cheering your efforts.

Even with colossal mass-market appeal and penetration of systems like Nintendo and Sega, GS entertainment companies continue to produce some of the most technically advanced titles in the industry—on a par with and in some cases better than what you see on the Commodore Amiga. What that means to you is engrossing, brilliantly realistic entertainment experiences.

A year ago when we received GS titles they were more often than not ported over from other formats. Nowadays, we see original GS titles—that is, games developed specifically for the Apple IIGS. From the looks (and sounds) of it, every time slick entertainment titles like Xenocide and Gnarly Golf are released, the state of the entertainment art advances by quantum leaps.

> "The innovations of 1989 are impressive—even Apple itself may begin to consider the II a 'serious' computer again. We certainly do."

DREAM MACHINE

What's our ultimate game computer? An Apple IIGS with a ton of memory. Not only do you need it for the greatest 16-bit stuff, it also breathes new life into your IIe/IIc favorites—they simply look and sound a whole lot better (and you can play them at fast speed if you dare). You'll really need the extra RAM for some of the more complex games—the more the merrier, but I wouldn't try sneaking by with less than 768K.

Speaking of speed, if you have tons of time and boundless patience, you could get away without a **TransWarp GS**, but why bother? Pick up **Sonic Blaster** and a pair of **Bose Roommate** speakers, too, and surround yourself with superlative sound.

And sight—an RGB monitor's a must. Sure, play some GS games on a monochrome monitor—I bet you'd have fun playing basketball with a brick, too.

Don't forget your drives—two 3½-inch. Considering the number of excellent GS games that are arriving on pairs of disks, two drives will make your game-playing life much easier.

Get ahold of a CH **Flightstick** and another joystick while you're at it; the Flightstick is the definitive flight-simulation controller, but don't limit yourself. If you're arcading or doing anything else, take a look at the Advanced Gravis **Analog**, the Kraft **KC 3**, or the Beeshu **Omega**.

ANYTHING ELSE?

As for other peripherals, get the biggest mousepad you can find. It'll help with games like Mean 18, Silent Service, and Zany Golf that are particularly mouse-oriented.

And don't neglect your seating arrangements. If you're so into gaming that you're designing an entire system around your entertainment preferences, you're going to log some long hours—so get comfortable, settle in, and enjoy.□

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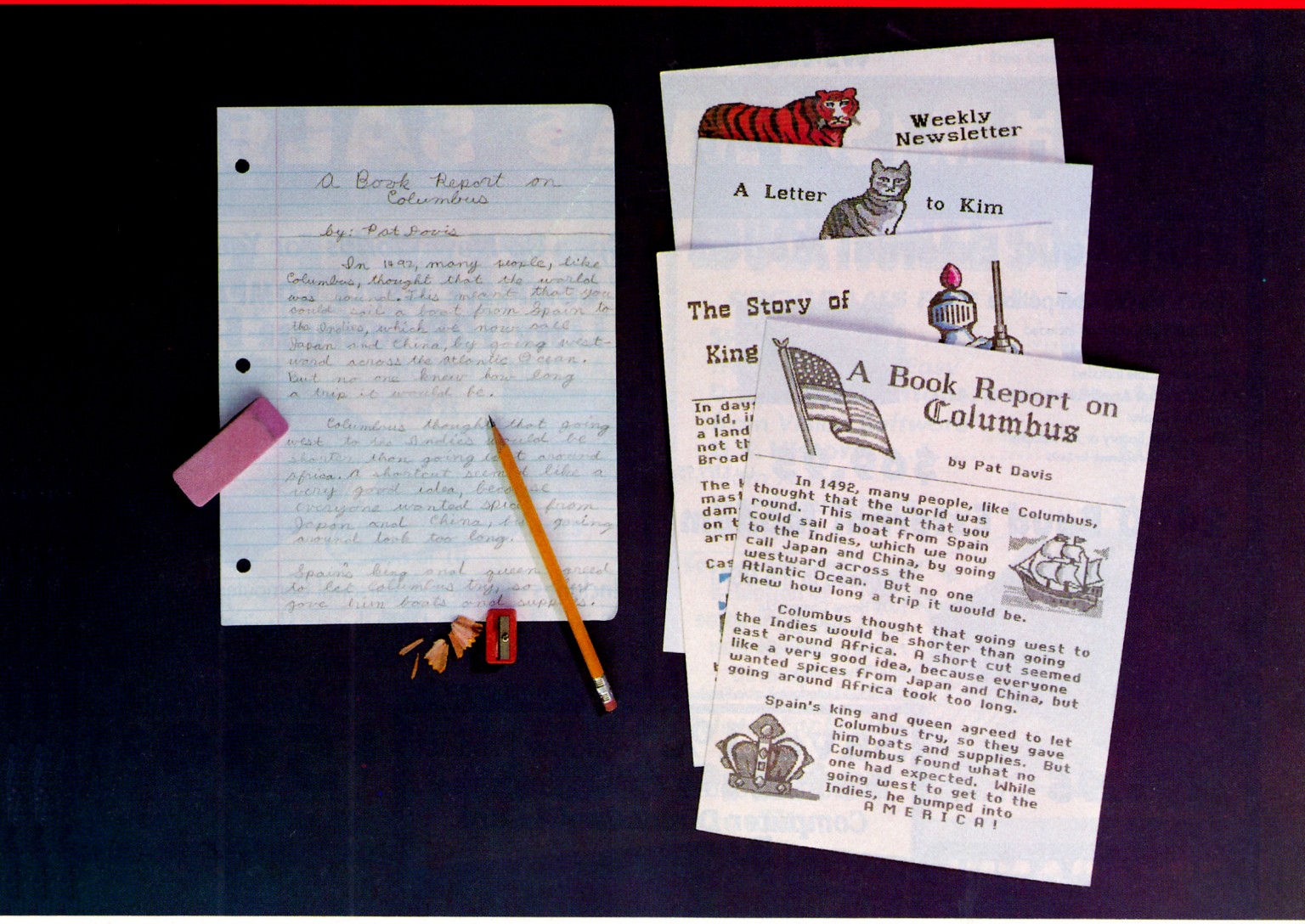

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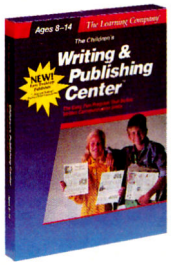

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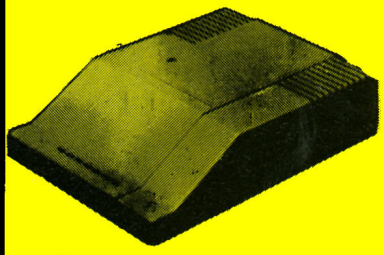

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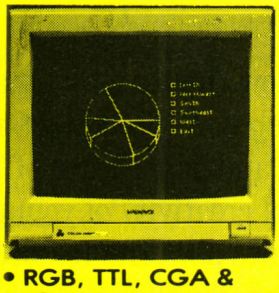

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Life with

So you've swapped Old Faithful for a sporty new model—the extras and options were irresistible. Now that it's out of the showroom and on the road, put it through its paces: From spelling checks and formatting features to multiple-category sorts and enhanced financial functions, AppleWorks 3.0 is one classy set of wheels.

By ERIC GREVSTAD • CONTRIBUTING EDITOR

IT'S FUN TO KICK THE TIRES AND TAKE a test drive, but you don't really know a new car until you've had it for a few weeks—adjusted the seat, learned how to work the radio and heater, driven the new machine long enough to compare it to your old one. Maybe you wish it had just a bit more pep on that long hill outside of town; maybe you rarely use the sunroof your dealer showed off so proudly. But for every small gripe, there are a dozen advantages to your smooth new model. You're glad you traded.

Change "sunroof" to "spelling checker," and you'll know how I feel about AppleWorks 3.0. As previewed in *inCider*'s August 1989 issue (p. 44), Claris Corporation's 8-bit best-seller has received a major overhaul. Two weeks with a production copy confirm what the prerelease disks promised: The new AppleWorks is a more powerful, better-integrated program than ever. It offers a wish list full of additional features, with only a few new commands and keystrokes to learn.

AppleWorks 3.0 is a revitalization of the most vital program in the Apple II universe. It's the first $249 any new II buyer should spend for software. For registered AppleWorks users, the $79 upgrade to 3.0 is an offer you can't refuse—probably an offer thousands of you will have accepted by the time this article appears.

Still, for those who haven't yet driven version 3.0, here's one user's road test: a recap of key features with some particular praises, pointers, and a few small complaints.

SAMPLING AND SWAPPING

The *Getting Started*, *Tutorial*, and *Reference* manuals in the AppleWorks package are excellent. I wish Claris had added a "what's new" section or a guide to the changes for AppleWorks 2.0 and 2.1 veterans, though

AppleWorks

there are scattered tips for "Old AppleWorks Hands" explaining new procedures.

One nice touch: Just as Claris recruited Beagle Bros experts to develop the 3.0 program, the firm borrowed data files from MIH Associates, the National AppleWorks Users Group, and the Teachers' Idea & Information Exchange to replace the simplistic "Mom's Apple Pie Company" sample files on the master disk. The new samples are impressive, ranging from gradebooks and an interactive math quiz for teachers to loan and tax templates for financial users.

The program and sample files fill most of a 3½-inch disk, which is a good thing to have: Owners of 5¼-inch drives must switch among four disks for the new version's desktop, word processor, spreadsheet, database manager, and spelling dictionaries. The bulkier modules don't slow AppleWorks too much if you preload them into expanded memory; booting the program and all three applications from a GS' 3½-inch disk takes 33.8 seconds, versus 26.9 for AppleWorks 2.1. (Using one 5¼-inch drive, it takes about one and a quarter minutes with two swaps.)

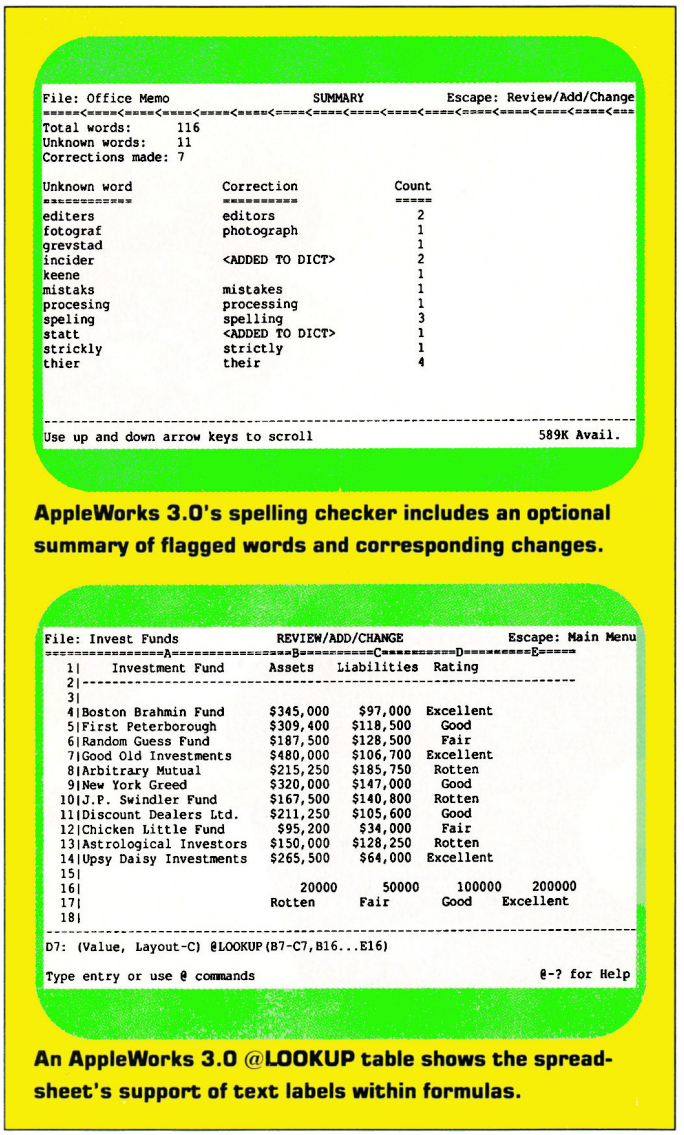
But if you don't have enough RAM for preloading, AppleWorks' frequent disk access and 5¼-inch swapping grow tiresome. On a 512K GS, the desktop has shrunk from 379K to 330K. On a 128K IIc Plus, it's shrunk from 56K to 40K, and switching from one desktop file to another can take almost 10 seconds. (Shiny new IIc Pluses will be jealous of battered old IIes, whose RamWorks or Checkmate memory cards now expand AppleWorks just as peripheral-slot or GS cards do.)

When it comes to actual data crunching, AppleWorks 3.0 is slightly slower than 2.1. Running on a standard GS, a 1000-cell spreadsheet recalculation took the new program 15.3 seconds, trailing the old one's 14.6. A quick 200 search-and-replacements in the word processor took 8.3 seconds, versus the old edition's 7.8 seconds.

These stopwatch differences aren't enough to be noticeable in every- ►

Illustration • Richard McNeel

day use. Subjectively, at least with 512K or more RAM, version 3.0 feels faster. If you lose a moment in raw calculation, you'll get it back when you give the Open apple-P (OA-P) command and discover that the print module is already in memory. You'll get it back when you use the new, smarter clipboard to copy spreadsheet rows into the word processor with no intervening "print to clipboard" step, or when you use the new desktop display to enter a subdirectory or import an ASCII file without typing pathnames.



AppleWorks 3.0's spelling checker includes an optional summary of flagged words and corresponding changes.

An AppleWorks 3.0 @LOOKUP table shows the spreadsheet's support of text labels within formulas.

SPELLING AND EDITING

One 3.0 feature that spins the disk no matter how much RAM you have is the word processor's spelling checker. The checker allows *ain't* (a fine thing for a program meant for America's classrooms) and occasionally falters when suggesting corrections—offering a fix for *misteak* but not for *misteaks*, flagging *alot* and *alright* but not suggesting *a lot* and *all right*.

But the speller works well enough, if you don't mind the way it scans its on-disk dictionary when you first summon it, or its much longer disk access to hunt for suggestions. Catching doubled words and offering a choice of error correction "in context" (one by one) or "from a list" (all at once) are good points; its optional summary of results is a nice teaching aid, which adult writers will likely leave turned off.

Even so, I found myself less excited by the speller than by the word processor's new formatting options. They can make your on-screen documents rather messy (you'll be lost without the OA-Z zoom view of formatting codes), but they'll make printed documents very neat.

Where the tab key formerly just inserted spaces to indent paragraphs or left-aligned columns, the new "real tabs" provide flawless control of left-, right-, center-, or decimally aligned columns. One hint: Before using the OA-T command to create a new tab ruler (as for a table), use it to make a duplicate of the default ruler, which you can easily copy and apply to text below the table instead of having to retype the old tab stops.

You may also want to put tabs closer together or clear them when pasting spreadsheet rows; a spreadsheet block that fit into the 2.1 word processor with only a few spaces between columns may be too wide in 3.0 with tabs between columns.

The new paragraph-formatting shortcuts Control-N, -F, -C, and -R for normal, full, center, and right justification are terrific timesavers compared to typing OA-O format-option codes. You'll still use the latter sometimes, because there are new codes to print the time and date as well as page numbers. These combine with the control-key alignments to create splendidly fancy, slightly complex multiline headers and footers. The six user-defined codes for special printer functions let me use AppleWorks with the near-letter-quality and italic modes of my Epson.

ARRANGING AND CALCULATING

The AppleWorks 3.0 database has only a couple of truly new functions: OA-A (Arrange) can sort on two or three categories at once, not just one, and OA-F (Find) can focus on a particular category as well as search for a text string anywhere in the database. They're powerful features, once you learn a few extra command keystrokes. Looking for Acme Co., I instinctively typed OA-F and *Acme*—which told 3.0 to look Anywhere (as opposed to "In a specific category") for *cme*.

Other database enhancements involve more convenient ways to view your data: trivial ones, such as inverse-video display for category names, and welcome ones, such as horizontal scrolling in multiple-record layout if a database has too many categories to fit on screen. Report formatting, still a bit painstaking, takes less duplication of effort now that the OA-P and OA-L commands speak to each other—you can base a report format on your on-screen layout, or vice versa.

Instead of a maximum of eight report formats, you can now have up to 20. (They're all still obliterated if you add or delete categories, so it's still wise to use a few empty, renameable categories if you plan to add data later or use one database as a template for another.) It's good news that you can now print multiple labels across. It's even better news that you can do mail merge with quick-and-dirty copying of records to the clipboard; there's no need to choose a report format and print to the clipboard in formal fashion.

The spelling checker may be the first gadget mentioned in Claris' ads, but the most powerful change in AppleWorks 3.0 is the spreadsheet. Merely being able to move or copy blocks, as well as whole rows or columns, is almost worth the upgrade price, and the 20 new trigonometric and financial functions are invaluable for math classes and business offices, respectively. (Those rusty on certain concepts may wish for a few more hand-holding examples in the manual, though the sample files helped me get the hang of radians versus degrees and monthly versus annual interest rates.)

You don't need to be a math or banking whiz to appreciate AppleWorks' six new logical functions and its ability to use labels—textual values, if you will—in formulas. Basically, this feature lets you

use the mathematical power of the worksheet for more database-like, English-language applications.

Teachers can now write lookup tables that yield students' letter grades. If an executive needs to see at a glance whether a branch office is making a profit, he or she needn't examine a screen already full of numbers to see whether D5 minus E5 is positive or negative: *@IF(D5>E5,"Profit", "Loss")* gives the answer in a word.

SIMPLY SUPERB

Extra convenience and better integration are the hallmarks of AppleWorks 3.0. So is easier navigation, whether you're moving between applications via the clipboard, moving sideways through a database, or using the new cursor commands to move to the beginning or end of a line or delete forward instead of backspacing.

As for moving among data disks and directories, AppleWorks' new menus and file-loading and -saving options are adorable. (I've been saying for years that Alan Bird's ProDOS "Bird's Better Bye" should be credited in the Hall of Fame; now it's credited on the title page of the AppleWorks manual.)

Of course, no program is perfect. I'm used to typing *3* to abandon changes when removing a file from the desktop; the key for that function now is sometimes *3* and sometimes *4*. While you can import a text file without typing pathnames and slashes, you must still do so when you export or save a file in ASCII format—something some offices may do a lot, because AppleWorks 2.0/2.1 and AppleWorks GS can't read many 3.0 files. (The hangups are the new spreadsheet functions, tabs, and print codes, and databases with more than eight report formats. On the positive side, the new tabs-to-spaces and no-extra-carriage-return export conversions work fine.)

The new version's extra appetite for memory and disk access may bother users who haven't upgraded to a GS. Frequent users of the spelling checker will even wish they had a hard disk or a RAM disk.

But will you ever wish you hadn't upgraded to AppleWorks 3.0? Never. The new edition does almost everything AppleWorks fans could have hoped for; it *will* do everything fans could hope for, if they indulge in Beagle Bros' tempting TimeOut add-ons. AppleWorks 3.0 more than lives up to the living legend.□

ERIC GREVSTAD IS *INCIDER*'S FORMER REVIEW EDITOR AND IS NOW A FREELANCE JOURNALIST. WRITE TO HIM C/O *INCIDER*, 80 ELM STREET, PETERBOROUGH, NH 03458. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

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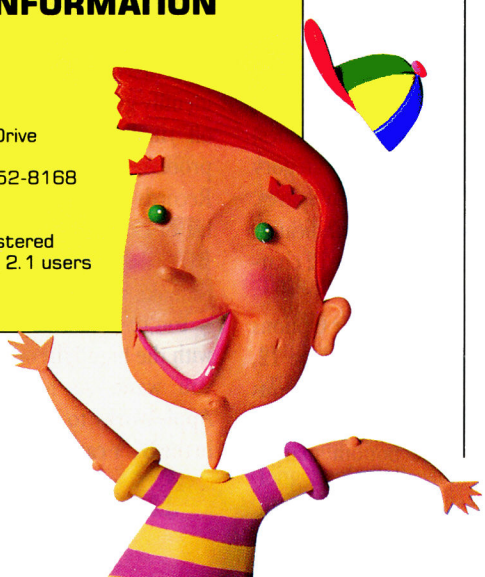

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FOOD FOR THOUGHT 2

Making a list and checking it twice are easy with AppleWorks' database. Create a customized shopping list that'll ensure you never run out of holiday treats.

By RUTH K. WITKIN

WITH ALL THE RUNNING AROUND YOU do during the hectic holiday season, you don't want to spend a lot of time preparing your grocery lists. But you also don't want to return home from the supermarket only to find you've forgotten the sugar for your Christmas cookies and the flour for your pie crust. The shopping-list database you created last month ("Food for Thought 1," October 1989, p. 66) prevents such headaches and makes shopping day a breeze!

To reprise, you've already created categories; set a standard value; and entered header, subheader, and item records. To arrange new records in proper order, you've sorted on the item and section categories. Let's begin again by printing shopping lists you can take to the supermarket. Start up AppleWorks and load the database named *SHOP LIST*. You should now see the records in the multiple-record layout of the Review/Add/Change screen.

LIST 1: ALL RECORDS

The list in **Figure 1** contains all records in the database, exactly as you entered them last month. To create this report format, press OA-P to bring up the Report Menu, and hit Return to confirm *Create a new "tables" format*. Type the report name **COMPLETE LIST**, and hit Return.

You're now in the Report Format screen with its array of commands, cursor movements, and category names. Below the category names you should see the first three records in the database: *ITEM* (header), ** B E V E R* (subheader), and *APPLE JUICE* (shopping item).

In the same way that you customized the multiple-record screen last month, customize this report format: With the cursor on the BUY category, press OA-Left Arrow (9 times) to reduce the column width. Now press the following key combinations to adjust the other column widths, using the right-arrow key to move to the next category:

ITEM	OA-Right Arrow (13 times)
AMOUNT	OA-Left Arrow (6 times)
BRAND/TYPE	OA-Right Arrow (17 times)
SECTION	OA-Left Arrow (8 times)
AISLE	OA-Left Arrow (9 times)
STORE	OA-Left Arrow (9 times)
PRICE	OA-Left Arrow (5 times)
UNIT	OA-Left Arrow (5 times)

Move the cursor to the SPARE1 category and press OA-D twice to delete both spares. The cursor is now on the print-width indicator, which shows *Ln96*, perfect to print at 12 characters to the inch.

Press OA-O to bring up the Printer Options screen. Now type **CI**, press Return, type **12**, and hit Return again. To permit continuous printing of a long list with no white space between pages, reduce the bottom margin from two to zero inches: Type **BM**, press Return, type **0**, and hit Return again. The report header merely takes up room at the top of each page, so turn it off: Type **PH** and hit Return. Press Escape to return to the Report Format screen.

Now turn on your printer. Press OA-P to bring up the Print the Report screen. Select your printer and confirm one copy. The printer rolls out a list of every item in this database, then AppleWorks returns you to the report format. Press Escape to return to the Report Menu.

LIST 2: ITEMS TO BUY

The second list, shown in **Figure 2**, contains items to buy on your next shopping trip. This list differs from the first one in two significant ways: It contains selected records only, and the BUY category doesn't appear, even though it's the category used for record selection.

No need to start a report format from scratch, so type **4** and hit Return to select *Duplicate an existing format*. Confirm *COMPLETE LIST* by hitting Return, then press OA-Y to erase the current name. Type **ITEMS TO BUY**, and hit Return. AppleWorks brings up a copy of the first report with the cursor on the BUY category.

You want to print header records to identify contents of columns, subheader records to identify groups, and all items with a 1 ("check off") in the BUY category. To start the selection process, press OA-R to bring up the Select Records screen. AppleWorks now displays a list of category names with the highlight on BUY, the one on which it makes most sense to make selections, so hit Return.

You're now offered 12 selection criteria, with the highlight on *equals*. This is also what you want, so hit Return again. To tell AppleWorks to select all records with BUY in the BUY category (as in the header record), ►

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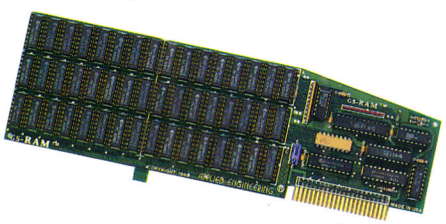

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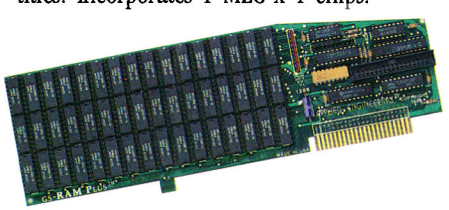

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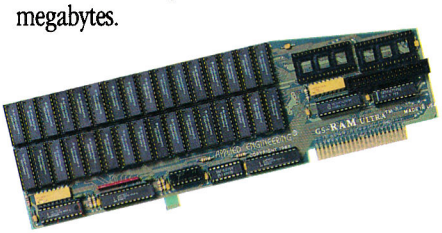

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type **BUY** and hit Return.

AppleWorks now brings up connectors *and*, *or*, and *through*, which let you narrow or expand the selection. You want to select more records, so type **2** to select *or* and hit Return. *BUY* is still your selection category, so hit Return, then hit it again to confirm *equals*. This time, type **= = =** (as in subheader records) and hit Return.

AppleWorks now invites you to include even more records in the selection. Hit Return three times to confirm *or*, *BUY*, and *equals*. Now type **1** (as in selected items) and hit Return. Three selections are the limit, so AppleWorks returns you to the Report Format screen. The top left of the screen should now look like **Figure 3**.

All selections are on the BUY category, so you really don't need to see it in this list. With the cursor on the BUY category, press OA-D to delete.

Now print this report. Be sure the printer is on. Press OA-P and hit Return twice. Your report should look like the one in **Figure 2**. As you can see, the selection still works, even if you delete the selection category. Press Escape to return to the Report Menu.

Figure 1. Shopping-list records (tables format).

BUY	ITEM	AMOUNT	BRAND/TYPE	SEC	AIS	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	===	===	=======	=======
1	CLEANSER	2	AJAX	CL	9	WB	.75	21 OZ
	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

Figure 2. Long version of shopping list.

ITEM	AMOUNT	BRAND/TYPE	SEC	AIS	STO	PRICE	UNIT
* B E V E R A G E S =====	======	==========	BV	===	===	=======	=======
APPLE JUICE	1	MOTT'S	BV	5	WB	1.99	2 QTS
GINGER ALE	2	WHITE ROCK	BV	11	WB	1.29	2 LTR
* C A N N E D G O O D S	======	==========	CA	===	===	=======	=======
CRANBERRY SAUCE	3	OCEAN SPRAY	CA	2	WB	.59	16 OZ
* C E R E A L S =======	======	==========	CE	===	===	=======	=======
COMMON SENSE OAT BRAN	1	KELLOGG	CE	7	WB	2.35	12 OZ
* C L E A N I N G =====	======	==========	CL	===	===	=======	=======
CLEANSER	2	AJAX	CL	9	WB	.75	21 OZ
LAUNDRY DETERGENT	1	ALL	CL	9	WB	8.99	20 LBS

AppleWorks then.

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Figure 3. Top of Select Records screen.

```
File: SHOP LIST
Report: ITEMS TO BUY
Selection: BUY equals BUY
  or       BUY equals ===
  or       BUY equals 1
```

Figure 4. Slimmed-down shopping list.

AISLE	ITEM	BRAND/TYPE	AMOUNT	UNIT
2	CRANBERRY SAUCE	OCEAN SPRAY	3	16 OZ
5	APPLE JUICE	MOTT'S	1	2 QTS
7	COMMON SENSE OAT BRAN	KELLOGG	1	12 OZ
9	CLEANSER	AJAX	2	21 OZ
9	LAUNDRY DETERGENT	ALL	1	20 LBS
11	GINGER ALE	WHITE ROCK	2	2 LTR

LIST 3: SLIM LIST OF ITEMS TO BUY

The shopping list in **Figure 4** is a no-frills version of the one in **Figure 2**. Only newly created category-names and items-to-buy records appear in this one. Also notice that categories are switched around.

Here's how to create its report format, as shown in **Figure 5**: Again, type **4**, and hit Return to duplicate an existing format. Now type **2** to select *ITEMS TO BUY*, and hit Return. Move the cursor to the space after BUY and type **—SLIM** (so that the report name becomes *ITEMS TO BUY—SLIM*), and hit Return. AppleWorks brings up a copy of the second report with the cursor in the ITEM category.

Now change the selection to print only those records containing 1 in the BUY category: Press OA-R and hit Return to confirm *No*. Hit Return twice to confirm *BUY* and *equals*. Type **1** (the comparison information), hit Return, and press Escape to exit the selection screen. AppleWorks will now keep header, subheader, and unnecessary item records from printing. Now delete the following categories, using the right-arrow key to move to each one, then pressing OA-D: *SECT* (section), *STO* (store), and *PRICE*. These categories join BUY and the SPARES in that happy hunting ground of temporary deletions. The print-width indicator now shows *Ln75*.

Next, switch the remaining categories around a bit: With the cursor in the AIS (aisle) category, press OA-< three times to jump to the left. Increase the AIS column width by pressing OA-Right Arrow three times. Now, move the cursor to the AMOUNT category ►

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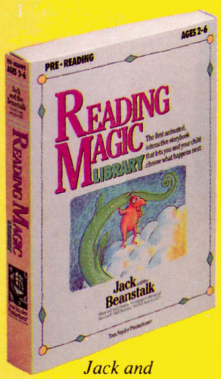

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Figure 5. Figure 3 report-format screen.

```
File: SHOP LIST                    REPORT FORMAT              Escape: Report Menu
Report: ITEMS TO BUY-SLIM
Selection: BUY equals 1

==========================================================================
--> or <--  Move cursor                    ∂-J  Right justify this category
 > ∂  <   Switch category positions       ∂-K  Define a calculated category
--> ∂  <--  Change column width            ∂-N  Change report name and/or title
∂-A  Arrange (sort) on this category       ∂-O  Printer options
∂-D  Delete this category                  ∂-P  Print the report
∂-G  Add/remove group totals               ∂-R  Change record selection rules
∂-I  Insert a prev. deleted category       ∂-T  Add/remove category totals
--------------------------------------------------------------------------
AISLE  ITEM                      BRAND/TYPE                  AMOUNT UNIT
AISLE  ITEM                      BRAND/TYPE                  AMOUNT UNIT    L
-A---- -B---------------------- -C--------------------------- -D---- -E----- n
2      CRANBERRY SAUCE           OCEAN SPRAY                 3      16 OZ   7
5      APPLE JUICE               MOTT'S                      1      2 QTS   8
5      ICED TEA MIX              TETLEY                             53 OZ

--------------------------------------------------------------------------
Use options shown above to change report format                 1027K Avail.
```

and press OA-> once to jump to the right.

A shopping list without either a header record or an AppleWorks header can be confusing, so create category names: Press OA-N (which jumps the cursor to the report name at the bottom of the screen) and hit Return to jump the cursor to the title line above the category names. The heading you're about to create prints at the top of each page, which is handy in a multipage report.

Now type **AISLE** and press the spacebar twice to place it above the *I* in *ITEM*. Type **ITEM** and hold down the spacebar until it's above the *B* in *BRAND/TYPE*. Type **BRAND/TYPE** and hold down the spacebar until the cursor is above the *A* in *AMOUNT*. Type **AMOUNT**, space over to *UNIT*, type **UNIT**, and hit Return. The combined total of text and spaces in this type of header can't exceed 78 characters.

Aisle numbers in ascending order can ease shopping chores, so hold down the left-arrow key to reach column A (AISLE), press OA-A, type **3** to select *From 0 to 9*, and press Return.

Now print this report. Be sure the printer is on. Press OA-P and hit Return twice. Your report should look like the one in **Figure 3**. This completes the reports in this session, so press OA-S to store the formats on disk.

To restore the records to proper order, return to the multiple-record layout screen and sort first (*From A to Z*) on the ITEM category, then on the SECTION category. Save the database again. Then, before you print the slim list, sort on the aisle category, but don't save the database.

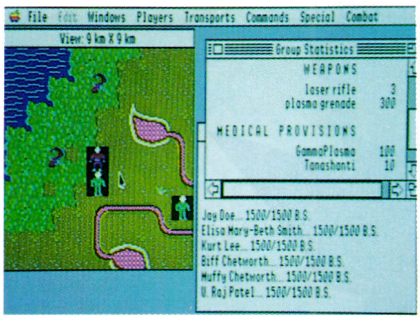
To make this database truly yours, do as I did—wander through the aisles of your favorite store jotting down items you buy regularly, where you can find them, and how much they cost.

Then use the techniques you learned to insert new subheader and item records. The best approach is to copy (OA-C) an existing record, keep entries that apply, and overtype those that don't. Do the double-sort to put new records in proper order.

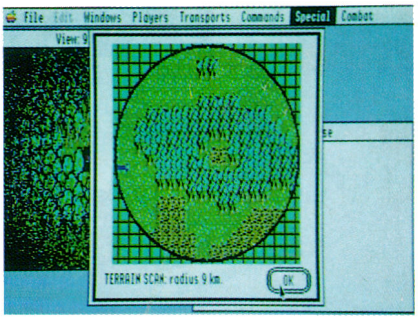
When shopping day arrives, check off items you need by entering the number 1 in the BUY column, as in **Figure 1**, and how many to buy in the AMOUNT column. After shopping, erase the contents of the BUY and AMOUNT categories. With items you buy each time you shop, it's a good idea to leave the 1 and the amount.

Next month ushers in a timely twosome of spreadsheets: one to compare what you spend with national averages, and the other to show how much it would cost in 1990 dollars to buy something you already have.□

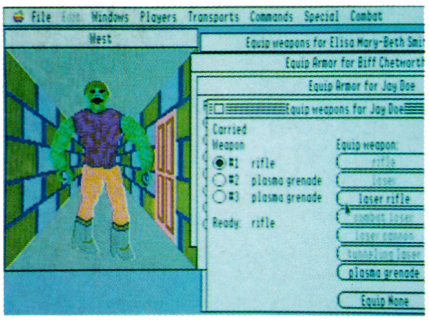
WRITE TO RUTH K. WITKIN AT 5 PATRICIA STREET, PLAINVIEW, NY 11803. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A REPLY.



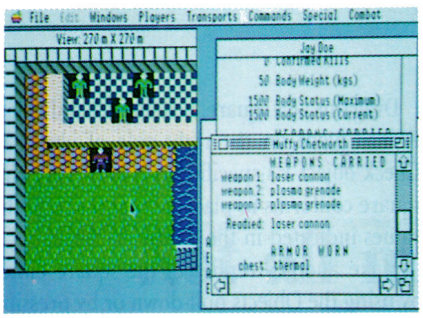
Be alert while exploring the Cryllan surface, for strange creatures abound.



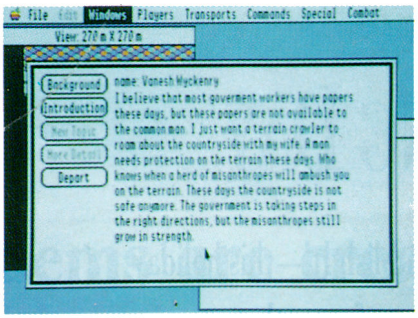
Operating various scanners, your science officer can offer invaluable guidance at night.



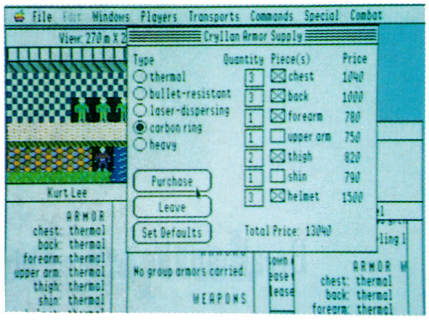
Explore buildings and caverns, but be prepared for hostile encounters in dark corridors!



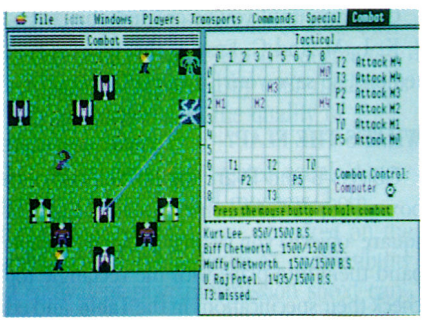
Towns offer armor, weapons, food, medical provisions, transports, repairs, and healing.



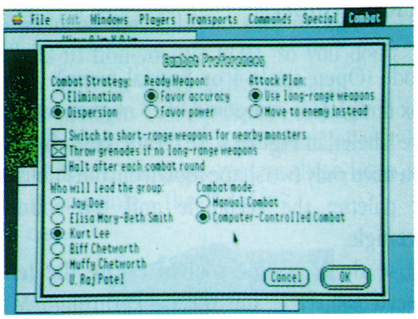
Chat with the local townspeople, but always remember the nature of your mission.



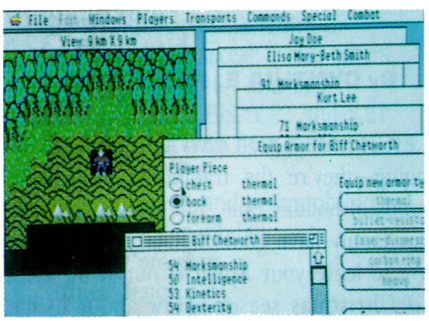
Modeless dialogs allow you to browse your supplies while shopping for new items.



Both player and monster groups can bring transports into combat.



Control combat manually, or allow the computer to follow your selected strategy.



Windows and dialogs are now 300-800% faster with System 5.0! Wow!

2088: The Cryllan Mission

Written Only for the Apple IIgs

November 20, 2088: Captain, you have been summoned here regarding the loss of contact with the U.S.S. Houston. The Houston had discovered a small planet, Crylla, in the Gamma-Chi sector. Transmission is several months overdue, and now we are concerned. Assemble your team of six within 72 hours for immediate dispatch to Crylla. Determine the crew's whereabouts, but do not disclose your mission to any natives. Good luck.

Victory Software proudly introduces **2088: The Cryllan Mission**, a role-playing game which incorporates fast 640x200 graphics and the complete desktop interface. Now with System 5.0 the desktop is up to 800% faster, providing a convenient, familiar, and quick interface.

Crylla's Colorful Landscape

2088: The Cryllan Mission displays the most realistic graphics of any Apple II game. For example, dense forests block your vision, but climbing hills allows you to peer over the tops of these same forests. Also, movement speed varies according to transport types and terrain.

A Six-Person Team of Specialists

Team members specialize in medicine, science, or combat. All members can fight, but their specialties can be quite handy on Crylla.

Combat

2088: The Cryllan Mission introduces several new dimensions to combat. First of all, both sides can bring several armored transports into battle. Players can enter and exit these transports freely during battle and repel approaching foes with the transports' lasers. Secondly, the command interface is simple, intuitive, and quick. Each round of combat is first planned and then executed. Move, attack, and enter-transport commands are quickly entered by clicking on the player's shape and dragging to a target. Finally, a computer-controlled mode can follow a variety of attack strategies. This automated mode can be entered and exited at will during a battle.

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2088: The Cryllan Mission is available from Victory Software for only $69.95. Please include an additional $4.00 for shipping and handling. Please note that Texas residents must add 7% for state sales tax.

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BOXING DAY

Break out the eggnog—and Publish It!—this holiday season, and create party favors that add fun to your celebrations.

By CYNTHIA E. FIELD, Ph.D.

SLEIGH BELLS RINGING AND CAROLERS singing—they're the traditional sights and sounds of holiday time. But even if you and your family have gone high-tech, you don't have to leave your Apple II out in the cold this Christmas season. How about using **Publish It!** to create custom holiday trinket boxes that are perfect as party favors?

Designing a three-dimensional object from a seemingly flat page-layout program is even easier than you think. And anything you can fit into a two-inch cube (candy, gift certificates—or even five gold rings) will fit inside this package.

BACK TO THE SOURCE

The original idea for this holiday project came—no, not from the North Pole—but from California.

A consultant in computer graphic arts forwarded her "low-tech" printed box design in hopes we could convert it to a Publish It! template. Like any drawing, this one was made up of discrete objects.

Though Publish It! lacks at least one tool (polygon) required to make an *exact* replica of the artist's box, you can easily construct a "reasonable facsimile" by using the tools that *are* available—even in the original Publish It! version. Here's how.

Start up Publish It! and work in Size to Fit mode (Open apple-4 or Special menu). The box template is composed of 13 objects, which I've labeled in **Figure 1**. To create these objects you need only two shape tools from the Publish It! palette: the rectangle and the round rectangle.

Use the rectangle tool to create the ten objects (object C and objects E through M) that are perfect squares and the two objects (B and D) that are rectangles. Use the round-rectangle tool to create the one object (A) that has rounded corners.

To begin, select the rectangle tool. Choose *Set Line Weight* from the Objects menu, and click on the radio button corresponding to the thinnest line. Beginning about 1½ inches from the left edge of the page and 4 inches from the top, "rubber-band" (press and drag) object E. Make it approximately 2 inches wide and 2 inches high.

Pull down the Objects menu and select *Show Specifications* (or press Open apple-M). Edit the specifications for object E, so that they conform precisely to that object's values listed in the accompanying **Table**.

Back on the "drawing board," select the pointer tool from the palette and click on object E. This action puts selection handles on object E's four corners. Pull down the Objects menu and select *Copy* (or press Open apple-C). Pull down the menu again and select *Paste* (or press Open apple-V). An exact replica of object E appears on screen.

Drag this new square, now considered object F, into place on the right side of object E. Check object F's specifications to be sure this square conforms in placement and size to the values indicated in the **Table**.

Make another replica of the square either by using the Objects pull-down or by pressing Open apple-V. Check the specifications of what is now object G.

Continue until you've created objects H, I, J, K, L, M, and C. Easy as this process is, it's tedious, so save your progress frequently.

WHAT'S THE FLAP?

Objects B and D are the inside flaps of the box. They're somewhat smaller than the square objects you've just created. Rubber-band them into place with the rectangle tool, check their specifications in the **Table**, and edit them (Open apple-M) if necessary.

Object A is a round rectangle, so you'll need to swap tools at the palette. With the round-rectangle tool rubber-band object A. Glance at the **Table** to check object A's specifications and edit them, if necessary.

Save this final template. Print a sample of your box, which should look like **Figure 2**.

CUSTOM DESIGNS

Theoretically you can add graphics or text areas to any object you've just created, or to all of them. Two factors, however, may convince you otherwise. First, some of the objects won't show when you've assembled the box. Who wants to waste time adding artwork no one will see?

Second, Publish It! can't flip graphics and text. (Publish It! 3, which should be available in January, was rumored at press time to offer this feature.) You can incorporate illustrations or messages into objects C, E, F, G, I, and L, but bear in mind that anything you print on C, I, and L may appear "upside down" when the you assemble the box. ►

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The right modem can change the way you use your computer. Modems allow you to step outside the limitations of your own hardware and software. But the degree to which you are benefitted by your modem is directly proportional to the quality of modem you select.

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Rectangles				
B	1.569	2.989	1.925	1.000
C	3.500	1.962	1.937	1.937
D	5.443	2.898	1.925	1.000
E	1.563	3.898	1.937	1.937
F	3.500	3.898	1.937	1.937
G	5.347	3.898	1.937	1.937
H	1.563	5.836	1.937	1.937
I	3.500	5.836	1.937	1.937
J	5.437	5.836	1.937	1.937
K	1.563	7.772	1.937	1.937
L	3.500	7.772	1.937	1.937
M	5.437	7.772	1.937	1.937

Table. Object specifications (inches).

There's a way around even this problem: On objects C, I, and L try using clip art that's radially symmetrical, such as the Star of David I imported for the box shown in **Figure 3**. Into object C I imported the Star of David illustration "as is" from the **Symbols & Slogans** art-portfolio disk. I then imported the same illustration into object L but changed the Star to inverse mode (press the spacebar) at the Publish It! cropping screen.

Once you're happy with your design, save it under a new name. Then print a few samples of your box to practice assembling them.

With a paper cutter or scissors, carefully cut along the perimeter of the box. Next cut the six "borderlines" between objects B/C, C/D, E/H, H/K, G/J, and J/M.

Use a straightedge or graphic-arts "folding

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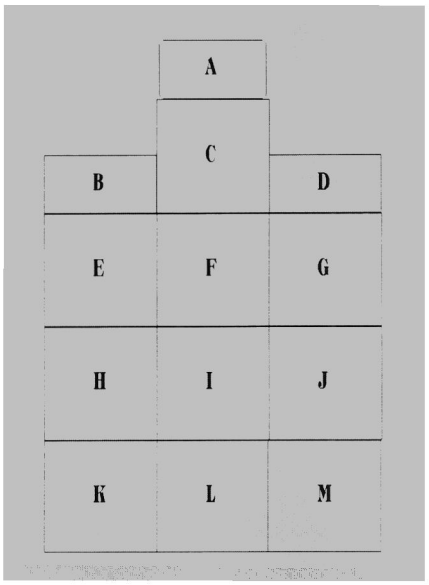

Figure 1. Objects creating trinket box.

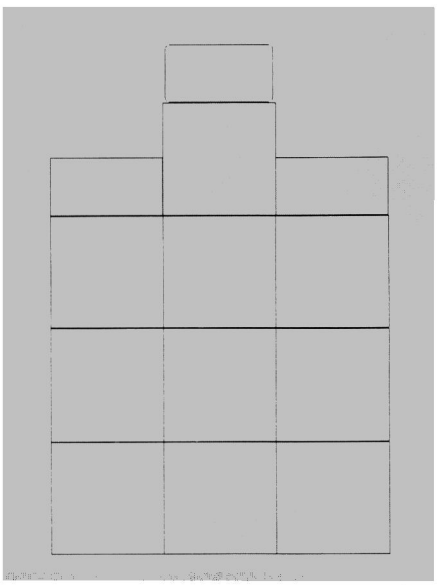

Figure 2. Blank trinket-box template.

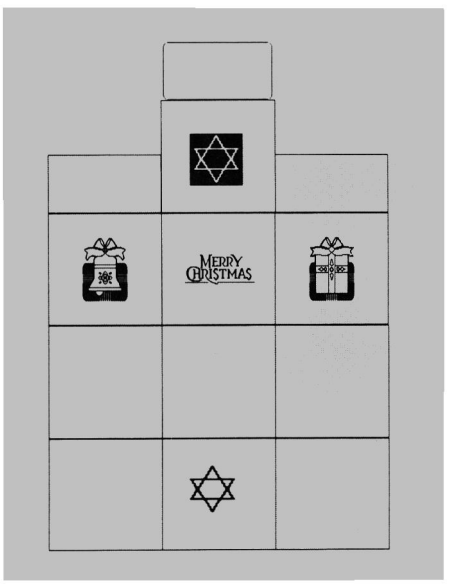

Figure 3. Final holiday trinket box.

knife" to score and fold all other borders. Place the box (printed side down) on your table or desk. Fold up objects H and J (the two sides next to the bottom of the box, I).

Fold up object L (the front of the box) and with a glue stick paste objects K and M (the two sides next to the front of the box) onto H and J, respectively. Next, fold up object F (the back of the box) and with a glue stick paste objects E and G onto K and M, respectively.

Next, fold down objects B and D (the box's inside flaps). Finally, fold down object C (the box top) and insert object A (the closing flap).

COLORFUL OPTIONS

When you're ready to print final versions of your box, use brightly colored paper in the printer or copy machine. Wausau Papers' ►

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You might just plan to use the boxes you've created as decorations. If so, standard-weight paper should suffice. Just poke a hole in the top (object C). Insert a wire, string, or ribbon loop, and secure it with a knot or with cellophane tape to the underside of object C. Glue the flap (object A) securely. Hang the boxes on your Christmas tree—or create a holiday-box mobile.

Packaging small gifts in the box requires that you reinforce it somehow. The easiest way is to print the box on colored paper (or on white paper and let the kids color the graphics by hand or add "glitter").

Use a glue stick to paste the complete 8½-by-11-inch printout onto an equal-sized piece of heavy card stock. Cut and assemble the box according to the instructions given earlier.

Whoa! Don't just think "Christmas" when you customize your box. Experiment with various graphics, messages, and paper colors to create decorations, favors, or gift boxes for celebrations all year 'round.□

CYNTHIA E. FIELD IS A FREE-LANCE JOURNALIST SPECIALIZING IN COMPUTER-RELATED TOPICS. SHE IS 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.

Pressing Matters

Steve Hawk of Houston, Texas, has encountered a problem that no doubt plagues countless other desktop publishers: too much white space remaining after designing a newsletter and importing text from *AppleWorks*.

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3. Switch to a larger font. **If you've used a 10-point typeface convert to its 12-point counterpart.**

4. Insert rules. **At an article's conclusion, rubber-band a horizontal rule (or double rule) as a visual clue that the article has ended.**

5. Incorporate a pull quote. **Create a rectangle with shaded background, or a plain or patterned border; overlay it with a text area; and copy/paste a telling quotation. Pull quotes can help draw your readers into an article.□**

—C.F.

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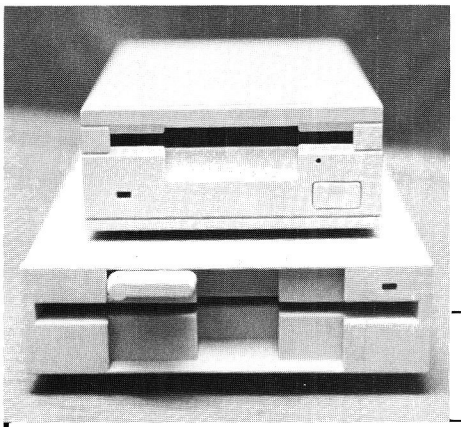

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INQUIRING MINDS

Programming got you down? Don't despair—this month's column addresses readers' questions and helps puts those worries to rest.

By JOE ABERNATHY

THE SPOTLIGHT'S ON YOU THIS MONTH, AS WE TURN GS BASICs over to the mail. From pointers to fonts, North Carolina to the Indian Ocean, programming questions are on everybody's mind.

AC OVERLOAD?

When running a game program that asks questions, then evaluates your responses, I keep getting strange error messages. This is a fairly complicated program, as it reads a lot of DATA statements, uses the RESTORE statement, rebuilds menus, and goes through a lot of conditional branching. I'm also displaying background pictures created with PaintWorks Gold.

The program's about 800 lines and, before it started misbehaving, it was more than 1000 lines. At one point, I get a Type Mismatch Error on a line that's nothing but a label.

I've talked to the people at Absoft, who try to help, but I wonder whether AC/BASIC is the proper type of GS BASIC to use for a program this large and complex. Would I be better off with another language compiler?

Jeff Prose
Denver, CO

Jeff, it's generally the case with complex programs that half the problems are limitations in the compiler and half are limitations in the programmer—at least with programs I write. Because I don't know what your exact problems are, I can't give you a specific answer.

I, too, have encountered the type-mismatch error on the line label. Switch it to a numeric label such as 250:, and the problem will go away.

Before you drop more money buying a new compiler, take a serious run at isolating your problem(s). To do this, break the program down into the smallest functions possible. Test each of them as a separate program, and once you're certain that each procedure works flawlessly, add another procedure and test them together. Eventually, you'll find the spot where your code is breaking. Be aware that a problem in one procedure can result from another procedure; a variable overwrite is a very common example of this. Make a list of every variable you use, and trace each through the entire program run.

If after this you determine that AC/BASIC isn't up to the job—and it does seem to get quirky with a really large program—you may want to consider another language. Micol Advanced BASIC has a lot to recommend it, especially for a program such as yours. ByteWorks is also working on what promises to be a reliable BASIC, and you may want to consider ORCA/Pascal. Pascal is very close to today's BASICs, and even if you want to stick with Micol BASIC, for instance, exposure to the structure of Pascal will help you learn to design big programs in a way that'll produce fewer bugs.

ADVANCED APPLES

I own an Apple IIe and a IIGS and have programmed in Applesoft BASIC. I now want to learn a language that takes advantage of the GS' features. Ideally, I'd like to avoid investing in a compiler, but if that's not possible, which one has a reasonable price tag? Also, which compiler will let me write applications and desk accessories?

David A. Larson
Aberdeen, SD

Apple kept Applesoft BASIC in the GS, David, but didn't spend a penny bringing it up to date. You'll have to use a GS-specific language compiler to do the jobs you want.

To write new desk accessories, get ORCA/Pascal or ORCA/C (Pascal, if your programming experience is limited; C if you know of and understand data structures and memory addressing, or don't mind learning). They're available from ByteWorks Inc., 4700 Irving Blvd. N.W., Suite 207, Albuquerque, NM 87114, (505) 898-8183.

If you can get by with .SYS16 programs and CDAs, get a copy of Micol Advanced BASIC (Micol Systems, 9 Lynch Rd., Willowdale, Ontario M2J2V6, 416-495-6864). Micol is fast and easy to use for the most part, and retains compatibility with your old Applesoft programs. It also has a set of one-word commands with which you can write (or port Applesoft programs) in the GS desktop metaphor.

FRENCH FONTS

Because I write in French, I'd like to access some French fonts other than the ones for the ImageWriter II. I'd like to use these fonts, which the TML manual describes, with MultiScribe GS. How can I create these ►

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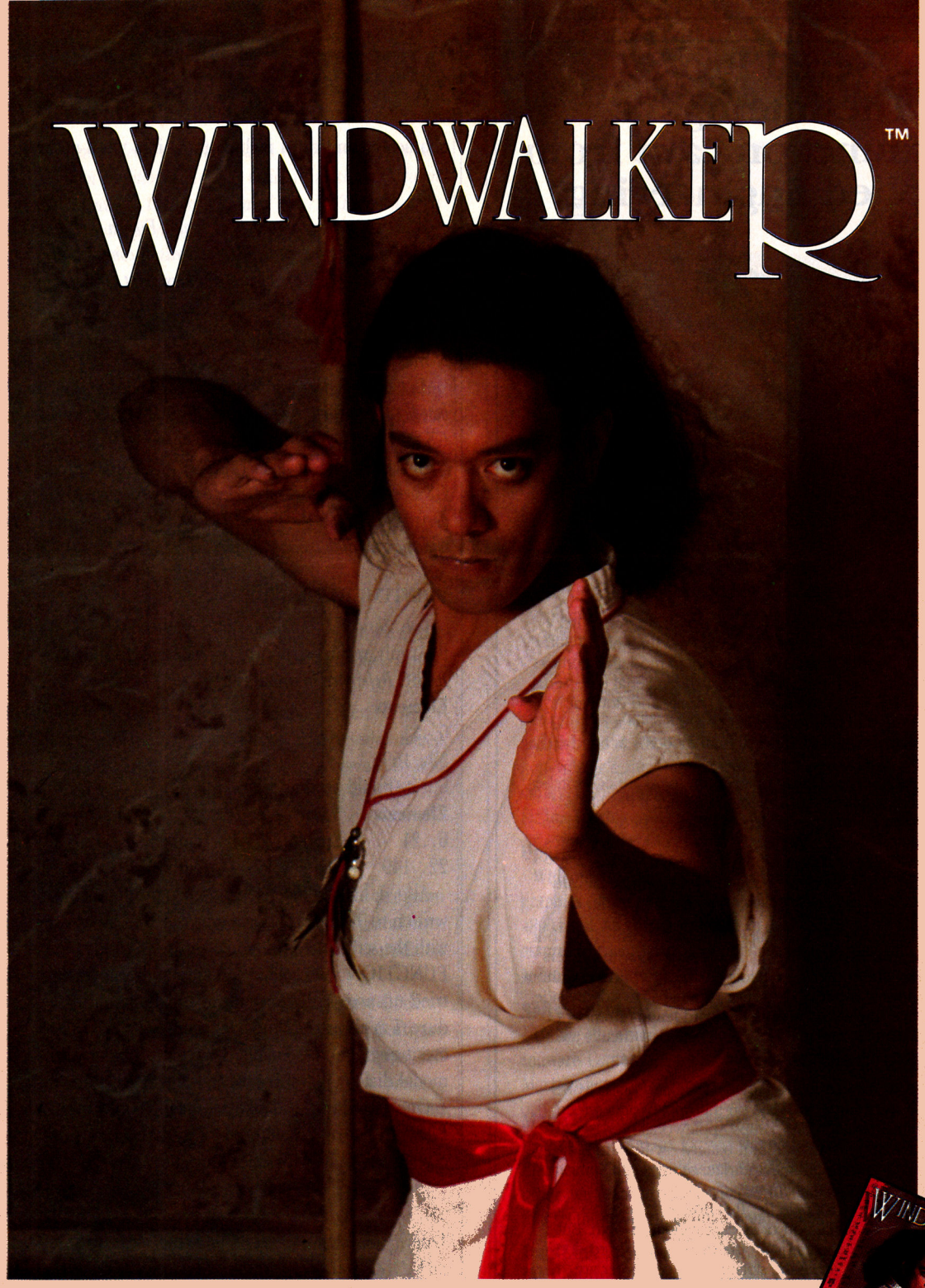

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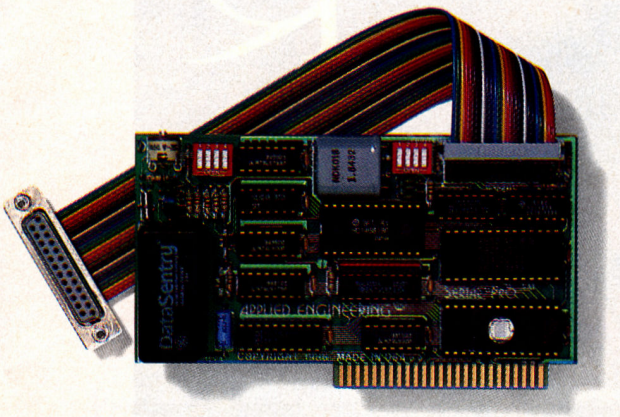

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characters, and can I include them in a word processor?

J.P. Guggenheim
Bryn Mawr, PA

What you need is a good predesigned French font, and I just don't know if there is one. There are literally hundreds of commercially available fonts in the public domain, however, which you may want to investigate.

Claris sells two font disks; TechAlliance offers six font disks through its public-domain library; and you can download fonts from on-line services and bulletin boards everywhere.

Another option is to use a font editor to design your own custom font. The best bet for this is the new Beagle Bros Font Editor, which will work with all GS fonts and older Print Shop-style fonts.

*Just add these fonts to the */SYSTEM/FONTS/ directory to use them with a GS word processor. To implement the Fonts menu in a program of your own design, you'll need the Toolbox calls _FixFontMenu and _ChooseFont, both of which are straightforward to implement.*

POINTING TO TROUBLE

I've noticed a small mistake in the TML BASIC documentation of the reply record-structure array. Page 463 (Appendix C) of the *TML BASIC Reference* manual lists:

Elements
6..31
32..159

but it should read as follows:

Elements	**Value**	
6..21	String!(15)	fname$
22..149	String!(127)	fpath$

Also, I have some problems programming with TML BASIC. I've written to TML twice and never received an answer! Can you help me with the scroll bar in a modal dialog? I think I know how to write the FUNCTION myscrollbar% (command%, mydialoga, item%), but I've tried unsuccessfully to point to this function in the NewDItem procedure. I'm also struggling over the UNPACKBYTES% function; I get an event-queue error. Finally, I have a problem with the lineedit item in modal dialog. When I want to get text I get an "msg 103" error.

One last thing—I'd like to meet people programming with TML BASIC. I live on an island in the Indian Ocean, and although there are quite a few of us with GSes, not many are programming.

Carole Fox
Logement de Fonction
Ecole Mathematique Candide Azema 1
Rue Mgr Mondon
97400 St Denis
France

I can't help with the UnPackBytes problem, but I have a good idea what's wrong otherwise. TML's facility for handling memory pointers, which both the scroll bar and lineedit items need to do, is flawed—so badly that TML is going to toss out the whole scheme when it updates the language. With some simple things the pointers work, but they break down quickly when you get past anything more complex than, say, _SFGetFile. I haven't tried to further isolate the problem; doing so wouldn't produce any tangible results.

This doesn't help you with your debugging, but at least it can save you from banging your head against the wall. In all likelihood, your code is written properly. Port it into Pascal, C, or another BASIC and it'll probably work.

Carole, you mentioned in your letter that you use the French Minitel on-line

service. Many overseas readers prefer to send mail via an on-line service, because it's free and much faster than traditional overseas mail. To reach this column on line, you must find a gateway to the United States' InterNET system, then address your E-mail to: jabernathy@pro-houston.CTS.COM.

BOOK IT

Can you recommend any good books for learning to program in Applesoft? I'm also interested in finding sources that discuss programming in BASIC for the IIGS.

Peter Lundholm
St. Cloud, MN

There are a lot of fine books covering the topics you specify, but it would be impossible to offer a complete list. To get started, however, you might want to pick up one of the following three texts.

Your First BASIC Program, *by Dr Rodnay Zaks (Sybex Books, Berkeley, CA, 1983), offers an introduction to Applesoft that examines such basics as variables, structure, branching, and looping. The book is a bit simplistic, but if you're lost, look here first.*

David Miller's Mastering Applesoft Graphics *(Scott, Foresman Computer Books, Glenview, IL, 1989) covers all aspects of fundamental graphics, shapes, and animation from the II Plus to the GS.*

Also, BASIC Programs of Scientists and Engineers, *by Alan R. Miller (Sybex Books, Berkeley, CA, 1981), shows how to deal with research topics, including mean and standard deviation, vector and matrix operations, and linear equations. The volume also discusses curve fitting, sorting, least squares, Newton's method, and other scientific functions.*

FROZEN IN TIME

I'm having a problem with TML BASIC freezing with one program I wrote. It freezes every second time I compile to memory and run. The program is about 630 lines, and I'm working with the updated ROM and 1280K of RAM.

Forest Godfrey
AFGodfrey Software
Ripon, WS

The most likely solution is to try a different version of your disk-operating system. The compiler you're using was never updated to run with anything past GS/OS version 3.2. Make a copy of your original distribution disk, and try booting cold from it.

BASIC UPDATES

A number of these letters—and an even larger number not printed here—deal with various aspects of the same problem: TML BASIC. The latest word from TML Systems (8837-B Goodbys Executive Drive, Jacksonville, FL 32217, 904-636-8592) is that it now has an Apple II product manager who's exploring the feasibility of updating the compiler. Before purchasing TML BASIC, check with the company to ensure that what you're buying is an updated, GS/OS 5.0-compatible product. As of September 1989, the only such IIGS BASICs were Micol Advanced BASIC and AC/BASIC.□

JOE ABERNATHY IS A JOURNALIST WITH *THE HOUSTON CHRONICLE*. HE'S A CERTIFIED APPLE DEVELOPER AND THE AUTHOR OR COAUTHOR OF EIGHT APPLE II PROGRAMS. WRITE TO HIM C/O *INCIDER*, 80 ELM STREET, PETERBOROUGH, NH 03458. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

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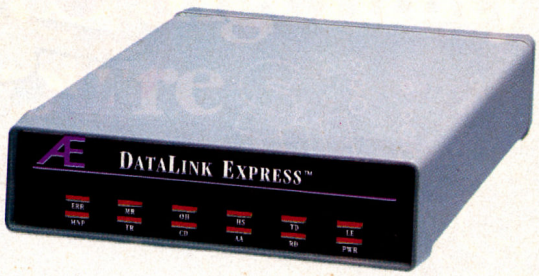

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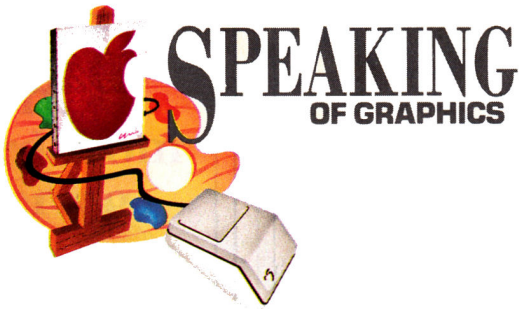


SPEAKING OF GRAPHICS

LEARNING THE LINGO

Bridge the communication gap by reviewing the most common computer-graphics terms. After all, isn't it time you knew your *pel* from your *pixel*?

By ROBERTA SCHWARTZ and MICHAEL CALLERY

COMPUTER-GRAPHICS PROFESSIONals, just like doctors, lawyers, plumbers, and sportspeople, have their own language. This jargon, although bewildering to the novice, lets the "pros" condense a concept into one or two words. When you read articles on computer graphics, including our columns, you're bound to come across this terminology. So this month, we'll review some common shoptalk to help you master the lingo.

Note that this list hits only the tip of the verbal iceberg—but it's a beginning. The following glossary contains each word's definition followed by a sentence that uses the term.

aliasing: The "stair-step" effect on lines and edges of a computer graphic. The higher the resolution, the less apparent the aliasing. This is often referred to as "the jaggies." With Apple II graphics, vertical and horizontal lines look fine, but diagonal lines suffer as a result of *aliasing*.

anti-aliasing: The technique of blurring an image to minimize the jaggies, as when you border a diagonal black line with shades of gray, going from dark to light. Some paint programs, such as Paintworks Gold, provide *anti-aliasing* brushes.

aspect ratio: The proportion of height to width on a display screen or other output device. For most computer displays, the aspect ratio is such that objects with the same number of pixels in both vertical and horizontal directions appear elongated on the Y-axis. What appeared to be a perfect circle on screen printed as an ellipse owing to the different *aspect ratios* of the screen and the printer.

bit map: The contents of a frame buffer or other graphics data structure, where a bit, byte, or word of memory represents each pixel. Apple II computer graphics are *bit-mapped*, and you can control each pixel on screen.

bit pad: An input device consisting of a surface with an attached stylus or puck. Moving the stylus (or puck) on the surface generates position information, which the software can use to place a cursor or enter command information. Bit pads, also referred to as *graphics tablets*, can be based on magnetic, ultrasound, or infrared technology, although magnetic is most common. If you're having difficulty manipulating the mouse, you might want to invest in a *bit pad* device.

buffer: An area of random-access memory used to store information temporarily. See *frame buffer*. Because data are stored in a *buffer*, you must save them to disk if you don't want to lose your picture when you turn off the computer.

clip: Chop a graphic to fit into a given window or viewport. Resizing a window and making it smaller will *clip* your graphic.

color lookup table (CLUT): A small piece of memory set aside within the frame buffer to hold the information about the content (amount of red, green, and/or blue) of each color. See *palette*. The Apple IIGS allows 16 different *color lookup tables*.

color-table animation: A type of pseudo animation in which you create the illusion of movement by cycling through a range of hues in a color lookup table. Also called *color cycling*. Some paint applications, such as 816/Paint and Paintworks Gold, include *color-table animation* capabilities.

composite: A type of video signal in which the red, green, and blue color signals are combined into one complex signal. See *RGB*. You can view standard- and double-hi-res graphics best on a *composite* monitor.

digitize: Convert a drawing, photograph, video source, or other continuous image into pixels. Artists often *digitize* photographs, then enhance them with a paint program.

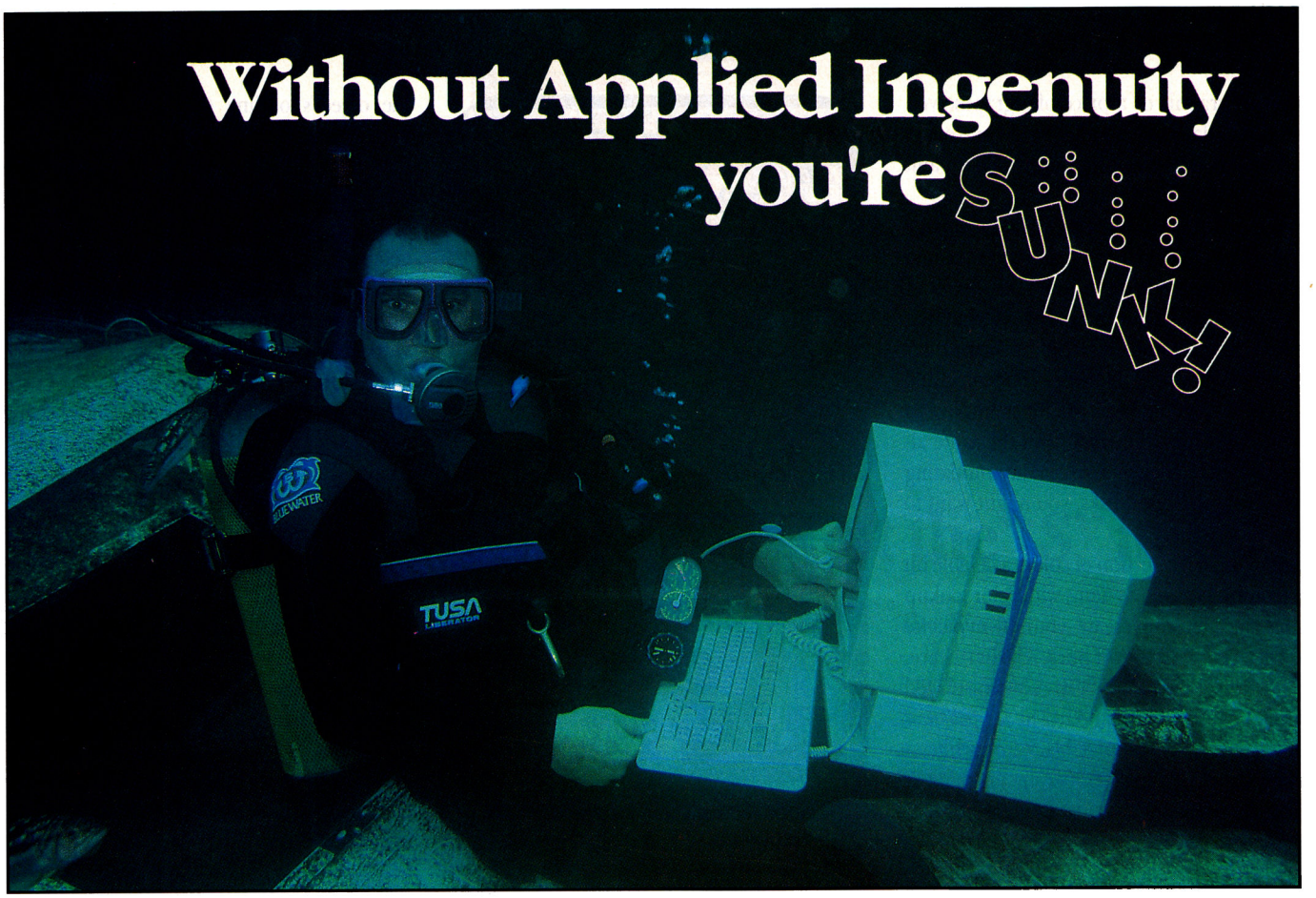
dither: Mix a new hue by placing different-colored pixels next to one another. You can expand the limited color palette of Apple II graphics by *dithering*.

fill: Placement of color within a bounded area. The tricky part of using a *fill* is being sure it doesn't leak out because of a missing pixel in the area's border.

frame buffer: That portion of RAM that holds a computer graphic. You don't need to see the frame buffer while your program is constructing or loading an image. In BASIC, simply typing HGR will show you the contents of the *frame buffer*.

map: Transform an object so that it fits on another object's surface. Using graphics software you can *map* a flag to the surface of a globe or a rough texture to a block of wood.

NTSC: National Television Standards Committee, the American standard for a broadcast TV signal. Apple's Video Overlay Card lets you overlay *NTSC* signals on your graphics. ▶



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object: A graphic or a piece of a graphic you can manipulate independently of the rest of the display. Drawing programs, unlike paint programs, work with *objects*.

packed picture: A compressed graphics image in which the bit map has been concentrated by a specific algorithm. Contiguous pixels of one color are often combined so that the packed picture reads "20 red" pixels rather than "red, red, red" 20 times. To reconstitute the compressed bit map, you must employ an unpacking program, which uses the same algorithm as the packer. To avoid accumulating a massive number of disks, you might want to *pack* your pictures.

palette: A fixed selection of colors available on the graphics screen. Systems with color lookup tables may let you create your own palette from a larger selection of hues. The hardware, however, fixes the number of colors displayed simultaneously. The standard-hi-res *palette* is limited to four colors plus black and white.

pel: A picture element. Generally the same as *pixel*, but may refer only to elements you can manipulate. For example, while the Apple double-hi-res display has 560 pixels, you can say it has only 140 pels. (You can see this in Dazzle Draw's zoom mode, depending on whether or not you've selected the color option.) See *pixel* and *resolution*. A computer graphic is nothing more than a profusion of *pels*.

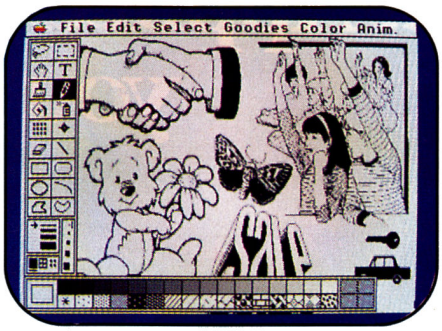
pixel: The smallest dot on a computer display; a contraction of *picture element*. It's easier to manipulate individual *pixels* in zoom mode.

raster: The horizontal scan of the electron beam as it sweeps the CRT (cathode-ray tube). Because the electron beam lights up dots on screen, we sometimes use *raster* to refer to the grid of pixels on the CRT's surface from which a graphics image is carved. All Apple graphics are *raster* graphics.

region: A graphics area that's usually an irregular object you can fill, drag, or otherwise manipulate. The marquee and lasso tools let you select a *region* of your graphics.

resolution: The number of dots you can display on a computer-graphics screen. The greater the resolution, the finer the image. Generally, resolution is given as the product of the number of horizontal pixels times the number of vertical lines. The increased *resolution* offered in super-hi-res is a boon to computer artists.

RGB: Acronym for *red/green/blue*. RGB refers to the three guns that shoot a beam of electrons toward the face of the picture tube from the rear of a color CRT, and the separate signal required to drive them. See *composite*. Super-hi-res graphics are best displayed on an *RGB* monitor.



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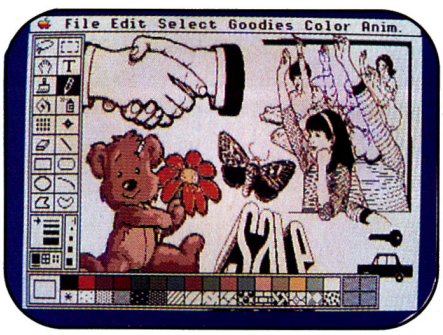

Using Paintworks Gold, we changed to a color palette and painted the bear. Even with a color palette, the images retain their clarity.

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rotate: Transform an object by spinning it around an axis. With lower-resolution graphics, your objects become distorted as you *rotate* them.

rubber-banding: A method of specifying lines, boxes, or other geometric figures by flashing the object's outline (often by pressing the mouse button and dragging) until you indicate that the position and size are correct. For precision work such as CAD (computer-aided design), inputting the exact dimensions of a geometric figure is preferable to *rubber-banding*.

scale: Stretch or compress an object along different axes. Unless you're working only with vertical and horizontal lines, *scaling* an object will distort it.

transform: Alter an object's position or shape. See *rotate*, *scale*, and *translate*. Advanced graphics programs let you select any area of your graphic and *transform* it.

transitions: Special effects for changing from one image or scene to another. See *wipe*. Slide-show programs often offer a variety of *transitions* for smooth continuity.

translate: Move an object along a straight line in the X, Y, or Z direction. In an animation program it's easy to *translate* an object across the screen.

viewport: That portion of the display that is currently active. You map the window contents into the *viewport*.

window: That portion of a coordinate system that a particular graphics operation is using. In many modern computers, *window* refers to the division of the display screen into smaller segments. In windowed displays, frequently only one window—the one containing the viewport—is active. In Paintworks, your picture is held within a *window*, while in DeluxePaint it's not.

wipe: A type of transition from one graphic to another, in which the second image pushes away another in a systematic pattern (from the top of the screen like a window shade, from the side like curtains, and so on). You can achieve interesting effects by having a series of images *wipe* across the screen.

zoom: Enlargement of a portion of the display; often used to enable editing of individual pixels. The best way to clean up your computer graphics is to work in *zoom* mode.

UPGRADES AND UPDATES

In September ("Now You See It," p. 92) we mentioned that Digital Vision was planning to produce a version of its popular video digitizer, ComputerEyes, that would add digitizing capabilities to the Apple II Video Overlay Card. It seems that the company has put this project on hold. Because ComputerEyes already works well with the Video Overlay Card, the folks at Digital Vision decided that the ►

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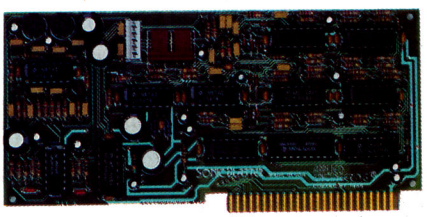

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The Buttons

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.

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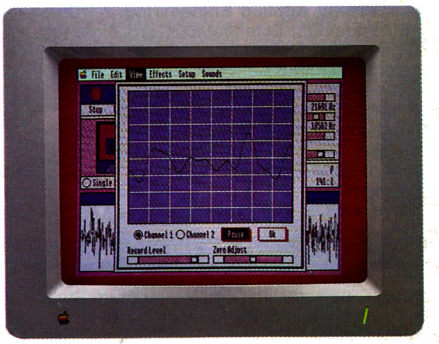
The Bars

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.

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add-on card would offer no real advantage over its existing products right now.

GRAPHICS IMAGES

Don't have a digitizer, but need high-quality digitized art for your artistic or desktop-publishing efforts? Unlimited Software (a division of Oltrad Graphics) has released a new set of clip art for the Apple IIGS. The five-disk set titled **Things You See Every Day** contains 160 pages of graphics.

Each page has at least three images; most offer many more. Among the everyday items you're going to find are clocks, food, furniture, cars, buildings, symbols, people, and animals. We're not sure how many of us see tanks, missiles, and military fighter planes daily, but they're there, too.

Most of the images are of exceptional quality, although some may need a little touching up in your favorite paint program. Of course, half the fun of using clip art is in altering the images to suit your needs.

The graphics, stored as Apple Preferred Format files, should be acceptable to most GS programs. Because the images are black-and-white, they're especially suitable for use in Roger Wagner's HyperStudio. The package includes a booklet with printouts of the entire collection.

MOUSE TRACING

After reading in "Mousing Around" (August 1989, p. 84) that we could no longer find special devices that snapped onto your mouse to aid tracing, Ellen Carr of Turnerville, New Jersey, wrote us with a lead. Ellen had just received a mailing from the Dynatron Company, and she noted a description of the **Sharp Tracer**, a plastic box that fits over your mouse (Apple brand only) and contains a lens with cross hairs for tracing. It appears to be exactly what we were describing in the column.

GRAPHIC FAREWELL

Thanks for the tip—and as they say in the world of computer graphics, may all your jaggies be little ones.□

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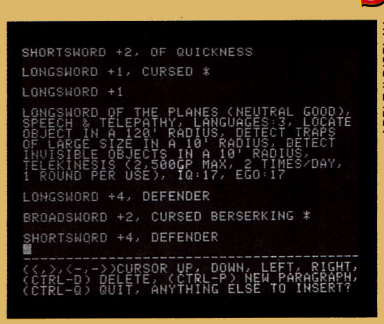

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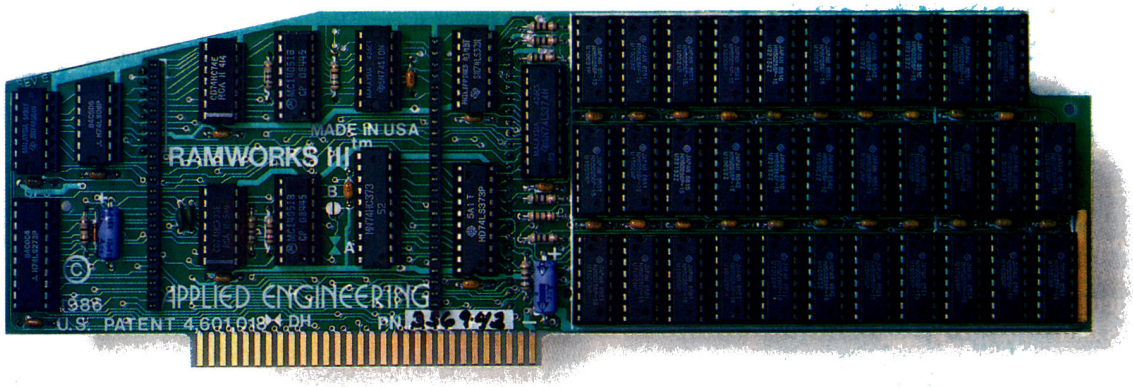

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The Ultimate in RGB Color.

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

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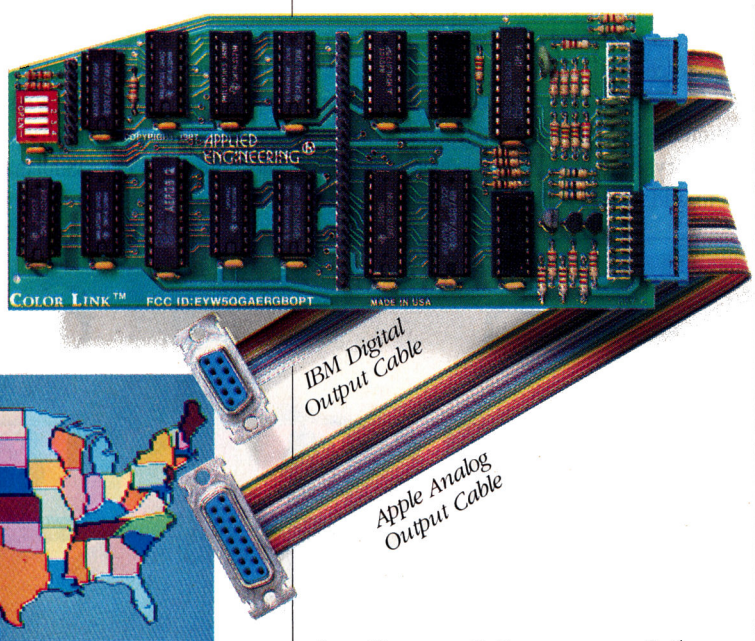
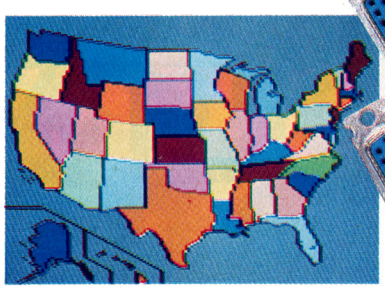
composite color monitor). For only $129 it can be added to RamWorks giving you a razor sharp, vivid brilliance that most claim is the best they have ever seen. You'll also appreciate the multiple text colors (others only have green) that come standard. But the RamWorks RGB option is more than just the 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





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Continued from p. 43

Junior writers can decorate each scene with as many as 15 graphics elements.

The colors in the background scenes are permanent. A Color option, however, lets kids alter the shades of any Picture Library image. Clicking on the Color button calls up a 16-color palette. Kids select a color by first clicking on it, then moving the pointer to an area of the graphic they'd like to change. When they click again, the selected color flood-fills that portion of the image.

WORD AND IMAGE

When children complete an illustration, they're ready to call on Kidwriter's word-processing tools to add text at the bottom of the screen. Children may also enter text anywhere on the background, as long as the cursor appears in the shape of a square. If the cursor looks like a pointer, click on the ABC icon to invoke text mode.

Kidwriter provides a limited number of text-editing options. It features word wrap and type-over mode rather than insert-character mode. Youngsters can add spaces and lines or delete characters, if necessary. There's room

for seven lines of text beneath each illustration. If children require more space for text, they may add a blank page to a picture story by clicking on the arrow in the top right corner of the screen.

Kids can save their stories as single-page documents, or if they want to create a multi-page storybook, they can click on the arrow key to add a new story page. They can also insert a new page before the current one or delete the current page by clicking on the Page button at the top of the screen.

The Play button will run through all pages in the story and provide musical accompaniment. The Tools button calls up the printer option to print a story page—or an entire story—on an ImageWriter or Epson.

Spinnaker should be commended for selling Kidwriter Golden Edition without copy protection; teachers and parents can make a backup as a safeguard. The absence of copy protection increases the program's versatility in a classroom or home setting.

NOT QUITE PERFECT

Although Kidwriter has much to offer any elementary language-arts curriculum, it's not quite perfect. Several peculiarities detract from its overall success. While these aren't major problems individually, collectively they make the program more difficult to operate.

First, Kidwriter lacks a disk-formatting option. To save stories on disk, kids (or teachers) must prepare ProDOS-formatted disks before booting the program. If you exit the program

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to format a data disk, you'll lose all work screens in progress.

Kidwriter's interface departs from the standard IIGS style. The menu bar rests at the bottom of the screen, rather than the top. The program offers poor error handling in the Color tool option. If kids try to modify a color on a background screen, nothing happens because the hues are permanent. Kidwriter should provide an alert box to inform kids they can't modify the background screen's colors when they try to make changes.

RESTRICTIONS

The well-written manual gives an adequate description of all program options, but doesn't include a printed catalog of backgrounds and pictures. Kids have to scroll through each picture to see what's available. Thumbnail sketches would be more convenient in a classroom setting with a limited number of computers. Kids could look at the pictures and think about what to write before actually sitting down at the computer. In addition, the absence of an image-library catalog promotes linear thinking rather than free association. Youngsters must look at the graphics serially rather than appreciate them in groups.

The Kidwriter storybooks are neither self-booting nor self-running. While the program demo changes screens automatically, picture books saved to disk require you to press the spacebar to advance through the pages. Also, the storybooks require Kidwriter to run; you can't view a story unless you've first loaded the program. Finally, if the music in the demo program or accompanying a story proves distracting, Kidwriter offers no way to turn off the sound.

THE GOLDEN RULE

Despite these minor criticisms, Kidwriter Golden Edition is a versatile writing tool. It's fun and educational. Some kids will enhance their stories with the high-quality graphics images provided. Others will use the backgrounds and pictures as story starters to stimulate creative thought. Both options facilitate the writing process, resulting in improved language skills.

Carol S. Holzberg, Ph.D.
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Rating: ◆ ◆ ◆ ◆

No, it doesn't swim, and you shouldn't immerse it in water. So what exactly is the Floating Point Engine? It's an Apple II expansion card that accelerates the speed of numerical operations only. For businesspeople, financial and statistical analysts, and serious AppleWorks users, it's a tremendous time saver.

As a floating-point math coprocessor, the FPE has one great advantage: the way it works with operations involving extensive numerical manipulation (called floating-point numbers, because the decimal point moves). That may sound obscure, but a math coprocessor is basically just a way of adding power to your ►

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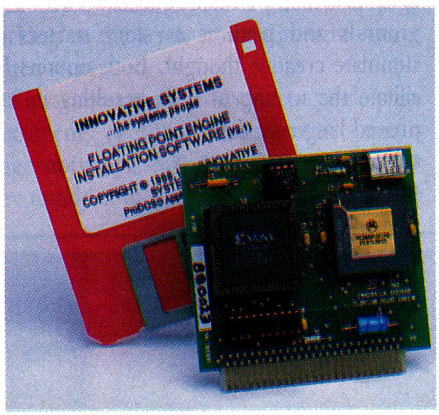
REVIEWS

computer's native capabilities. All computers have one main microprocessor. A math coprocessor enhances your machine's power by working only on numerical operations and thereby freeing the main processor for other tasks.

You'll find the Floating Point Engine particularly helpful if you use large AppleWorks spreadsheets or graphics programs frequently, write software, or work in fields such as statistics or engineering. Generally, the FPE proves beneficial to anyone who sits around watching an Apple struggle through calculations or sophisticated drawings.

Usually, a numeric coprocessor is no good unless your software has been written to address it specifically. (Remember, it's separate from the main processor for which software is usually written, so it takes different software instructions to call forth the coprocessor.) The



FPE escapes this fate, at least on the GS, by patching the GS/OS system software, so that all programs that use native GS math (the Standard Apple Numerics Environment, or SANE) will know the math coprocessor is available. That includes programs such as AppleWorks GS and the various GS drawing and publishing packages. Actually, many programs will benefit that don't appear to deal in math on the surface. Using a mouse to paint a picture, for instance, involves a lot of behind-the-scenes calculations.

There has been a scarcity of Apple IIe software that can use the FPE because of the problem in letting a program know the card is there; the IIe has no equivalent to the GS' system-wide SANE. ProSEL author Glen Bredon, however, has released a free patch to Applesoft BASIC that will let most existing BASIC programs use the FPE.

At the level of application software, the FPE is invisible, and that makes it useful for a broad range of people with no interest in the technical aspects—just plug it in and it works. But for those with the inclination—particularly programmers—the FPE has a whole other level of complexity that perhaps qualifies it as one of the most powerful creative tools available.

The Floating Point Engine offers a full implementation of the ANSI-IEEE 754-1985 floating-point standard, and your program can access the FPE at a number of increasingly complex efficiency levels. At its best, FPE can calculate 50–100 times faster than the IIe or IIGS when operating concurrently with the 65C02 or 65C816 main logic chip.

On a IIGS, the easiest approach to writing a program that uses the FPE is to pretty much ignore it. The system-wide SANE patch will catch any higher math and route it through the FPE. So it'll speed up automatically any math you use that's beyond addition and subtraction.

Normally, you'd expect real-number calculation to take longer than integer calculation. With the Floating Point Engine, though, you might be surprised to find that you can speed calculations by using real values rather than integers. Most compilers will handle these real values internally through SANE, letting you force these relatively simple operations into the faster FPE.

The only easy way to access the FPE on earlier Apple IIs—and by *easy* I mean without learning assembly language—is using Glen Bredon's patch for Applesoft BASIC. Bredon distributes the patch free via download from on-line services. If you don't own a modem, contact him directly at 521 State Road, Princeton, NJ 08540. There'll probably be a postage fee.

A more efficient way to call upon the FPE is to use a custom macro library for your language compiler. These macros enable the compiler to route calls directly to the math unit—a more efficient method than relying on a patch to intercept math calls. The FPE comes with a disk that includes such macro libraries for both the 8- and 16-bit versions of the Merlin and ORCA/M assemblers.

Until recently, the most efficient way of accessing the FPE has also been the most difficult. This involves addressing the FPE directly by writing or reading in standard slot space. This works under DOS 3.2, DOS 3.3, ProDOS 8, and ProDOS 16, and doesn't cost you the overhead of maintaining a macro library in memory.

You can use this technique even if you're

not an advanced programmer. ByteWorks (4700 Irving Boulevard N.W., Suite 207, Albuquerque, NM 87114, 505-898-8183) has incorporated direct FPE support into ORCA/Pascal (as an update) and the new ORCA/C. The Pascal update costs $5; the ORCA/C compiler is $150. Programmer Mike Westerfield says that the upcoming ORCA/BASIC also will include this FPE support.

Advanced programmers who use languages other than ORCA have 46 instructions (35 for arithmetic) available; a complete suite of trigonometric and transcendental functions; and 22 constants (including *pi*, *e*, and powers of 10). Data formats include byte, word, and long word integers; single, double, and extended-precision real numbers; and packed, binary-coded, decimal-string real numbers.

The FPE also offers eight noncorruptible, general-purpose, 80-bit, floating-point data registers. You just might make it through your whole life without wanting to write to 80-bit data registers from assembly language, but there's a secret here. People with the technical mastery to worry about such things consider a lack of data registers to be among the Apple II's more serious weaknesses.

This is where the possibility of more and better software comes in. By using those extra FPE registers, developers can create language compilers that are much more powerful than those currently available. Programmers using these new compilers would be able to generate applications that are impractical at this time.

The FPE will work in conjunction with any traditional system-wide accelerator you might own. For instance, if you were drawing a picture, you could have a TransWarp speeding up the screen drawing, while your FPE boosts the internal graphics calculations.

If you do combine FPE with a system-wide accelerator, it's ostensibly possible to upgrade the FPE to 16- or 20-MHz operation by replacing a chip on the card. In reality though, this would require a 20- or perhaps 40-MHz IIGS, so there'll have to be a significant breakthrough in accelerator technology before you'll want a faster FPE.

The Floating Point Engine is an agreeable, exciting way to empower your Apple II. It performs well and reliably. It's not a universal solution, however, because it's targeted for an audience whose work, in some way, relies on mathematical calculations. That may include a small-business professional, a commercial artist, a schoolteacher, or even a rocket scientist—all having math as a common denominator.

If you use the FPE in conjunction with a TransWarp GS manufactured before mid-May 1989, you'll have some compatibility problems, but there's an upgrade available from Applied Engineering. Some owners of Micol Advanced BASIC will also need an update.

The FPE's manual is disappointing. Installing the card is straightforward, so that shouldn't give you a problem. But the section of the manual containing technical information is inadequate. This works to the detriment of intermediate programmers, who with better guidance could squeeze as much from FPE as the most advanced software designers.

The Floating Point Engine is a solid piece of work that deserves to become a standard, and Innovative Systems is an energetic young company. I recommend Floating Point Engine without reservation.

Joe Abernathy
Houston, TX

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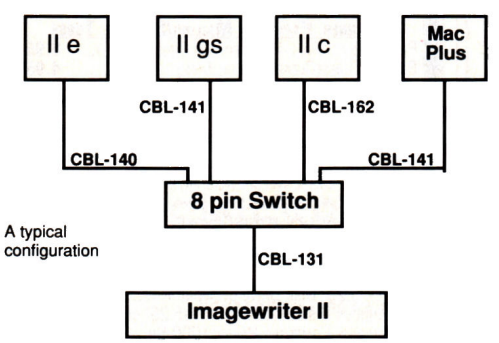

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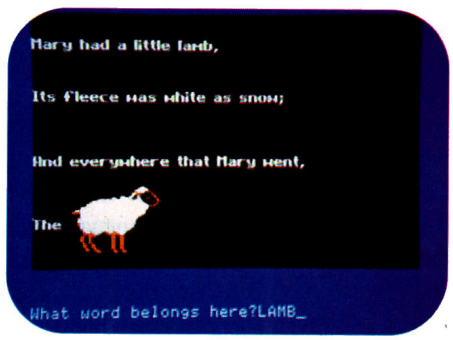
REVIEWS

with such favorites as *Mary Had a Little Lamb*; *Hey Diddle Diddle*; *Hickory, Dickory, Dock*; and *Pat-a-Cake, Pat-a-Cake*. Songs includes ten traditional children's tunes, such as *The Farmer in the Dell*; *Pop! Goes the Weasel*; *Hush Little Baby*; and *Baa, Baa, Black Sheep*. Fables presents 14 stories, including *The Boy Who Cried Wolf*; *The Fox and the Crow*; *The Tortoise and the Hare*; and *The Country Mouse and the City Mouse*.

Children begin by selecting one of the three categories. Each topic then presents a menu of nine exercises, all designed to reinforce reading mastery. The exercises are sequential—each is slightly harder than the preceding one and builds on previously learned skills. Kids



may play all nine game-like activities with a single rhyme, song, or fable title, or they can do the exercises with different titles.

The advantage of sticking with a single title for all nine games is continuity. Children will grow accustomed to the target words and pictures, thereby facilitating the learning process. Once youngsters become familiar with all the rhymes, songs, fables, and activities, however, they may prefer to play different games with several titles.

KEYS TO READING

Joshua's Reading Machine is a simple program to operate. Kids need to use only three keys to move from section to section. Hit the spacebar to highlight menu options, press Return to make selections, and tap Escape to exit the current activity. Adults may also customize the presentation by turning the sound on or off. Then can also cancel "automatic scrolling," so that the story won't scroll by unless they press the spacebar.

Kids probably won't be able to work entirely without adult supervision, because there are too many menus and titles to read. Grown-ups will have to assist nonreaders with some of the menu options. ►

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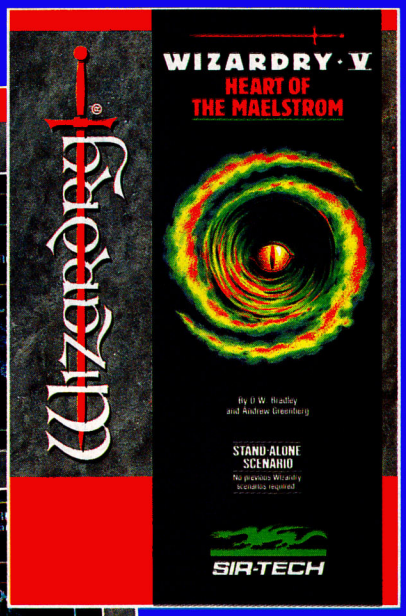
WIZARDRY·V

HEART OF THE MAELSTROM



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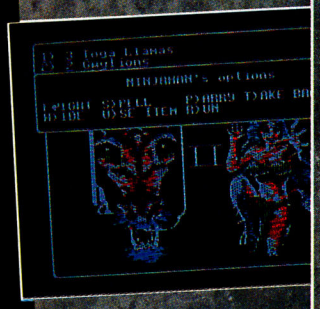

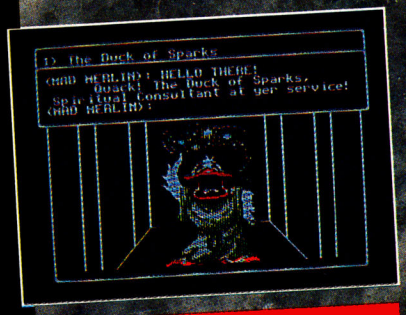

Screens from Apple II version of the game. Screens for other systems may vary.

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In the first activity, Picture Dictionary, kids review images and words for whatever rhyme, song, or fable they've selected. Pressing Return calls up a new graphic, and the spacebar toggles between the picture and the word. Reviewing the list helps the child associate words with pictures. Some youngsters may also begin to learn how to spell the target words. Contrary to what the publisher suggests, however, there's nothing very game-like about this activity.

Word Practice is Picture Dictionary's mirror-image activity. Here children first see a word taken from their chosen rhyme, song, or fable. The goal of the exercise is to read the word before switching to the picture. Again, there's nothing very game-like about this activity.

Story with Pictures presents a child with a rhyme, song, or fable adults should read aloud. In every line, there's a picture substitute for a key word. Youngsters will recognize the graphics, because they're the same ones used in previous activities. This exercise encourages prereaders to name the picture and complete the lines.

The next activity, Rhyme (or Song or Fable), presents the full text of the reading selection. There are no pictures accompanying the presentation; children listen as adults read aloud. You can, of course, encourage youngsters who want to read on their own to do so.

KEEP ON READING

In Guess the Next Picture, reading selections appear on screen one line at a time. Each line has a missing word, which youngsters must provide to complete the exercise. If they need a hint, kids can press the spacebar to call up a picture of the missing word.

Pick a Picture asks children to determine whether the picture appearing in a line of rhyme, fable, or story is correct. Before deciding, children may cycle through a list of choices to search for the right picture. Correct answers receive positive audio reinforcement, and the name of the graphic appears on screen. After three incorrect attempts, the program provides the answer.

Pick a Word is very similar to the preceding activity, except that children practice with missing words instead of pictures. The rhyme, fable, or song appears one line at a time. Each line contains a randomly selected word that may or may not be correct. If children decide that the suggested word doesn't fit, they can cycle through a list of words until they find the right one. If they choose the correct answer, they'll hear positive audio reinforcement and the word changes to its picture form.

Kids playing See a Picture, Type a Word have to type in the word for each picture that appears on screen. Correct spelling counts here, as the program doesn't recognize phonetic substitutions. Because many schools teach youngsters to use "inventive" spelling—a technique that focuses on ideas rather than correct spelling—the program's highly structured spelling requirements could frustrate youngsters who can name the word, but can't spell it correctly.

The final activity, Fill in the Word, requires that kids type in a missing word without any picture prompts. If the child enters the correct word, he or she hears musical reinforcement, and the word appears in its proper place in the rhyme, song, or fable. After three incorrect attempts, the program gives the answer. Again, this structured reliance on precise spelling might frustrate children who know the right answer, but lack the spelling skills.

A LITTLE OLD

The Apple II version of Joshua's Reading Machine isn't copy-protected. It comes on two double-sided 5¼-inch disks. The program operates more smoothly in a two-drive system, which cuts down on disk swapping. If you have a 3½-inch drive, you should copy all files to a single 3½-inch disk to eliminate disk swapping entirely.

The original 1984 version of Joshua's Reading Machine came out for the IBM PC as three separate modules, each under a different title. The current Apple II product (copyright 1988), combines the three modules with some changes.

Overall, however, Joshua tends to show its age. The graphics are simple and repetitive, and lack the detail we've grown accustomed to seeing on screen. Children may lose interest in the highly structured activities, which leave little room for open-ended exploration. Joshua the giraffe, who served well in his day, may now be growing a little old.□

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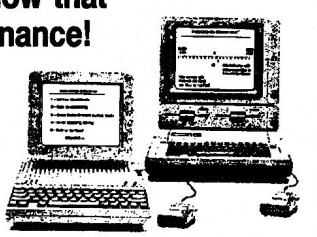

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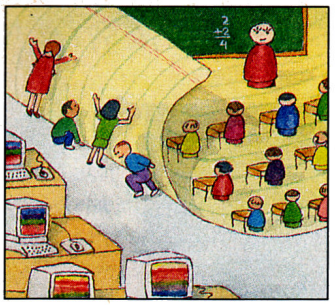


LEARNING CURVE

LOOKING AHEAD

By DAVID D. THORNBURG, Ph.D.

We're nearing the end of the time for talk. We don't need to wait for more new technology; we don't need any more academic research.

FROM THE STANDPOINT OF EDUCATIONAL technology, the '90s aren't going to start out very strongly. For example, most classrooms still have seats aligned in straight rows facing a blackboard that dominates the front of the room. Teachers still instruct primarily through lectures and books, even though video and audio technologies are increasingly available as alternative ways of exploring knowledge.

The sense that learning is a closed activity within the classroom is so strong that most teachers don't even have telephones with which they can call local libraries or other information sources during the day.

School activities are still largely structured around fixed-length periods, punctuated by the raucous sound of the bell at 40-minute intervals. Students are usually grouped by age instead of learning style or degree of intellectual development, even though research has shown that age isn't the best basis for establishing academic preparedness.

Fortunately, there are some schools, mostly in small communities, where students of various ages are grouped together and allowed to help each other. Subjects are integrated, not split into separate fields as though there were no relationship among them. But these schools are under fire for not conforming.

COMING OF AGE OR BACK TO THE FUTURE?

At this point, many of you are probably nodding your heads emphatically and saying, "Yes, that picture of the typical classroom is all too accurate." By the way, did I mention that I was taking it from a description of the schools of the 1890s, not the 1990s?

If you couldn't tell, I can't blame you. Considering the changes that have taken place in industry and in our personal lives in the past 100 years, the current structure of our educational system is an embarrassment.

When Edison invented the motion picture in 1894, he expected that it would revolutionize education. And if you look at today's classrooms, his invention of the phonograph in 1877 and Bell's invention of the telephone in 1876 may as well have gone unnoticed.

During one teachers' workshop I was conducting last year, I wanted to demonstrate a number of music tapes that have been shown to create a warm, engaging atmosphere in which learning can take place. The school not only didn't have a tape player, it had a policy that tape players weren't allowed on campus under any circumstances.

This neo-Luddite view of technology was being perpetuated in a year that marked the receipt of extraordinary closeup photos of Neptune and its moons from a spacecraft sailing billions of miles away from Earth.

COMPUTER ILLITERACY

I've had it with those who say we must tread slowly in the integration of technology into the classroom. We've been in a rut for a hundred years, and it's time to move forward. We don't need a tow truck, we need dynamite.

Look at one current educational reality—700,000 dropouts a year. Lost income over their lifespan amounts to more than $200 billion for every year we stay at that level. And that's not counting the cost of substance abuse, criminal activity, and the other tragedies of a disenfranchised population. Although there used to be a time when high-school graduation wasn't essential, those days have passed. Pick-and-shovel work is hard to come by in the information age.

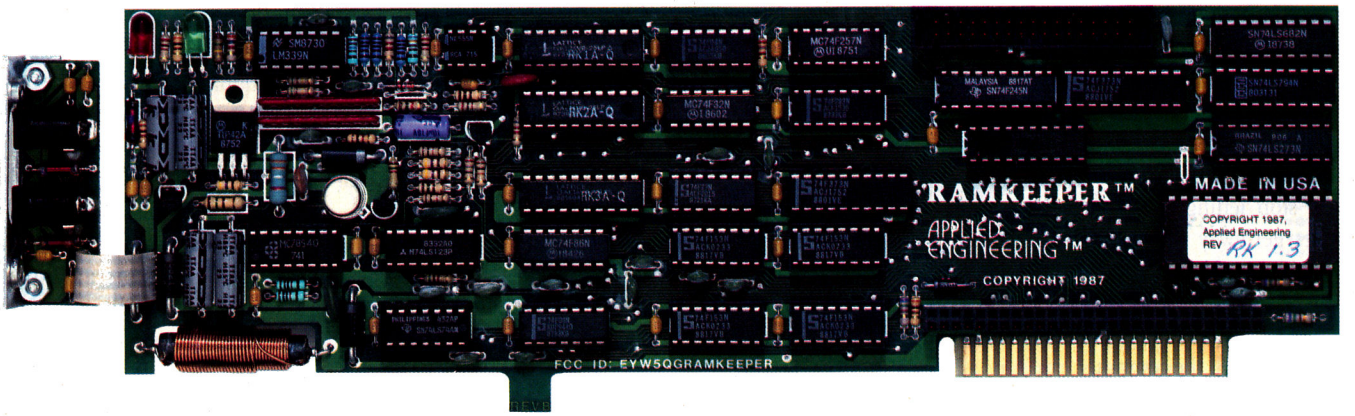
SOFTWARE CURRICULUM

So what does that have to do with computers in the classroom? Anyone who has watched educational computing for the past decade knows that well-designed computer activities can help unlock barriers to learning in any student with enough motivation to turn on the power.

I used to get steamed up about drill-and-practice software as a misuse of technology. I've modified ►

Illustration • Laura Johnson

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



Certainly the second.

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

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

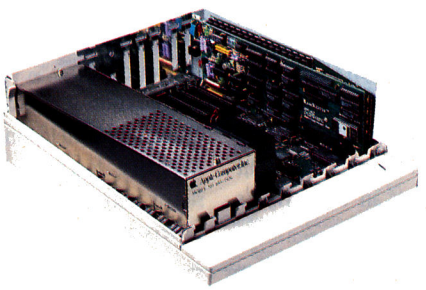
RamKeeper lets you add a second memory board to your memory expansion slot with a special "back pocket" connector. That way, you can use your 1 MEG Apple board and still expand beyond its 1 MEG limit. And RamKeeper "sees" the two boards as one, so all you'll notice is the increased memory.

Second, RamKeeper creates battery-backed Ram and ROM. Safely store your system software, often-used application programs and most-needed files on RamKeeper-enabled ROM. It's like an internal, electronic hard disk (up to 16 MEG!), but five times faster than an ordinary hard disk.

Turn your computer on and see the finder in 13 seconds, instead of several minutes.

Safe storage

RamKeeper powers up to two memory boards simultaneously, even when your computer is turned off. What's more, the stored programs are protected against power outages by the reliable Gel/Cell battery we include. Startup checksums are employed to verify that no data was lost



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

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

You can even mix different brands of boards. For example, an Apple board with at least 512K of memory (based on 256K x 1 chips), and AE's (MEG-chip based) GS-RAM Plus™ or GS-RAM Ultra™ boards. And most all other brand and size combinations are also possible.

Advanced enough to be easy

We designed RamKeeper to be easy to use. Instructions are clear and most functions are automatic. For example, there's no need to manually configure if you add a second board, it's done automatically. The configuring is linear, so there's less chance of a program crash. And *you* decide how much memory to devote to ROM and to RAM—all without affecting your stored files.

Compare features:

RamKeeper includes a collection of important features like *disk caching* that tremendously accelerates access time to the 3.5 drive, running most applications up to *seven times faster.*

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my position: Good drill-and-practice software can help students by analyzing errors and offering personalized advice one-on-one. Most current drill programs don't do that, but writing that kind of software isn't hard. As consumers, we must stop letting software companies get away with publishing electronic workbooks.

PUTTING IT ALL TOGETHER

Beyond drill, the computer can be a connection machine that lets students explore ideas in interrelated ways. The promise of hypermedia for the Apple II, as revealed through Techware's Tutor-Tech program and Roger Wagner's HyperStudio, is just now unfolding. (For more information, see "Curing the 8-Bit Blues," September 1989, p. 48; "HyperStudio: Hypertext for Your GS," Editors' Choice, August 1989, p. 108; "Does HyperStudio Stack Up?" September 1989, p. 44; and "In the Cards," Speaking of Graphics, October 1989, p. 94.)

The computer is already a system of navigation through a sea of knowledge. As I write this piece, I can check my spelling, find alternative words and phrases, look through my own library of quotations, dial up remote databases, and explore a vast world of information made useful—and I can do it all without ever leaving the keyboard.

SCHOOLS OF THE FUTURE

It has been predicted that by the end of the twentieth century we will have microwave ovens in more than 25 percent of our automobiles. We haven't provided our students with the most important informational tool of the century, and we're talking about microwave ovens in cars. Who's running this show?

Every child should have unlimited personal access to a computer—not because it's "hot" technology, but because computers are as essential for the capture, evaluation, and distribution of information as paper and pencil were in the past.

THE CLASS OF TOMORROW

There's no reason why Apple can't create a laptop IIc Plus-type machine and sell it at a price that would make it easy for parents and school administrators to purchase. And if we really wanted to control educational costs, we could just give computers away and pay for them out of the money we'd save from reducing the huge number of dropouts.

Education is probably the most conservative field on earth. Evolutionary forces work painfully slowly here; in the meantime, our society is running ahead at breakneck speed. And when society moves faster than its support systems, evolution gives way to revolution.

We're nearing the end of the time for talk. We don't need to wait for more new technology; we don't need any more academic research. What we need is to get off our lauching pads and bring schools into the 20th century before it, too, is over.□

DAVID THORNBURG IS INVOLVED IN THE CREATIVE USES OF COMPUTERS IN EDUCATION. PRINCIPALS OF SCHOOLS WITH STUDENTS IN GRADES K–6 ARE INVITED TO WRITE TO HIM REGARDING A SCHOOL DONATION PROGRAM HE HAS ESTABLISHED WITH ROYALTIES FROM THE AUDIO TAPE *SUNSHINE THOUGHTS*, PRODUCED BY THE THORNBURG CENTER FOR PROFESSIONAL DEVELOPMENT, P.O. BOX 1317, LOS ALTOS, CA 94023-1317. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

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GO FIGURE

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INVESTMENT SUMMARY

By James W. Sims

RUTH WITKIN'S INTEREST EARNED CALCULATOR ("Cashing In," AppleWorks in Action, April 1989, p. 68) helps you analyze potential available income for your retirement. Retirement Investment Analysis (see the accompanying **Figure**) will help you determine the general dollar amount you need to acheive *before* retirement. You can also use the spreadsheet to plan your IRA or Keogh withdrawal schedule to maximize your tax benefits. The revised spreadsheet provides a new section, Total Investment Income Summary, which combines the expected income from Social Security and your company's pension.

The **Figure** shows the complete spreadsheet. The top section is from April's Interest Earned Calculator; the bottom section is what our new information will determine.

Create the new section according to the following summary:

Long lines. Enter a single line across row 40 in columns A through G: Place the cursor in cell A40 and type quotation marks. Hold down the minus-sign key until the sign reaches the right edge of G40, and hit Return.

Leave the cursor in cell A40, and copy the row to the clipboard: Press OA-C to start the Copy command, and type **T** to select *To clipboard*. Press Return to indicate *A40...G40* as the source, then place the cursor in cell A43. Press OA-C, type **F** to select *From clipboard*, and hit Return to complete the copying procedure.

Labels. Before you type another word, center all your labels by pressing OA-V, then highlighting *Label format* and *Return*. Begin entering labels by placing the cursor in cell A39 and typing **TOTAL INCOME INVESTMENT SUMMARY**. Move the cursor to cell A41 and type **Age/**, then proceed to B41 and type **Investment**. Continue typing the labels according to the **Figure**.

Column width. You'll need to widen column G, so move the cursor to G40 and type OA-L to change the layout. Highlight *Columns*, then hit Return to indicate Column G. Now highlight *Column width* and press OA-Right Arrow several times. When you're finished, press Return and save the new format to disk.

FORMULA 1

Formula 1 correlates the Age/Year references in the Investment Analysis section with those in the Income Summary section.

Cell location: A44
Description: +A13

Copy the formula in cells A44–A68: Press OA-C to start the Copy command and hit Return to confirm *Within worksheet*. Press Return again to highlight A44 as the source. Hit the period key to select A44 as the range, then use the down-arrow key to highlight A44–A68 as the destination, and press Return. Press **R** to confirm a *Relative* reference.

FORMULA 2

Formula 2 is the "withdraw amounts" of cells E13–E37 in the Investment Analysis section.

Cell location: B44
Description: +E13

Follow the same procedure described above to copy the formula into cells B45–B68. Again hit **R** when AppleWorks asks whether this is a *Relative* reference.

FORMULA 3

Formula 3 calculates your estimated Social Security income. We'll refer each year to the previous year's entry, so the spreadsheet will carry forward an increase in any year. For this example, copy the number that appears in C44 in the **Figure**. When you calculate your personal income summary, just substitute the amount that will apply to your situation.

Cell location: C45
Description: +C44

Copy the formula into cells C46–C68 according to the procedure we used for the first two formulas. Press **R** once for *Relative* reference.

FORMULA 4

Formula 4 displays your Company Pension entries. Again, we'll enter each succeeding entry as relative to the previous year. To complete this example, use the number in D44 in the **Figure**. ►

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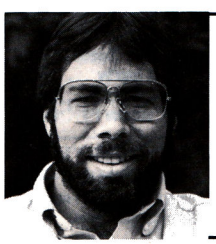

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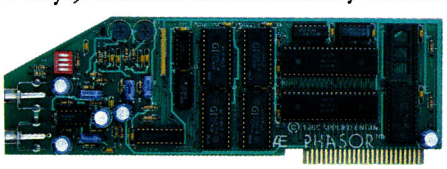

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Figure. Retirement-analysis spreadsheet.

File: RETIREMENT1 Page

RETIREMENT INVESTMENT ANALYSIS

Amount of Investment	85,000
Annual Interest Rate(%)	9.75
Times Comcounded Annually	365
Effective Annual Yield	10.24%
Initial Withdrawal Amount	7,500
Estimated Annual Inflation(%)	4.00After 15 Yr 64,559

Year	Beginning Amount	Interest Earned	Ending Amount	Withdrawal Amount	Balance Remaining
1	85,000	8,704	93,704	7,500	86,204
2	86,204	8,827	95,031	7,800	87,231
3	87,231	8,932	96,163	8,112	88,051
4	88,051	9,016	97,067	8,436	88,631
5	88,631	9,076	97,706	8,774	88,932
6	88,932	9,106	98,039	9,125	88,914
7	88,914	9,105	98,018	9,490	88,528
8	88,528	9,065	97,593	9,869	87,724
9	87,724	8,983	96,707	10,264	86,442
10	86,442	8,851	95,294	10,675	84,619
11	84,619	8,665	93,284	11,102	82,182
12	82,182	8,415	90,597	11,546	79,051
13	79,051	8,095	87,146	12,008	75,138
14	75,138	7,694	82,832	12,488	70,344
15	70,344	7,203	77,547	12,988	64,559
16	64,559	6,611	71,170	13,507	57,663
17	57,663	5,904	63,567	14,047	49,520
18	49,520	5,071	54,591	14,609	39,981
19	39,981	4,094	44,075	15,194	28,882
20	28,882	2,957	31,839	15,801	16,038
21	16,038	1,642	17,680	16,433	1,246
22	1,246	128	1,374	1,374	0
23	0	0	0	0	0
24	0	0	0	0	0
25	0	0	0	0	0

TOTAL INVESTMENT INCOME SUMMARY

Age/ Year	Investment Income	Social Security	Company Pension	Total Income	Inflation Estimate	Total Remaining
1	7,500	8,800	11,500	27,800	25,000	86,204
2	7,800	8,800	11,500	28,100	26,000	87,231
3	8,112	8,800	11,500	28,412	27,040	88,051
4	8,436	8,800	11,500	28,736	28,122	88,631
5	8,774	8,800	11,500	29,074	29,246	88,932
6	9,125	8,800	11,500	29,425	30,416	88,914
7	9,490	8,800	11,500	29,790	31,633	88,528
8	9,869	8,800	11,500	30,169	32,898	87,724
9	10,264	8,800	11,500	30,564	34,214	86,442
10	10,675	8,800	11,500	30,975	35,583	84,619
11	11,102	8,800	11,500	31,402	37,006	82,182
12	11,546	8,800	11,500	31,846	38,486	79,051
13	12,008	8,800	11,500	32,308	40,026	75,138
14	12,488	8,800	11,500	32,788	41,627	70,344
15	12,988	8,800	11,500	33,288	43,292	64,559
16	13,507	8,800	11,500	33,807	45,024	57,663
17	14,047	8,800	11,500	34,347	46,825	49,520
18	14,609	8,800	11,500	34,909	48,698	39,981
19	15,194	8,800	11,500	35,494	50,645	28,882
20	15,801	8,800	11,500	36,101	52,671	16,038
21	16,433	8,800	11,500	36,733	54,778	1,246
22	1,374	8,800	11,500	21,674	56,969	0
23	0	8,800	11,500	20,300	59,248	0
24	0	8,800	11,500	20,300	61,618	0
25	0	8,800	11,500	20,300	64,083	0

Cell location: D45
Description: +D44
Copy the formula into cells D46–D68 and type **R** once for *Relative* reference. ►

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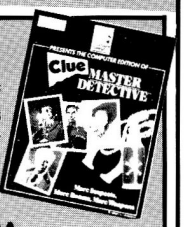

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FORMULA 5

Formula 5 adds the Investment Income, Social Security, and Company Pension to produce a Total Income Summary.

Cell location: E44

Description: +B44+C44+D44

Copy the formula into cells E45–E68 and type **R** three times to indicate *Relative* references.

FORMULA 6

Formula 6 sets up your initial desired income for the first year. Then it inflates that value each year by the amount you entered in your Estimated Inflation Rate. This will give you an estimate of how well your total income will keep up with inflation. Again use the number in cell F44 in the **Figure** to complete this example.

Cell location: F45

Description: +F44*(1+(D8/100))

Copy the formula into cells F46–F68 and press **R** once for *Relative* reference. Type **N** for a *No change* reference to D8.

FORMULA 7

Formula 7 repeats the Balance Remaining column in the Investment Analysis section.

Cell location: G44

Description: +F13

Copy this last formula into cells G45–G68 and press **R** once for *Relative* reference.

Write to James W. Sims at 2340 Stuart Drive, Kingsport, TN 37664.

QUICKIES

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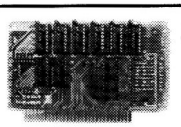

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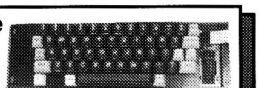

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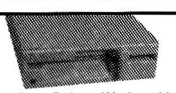

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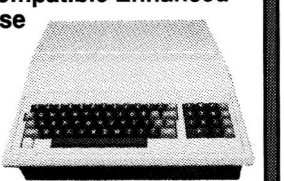

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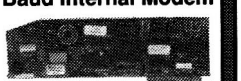

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READER SERVICE INDEX

Reader Service		Page
58	Abbys Discount Software	138
286	Abracadata	104
245	Advantage Computing	120
103	Alltech Electronics Co. Inc.	93
95	American Micro Research	47
*	Applied Engineering	25, 50, 51, 61, 71, 79, 82, 83, 95, 101, 108, 109, 113, 116, 117, 127, 131
54	Applied Ingenuity	111
47	Applied Ingenuity	73
65	Az-Tech Computer Services	137
87	Bible Research Systems	138
151	Big Red Apple	43
66	Borg Industries	138
32	Britannica Software	CV4
*	Broderbund Software	5
264	California Dreams	21
116	Canadian Computer Outlet	137
81	Casady & Green	4
8	CDA Computer Sales	16, 19
*	Central Point Software	77
94	Choice Computer Products	138
*	Claris Corporation	96, 97
154	Compu-Teach	6
*	Compucraft	138
124	CompuServe	52
109	Compushare	140
205	Computer Direct, Inc.	88, 89
252	Computer Enhancers	139
288	Computer Friends	122
*	Computer Learning Foundation	118, 119
142	Computers Plus Company	137
134	Dayton Computer Supply	137
108	Diversified Software	132
73	DMA Technologies	140
220	Educational Resources	22, 23
135	Entertainment Online	132
85	Fas-Track Computer Products	74
132	First Class Peripherals	125
61	GE Ridge Services	140
*	Genie	75
*	Golem Computers	30, 31
27	Gosselin Computer Services	141
*	inCider Sub Ad	135
23	International Software Lib	142
163	Interplay	11
*	Intuit	83
43	Island Computer Services	140
70	Island Computer Supply	141
199	Jameco Electronics	134
30	KAT	139
*	Kensington Microware	CV3
131	Kinson Products	29
175	Laser Computer Inc.	9
34	Little People Can Read	137
248	Memory Plus Distribution	105
4	Merritt Computer Products	138
55	National AW User Group	139
173	New Science Prospects	142
271	Nikrom	124
89	North Forty Enterprises	141
145	Origin Systems	65
42	Origin Systems	107
59	Perfect Solutions Software	137
77	PIE	139
84	Precision Data Products	139
*	Preferred Computing	66, 67
105	Price Busters	114
128	Programs Plus	36, 39
269	Public Domain Exchange	20
155	Quality Computers	102, 103
136	Quality Computers	2, 3
164	Quality Computers	136
7	Ramco Computer Supplies	139
117	Ribbonland	121
90	Roger Coats	44, 45
185	S.A. AuTeur Company	141
240	Sensible Software	12
293	Seven Hills Software Corp.	13
143	Silicon Express	129
218	Sir-Tech Software, Inc.	123
292	Softdisk	1
51	Softools	138
96	Softronics	141
127	SoftSpoken	142
270	Software Disc. of America	133
18	Sports Software Assoc.	140
233	Standard Peripherals	139
160	Strategic Simulations	115
92	Street Electronics	CV2
156	subLOGIC Corp.	128
104	Supra Corp	33
110	Taito Software Inc.	41
11	Telemax	140
10	The Experts	140
141	The Learning Company	87
68	Thunderware	35
140	Timeworks	63
50	Tom Snyder Productions	98
192	Triad Software	42
231	Tulin Corp.	93
232	Unlimited Software	141
297	USA Micro	28
82	Victory Software	99
283	Virginia REAL Software	141
260	Zimco Int.	27

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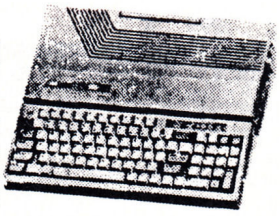

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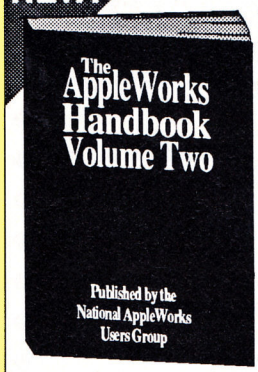

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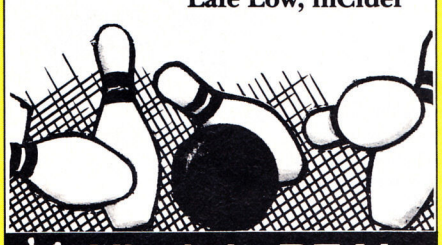

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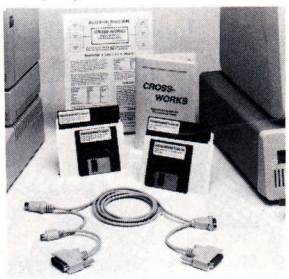

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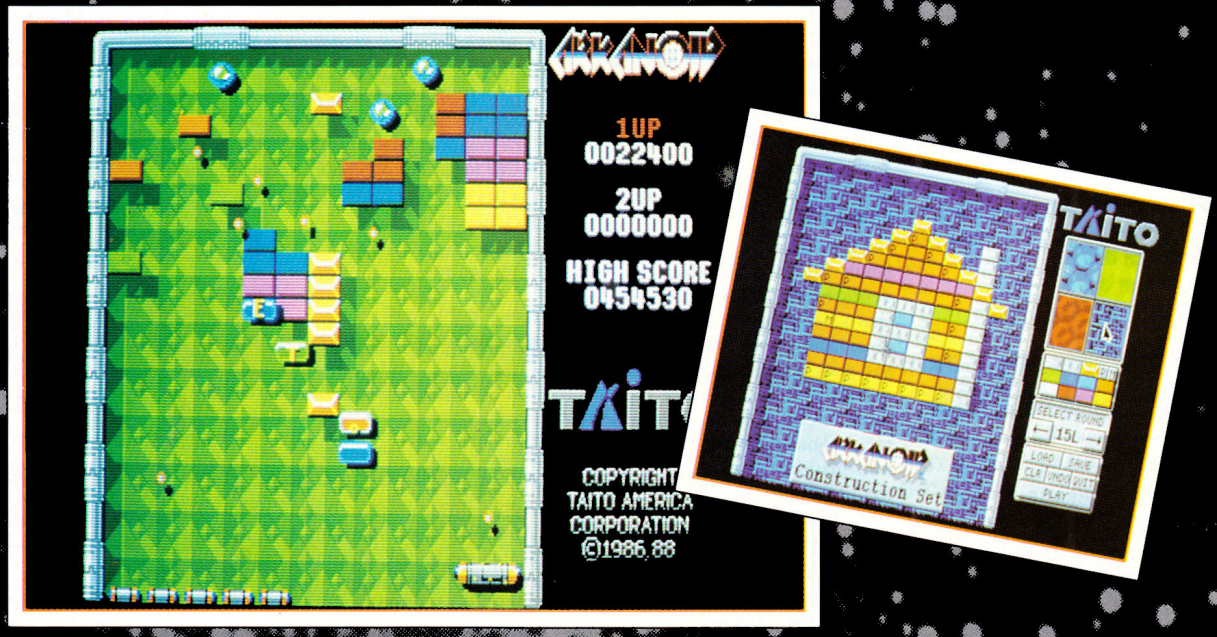
EDITORS' CHOICE

ARKANOID II: REVENGE OF DOH



JUST WHEN YOU THOUGHT YOU COULD FINALLY GET back to work . . . the villainous star of Taito's first Arkanoid returns with a vengeance. Doh's the *someone* the game makers claim has warped time and space, the monster you had to hit 15 times in the final level of Arkanoid—and in game II he makes that first encounter look like a walk in the park. This one's got twice the number of levels—33 to the left and 33 to the right—and you'll have to conquer them all before you get the chance to do battle with Doh.

What's your strategy? Arkanoid II offers some of the same "pills" you caught in part I—pills that slow the action; pills that make your "Vaus" (your ship) larger or give you an extra Vaus; pills that snare the energy ball or split it in three; pills that shoot lasers or help you sneak out the side door. But now there are even more, and they come rolling down at a furious pace: pills that give you a double Vaus, or a half-sized one carrying twice the number of points; pills that create a "shadow" to follow your Vaus and deflect energy balls; and special glowing pills that randomly give you rapid-fire lasers, 20 energy balls, 20 mega balls that break through any energy brick they hit, or nothing at all.

"The new pills are by far the best part of the new Arkanoid," says Review Editor and devoted fan Lafe Low. "I love the M, which gives you an orange nuclear-powered death ball that cuts through anything, even the yellow bricks. That's a great one to snag on those killer levels you just can't seem to get through any other way."

It may take years or it may never happen at all, but if you do tire of Arkanoid II, don't worry. This one also includes a Construction Set for designing your own levels. Just press *C* at the title screen. From there, let your imagination run wild. Design twisted labyrinthian passageways and convoluted caverns of energy barriers; you can choose background hues, the colors of the energy blocks, which blocks will yield pills, and which will move.

"As much as I enjoy playing—and that's a lot," says Senior Editor Paul "Arkanoid Hero" Statt, "the greatest part of Revenge of Doh is the Construction Set. In addition to making the game theoretically limitless, it's a great way to compete with a friend. Lafe Low and I concocted the most fiendish levels we could imagine and challenged each other to finish. I'm hooked, again."

Arkanoid II sells for $34.95 from the wizards at Taito Software, 267 West Esplanade, North Vancouver, British Columbia, Canada V7M 1A5, (604) 984-3344. Don't even try to say no, because you can't.□

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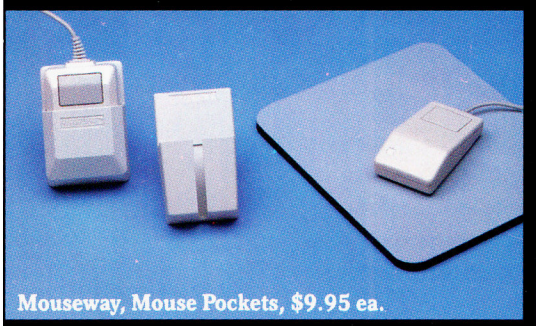

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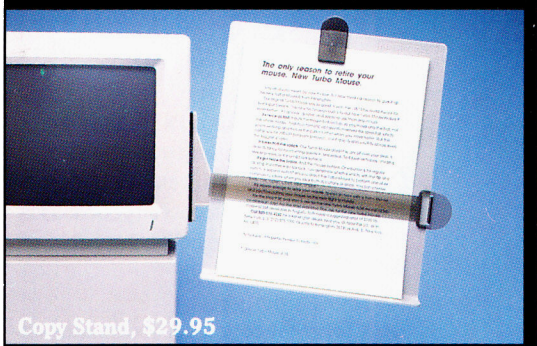

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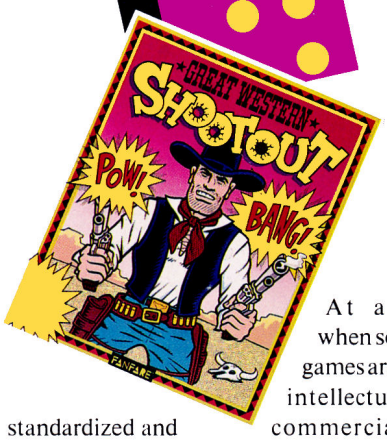

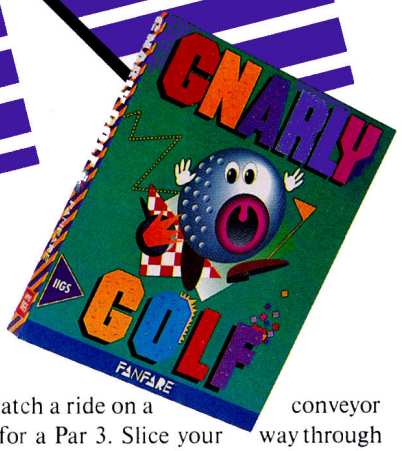

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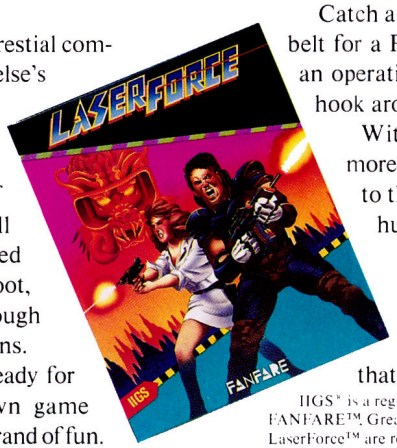

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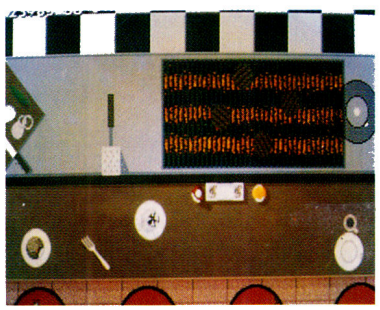

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