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August 1990

Interactive +S

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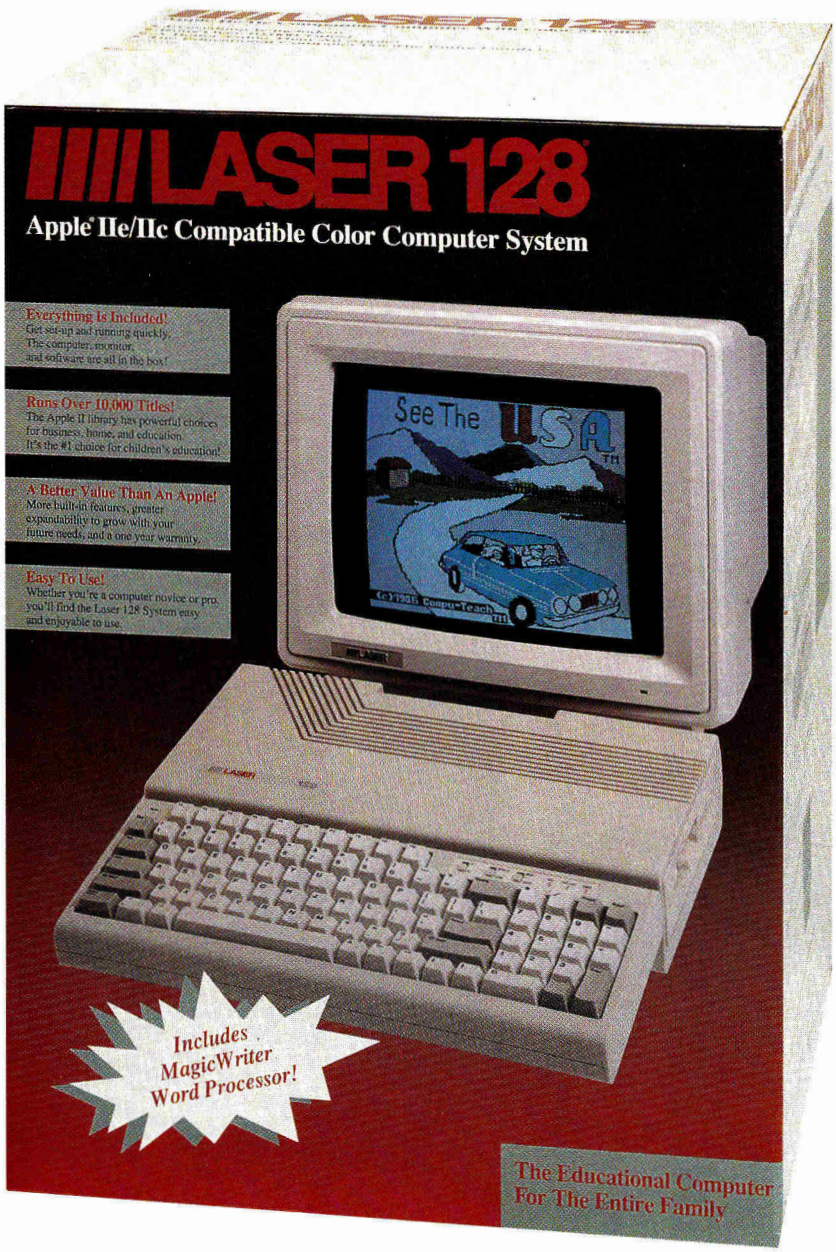

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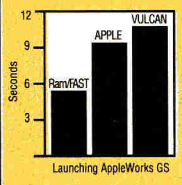

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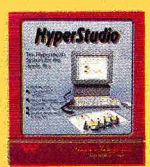

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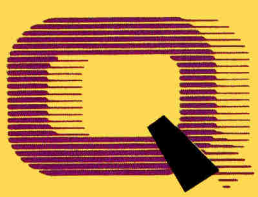

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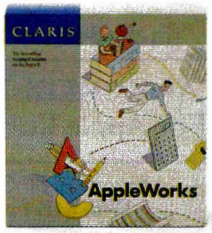

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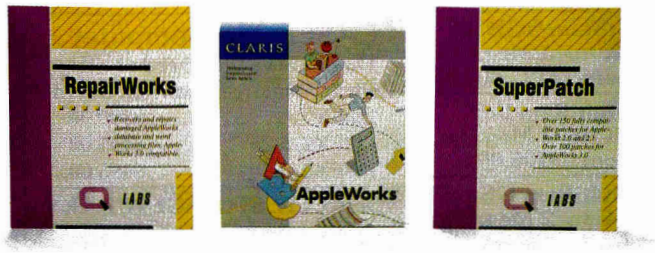

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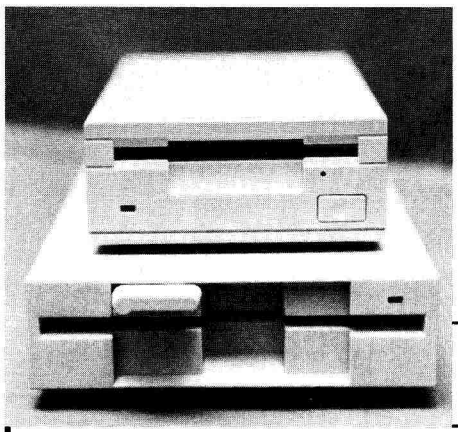
Circle 164 on Reader Service Card.



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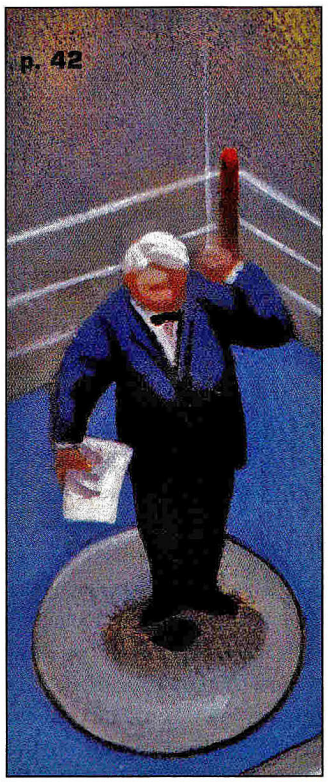

AUGUST

1990 Vol. 8 No. 8

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Let's . . . get . . . ready . . . to . . . rumble! In the red corner, weighing in at $129.95, with ProDOS 8, a minimum of 128K of RAM, and super-hi-res graphics support, the champ — Publish It! 3. And in the blue corner, weighing in at $149.95, with GS/OS, a minimum of 768K of RAM, and the true Apple desktop interface, the challenger — GraphicWriter III.

48 **Living Color**

Ted Turner notwithstanding, the shadow cast by *The Inquirer* will always be black-and-white in our memories of *Citizen Kane*. Print audiences in 1990 are more demanding, though. Add a splash of color to your newsletters, promotional pamphlets, ads, and posters, and wake up your readers with a spectrum of special effects.

52 **Is It Live or Is It Apple II?**

Apple users say it with music — and *inCider* has surveyed a symphony of software products that can turn your II into a recording studio or a classroom. In composition, editing, instruction, and performance, Apple II programs are hitting the top of the charts.

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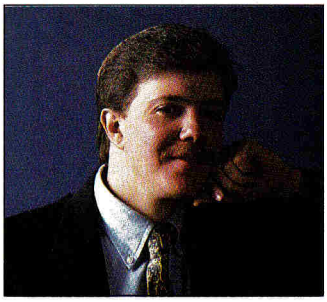
Cover Illustration * Earl Keleny



INCIDER'S VIEW

CREATING A MARKET

By DAN MUSE * EDITOR IN CHIEF

Buying Apple II products will have more impact on the II market than thousands of letters to John Sculley.

SOMETIMES WE KNOW THAT WHAT WE write in *inCider* will stir controversy. To be honest, we like to create controversy. It keeps us thinking and it keeps you thinking. So when we receive letters disagreeing (sometimes vehemently) with our opinions, we're not surprised.

Occasionally, however, one of us writes something that is obvious to us, but causes all sorts of problems when you read it. We were surprised, for example, by the flood of letters protesting Paul Statt's Stattus Report, "Supply and Demand," p. 20 in the June issue.

People were shocked, irritated, and angered by Paul's suggestion that you buy more Apple II products if you want the II line to remain healthy: "It's a poison pill you'll have to swallow, one I'm loathe to prescribe: You must buy every piece of Apple II software and hardware you can afford."

I'll admit that I don't agree with everything Paul Statt writes. In fact, I don't even understand everything Paul Statt writes. Not only do I agree with and understand Paul's message in "Supply and Demand," however, I think it's common sense. As we often say around here, he was stating the obvious with an air of discovery. You don't need a degree in economics to know that if people buy a lot of a particular product, businesses will catch on and make more of the same. Just look at "dry" beer, for example.

Buying Apple II products will have more impact on the II market than thousands of letters to John Sculley. Convince your friends and relatives, sons and daughters, teachers and school administrators that the Apple II is still a viable, reliable, and capable computer. We receive copies of many of the letters sent to Sculley via the II Infinitum campaign ("Apple Bits," What's New, July 1990, p. 17). If you believe in the II as strongly as your letters suggest, you should have no problem persuading people to buy Apple II.

We don't mean to minimize the II Infinitum approach, but Apple II users shouldn't expend their energies writing letters to John Sculley. Isn't it better to have 100,000 Apple II users convincing another 100,000 people to buy — or stick with — Apple IIs than to have 100,000 people trying to convince one person, even if that person is John Sculley? Sculley's a marketer, a salesman. Remember, before Sculley came to Apple he spent his time trying to convince people to buy Pepsi instead of Coke.

John Sculley's job is to sell boxes. If you show him there's a demand for Apple IIs, he'll want to sell more of them. When Apple talks about the II, the two words you hear most often are "support" and "transition." It will take more than words to convince Apple executives to add "market" and "sell" to the Apple II vocabulary. Performance is reality. Vote with your dollars. The road to obscurity is paved with letter-writing campaigns.

Maybe we're naive, but we still believe that users drive the market with their purchasing decisions. Look at Vitesse's Quickie and Thunderware's LightningScan, for example — two hand-held scanners for the Apple II. Thunderware, which also produces ThunderScan for the II, has had a hand-held scanner for the Mac for years; the company never showed much interest in selling it for the II. When Vitesse starting marketing and, more importantly, selling hand-held scanners for the II, however, Thunderware quickly jumped in with LightningScan. That strategy makes sense. When the demand became clear, Thunderware made its move. You could argue that Thunderware lost sales because it wasn't first, but many businesses prefer to let another company take the initial gamble. In this case, we're lucky Vitesse took the risk.

Although many people didn't like what Paul Statt said in his June column, it hits home. Don't expect Apple to suddenly start running commercials for the II. If you want new products, you'll have to prove there's a strong demand. You — we — have to get out there and, to use an Apple term, evangelize. □

The Ultimate 3.5 Drive

Introducing the new AE 3.5 Drive — setting a new standard for basic Apple II storage. All the reliability and performance of Apple's 3.5 drive at a price approaching that of the cheapest import. Our design incorporates the same top-quality Sony mechanism that Apple uses, but instead of Apple's $429, our drive is $279.

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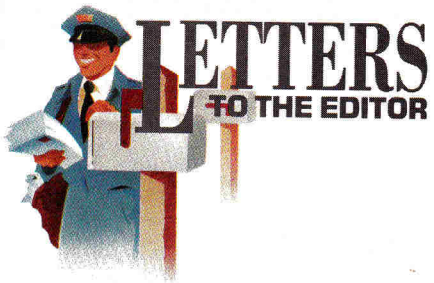

In Plain English

THE CYRILLIC PRINT IN YOUR May 1990 issue ("GS Invasion," What's New, p. 14) really jumped off the page at me, because I'm a Russian teacher and an Apple buff. The individual words translate as "powerful and much notable for bright colors." I'd put it all together as "Powerful and Color-Packed."

Jerry Wagner
P.O. Box 961
Sparta, NJ 07871

Star-Crossed Search

DOES ANYONE KNOW OF AN Apple II tracking program to trace the path of an orbiting space shuttle? No luck finding one for the IIe.

David Andrew McConnery
34 David Drive
Nepean, ON, Canada K2G 2N1

AE Responds

ELIAS DROBOTIJ'S LETTER suggests that we knowingly installed cheap and noisy cooling fans in our Vulcan hard-disk drives ("Not a Vulcan Fan," Letters, May 1990, p. 12). That isn't true. When we became aware that some of the cooling fans were becoming noisy after a few weeks of testing, we began testing other fans. Since then, we've changed over to a new fan that has remained quiet in our production Vulcans, as well as in several test Vulcans — they've been in continuous operation more than six months.

I have to take issue with Mr. Drobotij's comment that Applied Engineering was "penny wise and pound foolish." Both the original fan and its replacement are more expensive than the fans used in our competition's hard disks.

We consider excessive fan noise a legitimate warranty problem. Customers who purchased Vulcans within the first few weeks of availability and are experiencing this problem can have them serviced under warranty. In every engineering endeavor there are quality-versus-price tradeoffs. I have every intention of continuing Applied's policy of choosing quality.

Danny W. Pote
Director of Research and Development
Applied Engineering
P.O. Box 5100
Carrollton, TX 75011

Run-In

I'D LIKE TO THANK YOU FOR publishing Bart Grossman's letter regarding the Lode Runner virus in your March 1990 issue ("Running Wild," Letters, p. 12). It's in the best interest of every computer user to be as well informed as possible on viruses and their characteristics. Your readers may also be interested in a U.S. government paper, *Computer Viruses and Related Threats*, available for $2.50 from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Ask for stock number 003-003-02955-6.

As Bart Grossman stated, the Lode Runner virus doesn't damage any data or application files; it infects only one spot per disk and can't destroy any subdirectories. When you format your disk, the virus becomes part of the ProDOS kernel. To determine whether your disk has been infected, boot Copy II+, run the 3.5-inch Sector Editor and read block 0000 (track 00, sector 00, side 01). If the first 3 bytes are 01 A9 50, the disk is infected. Even though these 3 bytes aren't the only ones that have been changed, they verify the presence of the virus on the disk. If you perform a file copy, you appear to remove the virus.

Mr. Grossman wrote that the Public Domain Exchange offers a "vaccine." Virus Killer isn't 100 percent effective in eliminating the problem, but it can determine which disks have been infected. To obtain it free of charge, call (408) 496-6439.

I'm dismayed that someone would devote time and effort to such destructive means. It's obvious that the author of the Lode Runner is a talented programmer; it's such a waste that this individual chose to impede the computer revolution, rather than help it expand. I'll never understand the workings of the criminal mind.

Larry Woodard
Technical Support
Public Domain Exchange
2047C Walsh Avenue
Santa Clara, CA 95050

Where's the LCD?

IN THE APRIL ISSUE ("LIQUID Crystal," Letters, p. 13) you wrote that a liquid-crystal display could be purchased from Roger Coats in San Diego. The manufacturer that once supplied him with the C-VUE has discontinued production. Does some other dealer sell them?

Rudiger Monckert
1837 South Maywood Avenue
Independence, MO 64052

We've been unable to locate another source of LCDs for the Apple II. If anyone hears of a supplier, let us know. — *eds.*

Steering Clear

I NEED A USER-FRIENDLY PROgram to lead me through the maze of writing a résumé. Any suggestions?

Andrew S. Fatek
2129 Green Street
Philadelphia, PA 19130

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— eds.

Face It

I'D LIKE TO POINT OUT AN inaccuracy that appears in the article "Face to Face" (March 1990, p. 60).

Joe Abernathy complains that the various font editors he tested produced false "out of memory" messages with large fonts, even on his 2-megabyte GS. The error message has nothing to do with the hardware, however.

It results from Apple's standard GS font format, which sets a 32K limit on the font itself to let systems with less memory use that font.

Gregory J. Betzel
Route 4, Box 177
River Falls, WI 54022

More Paint

I READ YOUR DESCRIPTION OF Cheap Paint (What's New, May 1990, p.14) and thought you should have mentioned its font-modification feature, which lets you continuously adjust type size and style. This feature is handy because you can fit text into spaces of fixed size.

Scott C. Seely, D.V.M.
2839 Lafayette Road
Portsmouth, NH 03801

Avoiding a Lemon

I AGREE WITH YOUR COMPARIson between computer dealers and car dealers in the May *inCider*'s View ("What's the Deal?" p. 8). I thought I could get a copy of GS/OS version 5.0 for no charge, but I found that impossible.

At one computer store, I was told that the tech-support people didn't make copies of GS/OS, but that they would sell me a copy for about $49.95. Even the dealer who sold me a GS told me that the store didn't make copies of GS/OS, but if it was in stock, I could buy it for $59.95.

At this point I assumed that consumers can't get something for nothing, and I gave up pursuing a free upgrade. After reading *inCider*'s View, however, I have renewed hope. Through *inCider*, Apple II users can possibly have some leverage to at least get Apple Computer and its dealer network to tell the same story. At best, we may get some of the upgrades and support we thought we were getting.

Kenneth D. Taggart
1930 Brae Burn Drive
Corona, CA 91720

YOUR EDITORIAL "WHAT'S THE Deal?" in the May 1990 issue (p. 8) hit the nail on the head.

When I took some blank disks to my GS dealer to get copies of System Disk 5.0, he told me it would cost $20 to either make copies or to buy a package with documentation. After I bought the package and took it home, I discovered that the disks weren't from Apple, and the documentation consisted of only a few pages of notes. The new features of System Software 5.0 were hardly mentioned.

Since this episode I haven't been back to the store, and I've received the updates to System Software 5.02 indirectly by purchasing programs from companies that advertise in *inCider*.

Robert G. Hewitt
5436 Vanden Road
Vacaville, CA 95687

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Update

Micro-Peripherals Engineering has moved to a new location. To order the MP6 Extended-Capacity Drive ($154, 320K dual-sided 5.25-inch, as described in What's New, March 1990, p. 21) by mail, contact the company at 1230 FM, 1960 East Bypass, Humble, TX 77338, or phone (713) 446-8658.

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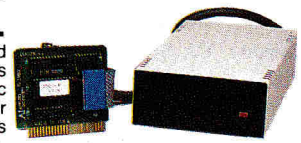

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Ram Express 512K (IIc+)	220.
Ram Express 1MB (IIc+)	269.
Serial Pro (II+, IIe, IIGS)	106.
Parallel Pro. Timemaster HO	ea. 73.
PC Transporter 768K	297.
Installation Kit (IIGS)	39.
Installation Kit (IIe)	31.
RamKeeper	139.
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WHAT'S NEW

edited by Paul Statt

APPLEFEST SOMERSET

EXPOSITION MANAGEMENT (WALTHAM, MA), formerly Cambridge Marketing, sponsors of AppleFest/ComputerFest, reports that "more than 12,000 educators and home and home-business computer users crowded the aisles" of the show in Somerset, New Jersey, in May.

Cambridge Marketing reported the attendance at last year's spring AppleFest in Boston to be 22,000. Those who attended the Somerset show cited the location, the addition of Commodore and IBM hardware to the show (ComputerFest), and the absence of Apple Computer as probable reasons for the downturn.

Exposition Management promises that the fall AppleFest/ComputerFest will be held in San Francisco on September 14–16. Apple Computer has neither confirmed nor denied that it will participate. For details on fall AppleFest, call (800) 262-FEST.

APPLE USER GROUP CONFERENCE

APPLEFEST WASN'T THE ONLY significant Apple II event this spring. Two weeks after AppleFest, Chicago hosted the 1990 National Apple User Group Conference. The conference was sponsored by INTERCHANGE, a nonprofit Apple computer user-group cooperative. Hundreds of user-group members from all over the country came to exchange ideas, see new products, and meet new friends.

While the show incorporated the Macintosh, Apple II companies that attended included Zip Technologies, America Online, Digital Data Express, Quality Computers, Ingenuity Inc., Stone Edge Technologies, Timeworks, Beagle Bros, On Three, CV Technologies, and Roger Wagner Publishing. Claris Corp., publisher of AppleWorks and AppleWorks GS, attended the show, but brought no Apple II software.

A highlight of the show was the first public demonstration of the new **RamFast SCSI card** from Andrew Vegan of CV Technologies (9431 Saddlebrook Lane, Suite 2C, Miamisburg, OH 45342), formerly with Ohio Kache Systems. RamFast is a DMA/caching board for SCSI (small-computer-systems interface) and SASI (Shugart Associates standard interface) hard drives. It reportedly will retail for under $200. Call (513) 435-5743 for details.

Apple Computer's Apple II Product Manager, Rajiv Mehta, told hundreds of Apple II and Macintosh user-group representatives that the Apple II is extremely important to Apple, and that Apple is committed to supporting, selling, and improving the entire line of Apple II computers.

Mehta also stated that Apple's goal is to provide products that enhance the installed base of IIs, and to provide a way to run Apple II software on a future Macintosh model. He encouraged users of both the Apple II and the Mac to see the strengths of each family of computers and to realize that both were excellent machines.

At late-night rap sessions many Apple II users vented their frustrations with Apple. Jane Lee, the Apple II's marketing "chief," listened to suggestions from several users on ways to improve the image and sales of the Apple II.

Jim Mensch, one of Apple's software engineers and the genius who designed the GS' accelerated System Disk 5.0 QuickDraw routines, talked at length about the past and future of the Apple II and hinted of further enhancements to the GS/OS operating system.

In other conference news, INTERCHANGE released the initial installments in its **GEM CD-ROM series** (compact-disc read-only memory) — one for the Macintosh, one for the Apple II. Each of the GEM CDs contains public-domain, shareware, freeware, and demonstration software.

The Apple II CD-ROM contains 150 megabytes of files. Although CD-ROM technology is still in its infancy, sales of these disks exceeded INTERCHANGE's wildest expectations, according to the cooperative's staff.

The Apple II GEM CD is distributed by Digital Data Express (13636 South Western Avenue, Suite 28, Blue Island, IL 60406, 708-389-7744) for $50, and operates in any Apple II with a CD-ROM drive.

— Dean Esmay, A2-Central, GEnie

NEW PROTERM

SOFTWARE

***ProTerm**, Greg Schaefer's popular and critically praised telecommunications program, is now back in production.*

Checkmate Technology (Phoenix, AZ), former publisher of ProTerm, went out of business recently. Author Schaefer has joined with Jerry Cline, of the Arizona Apple Users Group, to form a company called InSync Software to market ProTerm.

"We hope that we're 'in sync' with the market with ProTerm," says Cline. "We're in sync with each other already." Cline and Schaefer are considering what their next product will be; both think it will be something in telecommunications. "We've taken ProTerm 2.1 and cleaned up all the problems," claims Schaefer, "and added some features like expanded dialing lists" for this latest edition.

Version 2.2 is available to ProTerm users for only a $10 upgrade fee. InSync won't notify users individually, because Schaefer has no mailing lists. Contact the company at P.O. Box 22141, Phoenix, AZ 85028, (602) 992-5515, for details, or circle number 350 on the Reader Service card for more information. ***— P.S.***

Big Adventure small price

GAMES

Nite Owl Productions' **Wraith: Devil's Demise** is a new adventure for Apple IIe, IIc, IIc Plus, and IIGS owners. It comes complete on a 3.5-inch disk, including on-screen instructions, a map, a demo play option, and dungeons that are simply too vast to fit on 5.25-inch floppies.

The object of this graphics-based adventure is to search out and destroy the evil creature Wraith and thus save the island of Arthia. The intrepid explorer will have to fend off any number of monsters, learn magic spells, and purchase the right weapons and armor, among other challenges.

Wraith: Devil's Demise has a retail price of only $14.95, but if you order before December 31, it will cost an astoundingly low $9.95 (plus $2 shipping), from Nite Owl Productions, 5734 Lamar, Mission, KS 66202, (913) 362-5798. Circle number 351 on the Reader Service card for more information. **— P.S.**

THE ART OF TEACHING

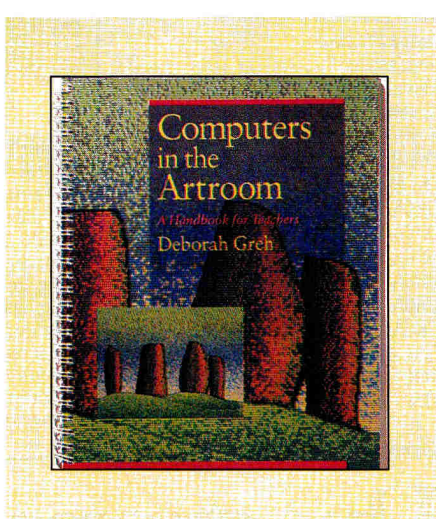
RESOURCES

"We teach as we've been taught," writes Deborah Greh, "and most of us have never taught with computers." Greh is the author of ***Computers in the Artroom: A Handbook for Teachers*** (Davis Publications, Printers Building, Worcester, MA 06108, 508-754-7201, $23.95).

Computers in the Artroom answers the teacher's need for a complete guide to getting the most from computers. The 131-page spiral-bound book covers curriculum development; activities in design, drawing and color; information on the hardware and software you'll need to set up a computer lab; and even hints on evaluation of students' artwork.

Teachers with Apple IIs can use the included 5.25-inch disk of student work to observe the step-by-step process of creating a piece of computer art. The cover of *Computers in the Artroom*, illustrated here, for instance, was created by eighth-grader Nick Hawryluk using 8/16 Paint (Baudville); the disk lets you see his "sketches" grow into a final "painting."

Computers in the Artroom is priced at $23.95. If you can't find it at your bookstore or in your school catalogue, call Davis Publications at (800) 533-2847 for details. ***— P.S.***



Computers in the Artroom: A Handbook for Teachers, by Deborah Greh, from Davis Publications; cover art by Nick Hawryluk. ►

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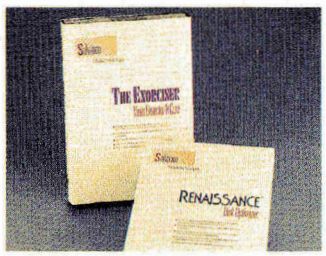

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ECLAT
Fractal Explorer(AP or GS)..... 27.

Electronic Arts
DeluxePaint II(GS).....35.
DeluxeWrite w/ Deluxe Paint II(GS)..59.

EL KASSIR Software
COLOR+(GS)..... 49.
Supergraphix II w/music(GS)..... 59.

Roger Wagner
Graphic Exchange(GS).....30.

So What Software Iconix(GS)..... 29.

Spinnaker
Newsroom Clip Art Collection vol. 1, 2 or 3..... 14.
Certificate Maker Library #1..... 19.
Certificate Maker or Newsroom..... 26.

Thunderware
Thunderscan(AP & GS)..... 159.
LightningScan(GS)..... 209.

Triad Venture
GDL Graphic Disk Labeler-GS v2.0.. 25.

Virtual Reality Inc. Visionary(GS) 279.

Vitesse, Inc. Quickie(AP or GS).... 199.

1-800-832-3201

Utilities and Languages

Absoft AC/BASIC(GS)..... 79.

Big Red Computer
PS Lovers' Utility Set(AP or GS)..... 27.

Micol Systems
Micol Advanced Basic IIE..... 59.
Micol Advanced Basic(GS) v3.0.....89.

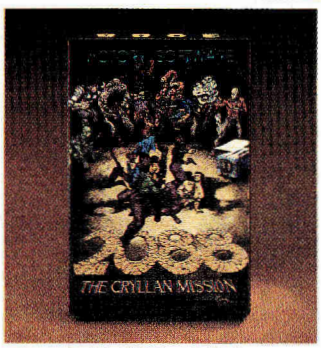
Roger Wagner
SoftSwitch(GS)..... 36.
Merlin 8/16 *(AP & GS)*..... 75.

So What Software
Hyper Launch(GS) v3.0..... 35.
Call-Box(GS).....69.

The Byte Works
ORCA/Disassembler(GS)..... 32.
ORCA/DeskTop(GS)..... 34.
ORCA/M Assembler(GS)..... 39.
ORCA/Design Master(GS).....59.
ORCA/Pascal Desktop Debugger.....80.
ORCA/C Desktop Debugger..... 80.

TML Systems
TML Source Code Library II(GS)..... 35.
TML Basic(GS) or TML Pascal II(GS).....82.

Zedcor ZBasic v4.21.....39.



FAR OUT – ROLL PLAYING GAME

2088: The Cryllan Mission by Victory Software earns top adventure game rating from Nibble and Apple IIGS Buyer's Guide. You lead rescue team searching planet Crylla for missing crew of U.S.S. Houston. Vivid graphics of towns, 3-D caverns and dungeons as you converse with numerous townspeople. Requires 1.125 MB and 3.5" drive.
Suggested Retail.....$69.95
Programs Plus Price..... $36.

Graphics Packages

Abracadata
Architecture Library 1, 2, 3 or 4(AP or GS).....21.
Interiors Library 1, 2(AP or GS) or Landscape Library 1..... 21.
Design Your Own Train.....34.
Design Your Own Home: Architecture, Interiors or Landscape.....47.
Design Your Own Home: Architecture(GS), Interiors(GS) or Landscape(GS).....59.

Activision Paintworks Gold(GS)..... 44.

Baudville
Award Maker Plus(AP & GS).....30.
816/Paint..... 49.

Beagle Bros. Beagle Draw(GS).....69.

SUPER PRINTER EMULATION PACKAGE

Superwriter 924 by Xetec virtually lets any 9 or 24 pin parallel printer emulate Imagewriter I, II and LQ printers. No special software or drivers needed. Cables included for Apple IIGS, IIC, IIC+, Laser 128, 128EX.
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Suggested Retail.....$49.95
Programs Plus Price.. $34.each

Apple Compatible Computers

Laser Computer, Inc.
Laser 128 Cables *(Parallel, Serial, RGB or Modem)*.....16.
Laser 128 Mouse.....45.
Laser 128 Disk Drive or Laser Amber Monitor.....99.
Laser 128 800K 3.5" Drive w/Controller.....215.
Laser 190A Printer w/Serial Interface.....235.
Laser RGB Monitor.....279.
Laser 128 Computer.....349.
Laser 128EX Computer.....389.
Laser 128EX II Computer (5¼).....409.
Laser 128EX II Computer (3½).....449.
Laser 128 System w/Amber Monitor & Word Processing Software.....399.
Laser 128 System w/Color Monitor & Word Processing Software.....510.

Printers

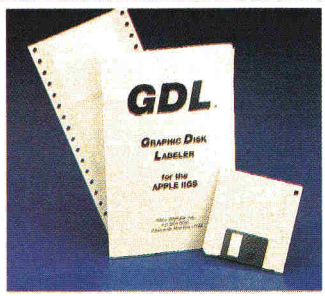
Apple ImageWriter II.....459.
Brother
M-1109AP *(ImageWriter Compatible)*.....225.
Laser Computer, Inc.
Laser 190A w/ Serial Interface.....235.
Seikosha
Seikosha SP 1000 *(ImageWriter Compatible)*.....229.

Printer Interface Cards

Apple
SCSI Card.....109.
Apple Super Serial Card.....119.
Applied Engineering
Parallel Pro.....79.
Serial Pro.....109.
Orange Micro
Grappler Plus *(AP & GS)*.....75.
Grappler 9 pin.....78.
SMT
No Slot Clock.....30.
Print Tech II.....33.
Envoy.....54.
Thirdware
Upgrade Kit (FingerPrint I & II).....30.
Finger Print GSi verIII *(Includes Desktop Accessories-GS)*.....89.
Finger Print Plus (Parallel, Serial, or ImageWriter II).....89.
Xetec Inc.
Superwriter 924 (GS,C+,C).....69.

Backup Utilities

Alpha Logic Locksmith v6.0.....36.
Apple GS/OS v5 (GS).....45.
Central Point Copy II Plus v9.0.....25.
Glen Bredon
Dos.Master or Pro.Cmd.....25.
ProSel 8 (5¼).....37.
ProSel 16 (3½).....54.
Vitesse, Inc.
Exorcizer(GS).....29.
Deliverance(GS).....31.
Guardian(GS) or Renaissance(GS)...31.
Wings(GS).....57.



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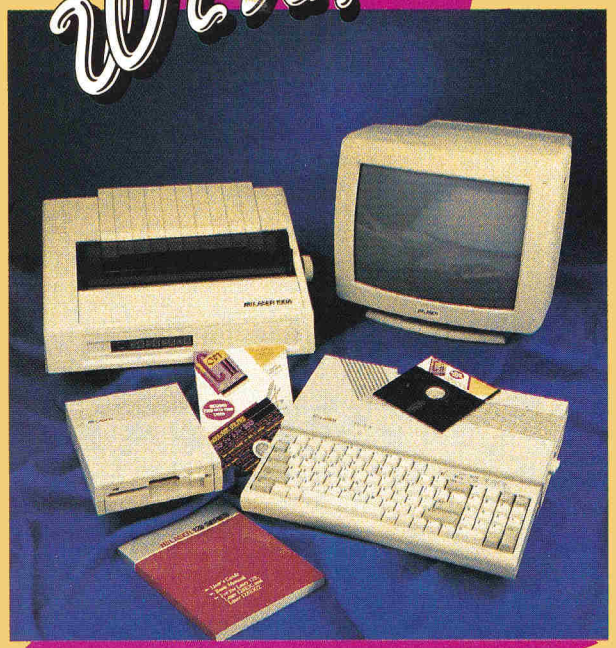

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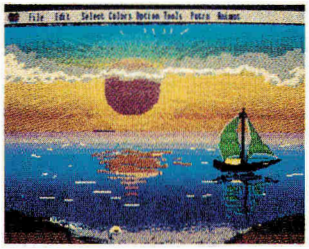

PAINT AND ANIMATION

Color+ by EL KASSIR Software lets you create animation, presentations, stories on IIGS. Change any standard 16 colors SHR to 256 colors. Transform 320 HR to 640 and vice versa. **SupergraphixII** enhances Applesoft enabling colors, music, animation. **Superpuzzle** is two games: scramble SHR and 256 color pictures, switch or slide 'em.

Color+..... $49.
Supergraphix II..... $59.
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Entertainment Software

Accolade
European Challenge(GS) or Muscle Cars(GS)..... 15.
California Challenge(GS) or Supercars(GS)..... 15.
International Course(GS)..... 15.
Bubble Ghost(GS)..... 24.
Test Drive..... 27.
Mean 18(GS) or Hardball(GS)..... 28.
4th & Inches(GS) or FastBreak(GS).. 28.
Heatwave(GS) or Grand Prix Circuit(GS)..... 28.
Jack Nicklaus Golf(GS) or Blue Angels(GS)..... 34.
Third Courier(GS) or Test Drive II(GS)..... 31.

Activision
Blackjack Academy(GS)..... 17.
Sky Travel(AP & GS)..... 34.

Artworx
KaleidoKubes(GS)..... 14.
Bridge 6.0(AP or GS) or Strip Poker III(GS)..... 27.

BlueLion
Ticket to Hollywood or London..... 27.
Ticket to Paris or Spain..... 27.
Ticket to Washington D.C..... 32.

Britannica
Laser Force(GS) or Gnarly Golf(GS).. 17.
Great Western Shoot-Out(GS)..... 17.
JigSaw(GS) or Task Force(GS)..... 24.

Broderbund
Down Hill Challenge(GS)..... 22.
Wings of Fury(AP & GS) or Prince of Persia..... 23.
Ancient Art of War or Ancient Land of Ys(GS)..... 30.
The Dark Heart of Uukrul or VCR Companion..... 30.
Centauri Alliance or Jam Sessions(GS)..... 32.

California Dreams
Vegas Gambler(GS), Mancala(GS) or Triango(GS)..... 27.
Tunnels of Armageddon(GS) or Club Backgammon(GS)..... 27.

Casady & Greene, Inc.
Crystal Quest(GS)..... 30.

Cinemaware
Defender of the Crown(GS) or Sinbad(GS)..... 17.
Three Stooges(GS) or King of Chicago(GS)..... 17.
Star Saga 1(AP or GS) or Star Saga 2(GS)..... 35.
Rocket Ranger(GS)..... 35.

Data East
Batman, Heavy Barrel, or Robo Cop.. 22.

Datasoft
Hunt for Red October (AP or GS)..... 22.

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Electronic Arts
Marble Madness(GS) or World Tour Golf(GS)..... 15.
Music Construction Set(GS) or Skate or Die(GS)..... 15.
Bards Tale II..... 18.
Cartooners(GS), Bards Tale II(GS) or Pipe Dream..... 22.
Zany Golf(GS) or King's Bounty..... 26.
Earl Weaver Baseball..... 26.
Bards Tale III or Madden Football.... 32.
Instant Synthesizer(GS)..... 35.

FTL
Dungeon Master(GS)..... 27.

Gametek
Double Dare or Press Your Luck.....9
School Bus Driver or Chutes & Ladders.....9.

Infocom
Leather Goddesses of Phobos..... 14.
Beyond Zork(AP or GS) or Battle Tech..... 34.
Zork Zero, Journey or ShoGun..... 34.

Interplay
Battle Chess..... 27.
Neuromancer(GS), Battle Chess(GS) or DragonWars(AP & GS)..... 32.

Leisure Genius
Clue, Risk, or Scrabble..... 27.

Melbourne House
Quarterback(AP or GS)..... 19.
Barbarian(GS)..... 25.
War in Middle Earth(GS)..... 30.

Micro League Sports
Micro League Baseball w/ General Manager & Stat..... 24.

Microprose
F-15 Strike Eagle or Silent Service(AP or GS)..... 14.

Micro Revelations
Xenocide(GS)..... 29.

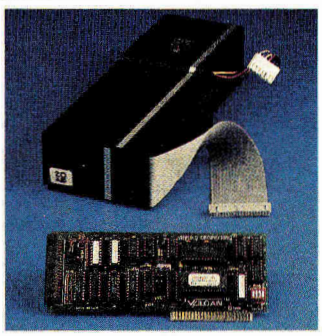
Mindscape
Hostage(GS)..... 29.
Captain Blood(GS)..... 29.
Deja Vu II(GS) or Balance of Power 1990(GS).... 32.

New World Computing
Might & Magic or Might & Magic II.. 36.

Origin Systems
Times of Lore(AP & GS) or WindWalker..... 26.
Space Rogue, Knights of Legend or Omega(AP or GS)..... 30.
Ultima Trilogy(I, II & II), Ultima IV or Ultima V..... 39.

PBI Software
Sea Strike(GS)..... 29.
Strategic Conquest(GS)..... 35.
The Tower of Myraglen(GS) or Alien Mind(GS)..... 39.

Sierra On-Line
Mother Goose(AP or GS)..... 19.
Thexder(AP or GS) or Silpheed(GS).. 24.
Leisure Suit Larry(AP or GS)..... 26.



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Cribbage/Gin King(GS)..... 29.
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Chessmaster 2100(GS) or Keef the Thief(GS)..... 33.

So What Software
Sonix(GS)..... 34.

Spectrum Holobyte
Solitaire Royale(GS)..... 22.
Tetris(AP & GS)..... 25.

Strategic Simulations
War of Lance..... 29.
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Sublogic
Jet..... 15.
Flight Simulator II..... 32.

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Bubble Bobble(AP & GS) or Renegade(AP & GS)..... 10.
Arkanoid II(GS) or Rastan(GS)..... 22.
Qix(AP or GS)..... 22.

Three Sixty
Warlock(GS) or Dark Castle(GS)..... 33.

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2088 The Cryllan Mission(GS)..... 36.

Virginia Real Software
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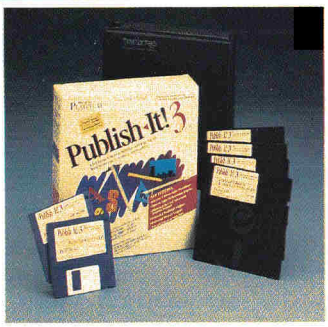

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PC Transporter (768K).....309.
ViewMaster 80 ///+/.....123.
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GS-Ram 512K..... 169.
GS-Ram 1MG.....249.
GS-Ram 1.5MG.....325.
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RamWorks III 512K.....195.
RamWorks III 1MG..... 269.
Ramkeeper.....149.
TransWarp III Accelerator..... 155.
TransWarp Accelerator(GS).....305.
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Z-Ram Ultra 2 256K.....209.
Z-Ram Ultra 2 512K.....249.
Z-Ram Ultra 2 1MG.....325.
Z-Ram Ultra 3 1MG.....395.
GS-Ram Ultra 512K.....199.
GS-Ram Ultra 1MG.....265.
GS-Ram Ultra 2MG.....389.
RamFactor 512K.....235.
RamFactor 1MG.....309.
Ram Express 512K..... 235.
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GS-Ram Plus 2MG.....389.
GS-Ram Plus 3MG.....515.
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C-Ram w/256K(C & C+)..... 159.
C-Ram w/512K(C & C+).....195.
C-Ram w/1MB(C & C+)..... 269.
Chips
Chips Set 256K 120 or 150 NS.....27.
Harris Laboratories, Inc.
GS Load 256K.....65.
GS Sauce 1MG..... 179.
GS Sauce 2MG.....269.
GS Sauce 4MG.....459.
Zip Technology
Zip Chip 4 MHZ..... 125.
Zip Chip 8 MHZ..... CALL
Zip Chip(GS)..... 239.

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Advanced Gravis' JoyStick(AP & GS)..... 39.
MouseStick ADB(GS).....69.
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Apple Mouse *//c*.....85.
Apple Mouse *//e*.....119.
Applied Engineering
TimeMaster II H.O.....79.
Conserver(GS).....79.
Sonic Blaster(GS).....105.
IBM Style Keyboard.....115.
Audio Animator(GS)..... 185.
Big Red Computer
Labels,Labels,Labels..... 27.
CH Products
Hayes Mach III Joystick.....33.
Hayes Flight Stick..... 47.
Roller Mouse ADB(GS)..... 75.

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Mouse Pocket *(Reg. or ADB)* or Mouseway *(Mousepad)*.....8.
Apple IIe, IIc or GS Dust Cover or Imagewriter II Cover..... 9.
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AntiGlare Filter GS..... 39.
Printer Muffler 80..... 43.
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System Saver GS..... 69.
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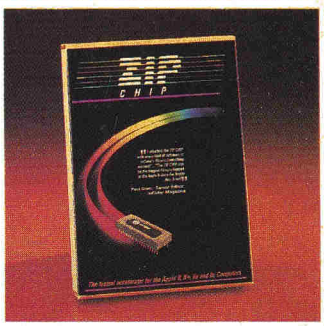
Koala Technologies
Koala Pad Plus w/Graphics Exhibitor..... 82.
Kraft
Kraft Universal 3 Button Joystick *(IIe, IIc)*.....34.
Kurta
!S ADB Tablet w/stylus(GS).....255.
Lynn Products
Cables (Specify)..... 15.
Lynx Computer
Turbo Trackball (IIe or GS).....59.
Maxell
Maxell 3½ DS,DD (10)..... 14.
Mouse Systems
A+ Mouse *(IIc)*.....59.
A+ ADB Mouse *(GS)*.....79.
MousTrak
MousePad 7"x 9" Size..... 8.
MousePad 9"x 11" Size.....9.
MousePad L/F *(Low Friction)*..... 10.
Orange County Speaker
OCS 2-40 (Stereo Amplifier).....145.
IBL Control 1 Speaker..... 205.
Practical Solutions
Cordless Mouse.....95.
RC Systems
Double Talk..... 187.
Ribbons
Available colors: black, blue, brown, green, orange, purple, red, yellow, silver or gold
ImageWriter Ribbon-color..... 4.
Laser 190A Ribbon..... 5.
Seikosha Ribbon.....6.
ImageWriter II-4 Color Ribbon..... 9.
ImageWriter Ribbon-Black six pack..... 20.
ImageWriter Rainbow Pack *(6 Colors)*..... 20.
Sony
Sony 3½ DS,DD (10)..... 13.
Street Electronics
Echo II(AP & GS)..... 105.
Echo IIC (IIC & IIC+)..... 129.



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UPDATES

Talk Is Cheap, from Morgan Davis, is now handled by Quality Computers (Grosse Pointe, MI).

SoftDisk (Shreveport, LA), the world's leading disk magazine, will be fulfilling subscriptions to monthly disks from **UpTime**, which went out of business last year. Call (800) 831-2694.

Scholastic Software (New York, NY) wants to modernize the teachers who subscribe to the 1990–91 **Microzine**: For only $25, teachers can upgrade their old Apple IIs to 128K. Scholastic found that 43 percent of classroom Apple IIs have only 64K of memory; the new Microzine requires 128K. Call (800) 541-5513 to subscribe.

Bachir Kassir of El Kassir Software (Los Angeles, CA), author of SuperGraphix 256, says a new GS paint program is almost ready: **Color+**, with the the ability to display 256 colors at once and mix 320- and 640-mode graphics. Call (213) 257-6882 for details.

Readers of **Programming the Apple II in Assembly Language**, by Eyes and Lichty, can receive an errata sheet by sending an SASE to Ron Lichty, P.O. Box 27262, San Francisco, CA 94127.

GET HYPED

SOFTWARE

Roger Wagner's HyperStudio generated most of the excitement at May's AppleFest; if you'd like to get in on it, consider becoming a part of the HyperStudio Network.

The HyperStudio Network is the baby of Rob Staats and Dave Cochran, New Jersey computer coordinators who want to "promote the use of hypermedia products in education." They note that they have nothing against Apple's Macintosh HyperCard, but that because most schools use Apple IIs, the network concentrates most of its efforts on HyperStudio. "Just as NASA can't launch a space mission without the help of thousands of people," they write in the first issue of The HyperStudio Forum, their newsletter, "we too can't go it alone. We need your help to generate ideas and products."

One neat idea for a HyperStudio stack, demonstrated at AppleFest, is HyperPostcards: The Friendship Network. This stack lets each student create a 100-word message, add a digitized photo or drawing and the sound of his or her voice, and share the message with other students all over the country.

Roger Harrivan, a third-grade teacher in the Manalapan-Englishtown, New Jersey, school district, wrote HyperPostcards for his classes; it's available for just $34 to HyperStudio Network members. Membership in the network is $29 for one year, which includes four newsletters, a "Best of HyperStudio" disk, and discounts on many products, including HyperStudio for $95. For details, write to the HyperStudio Network, P.O. Box 103, Blawenburg, NJ 08504.

— P.S.

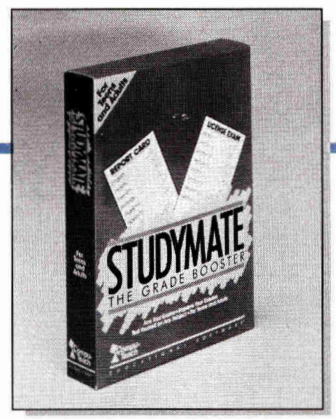
"The reality is, our customers are demanding an opportunity to use Macintosh technology in K-12 education."

Bernard Gifford,
vice president of education, Apple Computer,
in an official Apple videotape distributed to schools in May.

If you're running Passport's MasterTracks Pro professional MIDI sequencer on your GS, check out Craig Anderton's power user's guide, ***Power Sequencing with MasterTracks Pro/Pro 4***. The large-format 108-page book offers 122 tips, ranging from "How to Read a Manual" to "Creating Echoes and Polyrhythms," to "Capturing Ideas" and "The Feel Factor." *Power Sequencing* is also a great beginner's guide to MIDI and to synchronization, which is crucial to computer music. The book includes a glossary of those confusing MIDI acronyms and musical terms, too. Every serious computer musician needs a guide like this. Parts of *Power Sequencing* appeared originally in music magazines such as *Guitar Player* and *Electronic Musician*, so you know Anderton knows his stuff. Produced by Amsco Publications, *Power Sequencing* is available in the United States from Music Sales Corp., 225 Park Avenue South, New York, NY 10003, for $19.95.

Go MIDI with Power Sequencing.

HOME STUDY



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SOFTWARE

***StudyMate**, new from Compu-Teach, lets learners of all ages and in all subjects create their own self-tests in a variety of formats, including multiple choice, question/response, true/false, spell scramble, and fill in the blank.*

"StudyMate is the only software product of its kind on the market today," says David Urban, president of Compu-Teach. "In fact, we feel it is launching a whole new software category. We believe that StudyMate will establish 'desktop studying' in the '90s, just as 'desktop publishing' was established in the '80s. The program individualizes computer learning by letting students and professionals study their own course material to create a personalized studying system." Menus are easy to understand, allowing any user to create tests quickly.

The package also features automatic scoring and retesting, and includes a vocabulary disk with ready-made quizzes of word skills important in education and business.

Compu-Teach is noted for creating software for young learners, such as Once Upon a Time and See the USA, with the help of educators and experts in development. StudyMate is its first product for all ages.

StudyMate for the Apple II costs $49.95; a classroom edition is priced at $99.95. For more information, circle number 352 on the Reader Service card, or contact CompuTeach, 78 Olive Street, New Haven, CT 06511, (207) 777-7738. ***— P.S.***

APPLE BITS

An **optical character reader** (OCR) that works with the **Vitesse Quickie** for the Apple IIGS would be able to scan text and create text files at the rate of 50 words per minute.

Quickie software for the Apple IIe should be available now.

MECC's **Mercury**, a low-cost word processor and low-end desktop-publishing program for the Apple IIGS, is now shipping.

Two campaigns to "save the Apple II" — the **II Infinitum** effort to write millions of letters to newspapers, magazines, and Apple in praise of the Apple II, and the **Open Letter Project**, dedicated to buying a full-page ad in The Wall Street Journal for an open letter to John Sculley — have joined forces. It's not certain whether the goal is "one big letter" or many little ones.

Apple's **IIGS HyperCard** is facing a sea of troubles: It's slow, it's hard to use, it uses megabytes of memory. Insiders at Roger Wagner Publishing, makers of **HyperStudio**, aren't afraid of the competition: "If Apple releases a bad hypermedia product, it makes us look that much better."

If developers needed any more arguments against copy protection, the **upgrade** from the **Apple IIGS ROM 01** to **ROM 03** should have given it to them.

The folks from Zip Technology were seen rushing from booth to booth at AppleFest, where they had no booth of their own, testing the **GS Zip Chip** with as much software as possible.

Dave Westbrook of **Ingenuity** (formerly Applied Ingenuity) showed us the **CDrive** internal hard drive for the Apple IIe and IIc at AppleFest. It looks small and neat.

Quality Computers, a big mail-order dealer in Grosse Pointe, MI, used to use a lot of styrofoam "popcorn" in shipping. Worrying about the ozone layer, CEO Joe Gleason — that's Chief Environmental Officer — bought hot-air poppers and popped enough corn to pack all shipments safely. "It's a corny idea," admits Gleason, "but it works, and it's clean, local, and delicious." Quality still ships fragile items such as monitors in foam, however, he hastens to add.

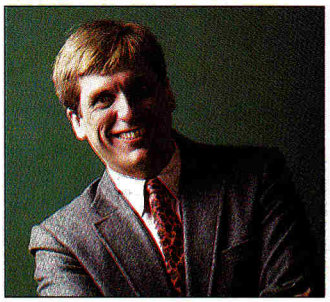
TurboRez, a graphics board that doubles the resolution of the Apple IIGS, impressed even the Commodore Amiga salespeople at AppleFest/ComputerFest. Too bad it's not QuickDraw compatible.

Springboard Software, formerly of Minneapolis, has moved to Cambridge, MA, probably close to **Spinnaker Software**, which recently acquired the publishers of **Publisher**. Call (617) 494-1200 for details.

At press time (late May), we heard that Apple plans to send more engineers and tech-support people than last year to Tom Weishaar's **A2-Central Summer Conference** in Kansas City, MO, July 20 and 21. We know the folks at Apple are taking all the developers out to the ballgame — Royals versus Bosox — so they must be serious.

Rumor has it that **Alan Bird**, the man who made spell checking legitimate with TimeOut QuickSpell and AppleWorks 3.0, is contemplating an **AppleWorks grammar checker**. If Alan can't do it, nobody can.

Jane Lee, who reports to Ralph Russo, who reports to Don Casey, who reports to John Sculley, uses several **GSes** in her work in Apple II marketing.



STATTUS REPORT

LIVE FREE OR DIE

By PAUL STATT * SENIOR EDITOR

Do you want compatibility with tomorrow's GS? Buy American. The software won't be quick, but it'll still be around.

IF YOU WANTED TO DRIVE A NAIL, YOU could search your garage for a bit of steel, pull a branch from the tree in the yard and carve a wooden handle, fasten the steel to the wood, balance the contraption carefully, and start banging. Or you could buy a hammer.

Most people would choose to buy the tool. Few carpenters build their own hammers, few writers invent languages, and most computer programmers choose ready-made software tools, too — software routines built into the computer that take care of many simple tasks, from arithmetic to setting menus to drawing and displaying pictures. The list of software tools available to a GS programmer fills two thick books (*The Apple IIGS ToolBox Reference: Volumes I* and *II*, Addison-Wesley, Reading, MA). Take heart — the Mac toolbox reference is five volumes.

Toolbox programs are (relatively) quick to write; they're (relatively) slow to run. All toolbox programs look more or less alike. Every Mac program looks like every other Mac program because all Mac programs use Apple tools. You can tell whether a GS program uses Apple tools just by looking at it. Do you see white windows waving in a field of cornflower blue? Then you're using GS tools.

If you want to see what programs that don't all look alike can look like, I suggest you track down some of the disks from the Free Tools Association, 34 Rue des Rotondes, 21000 Dijon, France, (33) 80 67 43 62. The FTA is group of young Frenchmen who write programs "on the metal" of the GS; that is, they write machine-language programs that use no Apple tools.

The programs are incredible. Space Harriers is a shoot-'em-up game that even unfinished is faster than Task Force. Photonix copies disks in seconds. FTA's animations so impressed Apple's Jean-Louis Gassée (of course, it may have been a touch of *chauvinisme*) that he used them at AppleFest in San Francisco last year to demonstrate how fast a GS can be.

Everything about FTA software is fast — graphics, disk loading, copying, the whole works. They're the most amazing programs I've ever seen on a GS, and I understand they've been in the United States since 1989. Why haven't I written about them sooner? There's a cautionary tale to tell.

Early one morning the postman drops a mailer with three disks and a nice letter on my desk. "The greatest thing ever to happen to the Apple IIGS," I read, "from France." I get a lot of disks, and I hear that a lot of them — everything from AppleWorks templates to Print Shop clip art — are "the greatest thing ever to happen to the IIGS." I'm in no hurry to boot these up. But late that afternoon I find some room in my RAM between Tetris and Arkanoid and try them. Two of the disks appear to contain no files, and the third crashes.

It crashed because I have a ROM 03 GS — the latest version — and FTA software runs only on the machine for which it's written. The first two disks looked blank to GS/OS because they contained no GS/OS files. When I tried them on a colleague's machine, I discovered they were fantastic, but I'm still reluctant to recommend software that won't run on every GS.

Apple politely asks programmers to use its tools for every possible task. When you don't use Apple tools, you lose *compatibility* — a word that means, as Jean-Louis Gassée was fond of noting, "suffer with." You pay for compatibility; the price is speed. The best GS software I've ever seen isn't compatible with my new GS. Even certain commercial programs such as Activision's PaintWorks Gold — a great program on a ROM 01 GS, probably because it doesn't use all that many Apple tools — are simply incompatible with ROM 03.

Do you want software to die for today, even if that means it'll be dead tomorrow? Write the Free Tools Association. Do you want compatibility with tomorrow's Apple IIGS? Buy American. It won't be quick, but it'll still be around. □

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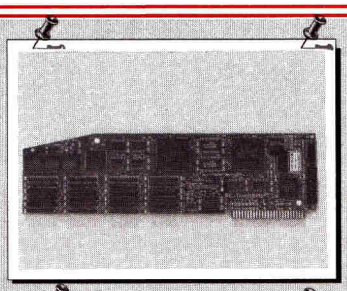

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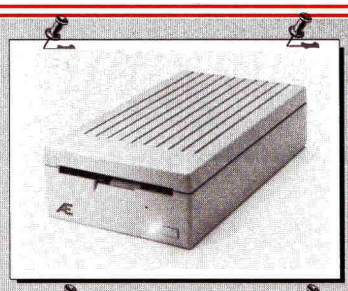

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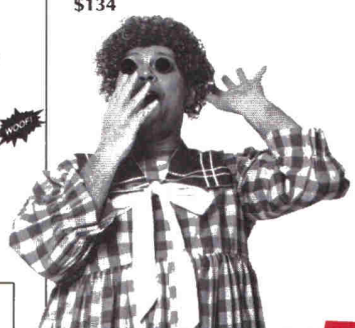

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* There's something suspicious about 'Lil Annie Mator, but what's her motive?--*Roger, a.k.a. Super Sleuth*

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Cooling Off

Without the internal fan, your Vulcan or your Apple may "melt down," and then where will you be? Quieter, yes, but . . .

By WILLIAM P. KENNEDY, Ph.D.

The Hard-Drive Racket

IS THERE A WAY TO DISCONNECT the cooling fan on my Applied Engineering Vulcan hard-disk drive? It makes such a racket I want to eliminate the fan and just use my Kensington System Saver's.

Jason Cu
Monterey Park, CA

Yes, you can disconnect the Vulcan fan, but you don't really want to, do you? The System Saver, although excellent, isn't designed to extract heat efficiently from your Apple's most prominent source, the Vulcan hard disk. Without the internal fan, your Vulcan or your Apple — or both — may "melt down," and then where will you be? Quieter, yes, but . . .

The Vulcan fan's plastic mounts tend to warp after prolonged use. The racket comes from the fan blades scraping against their enclosure. To cut down the noise, if not eliminate it, try loosening and/or tightening, in various combinations, the three screws that attach the fan mounts to the top of your Vulcan's case. Strategically placed shims between the fan mounts and case might also help. A drop of household oil placed carefully on the fan's drive shaft won't hurt.

If the noise persists and your patience wears down, contact Applied Engineering, P.O. Box 798, Carrollton, TX 75006, (214) 241-6060. One of the company's technical specialists might be able to assist you further with the noise problem. In addition, see "AE Responds" in this month's Letters section (p. 10) for the company's comments on this issue.

Perpetual-Calendar Fix

I HAVE A PROGRAM CALLED "Perpetual Calendar," which I received from *A+* magazine when it was an independent publication. It doesn't work correctly. The days of the week don't match the dates after December 31, 1988. For instance, it says that December 31, 1988, and January 1, 1989, both fall on a Saturday. Can you help?

Glen Gischel
Baltimore, MD

Our apologies to those of you who have suffered with this perpetually wrong calendar over the last year and a half.

I couldn't contact the program's author, so I took the plunge and waded into this dinosaur (copyright 1983). Fortunately, the author, Morris Effron, used the same computation routines for each of the program's options, including day of the week for a particular date, number of days between two dates, and days for the printed monthly calendar. That made the fix relatively simple once I figured out his algorithm.

Here's the fix. Boot into ProDOS Applesoft BASIC and LOAD PERPCAL *from a backup of the A+ utilities disk. Or start up your Apple with that backup disk, select and run the perpetual calendar, and press Control-Reset to stop its execution. Then, starting next to the BASIC bracket prompt, simply retype line 3290:*

```
3290 NY = LY – FY: IF NY THEN TD =
     INT (NY * 365.25 + .5) – 365
```

Now SAVE PERPCAL *onto the backup of that A+ utilities disk to make the change permanent, and RUN it to make sure it works. The Apple gods will be pleased that you've thus restored sync to the days and dates.*

Video Editors

I ENJOYED YOUR ARTICLES ABOUT Apple II desktop video enormously ("Making Movies with Your Apple II," Part 1, April 1990, p. 44, and Part 2, May 1990, p. 45).

In fact, I've purchased most of the equipment and software you mention for my Apple IIGS system, except the video editor/controller. Do you have any recommendations in this area?

L. E. Workel
Flushing, NY

We glossed over editor/controllers for the simple reason that truly automated editing is available only for some specific and compatible models of camcorders or videotape recorders.

Indeed, using certain controllers that cue up and manage the stop/start and play/record functions of the slave and master decks electronically is sometimes more tedious and time-consuming than taking the matter into your own hands and editing your videotapes manually. If you have the right equipment, however, a good editor/controller can be amazingly helpful for

producing home videos with your Apple II.

Sony, typically in the vanguard of consumer technology, offers the most serious line of editor/controllers right now; JVC and Panasonic aren't far behind. Consult a competent video dealer for more information on selecting the right equipment for your system.

Also, take a look at the articles in two recent video magazines that describe and review a selection of editor/contollers: Video Maker, *March/April 1990 (1166 East Lassen Avenue, Chico, CA 95926, 619-485-7754), and* Camcorder Report, *October 1989 (Miller Magazines, 2660 East Main Street, Ventura, CA 93003, 805-643-3664).*

QUICKIES

Here are some tips for printing foreign-language fonts, accents, the circumflex symbol, and so on from AppleWorks 3.0 on an ImageWriter II or LaserWriter.

First enter the special foreign-language codes, as noted in the ImageWriter II manual, into Printer Options (OA-O) Special Code 1. (For example, French is Escape Z Control-A Control-@ Escape D Control-F Control-@.) To print in that font, add the printer option SC1 before the first foreign word; it will add accent marks automatically.

To use a circumflex, set the Printer Options Special Code 2 to Control-H. Type the circumflex, OA-O SC2, and the vowel. C'est pas trop tôt!

— Francis Andrew
Vancouver, BC
Canada

Does the GS keyboard sometimes lock up on you, such as when you hold down one of the arrow keys too long? Can't even reset? Don't turn your computer off — just unplug the ADB (Apple Desktop Bus) cable that runs from the keyboard to the GS, then reattach it.

— Steve Fenwick
Southfield, MI

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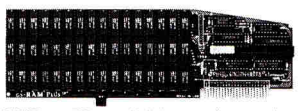

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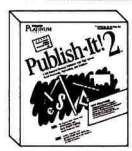

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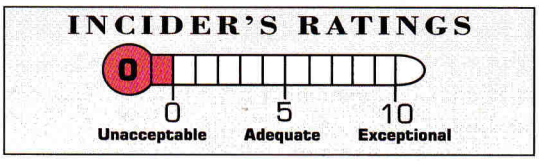
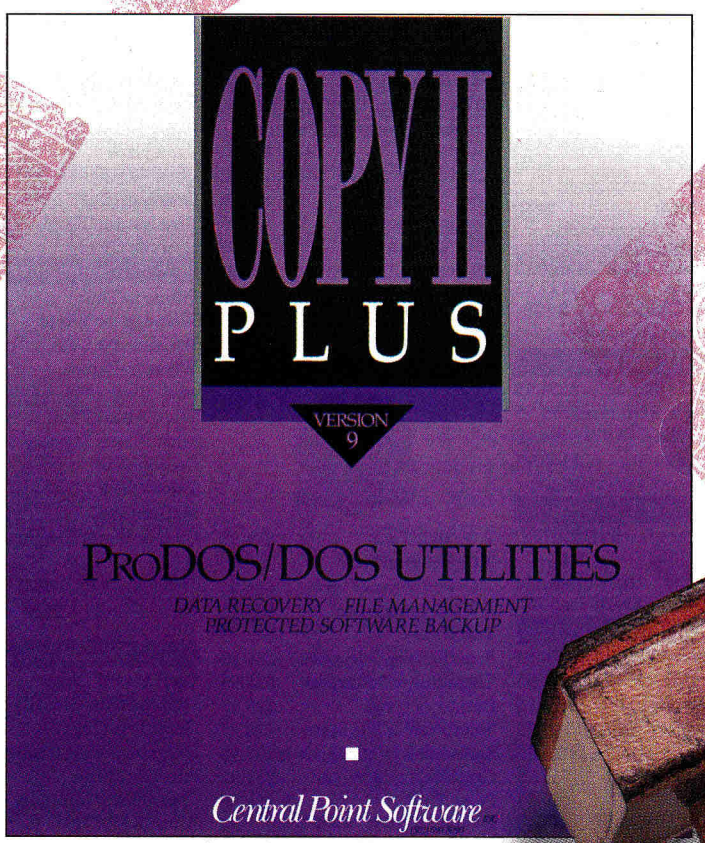
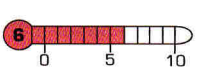




COPY II PLUS VERSION 9

Central Point Software,
15220 N.W. Greenbrier Parkway, #200, Beaverton, OR 97006,
(503) 690-8090

ProDOS 8 utilities and disk copier;
128K enhanced Apple IIe, IIc/IIc Plus,IIgs; off-disk copy protection for certain parameters; $39.95



Copy II Plus — Central Point's enormously popular utility program — has a new suit of clothes. Version 9 is easier to use, and its disk copier stands alone in its range of abilities. As a general-purpose utility, however, Copy II Plus may have slipped from its role as market leader.

The disk copier has been updated to understand the protection schemes of dozens of new software packages and is the major enhancement in the program's Version 9. Other major improvements include full mouse support and a provision for launching other programs.

The reasons you need Copy II Plus are twofold: First, it lets you do necessary maintenance such as copying, moving, erasing, and otherwise manipulating files and disks; but it also lets you make archival copies of your copy-protected software. You can even alter some copy-protected programs so that they'll run on a hard-disk drive. One of main problems with copy-protected software is that it's not designed to operate correctly with hard drives, RAM (random-access memory) drives, or many accelerators.

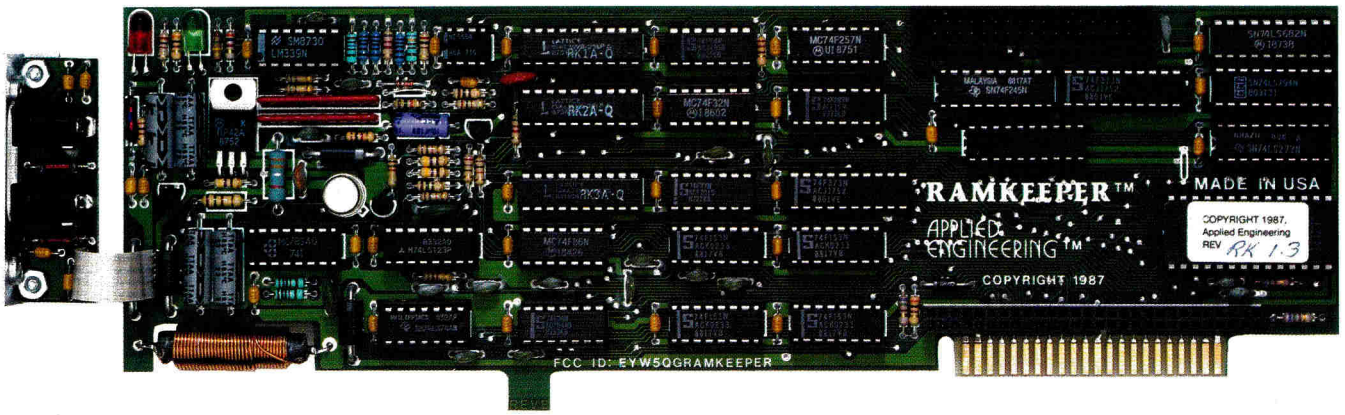
DISK COPIER STEALS THE SHOW

While Copy II Plus has multiple personalities — file and disk manager, program launcher, disk editor, and protected-disk copier — it's the copier that brings the charm to the party. Although the law of most locales lets you make a backup copy of a program in case you lose or damage the disk, no law requires software publishers to make it possible for users to copy their disks. Copy protection can take on a variety of forms, but the common goal of most schemes is to ensure that you have a factory original by making you boot directly from that original disk. Although the Copy II Plus manual contains information about all the protection schemes, you don't have to learn them to use the program.

The disk copier can make automatic backups because it's programmed to understand the protection schemes used by many popular titles. It also understands several generic types of protection that could pop up on new software releases from time to time. If a program isn't on ►

Photography by ✻ Ed Judice

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.

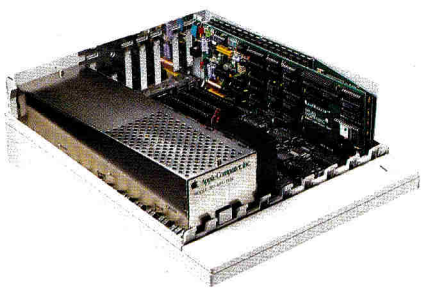
RamKeeper lets you add a second memory board to your memory expansion slot with a special "back pocket" connector. That way, you can use your 1 MEG Apple board and still expand beyond its 1 MEG limit. And RamKeeper "sees" the two boards as one, so all you'll notice is the increased memory.

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.*

Our *diagnostic utlilty* feature graphically detects the presence of bad or improperly-installed chips and tests for CAS before RAS chips.

And RamKeeper features Applied Engineering's meticulous craftsmanship, 5-year warranty, 15-day money-back guarantee* and our American-made pride.

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AppleWorks users will find another bonus. Our AppleWorks enhancement package dramatically increases AppleWorks word processor lines from 7,250 to 22,500. Database records are increased from 6,350 to 22,500 and clipboard capacity climbs from 255 lines to 2,042.

RamKeeper $189

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the list and the generic options don't work, Copy II Plus also provides tools that let you attempt to make a copy manually. Be forewarned: It takes patience and a fair knowledge of disk structure and assembly language.

Version 9 also includes parameters for copying 800 of the most popular software titles, evenly distributed between the IIe and GS. (The program has dedicated editors and copiers for both 5.25- and 3.5-inch disks.) A number of the 3.5-inch disk parameters also include provisions for unprotecting the disk, which lets you install it on a mass-storage device.

A trick in the program design locks you out of the latest parameters, however, unless you read the manual to find out how to load them. You also have to rename both parameter files each time you switch between them. This is one of the most striking finds about Copy II Plus: It's part of the problem it seeks to solve. Although there's no physical copy protection present, the built-in protection just described makes the program difficult to use.

While 800 programs may seem like a lot, many of the parameters are for older products such as Carmen Sandiego and LogoWriter. I found the list somewhat disappointing. I don't own many protected programs, but Copy II Plus was unable to deal with a third of what I do have.

Even with these drawbacks, Copy II Plus is still about the only game in town for reproducing copy-protected disks.

TAKE CONTROL

With a bit of study and experimentation, you could do all sorts of things with Copy II Plus — such as repairing disks and making changes to programs. Many people find the Copy II Plus disk editor preferable to the one included with Glen Bredon's ProSel — today's standard in disk maintenance.

The other Copy II Plus utilities let you maintain your files and disks. The Version 9 enhancements provide full mouse support and program-launching capability.

Now for the big news that's bad news: Copy II Plus does serious damage when you use it on an Apple IIGS — and the publisher doesn't seem to know about it; Central Point continues to claim program compatibility with that model.

Although it does run on the GS, it can't handle native GS/OS; therefore, it's unusable with any GS/OS disk (including hard drives formatted with GS/OS) you may own and it'll trash any GS/OS disk on which you manipulate files. (Despite this quirk, you can duplicate many older copy-protected IIGS programs.) The moral: Keep this thing away from your hard drive.

Now if you have a IIe or a IIc, Copy II Plus is completely reliable — but there's still a problem. It doesn't support Apple UniDisk drives or the Apple IIc Plus' internal disk drive.

UTILITIES YOU CAN USE

Copy II Plus features a number of good utilities. The launcher lets you build a list of programs you can start automatically when exiting Copy II Plus. It lacks the ability to launch any file at will, however, as you can with the Finder on the GS Desktop. If you're already using a dedicated program launcher, you probably won't want to replace it with the one that comes with Copy II Plus.

Use the remaining utilities with files, groups of files, ProDOS directories, or entire disks. They include 5.25-inch disk copy; 3.5-inch disk copy; file copy; DOS/ProDOS file copy; copy DOS; four-way disk catalog; delete files; delete disk; delete DOS; lock/unlock files; rename files or volumes; sort disk catalog; format disk in DOS 3.3 or ProDOS; verify disk, file, or drive speed; compare files; view files; map disk structure; change DOS 3.3 boot program; "undelete" files; and create subdirectory. You can also print file and disk contents.

You'll notice that a number of these features, such as copy DOS, are meant for the old DOS 3.3 operating system. If you still use programs that run under this format, Copy II Plus can do you a lot of good. It's a nice complement to the breed of hard drives that let you maintain various types of DOS partitions.

The disk-copying provisions in the program's Utilities menu are meant for unprotected disks, but there are various problems. As noted, it doesn't support the UniDisk 3.5; Laser RAM disks generate a bug; disks using an interleave of less than 4:1 won't copy; and the copier itself is a memory hog. A GS with 1.25 megabytes of RAM can't copy an 800K disk in one pass.

When you perform file operations, things really slow down. Copy II Plus reads each file separately, so you perform at least two disk swaps per file. In addition, the program can access only the first 255 files in a directory.

Disk mapping and the ability to verify files, disks, and drive speed are useful features. Improper disk-drive speed is a widespread problem with 5.25-inch disk drives, and Copy II Plus' Version 9 offers a quick solution.

The ability to identify a bad file and isolate its location on disk can also save enormous trouble. You can then either remove the problem or attempt to repair it with the disk editor.

Other notable utilities let you compare files for changes and resurrect accidentally deleted files. Note that the latter function usually works only immediately after you've deleted a file.

GETTING UP TO DATE

Central Point Software's focus on the copy-protected-disk duplicator in the program's Version 9 update is commendable; lack of attention to everything else, however, seems to indicate that someone was asleep at the wheel. This version of Copy II Plus would have been better off as an intermediate step toward a future product.

Copy II Plus is still the reigning star where the duplication of copy-protected software is concerned. Beyond that, your opinion of this product is going to be heavily weighted by the particular Apple II model you own and how you use it.

My favorite method for dealing with copy protection is to mail the disk back to its publisher. That's not always a good alternative, so it's great to have a newly invigorated Copy II Plus.

Overall, Version 9 isn't the breakthrough revision we've been waiting for. The lack of GS/OS compatibility is particularly unfortunate. (I had to rebuild my hard drive twice.)

Also, other disk utilities may have a hard time facing off against the competition. ProSel is the program to get if you're looking for just utilities. Even Quality's newcomer EasyDrive has more features, while the GS Finder is a better session manager. But recall that not too long ago, Copy II Plus ruled the roost.

What today's Apple II computer owners really need is a second-generation file management utility, with full backward operating-system compatibility, logical file relationships, and certain extensions of the advanced file-management utilities that are now available.

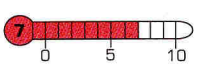
For productivity, Copy II Plus is a step in the wrong direction. For light maintenance and backing up your latest game or educational title, however, it's just the ticket.

Joe Abernathy
Houston, TX

ESL WRITER

Scholastic Inc.,
730 Broadway, New York, NY 10003,
(212) 505-3000

Word processor with built-in grammar and spelling checkers; 128K Apple II; no copy protection; $99.95



Word processors free inspired writers from knee-deep piles of crumpled paper, mountains of eraser shavings, and scribbled corrections. They can incorporate new ideas and delete old ones without a mess or a hassle.

For children learning to write, that's especially important, because when they revise their papers, they can concentrate on ideas rather than worry about neatness.

ESL Writer is a straight, "shoot from the hip," text-based Apple II word processor for elementary- and junior-high-school students learning English as a second language (thus the *ESL* in the title).

Although a variety of word processors are available for the Apple II, the better ones include a spelling checker; ESL Writer comes with a conventional spelling checker as well as a grammar checker.

WRITE AWAY

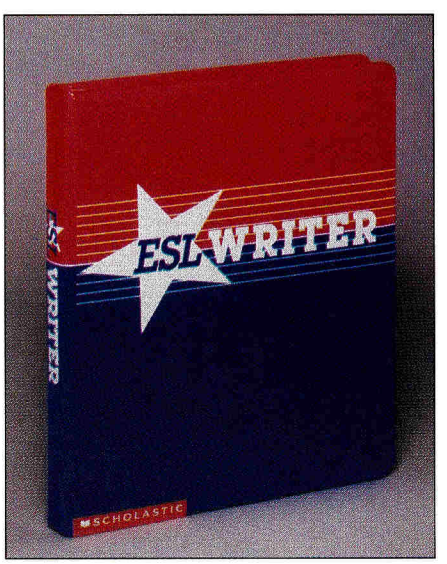
In general, ESL Writer is a flexible program. A special Teacher Disk lets you customize the program to meet the needs of individual students.

You can configure spelling- and grammar checking features, screen display, and print options. You can opt for in 40- or 80-column display and single- or double-space formatting. You can also choose whether or not you want highlighted Return characters.

You can deactivate the spelling and grammar checker entirely and use ESL Writer's word processor alone. Or you can deactivate the grammar checker only and use the word processor with just the spelling checker.

To supplement ESL Writer's 30,000-word dictionary, you can even add customized dictionaries with student names, geographic locations, or lesson-specific vocabulary.

This program really shines for Hispanic and Asian students. Not only does it have Spanish- and Asian-language-oriented help keys, but you can also direct the program to check for common spelling mistakes that Spanish or Asian youngsters make as they learn English. ESL Writer also supports Vietnamese, Cambodian, Hmong, Filipino, Laotian, Chinese, Japanese, and Korean. A generic help option is also available if a student's native language isn't Spanish or Asian.



Customize your grammar and spelling lessons with ESL Writer.

You can program the spelling and grammar checkers either to check the document after the student is finished (so-called *batch checking*) or while the student types.

If you want a student to use the word processor to brainstorm ideas or to compose a first draft, the student can select *Proof Text* from the Student Disk's main menu, and the program will check for mistakes after he or she finishes composing the document.

If you want a student to concentrate on correct spelling and grammar while typing, the you can select *Write* and *Proof* from the Spelling and Grammar option menu on the Teacher Disk. As the student types, the program verifies spelling and 12 categories of grammatical style.

Any misspelled words are highlighted in inverse type and any sentence containing a grammatical error is flagged. Also, the *Check Capitalization* option directs ESL Writer to look for capital letters in proper nouns, for the pronoun *I*, and at the beginning of each sentence. If a word is flagged, the student receives a helpful hint to correct it.

ESL Writer's printing options are adequate, but somewhat limited when compared to other word processors. The Teacher Disk lets you print selected files from a student's data disk without booting the student program disk.

The Teacher Disk also lets you configure document margins, set single or double spacing, print with filenames centered at the top of the first page, and print with or without marked errors.

Youngsters can temporarily override teacher-configured printer settings from the Student Disk and modify the program to suit their needs. They can alter margin settings, print with or without marked errors, or generate statistics that summarize their errors. Unfortunately, ESL Writer makes no provisions for multiple fonts, type sizes, and type styles.

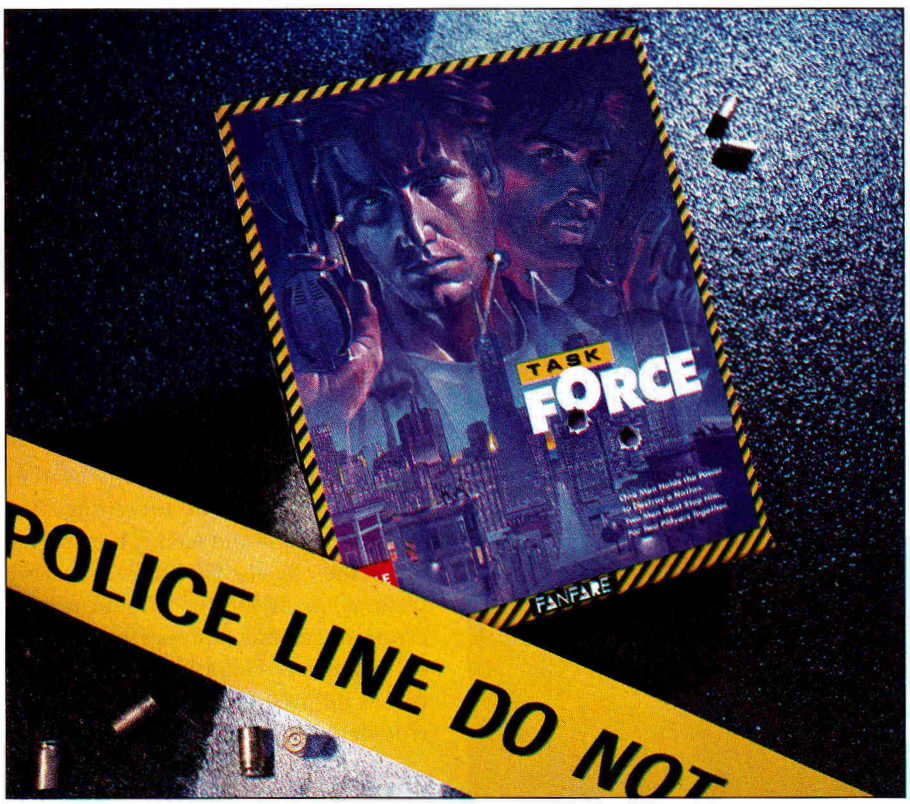
FIRST WORDS

Boot the ESL Writer Student Disk to begin writing. Depending on the way you configure the disk, the main menu provides seven or eight choices, including writing, loading, and saving a file. If students wipe the screen by selecting *Clear Text*, they can start a new file or load a saved one. ESL Writer lets students work with only one file at a time.

A student can also select spelling and grammar checkers from the main menu. Remember, by selecting *Proof Text* the program checks spelling and grammar for the file in memory. If you configure the Student Disk to check for mistakes as your students type, the two-step *Write* and *Proof* options combine into one, and the word processor flags spelling and grammatical errors as they appear.

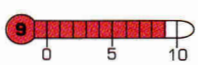
Continued on p. 80

GAME ROOM



TASK FORCE

Britannica Software,
345 Fourth Street, San Francisco, CA 94107, (415) 546-1866, (800) 572-2272
Arcade action; 768K Apple IIgs; joystick recommended; copy protection; $39.95



FREEZE! It used to be that when a cop yelled that, crooks would stop dead in their tracks. Not any more — these days when you want to stop the bad guys, "dead in their tracks" takes on an ominous new meaning.

As one member of an elite two-man FBI task force, you're charged with cleaning up the streets of America's five most crime-ridden cities. You'll deal with hordes of thugs in Los Angeles, Chicago, Washington, San Francisco, and New York (in order of increasing difficulty.)

You'll start off with just a pistol, but after blasting some of the local hoods, you'll find some heavier artillery lying around — a rocket launcher, a tazer, a flame thrower, a machine gun, a bazooka, and supposedly grenades (I never found them). To pick something up, just walk over it. The same goes for extra ammunition — you'll need everything you can lay your hands on.

Each city has three levels of vermin you'll need to exterminate. Once you've put down enough of them, you'll see a flashing red arrow telling you how to get to the next level. Don't let your guard down, though. Just when you think you're in the clear, a low-flying helicopter can swing by and give you an unwanted lift with a grenade.

I tried to load Task Force on my hard drive, but I had the best luck booting right from the 3.5-inch drive. Sure, you have to change disks to get to Washington and New York, but it gives you a chance to rest your trigger finger.

Blowing away the bad guys.

The graphic detail and fluid animation in Task Force are nothing short of amazing. Even when you have two players on screen surrounded by hoodlums with a helicopter flying by, the action never slows down. If you're an action-game fanatic (like me), you won't want to miss Task Force.

Lafe Low
inCider staff

Photography by ✻ Ed Judice

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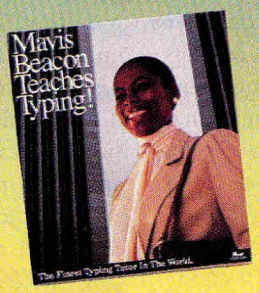

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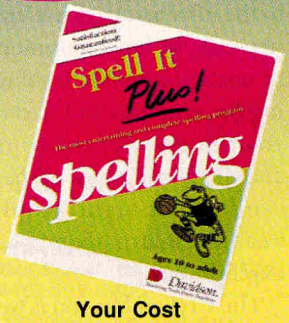

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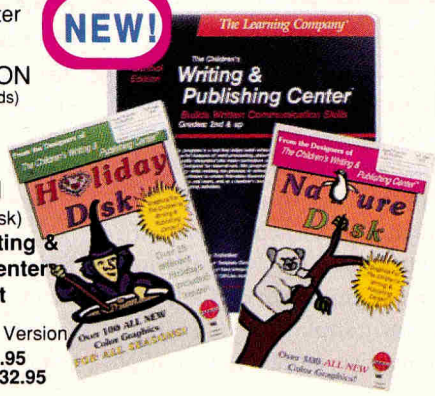

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(713) 493-3232

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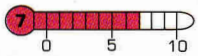
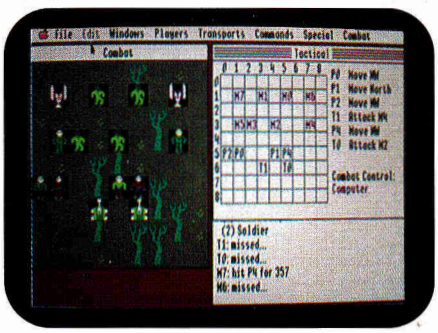


They call it a search-and-rescue mission, but there's such a thing as throwing good money — or bodies —after bad. The natives of the planet Crylla have an attitude problem, the government is involved in some shadowy goings-on, and you've got quite enough to



Operation Rescue on the planet Crylla.

do taking care of yourself without having to look for the crew of the starship U.S.S. *Houston*.

The Cryllan Mission is a finely crafted adventure game, and it's the first to operate fully and comfortably with the desktop interface. The graphics and animation are sophisticated, while game play is fast-paced and intuitive. There's even a detailed story line, although it's disappointingly hard to find at first.

The Cryllan Mission has an intriguing plot, but it's hidden by an amateurish manual. Toss the manual aside, give yourself a couple of days to explore, and you'll find things quite lively. Although the game starts out slow, it becomes more intriguing the longer you play.

Your party of six specialists will explore the surface of the planet Crylla, along with a number of towns and caverns. The terrain is extensive and varied. Speed of movement and extent of vision are keyed to the type of terrain through which you're traveling. The game interaction in general is very smooth; you use pull-down menus and dialogs to issue commands.

Most encounters on the surface are violent. You can choose to let the computer plan and execute a battle for quick results, or you can serve as your own tactician, providing blow-by-blow commands. To the victors go the spoils — including money, supplies, and experience points — all of which increase the abilities of your party.

When you're inside towns, you can talk to the inhabitants, break into the computer network, or buy equipment such as arms or medical supplies. It's through interviewing the residents and hacking around that you can discover the truth about Crylla and the missing crew of the *Houston*. If you can find the right people, you'll get a wealth of information to help you in your explorations.

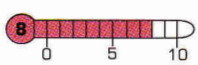
The Cryllan Mission is well designed. Its attention to detail helps justify its high price; that it was developed strictly for the Apple IIGS gives it an edge over most other role-playing games in the quality of its user interface. It may lack flash, but anyone who enjoys a good sci-fi mystery will have a jolly time.

Joe Abernathy
Houston, TX

KNIGHTS OF LEGEND

ORIGIN SYSTEMS, INC.,
P.O. BOX 161750, AUSTIN, TX 78716,
(512) 328-0282

Fantasy role playing;
64K Apple II; off-disk copy protection;
$49.95



Knights of Legend is indeed a noble effort, but one whose ambition may have exceeded its results. The authors of this game knew what they wanted to accomplish — the consummate fantasy role-playing game, complete with highly individualized characters, multiple quests within the framework of a larger theme, relevant nonplaying characters, and a comprehensive, ultrarealistic combat system.

For the most part, the programmers succeeded in meeting their goals, which ironically is the game's undoing. The problems with the 8-bit Apple II version of Knights of Legend lie not in the design of the game, but in its implementation on a machine incapable of handling the game's complexity.

The level of detail in Knights of Legend would have been impossible in a board game or even a traditional pen-and-paper role-playing game because of the tremendous amount of bookkeeping involved. The thinking was that a computer could handle it. The Apple II, however, isn't quite up to the task, so playing Knights of Legend involves an unbearable amount of disk swapping; for instance, you'll have to switch disks twice just to get through the animated introductory sequence.

Keep in mind that the game includes six disks and a player-generated character disk that must interact with one another. (One disk contains the master program; the other five are region disks that make up the vast land of Ashtalarea.) Only the most ardent and patient gamer will be able to tolerate these frequent interruptions.

The only other complaint you might have must once again be blamed not on Knights of Legend but on the Apple II. While the graphics images are as good as you could expect, the garish orange, green, and blue combinations leave a lot to be desired — especially considering the game's visual emphasis.

Knights of Legend does have numerous strong points. In its eight years of development, no aspect of role playing has been overlooked. The game's attention to minute but important details is impressive.

The game contains all the standard features associated with the genre — but it's in the scope of these features that Knights of Legend surpasses other games. While all computer adventures allow for different character classes, Knights of Legend is the only one that lets you choose from 40 unique classes.

Likewise, other games let you play your character as any one of a number of races. Knights of Legend not only offers different races, but species within each race. For instance, elves can be any one of six different types.

MAGIC AND MIGHT

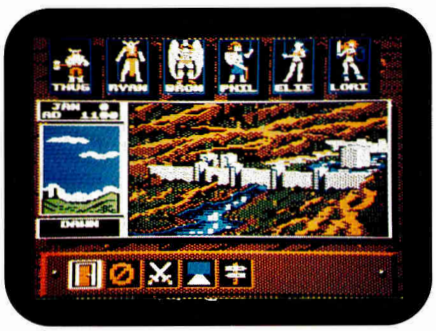
The game's combat scenarios are particularly realistic and comprehensive. You'll decide not only whom to attack, but

also how to use your weapon and where to aim the blow. Wounds are graphically depicted on silhouette figures to indicate extent of damage.

Combat also considers such factors as fatigue, armor, defensive stance, weapon type, physical characteristics like strength and quickness, and weapon training.

The magic system differs in that not only can you select spells from those provided by tutors, but you can also create spells from scratch or modify those already in existence. This system is moderately complex, but offers an incredible amount of variety and flexibility.

Magic users in Knights of Legend can also fight quite well, though keep in mind



Might for right in the land of Ashtalarea.

that the more they fight during a particular encounter, the less effective they are as spellcasters because of fatigue.

A plethora of other elements blend to make Knights of Legend an all-encompassing role-playing game. The land is rich in types of terrain and variety of monsters. The climate varies, too: Blizzards and torrential downpours can affect your band of adventurers almost as much as goblins and "orcs." Your characters must eat, sleep, heal, parley, and train — just as they would in real life.

MORE TO COME

You can play in many different ways. If you simply like to "adventure" and go monster bashing, there's ample opportunity for that. The game offers hundreds of quests, however, along with the opportunity to advance from lowly peasant to mighty knight — perhaps even a knight of legend.

The game also boasts a modular design that will allow for expansion beyond the current realms of Ashtalarea, a feature that promises more extended play beyond this adventure.

Knights of Legend is more than just a role-playing game — it's a full-blown system of play. It would have been nice to see this game designed for the Apple IIGS to take advantage of the machine's graphics and sound. As it stands now, the biggest disappointment isn't so much a case of what Knights of Legend is, but what it could have been.

Jim Trunzo
Leechburg, PA

CENTAURI ALLIANCE

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(415) 492-3200

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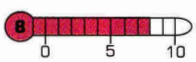

There may be peace throughout the galaxy, but chaos reigns in your small corner of it. Centauri Alliance — a group of six races banded together for mutual protection against outside forces — is being threatened by unrest and the re-emergence of an overpowering ancient weapons technology.

Centauri Alliance is a classic in the making. It has the compelling game action of The Bard's Tale and Destiny Knight, the author's previous best-selling titles, but with a degree of maturity.

The plot is provocative and well presented, and you can replay the game in a series of unique adventures. It's The Bard's Tale grown fair and strong.

You'll explore the 11 worlds of the Alliance and meet some of the seediest characters in the space lanes — at least you will if you're doing your job right.

Be sure to bring along someone from the Donsai race for protection, and someone from Kevnar's World who may have mystical psionic powers.

You'll choose your party from among the six races of the Alliance. (Those outside the Alliance are aliens.) Each race is strong in particular skills, so you have to seek a balance in choosing your team members. You can also obtain several varieties of legal and illegal fighting machines.

The Donsai are superior warriors, and reports indicate that a mutinous Donsai officer may be gathering recruits for an assault against the Alliance.

Amid a string of mysterious events at the far reaches of Alliance space, it also appears that components of the dreaded Fractyr Fist are resurfacing after lifetimes in limbo.

So what's the point of all this? Your secret mission is to quell the rebellion and reclaim the Fist from the forces of chaos.

Centauri Alliance is fun to play, but please be forewarned that it's very much an adventure game, not arcade action. The software creates a map automatically as you travel, but you'll still have to verify and transcribe that map to graph paper.

Adventure gamers take pride in being able to map even the slimiest dungeon — or starport. Centauri Alliance respects this traditional challenge while relieving you of some of its more mundane aspects.

You're responsible for maintaining the health, equipment, training, and possessions of your team members. The combat system is hands-on, so you'll have to direct each group member's actions in every round of your encounters. The frequent combat rounds fit the pace of the game nicely, but I found myself wishing for the ability to set defaults.

Animation and graphics are very nicely done, give the limits of Apple II technology. You can even import characters from the Bard's Tale series, numbers I through III, along with Wasteland and Might & Magic — but only from the IIe versions. Well-written documentation and a poster star chart contribute to the game's quality.

The Apple II version is reliable, but the copy protection rules out using it on a hard drive. You can't use an 800K floppy as your data disk, either, although you can configure the game to work properly with an Apple IIGS running at native speed. (Remember that you'll have to deactivate any further acceleration.)

Centauri Alliance is the game to have. In the tradition of Wizardry, Zork, and The Bard's Tale, it's nonstop adventuring with treasure, tunnels, and tumbles in abundance. This is fantasy at its finest. □

Joe Abernathy
Houston, TX

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Ed Casey

Chuck Sullivan

Kelly Warren

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Brian Hoppaugh

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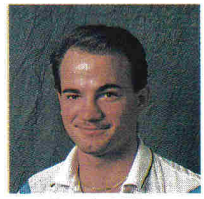
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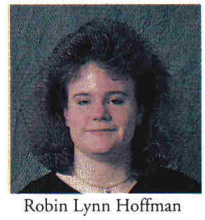
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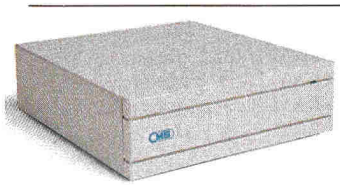

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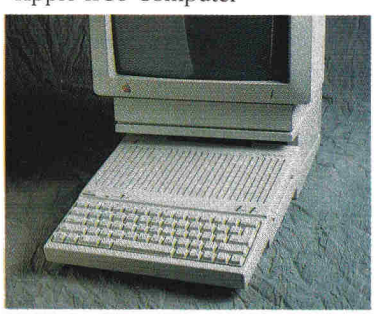
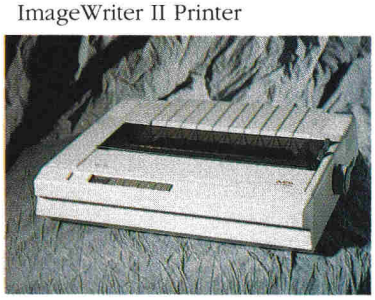


Apple IIc Plus Computer

ImageWriter II Printer



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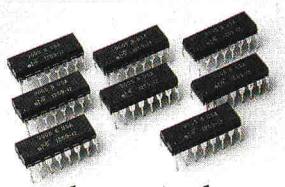

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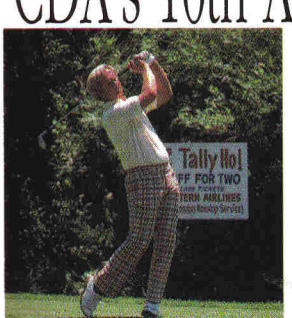

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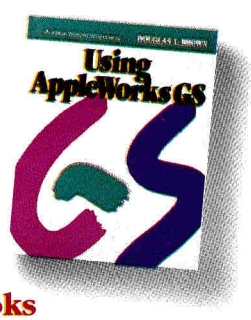

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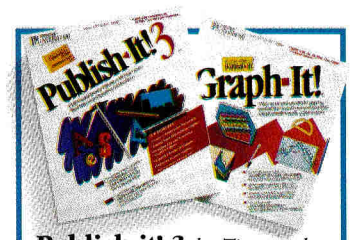

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THE PUBLISH IT! POUNDER VS. KID GRAPHICWRITER

Let's . . . get . . . ready . . . to rumble! In the red corner, weighing in at $129.95 with ProDOS 8, a minimum of 128K of RAM, and super-hi-res graphics support, the champion — Publish It! 3. And in the blue corner, weighing in at $149.95 with GS/OS, a minimum of 768K of RAM, and the true Apple desktop interface, the challenger — GraphicWriter III.

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

FROM THE BEGINNING, PUBLISH IT! HAS OUTsparred the competition in the Apple II desktop-publishing arena. There's a new kid in the ring these days, though — and this one's a real heavyweight. After some two years in training, Seven Hills Software's **GraphicWriter III** seems to have muscled in with the strength needed to bounce even **Publish It! 3,** the latest version of the much-heralded Timeworks program, from its long-held position as reigning champ of the DTP division. Still, GraphicWriter III's not for everybody: For one thing, the program requires an Apple IIGS with at least 768K of RAM (random-access memory).

If you use an enhanced Apple IIe, a IIc, or a II compatible, we'll point out some convincing reasons why you should purchase (or upgrade to) Publish It! 3. But GraphicWriter III is a tempting alternative for members of the GS crowd who clamor for that machine's authentic, colorful interface as well as GS/OS operating-system bonuses, such as the icon-based Finder with its built-in file-management utilities.

Consult the accompanying **Table** for head-to-head comparisons of these two top contenders for your DTP dollars. And in the meantime, let's highlight some of the capabilities that Publish It! 3 and GraphicWriter III have to offer.

IN THIS CORNER

It's no secret we've been longtime fans of Publish It!, Timeworks' mousetext-based, more-or-less WYSIWYG (what you see is what you get) page-layout program that just keeps getting better and better. A perennial favorite feature is the program's logical, object-oriented persona.

If you want to type in your copy, for example, create a frame with the text tool — it's one of nearly a dozen design instruments in the on-screen toolbox. Want to import some clip art? Just "rub- ►

Illustration * Fred Lynch

DESKTOP-PUBLISHING FEATURES COMPARED

	GraphicWriter III	Publish It! 3
Version	1.0	3.0
Price	$149.95	$129.95
Operating System	GS/OS	ProDOS 8
RAM Required	768K	128K (256K for SHR graphics)
Color Monitor	yes	no
Formats Data Disks	yes	no
# Pull-Down Menus	11	9
Keyboard Commands	yes	yes
Maximum Page Size	17"x17"	8.5"x14"
Maximum Document Size Depends on. . .	 disk space	 RAM
Insert/Delete Page(s)	yes	yes
Measurement Units	in, cm, pica, point	in, cm, pica
Precision Level (Inches)	0.01	0.001
Page Titles	yes	no
Left/Right Master Pages	yes	no
Auto. Double-Sided Pages	yes	no
Multiple Document Windows	yes	no
Screen Rulers	yes	yes
Rulers Track Cursor	no	yes
Column Guides	yes	yes
Custom Guides	yes	yes
Color-Coded Guides	yes	no
Snap-To Guides	yes	yes
Text-Frame Tool	yes	yes
Graphics-Frame Tool(s)	yes	yes
Shape Tools	line rectangle/square round-corner box oval/circle arc triangles (2) polygon freehand	line rectangle/square round-corner box oval/circle
Preset Viewing Modes	tall text actual size fit in window	double size actual size half size size to fit
Custom Viewing Mode(s)	yes	no
Preview Mode	no	yes
Set Preferences	yes	yes
Visible Clipboard	yes	no
Status Display	no	yes
Color Objects	yes	yes
Cut/Copy/Paste Objects	yes	yes
Lock/Unlock Objects	yes	yes
Align Objects	yes	yes
Rotate Objects	yes	no
Auto. Select All Objects	yes	no
Resize Objects	yes	yes
Auto. Make Objs Same Size	yes	no
Group Objects	yes	yes
Couple Objects	yes	no
Show Object Specifications	no	yes
1-Step Copy Text Frame/Text	yes	no
Don't-Print Feature	no	yes

Chart continued on next page

ber-band" a box by dragging the graphics-frame tool with the mouse, then click on the appropriate import option from the File pull-down menu.

Adding rules (straight lines of various thicknesses, or "weights"), boxes, round-corner boxes, circles, and ovals is just as easy. And now, with Publish It! 3, you can fill any shape with one of ten ready-made shading densities. They're perfect for building borders around illustrations or for emphasizing text in sidebars. As in previous versions of the program, Publish It! 3 offers a couple dozen other predefined pen and fill patterns and lets you create custom fill patterns if you prefer.

Setting up a newsletter, or any publication requiring precision layout, is a snap — literally. Publish It! 3, like its earlier incarnations, offers "snap-to guides," which let you design or position text frames and graphics objects with ease. The latest version of the program also lets you implement custom guides to design a user-defined page grid with as many columns and rows as you like. Within the grid, you can set custom row and column spacing as well as determine top, bottom, left, and right page margins. Custom grids can be invaluable aids in designing small publications, such as business cards, tags, and labels.

Thanks to Publish It!'s flexibility you can view virtually every change you make to your publication. The program offers four viewing modes: double size, actual size, half size, and full-page facsimile. In addition, the program's preview mode lets you see in nearly perfect detail what your final printout will look like.

Execute fine adjustments with Publish It!'s "show specifications" feature. Select an object, then size and/or position it precisely — to thousandths of an inch. The program supports other units of measurement, too, such as the centimeters we often employ when creating variously sized adhesive labels.

Publish It! 3 lets you lock each object in place. Moreover, you can select and then align objects vertically or horizontally or move them as a group. Even better, you can copy and paste the object group from one page to another, a process that eliminates many of the repetitive motions of previous versions of the program. Create a couple of "master pages" and then copy the design items to additional pages as required. Thanks to the software's invisible clipboard, you can even copy objects from one Publish It! 3 file to the next.

During the past couple of years, Bruce Rosenblum and Turning Point Software, developers of Publish It! for the Apple II family, have dramatically improved the program's ability to import text and graphics that were originally created with other DTP, word-processing, or paint programs. Because Publish It! 3 lacks a full-featured word processor with spelling checker, some users prefer to write, edit, format, proofread, and spell-check their text in a stand-alone word processor before importing it. Publish It!'s link tool lets you pre-arrange the order of the text frames into which the imported text will flow.

Embellishing your publications with graphics objects

is easier than ever, because Publish It! 3 imports graphics directly from both DOS 3.3- and ProDOS-formatted disks. Best of all, those images can range in form from single hi-res (high resolution) to double hi-res to SHR (super hi-res). (Your computer needs at least 256K to include this last type of artwork in your publications.) The program's text-wrap feature makes words flow automatically around the graphics you incorporate into your layouts.

Because Publish It! 3 lacks paint tools, you may not be able to edit or embellish artwork in ways you'd like. Some users, however, have discovered roundabout ways to perform simple touchups. For example, you can "erase" stray pixels (the dots that make up a bit-mapped picture) by covering them up with small, blank text areas or with white-filled, borderless rectangles.

Adding manually cut-and-pasted clip art is easier than ever before, too, thanks to the program's new "don't print" feature, which lets you draw an object but not print it. You can create a nonprinting, "reserved" area for a photograph or original line art, for example.

We recently used the program's "don't print" feature when we prepared some round name badges. We drew and positioned a dozen circles on a custom grid; each circle represented the outer edge of a badge. These round screen guides helped us keep overlying text and graphics frames within bounds. We clicked on the *Don't Print* check box in each circle's *Show Specifications* dialog to prevent the circles themselves from printing.

Eager to expand your DTP system's repertoire of typefaces? Timeworks' latest version directly supports so-called GS, or type $C8, fonts. Many such fonts are available at little or no cost through freeware and shareware sources such as public-domain libraries, user groups, and on-line information services or electronic BBSes (bulletin-board systems). If your Apple II has enough memory (Publish It! 3 supports a variety of RAM cards), you can cache (preload into memory) any fonts you've installed to reduce the disk-access time required when previewing or printing your work.

For large press runs in which you plan to duplicate a publication by photocopying or offset printing, standard operating procedure calls for production of a black-and-white master copy of your creation. At this stage of prepress (the process leading up to actual duplication), Publish It! 3 excels. The program's double-strike dot-matrix printing mode (together with its support for a wide variety of models) produces printouts unequaled in quality.

Like its immediate predecessor, Publish It! 3 supports Apple's LaserWriter series, too (except the SC model). Connect your Apple II to a LaserWriter printer either directly or through an AppleTalk network and you have the next best thing to a professional typesetting station.

If you don't have access to a LaserWriter, Publish It! 3 lets you save your desktop publication in a format that's compatible with the PageMaker page-description language resident in certain brands of laser printers. In theory at least, all you have to do is save the file to a 3.5-

Chart continued from page 44

	GraphicWriter III	Publish It! 3
Paint Tools	brush pencil marquee magnifying glass eraser	none
Paints	heavy paint watercolor dye	no choice
# Line Weights	11	6
# Pen/Fill Colors	48	8 (including black & white)
# Pen/Fill Patterns	0	24
# Shading Densities	0	10
Custom Patterns	no	yes
Import Single-Hi-Res Graphics	yes	yes
Import Double-HR Graphics	yes	yes
Import Super-HR Graphics	yes	yes
Import Print Shop Graphics	yes	yes
Export Super-HR Graphics	yes	no
Custom Char./Line Spacing	yes	yes
Use GS (C$8) Fonts Directly	yes	yes
Custom Font Sizes	yes	no
Color Text	yes	yes
Type Styles	plain bold italic underline outline shadow	plain bold italic underline outline shadow
Type Formats	subscript superscript all uppercase all lowercase all proper names	subscript superscript
Special Characters/Symbols	yes	no
Import Formatted WP Files	yes	yes
Import Unformatted (ASCII)	yes	yes
Export Unformatted (ASCII)	yes	no
Justification Options	yes	yes
Link Text Frames	yes	yes
Display Links	yes	no
Transparent Text	yes	yes
Text Wraps Around Objects	yes	yes
Text Skips Over Objects	yes	yes
Text Wraps to Irregular Objs	yes	no
Find/Replace	yes	yes
Spell Checker	yes	no
# Tab Settings/Page	unlimited	6
Tabs	left right center decimal	left right
Custom Tab Leaders	yes	yes
Go-to-Page Command	yes	yes
Custom Printer Driver	yes	yes
# Print Modes (Dot-Matrix)	2	2
Portrait Print Orientation	yes	yes
Landscape Print Orientation	yes	no
LaserWriter Support	yes	yes
PostScript Print-to-Disk	no	yes
Print Page Range	yes	yes

►

inch disk in *Print Postscript to Disk* format. Take the disk to a service bureau offering a Macintosh computer and Postscript laser printer. As an alternative, you can send the file by modem over telephone lines to a laser printing service.

For small press runs, Publish It! makes it practical now to add spot color to a newsletter's title page or to letterhead stationery, or to incorporate some SHR graphics into a school report. The program supports not only color graphics but also color text.

A few caveats apply, however. While SHR graphics images print correctly, they sport distorted colors on the Publish It! 3 cropping screen. You can flip hi-res and double-hi-res graphics vertically or horizontally (or invert them as before) via the cropping screen, but you can't manipulate SHR graphics that way.

"Publish It! 3's double-strike mode produces dot-matrix printouts unequaled in quality."

Because the Publish It! 3 layout screen is monochromatic, it can't display colors, even in preview mode. When you enhance text with one of the half-dozen hues available (yellow, red, orange, blue, green, or purple), it appears "overlined" (the opposite of underlined) on screen. You can also draw and fill objects with color, but the embellishment appears only when you print the publication on a color-capable printer equipped with a multicolor ribbon.

When we tried recently to create a batch of round name badges for a Halloween party, we couldn't get a full page of SHR clip art to fit onto Publish It! 3's cropping screen, even after scrolling. To remedy the situation, we used an SHR paint program to open the clip-art file. We then "lassoed" (or "marquéed") the illustrations we wanted and arranged those pictures in the top half of the paint program's easel.

Printing the page of completed badges in color in double-strike mode took about nine minutes. We compared the Publish It! 3-printed colors to those generated for the same illustrations by their native paint program. With one inconsequential exception, colors were true to their appearance in the original paint palette.

FANCY FOOTWORK

If you haven't yet purchased a DTP program for your GS — or if you're considering switching to another product — don't be daunted by GraphicWriter III's sophistication. Achieving proficiency with this authentic GS program, designed by Gary Crandall and Datapak Software, may come a tad more slowly only because it offers more features than most other DTP programs, including Publish It! 3.

To harness its broad powers, GraphicWriter III sports nearly a dozen pull-down menus, with a range of both standard and exceptional program features.

For example, text types include the usual (plain, bold, italic, underline, outline, shadow, superscript, and subscript), but the Style menu also provides options for formatting text in ALL CAPS, all lowercase, or All Proper Names.

Other menus function as pull-down palettes for line weight, pen color, or fill color. Pull down the Apple menu to uncover desk accessories such as the icon-based Control Panel or the free disk-initializer program that ensures you'll never again be caught short of formatted data disks.

Many GraphicWriter III features provide surprising power. For example, the program lets you choose from among four text-wrapping options, including "wrap to" for shrink-wrapping text around irregularly shaped graphics.

In a similar vein, GraphicWriter III provides multiple choices for inserting pages and offers more drawing instruments, including two triangle tools, a polygon tool, and a freehand sketch tool. Enjoying sophisticated options like these may exact a small price — more decision making — but it offers huge dividends in expanded DTP power.

Not surprisingly, given its Apple Human Interface nature, GraphicWriter III shares a Mac-like look and feel with Publish It! 3. Menu bars, tool boxes, page-turning icons, vertical and horizontal rulers, and scroll bars are similarly positioned in both programs. Like Publish It! 3, GraphicWriter III requires the mouse, but also offers a generous number of alternative keyboard commands, many of which are mnemonic: Open apple-P prints a document; Open apple-S saves it.

Beneath these superficial similarities, however, lie countless advanced options in GraphicWriter III. For instance, you can set as many tabs as you like: Simply pick up left, center, right, and decimal tab icons and slide them into place along the horizontal ruler.

In addition, each object sports eight handles for easier manipulation. And you can expand your desktop-publishing options by combining custom page sizes with landscape (sideways) and portrait (normal) printing modes.

Adding to this arsenal of features, GraphicWriter III offers 11 line weights and 48 dithered (mixed as opposed to pure) pen and fill colors.

Designing a page with GraphicWriter III is no chore, thanks to the program's color-coded column and arbitrary guides and its "snap to" capabilities. Creating a three-column newsletter? Just pull down the Page menu and enter *3* in the *Set Column Guides* dialog box. You can specify the gutter size (the space between columns), as well.

If you're creating a page of small publications such as business cards, simply drag into place as many horizontal and vertical arbitrary guides as you need. Viewing a GraphicWriter layout without guides is possible, too: Just turn off the Page menu's *Show Guides* option.

PRODUCT INFORMATION

GraphicWriter III
Seven Hills Software
2310 Oxford Road
Tallahassee, FL
32304-3930
(800) 531-3122
(904) 576-9415
$149.95

Publish It! 3
Timeworks
444 Lake Cook Road
Deerfield, IL 60015-4919
(800) 535-9497
(312) 948-9200
$129.95

GraphicWriter III lets you create left and right master pages to further facilitate your publication's design. Boilerplate pages automatically copy repetitious items such as headers and footers and shift left and right margins for double-sided copying.

With important exceptions, GraphicWriter's tools are similar to Publish It! 3's. GraphicWriter III's I-beam performs triple duty: Use it to rubber-band text frames, to size them, and to type text into them. Use the option key together with designated alphanumeric keys to access special symbols, including the copyright sign or accented foreign-language characters, that are available in the GS fonts that GraphicWriter III supports.

Unlike Publish It! 3, GraphicWriter III displays fonts and virtually all page elements, including color, in WYSIWYG fashion. But appearances can be deceiving, thanks to the GS' screen-resolution quirks. To sidestep the problem of text that's unreadable in actual size, GraphicWriter III offers a tall-text viewing mode for typing, editing, and formatting. Other viewing modes let you spot-check a whole page or enlarge parts to user-defined size.

GraphicWriter III's word processor, with its expanded search-and-replace functions and built-in spelling checker, is more full-featured than Publish It! 3's. A host of translators (built-in utility programs) let you import text from virtually all popular word-processing programs with most formatting intact. GraphicWriter III can also export unformatted (ASCII) text files.

The program's linking tags signify the intelligent column links the program sets up: Not only can you view linked columns and the end of each article's chain (indicated by the traditional # sign), but you can also readily determine whether a text frame is inadequately sized to hold all the text it should. A plus sign alerts you to enlarge the frame so that hidden text can show.

Unlike many DTP programs, including Publish It! 3, GraphicWriter III has multiwindow capabilities, letting you view more than one document simultaneously. Shrink a document window and drag it aside. The View menu lists documents that are open on your desktop. When you're finished with a file, click on its close box. You can also view GraphicWriter's clipboard to see text, objects, or illustrations you've cut or copied recently.

To add bit-mapped (paint) graphics to your publication, switch to actual-size mode and use any GraphicWriter III paint tool (brush, pencil, marquée, magnifying glass, or eraser) to rubber-band a graphics frame into place.

Thanks to a host of graphics translators, you can import nearly any kind of Apple II-compatible artwork, including SHR graphics, into your GraphicWriter III creations. Conversely, you can export as an Apple Preferred Format file any SHR illustration you've created or embellished with GraphicWriter III.

Import an illustration and, in tall-text mode, perform touchups or edit the artwork with GraphicWriter III's paint tools, shape tools, and paint-palette colors. The program offers three kinds of paint (heavy, watercolor, and dye) for varying effects. These paint features let you add a touch of color even to imported graphics images that were created originally in black-and-white.

Unlike a full-fledged paint program, GraphicWriter III doesn't offer custom palettes, multiple zoom modes, or options for mirroring or flipping objects. But the program offers enough design tools to satisfy all but the most finicky desktop publisher.

That's not to say that all's well in GraphicWriter III land. For one thing, we were unable to set up an accurately sized page using centimeters. The program's spelling checker worked unreliably. And on one occasion, the program rewarded our graphics-clipping efforts with *Fatal System Error 0308*.

We weren't ecstatic with the outcome of our first GraphicWriter III printing efforts, either, though we were careful to use the program's custom printer driver for our ImageWriter II. Laser printing would no doubt have produced far more attractive results no matter what DTP program we used.

Printing a page of round badges in GraphicWriter III's "Best" mode took an incredibly long 24 minutes. Printing the same page in "Faster" mode not only took less time (nine minutes), but, in our opinion, resulted in better-looking badges.

Seven Hills Software's Dave Hecker acknowledged at press time that a few bugs remained to be fixed, but couldn't predict a release date for version 1.1, which he indicated would be sent free of charge to registered users.

"GraphicWriter III offers enormous appeal for GS users who want authentic 16-bit software."

THE DECISION

Many Apple IIe or IIc users who've already chosen Publish It! as their DTP program know that this product is tops in its class. Publish It! 3 may not be full-featured, but it's easy to learn and requires little memory. Moreover, its dot-matrix output is excellent. Whether you're generating black-and-white prepress masters or short runs of full-color publications, Publish It! 3 is probably equal to the task.

GS users, on the other hand, need to weigh the power and flexibility of GraphicWriter III against its somewhat inferior dot-matrix output and its remaining bugs. Despite these drawbacks, GraphicWriter III offers enormous appeal for GS users who want authentic 16-bit software.

When it comes to selecting a DTP program for your Apple II, one thing's for sure: Whether you stick with the champ (Publish It! 3) or go with the newest contender (GraphicWriter III), you've decided wisely. We're not pulling our punches — both programs are state-of-the-art for their respective systems. This is one bout that ends in a draw — but stay tuned for round 4.□

CYNTHIA E. FIELD IS A FREE-LANCE COMPUTER JOURNALIST AND THE AUTHOR OF PRESS ROOM, *INCIDER*'S MONTHLY 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.

LIVING

Ted Turner notwithstanding, the shadow cast by *The Inquirer* will always be black-and-white in our memories of *Citizen Kane*. Print audiences in 1990 are more demanding, though.

A HUNDRED YEARS AGO IN NEW YORK, HEARST and Pulitzer slugged it out with purple prose and red-cent pricing — and "yellow journalism" was born. These days, publishers of all stripes are putting a somewhat more literal spin on that phrase. Three generations of Technicolor moviegoing and half a century's worth of advances in the art of color photography have conditioned us to judge every medium by visual standards. It's 1990, and if you want your newspaper — or any desktop publication, for that matter — to be "read all over," as the children's riddle goes, black-and-white may not suffice. Color's the magnet that attracts an audience.

Problem is, color has to be sensibly chosen, prudently allocated, and acceptable in quality. You'd be loath to splash fire-engine red on a poster advertising a child-care agency, and you probably wouldn't feature baby blue in a newsletter about kick boxing. Color selection's intuitive, yet there's nothing mystical about it. Learn from the experts by studying the graphics elements used in magazines like this one. Just be careful that your newfound enthusiasm for color doesn't overcome old-fashioned common sense — which often dictates that less is more.

Whatever your innate color sense, Apple II desktop publishers have traditionally relied on ImageWriter II printers to add touches of color to computer-designed documents. Not surprisingly, state-of-the-art page-layout programs such as AppleWorks GS, GraphicWriter III, Medley, and Publish It! 3 include built-in color-printing capability. Unfortunately, anyone who's witnessed the way an RGB (red/green/blue) monitor's blazing color dies on the printed page can't help but lose his or her zeal for the much-touted ImageWriter II.

Of course, you needn't own an ImageWriter II to add flair to computer-designed publications. Using a succession of single-color ribbons and a separate file for each page element, for instance, you can create multicolor publications with nearly any printer by adopting the method described in August 1989's Press Room (p. 74). Even better, you can experiment with the following techniques to enhance the appearance of ordinary-looking black-and-white publications. We think you'll be pleasantly surprised by the possibilities.We used Publish It! to create three-color name tents like those you'd perch on the head table at a business seminar or sports banquet. Samples are displayed in the accompanying illustration.

FILMING YOUR DOCUMENT

Setting up and using the **Kroy ColorPlus** system couldn't be easier. First, generate your desktop publication as usual on a dot-matrix printer with a black ribbon. Photocopy the printout. Overlay selected areas of the photocopy — the logo, say, or an illustration — with Kroy ColorPlus film, which will bond later to the carbon-based toner on the copy. If you have a laser printer, skip the photocopying step; laser printers use toner when they make originals.

Kroy color film comes in 8.5-by-12-inch sheets in three finishes and 40 colors, ranging from the ordinary (such as "matte navy" and "metallic green") to the unusual ("metallic matte copper" and "gloss turquoise pastel"). Each sheet costs about 62 cents.

Cut the film with scissors, a personal paper cutter, or an X-acto-type knife. Attach the film to the photocopied document with 3M's Post-It tape. Now turn on the ColorPlus unit and let it warm up. A selection slider on the top panel of the device lets you choose the optimum temperature for bonding the color to the toner image. The accompanying *User's Manual* offers not only guidelines for selecting proper temperature, but tips for troubleshooting and for creating multicolor effects, as well.

When you insert the film/document sandwich into the ColorPlus unit, internal pressure rollers draw the document into the machine, fuse the color onto the page, and expel the color-enhanced product into a rear tray. Just peel off the

COLOR

Add a splash of color to your newsletters, promotional pamphlets, ads, and posters, and wake up your readers with a spectrum of special effects.

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

spent film, and your publication's ready to distribute.

You have to repeat these steps for each copy you want, so the Kroy ColorPlus system may be neither cost-effective nor time-efficient for large press runs. The Business Presentation Demo Kit accompanying our evalution unit included supplies for creating a report cover, an agenda, an overhead transparency, a name tent, and name badges — the kinds of documents to which ColorPlus seems best suited.

A FEW WRINKLES

The **LaserColor** name belies the fact that this film, which is similar in appearance to Kroy ColorPlus film, also works well with photocopies made from dot-matrix printouts, or from daisywheel printouts embellished with manually cut-and-pasted clip art. A major difference is that instead of requiring an additional piece of hardware, LaserColor film uses your copier or laser printer to fuse color.

Color kits add pizzazz and special effects.

For example, after you've created a photocopy, place a blank white sheet of paper onto the platform of your desktop copier. Attach LaserColor film to the photocopied document wherever you like; each package contains self-adhesive "dots," which you use to hold the film in place over the image or text you want to colorize. Now feed the LaserColor film/photocopy sandwich into the copy machine. Heat generated inside the copier bonds the film color to the toner image. Peel off the spent film.

At about $3 a sheet, LaserColor film isn't cheap. Heavy users who opt for LaserColor in lieu of Kroy ColorPlus could be practicing false economy, because the payback volume for ColorPlus is about 350 sheets of film. Another drawback is wrinkling, which causes uneven color and seems to be more prevalent with LaserColor than Kroy ColorPlus.

TAG IT

Letraset's **Color Tag** is similar to ColorPlus and LaserColor — color film fuses with toner from your copier or laser printer. Just photocopy any dot-matrix printout or use a laser document as is. What's different is that the Color Tag system uses a hand-held heat-transfer device much like a flatiron — and if you can iron a shirt, you can produce top-quality results with this inexpensive unit. It gets hot, but with guidance even a child can use it safely.

Color film is available in boxes of 25 sheets, in hues ranging from green to hot pink to metallic copper. (You can even substitute Kroy or LaserColor film.) Your greeting cards will rival commercial ones; your report covers will impress even the most discriminating boss, banker, investor, or teacher.

SILK-SCREENED COLORS

Print Gocco is arguably the most flexible of colorful alternatives for Apple II desktop publishers. A typical starter kit costs about $130 and includes all hardware and sufficient material to prepare at least a half-dozen color press runs. After you deplete the initial stock, each run (consisting of up to hundreds of color copies) should cost no more than $4.

Begin by making a photocopy of your desktop design. Cut out the photocopied images and attach them with cellophane tape or a glue stick to a notecard-sized piece of plain paper. The Print Gocco platform pad is about 4.25 inches wide by 6 inches high, an ideal size for printing custom greeting cards or small forms for business purposes. Your publications aren't necessarily limited to those dimensions, ►

however. You can't print full-sized letterhead stationery in one fell swoop, but you can print your logo at the top of the page and then, on a second pass, print the address at the bottom. Whatever your project, place the pasteup on the printing platform. Insert the blue filter and a stencil-like "print master" into the holder. Push and twist two flash bulbs into the battery-powered lamp housing. Press down on the handle to discharge the bulbs. The flash "burns" miniscule pores wherever the stencil substrate contacts toner.

Print Gocco ink comes in "toothpaste" tubes and is easily squeezed onto the stencil. Ink-blocking foam strips prevent colors from bleeding. A wide range of colors, including pastels and fluorescents, are available. You can also mix them to create tailor-made tints. Insert the inked stencil into the holder. Place a black piece of paper onto the platform and press down on the unit's handle. Firm but gentle force squeezes ink through the pores of the stencil and onto the paper. Replenish ink as required. Nearly anything you can create on your Apple II — notepaper, memo pads, party napkins, business cards, report cover labels, and more — you can "silk-screen" this way. A cloth-printing accessory lets you decorate placemats and canvas bags, as well.

PRODUCT INFORMATION

Color Tag, $99.95
Color Tag Color Strips, $6.50/box of 25
Letraset USA
40 Eisenhower Drive
Paramus, NJ 07653
(201) 845-6100

Kroy ColorPlus Processor, $875
Kroy ColorPlus Film, $62.95–$84.95
Kroy Inc.
P.O. Box C-12279
Scottsdale, AZ 85267-2279
(602) 948-2222

LaserColor Multicolor Pac, $19.95
LaserColor Single-Color Pacs, $22.50 each
Alfa Graphix
875 Ave. of the Americas
New York, NY 10001
(212) 268-1550

Print Gocco B6
RISO Inc.
300 Rosewood Drive
Suite 210
Danvers, MA 01923-9892
(508) 777-7377
call for pricing

PAINT THE TOWN RED

Colorization may be anathema to the diehard film fanatic, but your print audience demands it. Color of acceptable quality is not only available to Apple II desktop publishers, it's affordable. And fun! Whether you use a color-capable page-layout program and an ImageWriter II, or special hardware units such as ColorPlus, LaserColor, Color Tag, or Print Gocco for a rainbow of unique effects, the results are tantalizing. Color your corner of the world — and *you'll* be read all over. □

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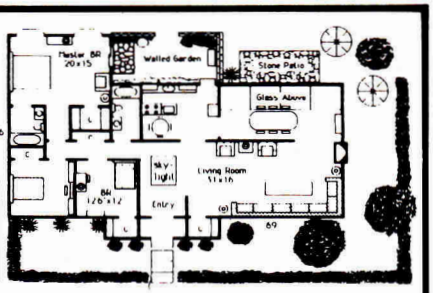

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Apple IIGS with IMB $89.95
*Macintosh with IMB $99.95
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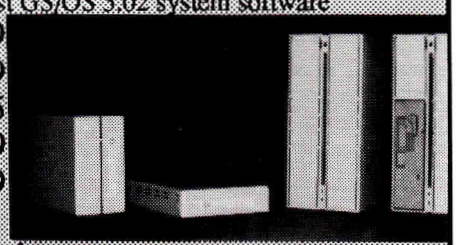

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If the Queens army had such innovation they just might have won the war. Refer to the January issue of Nibble magazine for an informed review of internal hard drives. Bytheway, we're depicting George Washington, and not stereotyping Americans as imperialistic Warmongers. Although, a hero to us George was a criminal in the eyes of the British, not unlike Poncho Via the subject of our last few Ads. Revolutionaries who made a difference.

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IS IT LIVE OR IS IT APPLE II?

Apple users say it with music — and *inCider* has surveyed a symphony of software products. In composition, editing, instruction, and performance, Apple II programs are hitting the top of the charts.

By MARC APFELSTADT

In every culture and throughout every era of human history, music has accompanied our most important activities, and our most trivial. From the log drum to the lyre to the human voice, from the tin whistle to the harpsichord to the electric guitar to the most radically different instruments of all — today's computer-driven synthesizers — music has entertained kings and commoners, lulled us to sleep, sent us off to war, told tales of love, and helped us illustrate our poems and stories.

The *desire* to make music is inherent in all of us, and today, thanks to Apple II software attuned to all levels of experience — novice, amateur, and professional — the *opportunity* to make music is more widely available than ever before.

IN THE HOME STUDIO

Let's begin our survey of Apple II music software with "consumer-level" products — software for "home/hobbyist" musicians, people who may (or may not) play a little piano and are looking for new ways to experiment with music just for fun.

Instant Music/Instant Synthesizer, **Jam Session**, and **Music Construction Set**, for instance, are all top-notch GS programs for beginners. Jam Session and Instant Music are primarily play-along programs; Instant Synthesizer incorporates only limited editing of Instant Music compositions. Music Construction Set lets you control two instruments, but you have to use a mouse to maneuver notes on screen.

After you tire of playing through the canned songs or fighting a clumsy interface, Activision's MIDI-compatible **Music Studio** emerges as the base-level program of choice for many GS owners. (See "MIDI Notes," p. 56, and "A Glossary for Beginners," p. 58, for further discussion of MIDI.) The program isn't without flaws; its hardcopy output has some problems, for instance, as **Figure 1** shows, with its blocky, hard-to-read character map.

Music Studio is also "frozen" — the most recent version predates the release of GS/OS System 4.0 and System 5.0.2. You'll encounter some compatibility problems, especially launching it from a hard-disk drive. To run Music Studio from a hard drive, copy it to its own subdirectory on the hard drive (the boot disk), and then copy the waves subdirectory into the hard drive's root directory. To use MIDI, make a duplicate of the Apple.MIDI driver (from the drivers subdirectory in the systems folder) and name the copy *AppleMIDI*.

What Music Studio does offer is a lot of power and control over sounds. Musicians often describe instruments in terms of "tone color," and Music Studio picks up on that by giving each instrument a different color on screen, offering an ►

Illustration ✻ Devis Grebu

excellent medium in which the novice musician can discover why a string bass sounds different from a trumpet, for instance. In addition, the software offers you the chance to edit the sound through ADSR techniques — *attack*, *delay*, *sustain*, and *release*, basic to artificial sound synthesis and part of the foundation of timbre.

Music Studio supports MIDI for playback, but its MIDI recording mode has one serious deficiency: no metronome to help you stay with the internal tempo of the program. The program may interpret your half note, for instance, as some other value, and you'll end up doing so much editing that it's faster to drop the notes into place on screen with the mouse than to re-edit the music you've already recorded.

What's the bottom line? Check your local electronic bulletin-board system and your favorite on-line information service for Music Studio public-domain song files available for downloading. The software itself also offers a number of features that can stretch your musical imagination. Even with its weaknesses, Music Studio still offers the home user the richest environment for entering musical material "by the note."

Figure 1. Music Studio hardcopy.

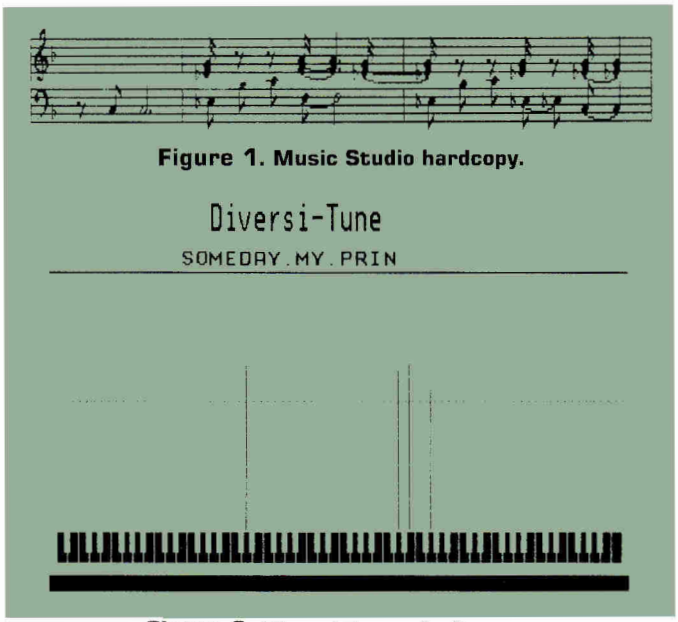

Figure 2. Diversi-Tune velocity map.

DIVERSE OPTIONS

What if you play by ear and don't want to deal with note reading? In that case, check out Diversified's **Diversi-Tune**. It's a great program for "quick and dirty sequencing," and offers a powerful playback function that stretches the GS' sound chip to its outer limits.

A multitude of song-file disks are also available; Bill Basham's vision of hundreds of thousands of Apple users huddled around their monitors as they sing along with the "bouncing ball" lyrics may just come true someday. A number of compatible files are also available on BBSes and on-line services.

In combination with a MIDI interface and keyboard, Diversi-Tune makes a great low-cost starter system. The program's only real drawback is its unusual interface — no staff, plus a set of nonstandard commands.

Keep in mind that Diversi-Tune offers a couple of interesting options not available in certain other programs. First, as noted above, you can see raw MIDI data scroll by as the music plays — the actual codes your synthesizer is interpreting. Another viewing option lets you see a "velocity map" of lines over a keyboard, as **Figure 2** shows. *Velocity* is MIDI's term for how hard you're striking a key — it's commonly used for volume control, but it can also affect timbre and other aspects of sound. Diversi-Tune is the only program that lets you see at a glance whether musical material is live performance or edited step entry; in live material, different notes have different velocities, while notes entered one at a time and strung together often carry the same velocity.

Diversi-Tune doesn't support MIDI time-clock manipulation; you can't tie it remotely to a second MIDI sequencer and lock them together in tempo. Getting material into Diversi-Tune from another sequencer is easy: You simply cable the two devices together and place Diversi-Tune in recording mode, then start the other unit playing. Getting material out of Diversi-Tune, on the other hand, gives you notes in rhythm, but your recording unit won't necessarily match the tempo map of the song. Most MIDI sequencers think in terms of a tempo-map "ruler," and Diversi-Tune doesn't. Still, it's a good, low-priced program for play-by-ear amateurs who want to work with a GS.

ALL TOGETHER NOW

If you just want to work with digitized sounds in a GS environment, Roger Wagner's **HyperStudio** offers an outstanding multimedia combination of capabilities.

The latest release (version 2.1) offers even more power, including a new option for creation of "user disks" containing a run-

BOOKS AND RESOURCES

If you're a MIDI novice, some excellent resources are available to help you get started. **What's a Synthesizer?** by Jon Eiche ($5.95, published by Hal Leonard Books, P.O. Box 13819, Milwaukee, WI 53213), is a simply written introduction to MIDI and synthesizer principles.

It's a plain-language manual presenting accurate information in an entertaining format. (Chapter 1 is titled "Do I need a PhD in Electrical Engineering?") Read this book through twice from cover to cover, and you'll be infinitely better informed.

A more detailed resource is **Computer Literacy for Musicians**, by Fred Hofstetter, published by Prentice-Hall (Englewood Cliffs, NJ). It looks at all types of hardware and software systems, and even offers a graded and annotated listing of programs available.

Keep in mind that it was published in 1988, though; the listings and descriptions don't include some newer products and updated versions now available. Nevertheless, it's a superior piece of writing and documentation.

Subscriptions to **Keyboard** (P.O. Box 50404, Boulder, CO 80321-0404) and **Electronic Musician** (P.O. Box 3747, Escondido, CA 92025-9860) are also must items. The technology is changing so fast that these magazines are the only places to get current reviews of equipment and software as they're released — plus the ads provide an idea of current prices and reliable mail-order sources. **— M.A.**

time version of HyperStudio — with no licensing fee for noncommercial use.

The new utility disk **Clip-Sounds Volume 1** adds a command that lets you play a sound directly from disk, permitting long sounds you couldn't use before; the potential for writing educational music software increases exponentially with this single modification. And with an additional feature on the new **X-Commands** disk of utilities, HyperStudio also lets you play music from the Apple CD-ROM drive, linked directly to buttons on screen.

What's next on the multimedia horizon? Synthesized sound linked to stacks. Music created "on the fly" by a computer user/player is much more space and memory efficient than digitized sound; when asked about this possibility, Roger Wagner replied that "synthesized sound is something we have been very interested in for a long time, and we expect to support this in the near future." In the meantime, recent enhancements to HyperStudio's digitized sound capabilities make this breakthrough program a fascinating environment for music creation.

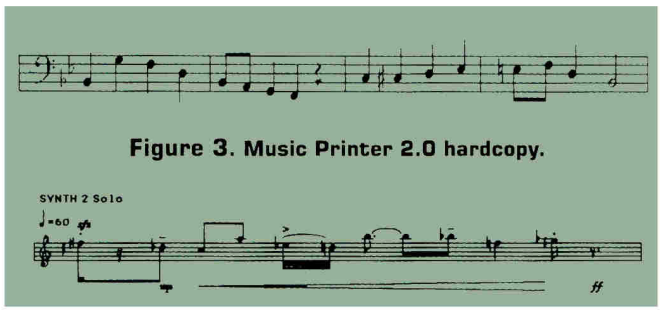

Figure 3. Music Printer 2.0 hardcopy.

Figure 4. Music Writer condensed print mode.

HERE'S THE SCORE

More-advanced musical users have a choice of two approaches to Apple II music: notation-based entry and sound-based entry, or sequencing. **Music Printer 2.0**, from Temporal Acuity, is the best of the available notation programs for the IIe and IIc. This easy-to-use program lets you enter music in a line-by-line typesetting-style environment and produces good-quality printed material, as shown in **Figure 3**.

Music Printer is designed around visual placement of notation symbols, but the Apple II version includes no provision for recording from a MIDI instrument or playback. (The IBM edition does.) Other limitations include manual placement of bar lines and other components on a horizontal plane for each line of your score, one line at a time. It's fine for piano-score notation, though (two-staff work is easy), or for short examples you'll insert into tests, for instance.

For the GS environment, the real workhorse, and a staple of many a musician's software library, is **Music Writer** from Pygraphics. Music Writer is a full-featured music-notation program, complete with MIDI recording and playback, quantizing (automatic correction of a player's errors in rhythm), and attractive hardcopy. Choose condensed type from the printer-options menu to get the best hardcopy quality, as in **Figure 4**.

You can print either an entire score or selected parts. A new Professional Edition, nearing release, will support scores of up to 40 staves, with the data stored as standard MIDI files, directly portable to other MIDI programs and other computer formats. Music Writer's Special Edition is being expanded from six to eight staves; the Limited Edition is still fixed at three staves. Each level of the software contains all program features, but the less expensive versions limit the number of lines on which you can work simultaneouly.

Music Writer offers a variety of sound choices for playback; you can assign each line of the score a different timbre. The MIDI recording function is well designed, and you can even record to a keyboard grand staff (both treble and bass clefs) on screen if you like. A separate **Instrument Designer** sequencer and voice-librarian package lets you create your own timbres for use with the program.

Some of the program's flexibility is hidden, though. Adding ledger lines (a vertical extension of the range) above the top staff will place more space between lines on the full score, for example. One weakness of earlier versions that the program's newest release addresses, however, was an inability to force page breaks at given places in the music, resulting in some nasty page turns. With this latest incarnation, it's a treat to finally be able to preview formatting layouts. (Condensed print mode gives the best output.) In short, if you want top-quality printed output in a flexible environment, Music Writer's the program for you.

TUNE IN

If you approach music from the sound angle instead of the printed page, here's a new and unique product, available in both 8- and 16-bit versions. Magic Tree's **MIDI On-Stage**, developed by Mark Pelczarski, former guru of Penguin Software (now Polarware), is a sort of Apple II drum-machine program in sequencer's clothing. ►

FURTHER READING

Features

"Making Music"
August 1987, p. 38

"Apple Serenade"
May 1988, p. 70

"Does HyperStudio Stack Up?"
September 1989, p. 44

"Face the Music"
October 1989, p. 34

"Exploring HyperStudio"
March 1990, p. 56

Editors' Choice

Instant Music
October 1987, p. 144

Diversi-Tune
September 1988, p. 112

Sonic Blaster
May 1989, p. 108

Instant Synthesizer
July 1989, p. 108

HyperStudio
August 1989, p. 108

Jam Session
March 1990, p. 108

Reviews

Phasor
March 1987, p. 24

Personal Musician
February 1988, p. 97

FutureSound
March 1989, p. 320

Sound Ace
June 1989, p. 36

Sonic Blaster
June 1989, p. 36

Music Writer 1.3
June 1989, p. 40

Music Shapes 1.0
June 1989, p. 40

MasterTracks Jr.
June 1989, p. 110

Instant Synthesizer
September 1989, p. 28

MasterTracks Pro GS
January 1990, p. 100

A sequencer is a multitrack MIDI data recorder; the benefit is that all musical information for the whole song is available for editing, but one drawback is that an entire song of MIDI data takes up a lot of space in RAM and on disk. Drum machines (synthesized MIDI percussion) follow a different concept: You enter component patterns (often one or two measures), which the software assembles into a complete song through a mapping process. Each pattern is in memory only once, for maximum space saving. Take your computer along on your gig, and MIDI On-Stage gives you accompaniment at a single keypress: The computer plays prerecorded bass, piano, *and* drum parts, for example, while you jam along as the live component.

The MIDI On-Stage interface is somewhat nonstandard, and data entry seems a bit awkward at first. Still, the program offers tremendous potential for live performance. It's far less expensive and more memory efficient than stand-alone MIDI sequencers, and takes much less time loading individual song files, because it reads a sort of shorthand code. No more shuffling through a stack of 3.5-inch disks for a requested tune, then waiting three minutes to load the file into your MIDI workstation; in 30 seconds, you can be playing the song with MIDI On-Stage. If live performance with canned accompaniments is your goal, look no further (though you might want to get ahold of an old IIc — the program is incompatible with the IIc Plus' serial ports — for the ultimate "luggable" MIDI system).

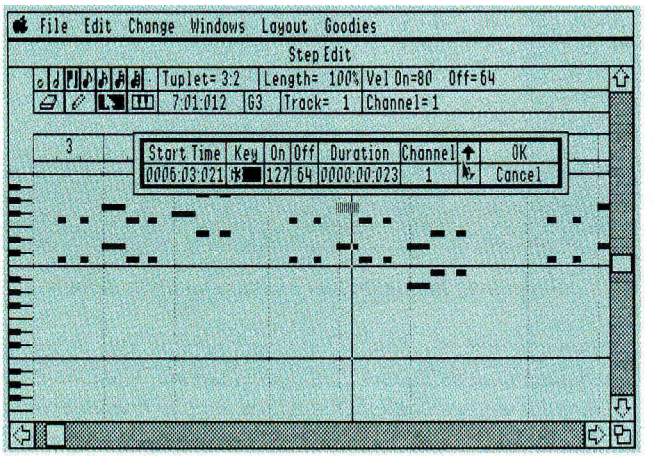

Figure 5. MasterTracks Pro GS step editing.

IN THE GROOVE

The real power user's MIDI system of choice is **MasterTracks Pro** for the GS, from Passport Designs. The newest version of MasterTracks Pro is fully System 5.0.2 compatible, and works with Apple's external MIDI interface unit. The program offers 64 tracks of recording, with a total capacity of 64,000 events (assuming sufficient memory in your computer). In addition, MasterTracks Pro allows step-editing — adjusting rhythm, velocity, length, and so on for each note. Basically, you can edit that less-than-perfect first draft to perfection, much the way you'd use a word processor to turn rough copy into a finished article. **Figure 5** shows a sample step-editing screen.

A couple of issues are worth noting. First, the program is time-sensitive, as it records data in very small increments. Certain desk accessories, notably alarm clocks and screen savers, steal clock cycles from the system software to check status periodically. (Has it been two minutes since a keypress? If so, blank the screen.) MasterTracks Pro may drop information during those "missing" cycles; deactivate any time-oriented desk accessories before starting a recording session.

Another quirk is the size of MasterTracks' data-recording buffer, a problem specific to devices that generate continuous controller information. Besides basic start and stop data (note on/note off), MIDI keeps track of components such as pitch bend (slightly upward, as in string and wind instruments), modification wheel (usually regulating degree of vibrato), breath control, and aftertouch (pressing a key after the key is down to modify a dynamic component such as pitch).

A MIDI instrument such as the Yamaha WX-7 Wind Controller (a seven-octave instrument with saxophone-style fingering), for example, is constantly sending information about minor variations in air pressure to the computer.

These changes may not make a big difference in the sounds produced, but they take up a lot of space in the MIDI data stream and in the MasterTracks recording buffer. Because of that, you can record Wind Controller data only in smaller units (about two minutes) or the buffer overflows and cuts off the end of the track.

In practice, there are two ways to solve the problem. The

MIDI NOTES

If you're buying a MIDI keyboard for the first time, get a "master controller" with a good-sized complement of features. A unit with 61 keys, aftertouch, and velocity is desirable, but you'll need "weighted-key" action only if you want a piano-style touch. Multitimbral sound capability is also a good idea.

Anything other than a Passport-compatible internal interface or an Apple MIDI-compatible external interface (any Mac MIDI box will do) probably requires custom software that will work only with that one device. If you buy some other type of MIDI unit, don't expect to be able to run standard MIDI software with it — they're not necessarily compatible.

Synthesizers create sounds by manipulating sound waves artificially. Samplers, on the other hand, replay time-slices of real sounds. Sample players are often a good choice for adding sounds during playback, though with certain units you can't record your own sounds; they just play back data using sounds stored in ROM.

"MIDI workstation" was the buzzword last year, consisting of a single unit with keyboard, sound source, sequencer, and often a low-quality effects/reverberation unit as well. If you're doing your sequencing in the GS anyway, the workstation unit is probably not as useful.

Beware the differences among amplifiers: Bass amps favor low sounds, and guitar amps bring out the treble end. For most synthesizers, you'll want a keyboard amp, which projects the full range of sounds evenly.

A final note: Get the maximum amount of RAM your system can hold. Especially with products such as MasterTracks Pro GS and Music Writer, the larger system memory area will allow a great deal more flexibility and power.

— M.A.

easiest is to assemble the song in shorter segments recorded individually (called "punching in" on a track). Another option is to run the MIDI data through a filtering device and remove the breath information before the data enters the GS.

If you need ultimate musical control for studio jingles, recording, and so on, MasterTracks Pro offers the Apple II user the best professional environment currently available. If you're willing to surrender the individual note-editing capability and fix mistakes by rerecording single measures, **MasterTracks Junior** offers many of Pro's features. Missing are Pro's ability to customize your synthesizer keyboard to control many aspects of the program from your instrument, and Pro's "humanization" options, which lessen the rhythmic rigidity of quantization. The data files are completely compatible, however; you can pass them back and forth.

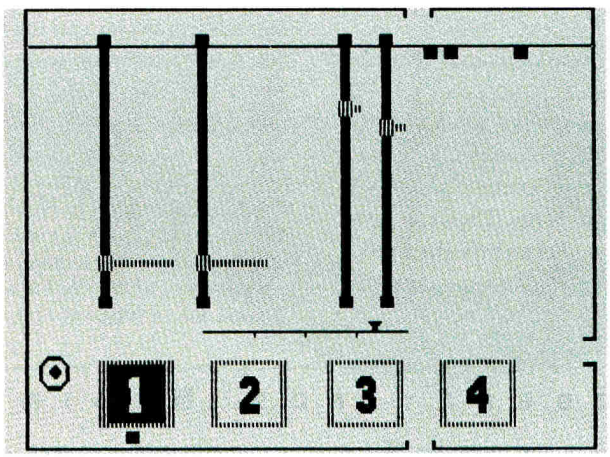

Figure 6. Music Shapes "duration room."

STRIKE UP THE BAND

What about software for young musicians just starting out? There's more educational music software available for the Apple II than for any other machine, and it's generally of a higher quality than products for other brands of computers. One major problem, however, is the way in which the sound may be produced. Avoid any software that uses the one-voice internal IIe speaker if at all possible: The intonation and timbre are unsatisfactory.

Apple II music-education software follows two approaches: drill-and-practice and experience-based platforms. The single largest and best library of drill-and-practice software is available from Temporal Acuity Products. TAP recently rewrote its **Master Edition** music series (roughly 30 program sets) to make use of the GS' internal sound chip and other options. The programs will also run fine in a IIe with TAP's **DAC** sound card (four voices). Most one-voice melodic dictation software (nonchordal) also runs using the internal speaker as well. That way, if you have a lab of IIc computers, inexpensive headphones will let you avoid "sonic conflict" and still have students working with music software. Temporal Acuity also offers a coordinated curriculum package to help organize the entire software library into a logical sequence so that you can integrate it more easily into theory and all other aspects of music teaching.

Perhaps the best program in TAP's catalogue is **Sebastian II**, by Brian Moore, a music professor at the University of Nebraska. Sebastian uses a random data bank of examples (common for TAP products). It also saves student performance data to a disk file so that the teacher can establish minimum competencies (80 percent on level 2 if you want an A this semester, for instance). In addition, the software is networkable and lets the teacher create customized example files.

Following a question-and-answer game format, the program's basic cycle is "present music on screen, play it, ask what's wrong." The choices are simple — pitch, rhythm, melody, or nothing. The program corrects erroneous entries gently and replays the selection; correct responses lead to pinpointing of specific errors. Throughout the program, humorous musical feedback and flexible options keep kids going; screen design is exceptionally clear, and prompting is exemplary. The student always has an option to quit trying and see the answer, instead of being locked into finding the right answer before the software will proceed.

Sebastian is copy protected, but TAP offers quick turnaround on replacement disks. For students who read music (perhaps fifth grade and above), this program offers a great learning experience. In addition, a number of other programs in the TAP library offer similar power, so music teachers and computer coordinators need to give the whole catalogue a look.

For teachers who want to provide some Apple II musical experimentation without being tied to kids' understanding of ►

PRODUCT INFORMATION

DAC Sound Card, $95
Master Edition Series, $30–$150
Music Printer 2.0, $149
Sebastian II, $125
Temporal Acuity Products
300 120th Ave. NE
Bellevue, WA 98055
(206) 462-1007

Diversi-Tune, $75
prerecorded song disks, $19.95–$29.95
Diversified Software Research
34880 Bunker Hill
Farmington, MI 48331-3236
(800) 835-2246

HyperStudio 2.1, $149.95
Clip-Sounds 1, $24.95

X-Commands, $49.95
Roger Wagner Publishing
1050 Pioneer Way, Suite P
El Cajon, CA 92020
(619) 442-0522

Instant Music, $19.95
Instant Synthesizer, $79.95
Music Construction Set, $19.95
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171

Jam Session
Broderbund Software
17 Paul Drive
San Rafael, CA 94903-2101
(415) 492-3200
$49.95

MasterTracks Pro GS, $395
MasterTracks Pro IIe/IIc, $299.95
MasterTracks Jr., $149.95
Passport Designs
625 Miramontes St.
Half Moon Bay, CA 94019
(415) 726-0280

MIDI On-Stage
Magic Tree Software
830 4th Ave.
Geneva, IL 60134
price not available at press time

Music Shapes 1.1
Music Systems for Learning
311 East 38th St., Suite 20C
New York, NY 10016
(212) 661-6096
$129.95

Music Studio 2.0
Activision
3885 Bohannon Drive
Menlo Park, CA 94025
(415) 329-0800
$99.95

Music Writer GS, $119 Limited, $295 Special, $595 Professional
Music Writer, $295 Special, $595 Professional
Instrument Designer, $129
Pygraphics
P.O. Box 639
Grapevine, TX 76051
(817) 481-7536

notation, **Music Shapes**, from Music Systems for Learning, is hard to beat. Music Shapes runs on a GS without additional hardware, although the software supports MIDI sound generators. The Apple II version requires an internal Passport MIDI interface and a Casio CZ-101 synthesizer (discontinued, but available through special order).

Music Shapes isn't a game, nor is it something a student can master unsupervised. It offers a creative environment in which students can design components in musically correct perspective: On screen, up means a higher pitch; a longer note line indicates a longer rhythmic value; and so on. These principles are in agreement with current research on the way children perceive visual relationships in connection with sounds, and make the software very intuitive to operate.

Figure 6 shows the Music Shapes "duration room." Pitches were assigned in the "pitch room," and the notes have been moved to assign values (long, long, silence, short, short) to this set of materials. You can assemble different melodies and place them in the large and small boxes (A B C), letting the student put together visual structures of musical form. They can give each individual note a volume setting, and even turn the music upside-down and backwards (common techniques among composer types).

In short, all the standard manipulations of musical materials are available to students in a visual environment. Some of the best creativity seems to happen when students are assigned in teams of two or three and given a specific goal ("Design a piece of music to illustrate a walk in the woods," for example). Music Shapes is available in a school version with backup disk and teacher suggestions from Silver, Burdett, & Ginn. A family version is available directly from Music Systems for Learning. If you think of the product as a tool for exploration, Music Shapes represents a great asset for building musical understanding.

ON KEY

Say it with music — with outstanding products like these to choose from, you can cover a tremendous range of musical activities, from composing to teaching to live performance. Apple II systems — the instruments of the '90s — don't have to take a back seat to anything as tools for musical creativity. □

MARC APFELSTADT IS A PROFESSOR OF MUSIC AT THE UNIVERSITY OF NORTH CAROLINA/GREENSBORO. HE HAS WRITTEN EAR-TRAINING SOFTWARE FOR MUSIC TEACHING AND IS A PROFESSIONAL BASSOONIST AND SAXOPHONE PLAYER. ADDRESS YOUR CORRESPONDENCE TO 2119 TARRYWOOD DRIVE, GREENSBORO, NC 27408. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

A GLOSSARY FOR BEGINNERS

MIDI. Musical-instrument digital interface. Machine language for sound chips. Standardized code for digital electronic-music data. Equipment from one manufacturer can communicate with equipment from another if both follow MIDI standard.

MIDI channels. Routes for serial data transfer; 16 channels over one cable connecting computer and synthesizer. Each channel assigned to one or more synthesizers; synthesizer can send and receive only on channel assigned to it. Within each channel, sequencer software determines maximum number of tracks for recording and editing; normally one instrument per track, with related instruments grouped by channel (string, brass, and so on).

MIDI synthesizer. Instrument (keyboard, wind, percussion, guitar most popular) that produces music electronically and outputs it two ways: as analog sound heard by listener and as digital data representing each note's characteristics (timbre, pitch, volume, and so on) according to MIDI standard. Synthesizer adds voices and perhaps instrument types beyond those offered by your computer. Computer with internal MIDI interface card or external MIDI box, connected to synthesizer, receives data and records it on disk via sequencer program (records data representing sound characteristics, not sound itself).

Sampler. Sound digitizer card (with software). Records and converts short (analog) sequences of voice, sounds, and music to digital data. Stored on disk and added to computer-generated compositions and performances as desired. Edit for speed, volume, fade, reverse, stutter, and so on as needed.

Sequencer. Computer software that records digital music data on disk and allows music editing, such as deletion, transposition, adjustments to tempo and volume, and so on. Interface (controlled by mouse, arrow keys, keyboard overlay, or some combination) shows on-screen staff, wave forms, or other representation of music. May control both MIDI instrument and computer's music chip, or just MIDI instrument, bypassing computer chip. Sends edited data back to synthesizer and plays through synthesizer without operating instrument's keys, strings, or stops.

Sound card. Adds stereo sound and multiple-voice music synthesis to IIe/II Plus (whose built-in speakers generate one voice only), or stereo-output ports to GS. (GS' Ensoniq chip has 15 voices and stereo production capabilities.)

Sound-library software. Predigitized, prerecorded sounds on disk to be added to computer-generated compositions.

Step entry. Notes recorded separately, edited one at a time, and strung together to produce music.

Synthesizer. Music-generating computer chip (such as GS' Ensoniq), plug-in card, or stand-alone electronic instrument.

Timbres. Sounds characteristic of different types of instruments (piano, flute, violin, and so on). Number and types of instruments programmed into synthesizer.

Voice-librarian software. Records sounds created with MIDI synthesizer (not sampler) to be added to computer-generated compositions. Prerecorded music also available on disk.

Voices. Number of notes synthesizer can play simultaneously. Generated by the same type of instrument or by different types. (On written staff, number of notes in same column.) Programmed into synthesizer is maximum number of voices, assigned among its instruments by sequencer software as needed for a particular piece of music; instruments that can sound more than one note at a time (such as piano) may therefore take up more than one voice (total of multivoice and single-voice timbres not to exceed maximum number of voices synthesizer can play simultaneously).

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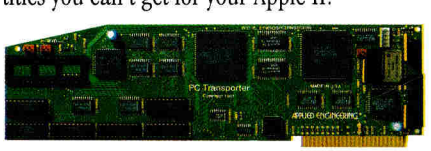

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PROSPEROUS PORTFOLIOS 1

Put some stock in your portfolio — our database helps you organize your assets and keep your financial records in line.

By RUTH K. WITKIN

THERE'S NO MAGIC FORMULA FOR making a mint on Wall Street, but one thing's for sure: Successful investing hinges on constant vigilance over your holdings. In this and next month's sessions, you'll learn how to use a database of fictional stocks to help you exercise that vigilance as well as produce timely reports replete with calculations.

As usual, these instructions are designed for AppleWorks 3.0 and its significant database enhancements. You'll be working with the insert cursor — the blinking underline — unless the instructions say otherwise. If you make a typo, press Delete to back up the cursor and erase.

ENTERING CATEGORIES

Now start up AppleWorks; create a new database file; name it **PORTFOLIO.DB**. You should now see the *Change Name/ Category* screen with the cursor on the *C* in *Category 1*.

Figure 1 shows the ten categories in this database, two of which are *spares*. A spare is a safety net, and it's good idea to have several (preferably more than the two shown here) in every database. If you remember a category you simply can't do without, you can just rename a spare category and make your entries. Without a spare, you'd have to insert a category, which would make any custom screen layouts and report formats vanish.

An abbreviation represents each category: *EXCH* is stock exchange, *OPRICE* is original purchase price, *CPRICE* is current price, *PURCHDATE* is the date you bought the stock, and *COMMIS* is the amount you paid the broker.

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

COMPANY NAME
SYMBOL
EXCH
SHARES
OPRICE
CPRICE
PURCHDATE
COMMIS
SPARE1
SPARE2

Make sure you've entered and spelled each category correctly. If you've forgotten one, place the cursor on the category name immediately below the spot where the entry belongs, press OA-I to insert a blank line, type the category name, and press OA-Y to delete the dash at the end. Then press the return key.

Press OA-S to store the database on disk, AppleWorks advises that you'll enter *Insert New Records* mode automatically. Press the return key, and Record 1 appears in single-record layout with all categories awaiting your entries.

SINGLE-RECORD LAYOUT

Figure 2 shows the eye-catching screen layout and entries in the first record. To achieve this layout, you'll use the *Change Record Layout* command and "drag" each category (not the spares) to the center, aligning colons one below the other.

First exit the *Insert New Records* screen by pressing Escape. (Don't be concerned — you'll get back to it soon.) You're now in the *Review/ Add/ Change* screen with the cursor in the category *COMPANY NAME*.

Now press OA-L to bring up the *Change Record Layout* screen. The cursor is now on the *C* in *COMPANY NAME*. Hold down the open-apple key and tap the right-arrow key 26 times, moving the entire category name to the right. Release both keys. The colon after the category name should be aligned with the *E* in *RECORD* at the top of the screen.

Press Return to move the cursor to the *SYMBOL* category. Now hold down the open-apple key and tap Right Arrow until you align this category's colon with the one in the above category. Release both keys and press Return.

In this manner, continue to move each category, excluding the spares, to the center. After you relocate *COMMIS*, hit Return twice to move the cursor to *SPARE2*. Hold down the open-apple key and tap Down Arrow five times to move the category down. Now press Up Arrow six times to reach SPARE1, then use the open-apple and down-arrow keys to move it down the same way.

To add some pizzazz to the screen, press OA-T to turn on the category names — ah,

neon nights on Broadway. Now press the escape key to return to the *Review/Add/Change* screen, and hit Return at the prompt — you're again in *Insert New Records* mode. Now press Return to enter the *Insert New Records* screen.

FILLING THE RECORDS

Refer to **Figure 2** and fill Record 1: Type **DIVA FOODS** and hit Return to move to the *SYMBOL* category; type **DIF** and hit Return to move to the *EXCH* category; type **NYSE** and hit Return again. (*NYSE* stands for *New York Stock Exchange*, *AMEX* for *American Stock Exchange*, and *OTC* for *Over-the-Counter*.)

Continue typing the entries in Record 1, and remember to press Return after each one. After you enter the commission amount, press Return and the OA-Down Arrow key combination to skip past the spare categories and bring up Record 2.

Figure 3 shows the rest of the records. Note that some dollar entries have no decimal places, while others have one or two. When you create a report format, you can tell AppleWorks the number of decimal places you want; therefore, it's not necessary to keep your entries uniform.

Before you fill Record 2, note that its exchange (*NYSE*) is the same as Record 1's. Instead of retyping this entry in Record 2, you can copy it from Record 1 with a "ditto." Simply place the cursor in Record 2's exchange category and press OA-". (You don't need to press the shift key to type the quotation mark.) Record 3's exchange is also *NYSE*, so you can ditto once again. Now in Record 5, type the exchange **OTC** and ditto it in Record 6. With AppleWorks 3.0 you can ditto entries in either single-record or multiple-record layout, whereas in earlier versions, you could ditto in multiple-record layout only.

AppleWorks also provides a shortcut for entering dates in the *PURCHDATE* category. (It "knows" you're entering a date and not some other type of numeric information because the word *DATE* appears in the name of the category in which you're working.) Although the purchase dates in **Figure 3** are in the form 6-7-87, AppleWorks changes them to a three-character month, one- or two-digit day, and two-digit year. (See the date form in Record 1.)

Now fill Records 2 through 7 as you did Record 1 and remember to ditto where you can. When you're finished, the cursor should be in the *SPARE1* category in Record 7. Now press OA-S to store the database on disk.

```
File: PORTFOLIO.DB          CHANGE NAME/CATEGORY    Escape: Review/Add/Change


Category names
================================================================================
COMPANY NAME                          |
SYMBOL                                | Options:
EXCH                                  |
SHARES                                | Change category name
OPRICE                                | Up arrow    Go to filename
CPRICE                                | Down arrow  Go to next category
PURCHDATE                             | @-I         Insert new category
COMMIS                                | @-D         Delete this category
SPARE1                                |
SPARE2                                |
                                      |
                                      |
                                      |
                                      |
                                      |
                                      |
--------------------------------------------------------------------------------
Type entry or use @ commands                                        860K Avail.
```

Figure 1. Categories in portfolio database.

CREATING A LABELS REPORT

Figure 4 shows the first page of a labels report — it looks a lot like that handsome single-record screen you created earlier. With AppleWorks 3.0, you can design a screen layout and get the same layout on paper without repeating any steps: Press OA-P to bring up the Report menu, type **3** to choose *Create a new "labels" format*, and hit Return. AppleWorks now asks whether you want to create the format *From scratch* or *From the current record layout*. *From the current record layout* it is, so type **2** and hit Return again. Now type the report name **ALL RECORDS** and hit Return again.

The *Report Format* screen appears. Now eliminate the spares: Press Down Arrow eight times to move the cursor a line below the *COMMIS* category. Press OA-D eight times to delete the empty lines and the spare categories. The screen should now show *Each record will print 9 lines*.

TURNING ON CATEGORY NAMES

Next, tell AppleWorks to print category names so that you know what each entry means: Press Up Arrow once, then hold down Right Arrow until the cursor rests on the *C* in *COMMIS*. Press OA-V, and AppleWorks plunks in *23*, the commission amount in Record 1. The presence of this entry indicates that the category name will print in a report.

Press Up Arrow once, then Left Arrow to move the cursor to the *P* in *PURCHDATE*. ►

```
File: PORTFOLIO.DB          INSERT NEW RECORDS      Escape: Review/Add/Change


Record 1 of 1  (0 selected)
================================================================================
                        COMPANY NAME: DIVA FOODS
                              SYMBOL: DIF
                                EXCH: NYSE
                              SHARES: 100
                              OPRICE: 15.5
                              CPRICE: 21
                           PURCHDATE: Feb 25 87
                              COMMIS: 23




SPARE1: -
SPARE2: -
--------------------------------------------------------------------------------
Type entry or use @ commands                                        860K Avail.
```

Figure 2. Record 1 in fanciful single-record layout.

CATEGORY	RECORD 2	RECORD 3
COMPANY NAME	ABRACADABRA CORP	MERLIN FUND
SYMBOL	ALC	MEF
EXCH	NYSE	NYSE
SHARES	200	100
OPRICE	13.5	47.12
CPRICE	22.87	49.75
PURCHDATE	6-7-87	6-21-88
COMMIS	27	45
SPARE1		
SPARE2		

CATEGORY	RECORD 4	RECORD 5
COMPANY NAME	COMPUTERS UNLIMITED	BUTTERNUT FOODS
SYMBOL	COU	BUF
EXCH	AMEX	OTC
SHARES	200	100
OPRICE	23	13.75
CPRICE	21.62	15
PURCHDATE	9-9-88	11-23-88
COMMIS	46	14
SPARE1		
SPARE2		

CATEGORY	RECORD 6	RECORD 7
COMPANY NAME	ALASKA MINING	PAPPY ELECTRONICS
SYMBOL	ALM	PAL
EXCH	OTC	AMEX
SHARES	500	1000
OPRICE	6.75	12
CPRICE	4.25	13.5
PURCHDATE	3-25-89	5-23-90
COMMIS	33	96
SPARE1		
SPARE2		

Figure 3. Remaining records in portfolio database.

```
COMPANY NAME: ABRACADABRA CORP
      SYMBOL: ALC
        EXCH: NYSE
      SHARES: 200
      OPRICE: 13.5
      CPRICE: 22.87
   PURCHDATE: Jun  7 87
      COMMIS: 27

COMPANY NAME: ALASKA MINING
      SYMBOL: ALM
        EXCH: OTC
      SHARES: 500
      OPRICE: 6.75
      CPRICE: 4.25
   PURCHDATE: Mar 25 89
      COMMIS: 33

COMPANY NAME: BUTTERNUT FOODS
      SYMBOL: BUF
        EXCH: OTC
      SHARES: 100
      OPRICE: 13.75
      CPRICE: 15
   PURCHDATE: Nov 23 88
      COMMIS: 14

COMPANY NAME: COMPUTERS UNLIMITED
      SYMBOL: COU
        EXCH: AMEX
      SHARES: 200
      OPRICE: 23
      CPRICE: 21.62
   PURCHDATE: Sep  9 88
      COMMIS: 46

COMPANY NAME: DIVA FOODS
      SYMBOL: DIF
        EXCH: NYSE
      SHARES: 100
      OPRICE: 15.5
      CPRICE: 21
   PURCHDATE: Feb 25 87
      COMMIS: 23

COMPANY NAME: MERLIN FUND
      SYMBOL: MEF
        EXCH: NYSE
      SHARES: 100
      OPRICE: 47.12
      CPRICE: 49.75
   PURCHDATE: Jun 21 88
      COMMIS: 45
```

Figure 4. First page of labels report containing all records in portfolio database.

Press OA-V again. Now AppleWorks displays *Feb 25 87*, the purchase date in Record 1. Continue this way, turning on every category name. Be sure the cursor is on the first character in the category name before you press OA-V. When you finish, leave the cursor on the *C* in *COMPANY NAME*.

ARRANGING RECORDS

Whether you have few or many records, it makes sense to arrange them logically instead of leaving them random, as you entered them. You can organize these records by purchase date (as they are now), company name, exchange, current price, or any other method that works for you.

With AppleWorks 3.0, you can sort as many as three categories at once. In multiple sorts, AppleWorks arranges categories in the order you supply: Initially it sorts by the first category; then within each group of identical first categories it sorts by the second category; then within each group of identical second categories it sorts by the third category.

If you choose to handcraft an arrangement instead, you can sort on more than three categories. Start with the least important, then sort on the next more-important category, and continue this way until you get to the most-important category.

Now, after all that complexity, sort these records in simple alphabetical order: With the cursor on the *C* in *COMPANY NAME*, press OA-A. AppleWorks proposes to arrange (or sort) on *Category (COMPANY NAME)*, the one you want, so hit Return. AppleWorks now proposes to sort *From A to Z*, another winner, so hit Return again.

PRODUCING THE REPORT

Before you print, get an idea of what this report will look like on paper by displaying it on screen: Press OA-P, type the number corresponding to *The screen* (typically **2**), and hit Return twice; the *ABRACADABRA* record appears on screen.

Hit Return again to see the next record. Each time you hit Return another record appears until you've seen all records and AppleWorks returns to the *Report Format* screen. You're lookin' good.

It's time to print, so turn on your model. Type OA-P to start the *Print* command. Now type a printer number (typically **1**) and press Return. Type @ (the "at" sign), which tells AppleWorks to print today's

date, and press Return twice. The first page that rolls off the printer should look like **Figure 4** (but with today's date).

Let's say you want to print only those records of stocks on the NYSE. Some of our AppleWorks in Action readers seem to be confused about selecting records for printing or display, so we'll take it slowly.

You're still in the *Report Format* screen, so press OA-R (for *Record Select*), and AppleWorks brings up a list of category names in the *Select Records* screen. Type **3** to choose *EXCH* and hit Return. AppleWorks now presents 12 selection criteria, with the highlight on *equals*. This is the one you want, so hit Return. Type **NYSE** as your comparison information and hit Return again. The third line at the top of the screen shows *Selection: EXCH equals NYSE*.

AppleWorks now produces other connectors so that you can zero in on the selection you want. You have no other criterion, so press Escape.

Make sure the printer is still on, and print the selected records: Press OA-P and hit Return three times. (The second time, notice that AppleWorks replaced the "at" sign with today's date.)

Now you'll see the report that contains the three stocks listed on the New York Stock Exchange — Abracadabra Corporation, Diva Foods, and Merlin Fund. To return the selection to *All records*, press OA-R and type Y. That's all there is to it. Now press OA-S to store your AppleWorks database on disk.

NEXT MONTH

A database can be much more than just a warehouse of facts about your stocks. Next month, we'll use these records to print reports that include a variety of calculations. Resist the temptation to change the database, because next month you'll need it in its original form. You can give the database another name, of course, and experiment with that one. □

CONTRIBUTING EDITOR RUTH K. WITKIN IS THE AUTHOR OF THE TEMPLATE/HANDBOOK SERIES *SUCCESS WITH APPLEWORKS* (*INCIDER*, IDG COMMUNICATIONS/PETERBOROUGH), *THE BEST BOOK OF APPLEWORKS* (HOWARD W. SAMS & CO.), AND *PERSONAL MONEY MANAGEMENT WITH APPLEWORKS* (JOHN WILEY & SONS). WRITE TO HER AT 5 PATRICIA ST., PLAINVIEW, NY 11803. ENCLOSE A STAMPED, SELF-ADDRESSED ENVELOPE IF YOU'D LIKE A REPLY.

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BUTTON UP

Don't wear your heart on your sleeve — put it on a button . . . or a magnet . . . or a key ring . . . and get your message out there.

By CYNTHIA E. FIELD, Ph.D.

IF YOU'RE LOOKING FOR AN INEXPENsive, easy way to promote school spirit, boost business, or advertise club functions, consider designing and assembling pin-on buttons. After all, if they work for politicians they'll probably work for you.

Your imagination's the limit. (See **Figure 1** for some computer-designed samples.) With a button-making starter kit, which costs less than the average computer game, and a desktop-publishing program such as **Publish It!**, you can create virtually any kind of button you'd like. Best of all, once your layout's done, you can even use it to make decorative magnets and key rings.

This month we'll create a template for designing buttons and offer some suggestions to help ensure that your button-making enterprise is enjoyable, and maybe even profitable.

BUTTON UPDATE

This month's template is designed to fit buttons that are made with supplies and hardware from an Illinois company called Badge a Minit. The **Starter Kit** ($29.95) includes nearly indestructible plastic assembly rings, a sturdy hand press, and enough supplies to make ten buttons. Additional button sets cost 12 to 20 cents each (depending on the quantity you order) and include parts for one button apiece.

You can also use the assembly rings and hand press to create magnetic-back buttons (for refrigerator doors, among other things), mirror-back buttons (for pockets and purses), sticky-back buttons (for children who might otherwise jab themselves with a pin back), and key chains.

Best of all, it's nearly impossible to outgrow your button-making equipment. Badge a Minit offers a unique trade-up plan whereby you receive full credit for any system you've purchased. For example, if you decide to upgrade to a benchtop press from the hand press, you can receive a cash discount of $29.95.

Figure 1. Finished buttons.

Alternatively, you can receive $29.95 in free merchandise from the Badge a Minit catalogue if you keep the hand press. If you upgrade from an initially more expensive system, such as **Master Kit I**, you'll receive $43.45 in cash discount or free merchandise.

And even the busiest Apple II button makers can keep pace with their business thanks to the **Badge a Matic II**, an electronic, fully automatic button-making machine.

DESIGNER BUTTONS

The Badge a Minit company sells hundreds of ready-made, full-color button designs that are appropriate for all types of activities and interests. These buttons are not only attractive, they're also affordable: Depending on the quantity you order, each button costs 11 to 14 cents each.

When you use someone else's artwork, however, you're not involving your creativity. Instead, gather your computer clip-art collection, your font-disk library, and your desktop-publishing program and rev up your imagination.

The following Publish It! template accommodates six button layouts on a single page. (See **Figure 2** for a sample printout.)

STEP BY STEP

First, start up Publish It! (any version) and work in *Size to Fit* mode by pressing Open apple-4 (OA-4) or pulling down the Special menu.

Select the circle tool and "rubber-band" a circle of any size anywhere on screen. (Press the mouse button, drag, and ►

Three ways to grow a IIGS.

Applied Engineering makes three different memory cards for the IIGS because every IIGS owner is different. Each card was designed to suit specific needs:

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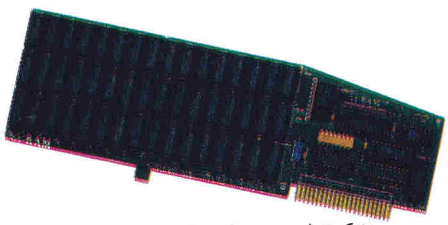

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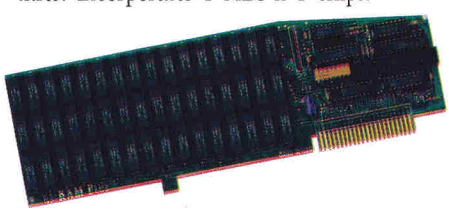

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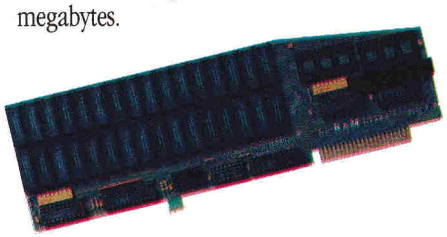

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release.) Now invoke Publish It!'s *Show Specifications* feature by pressing OA-M or pulling down the Objects menu.

In the dialog box, type the placement and dimension values for *Outer Circle 1* from the accompanying **Table**. When you're finished, press the return key or

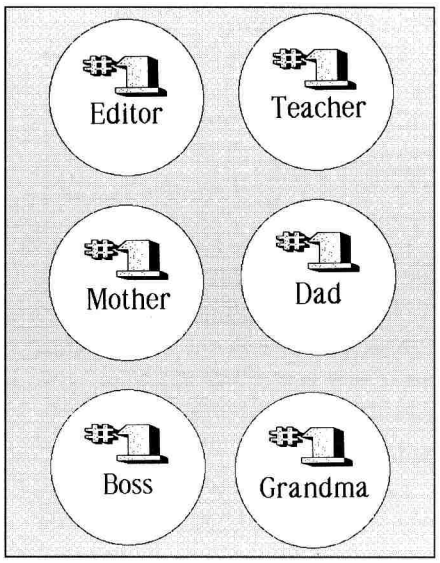

Figure 2. Six button layouts per page.

click on the *OK* button. The first circle, which represents the outside edge of your first button layout, will snap into place.

COPY DESK

Use the pointer to select the circle. (If it's already selected, it displays corner handles.) Press OA-C to take an electronic snapshot of the circle. If you prefer to be "mouse-bound," pull down the Objects menu and select *Copy* instead.

Press OA-V (or use the Objects menu) to paste a replica of the first circle on screen. Press OA-M (or use the Objects menu) to open this second circle's specifications dialog box. Type in the *Left Start* and *Top Start* values provided in the **Table**.

Paste and specify more circles until you have a half-dozen button layouts displayed on the page. Save this template in progress as BUTTON.TEMPLATE.

DETAIL WORK

Note that each circle's diameter is 2.75 inches. After you print your template, use each circle's perimeter as your cutting guide to separate the designs — either use scissors or a Badge a Minit circle cutter. A manual **Cut-a-Circle** tool costs $18.95; the electronic version is $69.95.

When you assemble the buttons, you'll "lose" about a half inch of the circle's diameter, because the outer edge of each circle is crimped around a metal base. When you create your design, remember that the display area will be about 2.25 inches.

Next, because it's difficult to judge the "out of bounds" zone, create an inner circle on screen to demarcate the actual working area.

Now rubber-band the first inner circle and use *Show Specifications* to fine-tune its placement and size. Copy it, then paste five replicas on the remaining buttons.

Use *Show Specifications* and the **Table** as you create each of the inner circles. Save your completed template, which should look something like **Figure 3**, by pressing OA-S or selecting *Save* from Publish It!'s File menu.

DESIGNER'S SHOWCASE

The real fun begins when you incorporate a message on your button. Use the text tool and rubber-band a small text frame within the boundary of the inner circle.

Next, insert the I-beam tool into the text area and select a Publish It! font (OA-W or from the Font menu).

Heavier fonts are easier to read, so either choose a bold font from the menu, or add boldface to the text: Select the text (press the mouse button, drag the mouse across the text, and let go), then press OA-B (or select the *Bold* option from the Font menu).

For the last step in creating your message, use the *Justification* option in Publish It!'s Format menu to center the text.

PICTURE THIS

To add an illustration to your button, use the graphics-frame tool to define the area, insert a clip-art disk in a drive, and select the appropriate picture-importing option from the File menu.

If you've drawn custom illustrations with

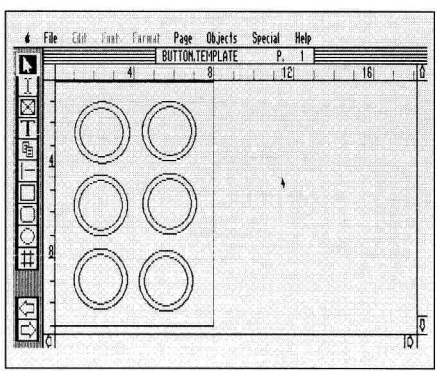

Figure 3. Completed template.

a paint program, that's even better — just crop the clip art appropriately and press the return key. If you have Publish It! 2 or 3, you can shrink or enlarge your clip art.

When you're satisfied with a design, copy its objects to other buttons on the page: Select a graphics or text frame, then copy and paste it.

A graphics frame carries its picture with it, but a text frame travels light — you

	Left Start	Top Start	Width
Outer Circles			
1	0.998	0.959	2.750
2	4.361	0.891	2.750
3	0.954	4.225	2.750
4	4.361	4.152	2.750
5	0.952	7.483	2.750
6	4.212	7.558	2.750
Inner Circles			
1	1.248	1.209	2.250
2	4.648	1.141	2.250
3	1.204	4.475	2.250
4	4.647	4.402	2.250
5	1.202	7.733	2.250
6	4.462	7.808	2.250

Table. Specifications for Badge a Minit button template (all dimensions in inches).

must return to the original text frame, select its text, then copy and paste the text to other buttons. If you're feeling ambitious, you can create a different design for each of the buttons on the page.

FINISHING TOUCHES

When you're finished with the button designs, go back to the first button, select its inner circle, and press OA-X to delete it. (Remember that this circle is just a temporary layout guide, so we don't want it to print.)

Now, using the same method (select the circle and press OA-X), delete the inner circle on each of the other five buttons.

Be sure to save your Publish It! layout under a specific name that indicates its purpose, such as BUTTON.BIRTHDAY, BUTTON.CLUB, or BUTTON.SALE.

ARTISTIC ENDEAVORS

Print the page using Publish It!'s double-strike mode. Although a black-and-white printout may not look impressive, you can photocopy it on colored paper — try pastels, parchments, or even neons! You can also add some pizzazz with a red, green, or purple single-color ribbon.

Or, if you use Publish It! 3, try incorporating colored illustrations from super-high-resolution paint programs with a four-color ribbon in an ImageWriter II printer — you'll create multihued buttons of striking quality.

PRODUCT INFORMATION

Badge a Minit Starter Kit, $29.95
Badge a Matic II, $495.95
Cut-a-Circle, $18.95
Electronic Cut-a-Circle, $69.95
Master Kit I, $64.95
Badge a Minit
348 North 30th Road
Box 800
LaSalle, IL 61301
(800) 223-4103

The Print Shop
Broderbund Software
17 Paul Drive
San Rafael, CA 94903-2101
(800) 521-6263
(415) 492-3200
$49.95

Publish It! 3
Timeworks Inc.
444 Lake Cook Road
Deerfield, IL 60015
(800) 535-9497
(708) 948-9200
$129.95

If you've been looking for a reason to drag your crayons out of the attic, print your buttons with a black ribbon and color your illustrations and text. (Select the *Outline* type style from the Publish It! Font menu.) Fiber-tip pens and colored pencils work well, too.

Badge a Minit's custom-design, full-color printing service may also provide alternatives — and it's not as expensive as you may think.

GET IT TOGETHER

Cut out each completed button design with scissors or a circle-cutting tool. Insert a metal button front into the blue plastic assembly ring that comes in each Badge a Minit kit. Place your button design face up on top of the metal piece and add a transparent plastic disc.

Add color-coded assembly rings according to the manufacturer's easy-to-follow instructions. Insert the button's back and the final green assembly ring, then place this "club sandwich" into the press and close it manually.

Remove the rings and your completed button is fully assembled and ready to pin on. (Notes for other projects: If you're creating magnets, you must stick an adhesive-backed magnet on the back of the button. If key rings are your trade, line up the tiny holes in the front and back and attach your key chain.)

BUTTONS GALORE

Badge a Minit's catalogues and the company's newsletter, called *The Bright Idea*, are loaded with profiles of button makers, such as the artist from Montana who created "limited edition" buttons to raise money for a community decorations fund.

Whatever your interests, button making can be an enjoyable, inexpensive, and rewarding hobby or sideline business.

And, thanks to creative page-layout programs such as Publish It!, there's no excuse for any Apple II user to miss out on this kind of desktop-publishing fun.□

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PRINT SHOP 50/PK ENVELOPES
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APPLE IIGS (2 COVER SET)....$9.99
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FUNDAMENTAL TOOLS

Lay the foundation, build the supports, add the finishing touches: Follow the steps and you'll be programming your GS in no time. A few basic rules and a solid acquaintance with the machine's Toolbox will get you started.

By JOE ABERNATHY

WELCOME TO THE NEW APPLE IIGS Basics, *inCider*'s column on GS program design. Our previous GS BASICs has evolved from a treatise on the BASIC language into a forum for helping you gain expert results in your programs, regardless of the language you're using or the environment in which you choose to compose GS programs.

PUTTING IT ALL TOGETHER

From the beginning, *sophistication* and *difficulty* have been synonymous in programming; software for the GS is no exception.

For example, in the early days of the Apple II it was acceptable to program most, if not all, requests for user response (the "user interface") as simple menu-type Applesoft subroutines, or even as INPUTs and GETs.

Today, programming Apple's sanctioned interface, the GS "Desktop," requires an extensive array of high-performance assembly-language routines to manage the machine's elaborate electronics: sound, graphics, memory, input/output, and so on.

Fortunately, Apple Computer as well as several other third-party manufacturers provide numerous resources and tools for GS software development. Note the existence of more than six thick technical manuals for the GS, versus one or two for the II Plus or IIe.

The programmer of today can't simply sit down and begin "hacking out" his or her magnum opus. Rather, programming the GS is much like weaving an elaborate tapestry; the blend of colors represents the various programming languages and tools you might employ, and each thread of program code is carefully planned and entwined with the provided GS system resources to produce what can be a real work of art.

The first step toward programming that tapestry is to develop an understanding of what your GS can do, what languages and tools are best for a particular program, and how to gather those resources.

Thereafter, programming the GS consists of laying a foundation or "shell," weaving the framework or "library" of support routines, and, finally, adding the finishing touches by coloring in the program-specific details.

Our goal in this column is to help you collect the threads for your tapestries.

We'll expose you to the latest and best development theories and tools, we'll provide you with flexible program shells, and we'll help you develop some sophisticated tools you can use over and over again.

MENU OF CHOICES

Dozens of programing languages and software-development environments are available for the GS. For your more ambitious projects, you'll need to combine two or more segments of code generated from as many different languages or environments. How do you choose?

As discussed in detail in the article "Breaking the Programming Code" (June 1990, p. 50, and July 1990, p. 56), common sense usually dictates the way you should approach a project and which tools are appropriate.

For instance, if you want to combine pictures, documents, and sound, you'll probably need multimedia tools — Roger Wagner's **HyperStudio** or Apple's yet-to-be-released HyperCard GS. To modernize an old Applesoft BASIC program, you might look for a GS-specific BASIC compiler or an added-command-set utility.

A traditional programming language is best suited for most GS software projects. Of these, Pascal is easiest, assembly is the most fun, while C offers perhaps the best hope of transferring your skills and source code to the future. Other GS languages include the very capable **GS16FORTH II** from GSF, and a new GS-specific version of **Logo Plus** from Terrapin.

Assembly-language programming offers flexibility and speed of execution at the cost of a long learning cycle and larger source-code listings.

Pascal provides excellent information management with more concise listings and a much shorter learning curve, but with proportionally less flexibility — and

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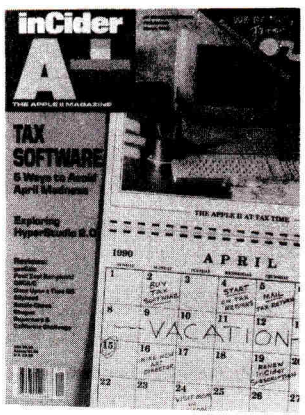

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slower speeds of execution. The C language offers efficiency, flexibility, and moderate speed — but at the cost of a steeper learning curve.

BASICs available for the GS, such as **Micol Advanced BASIC** or the **CallBox** Applesoft extensions, although very capable environments, require compromises that make them questionable for large-scale projects.

For Pascal, **ORCA/Pascal** is the only reliable compiler. **APW C** is the safe Volvo of C-language compilers, although it's widely expected that the update to **ORCA/C**, scheduled for release this summer, will change the balance of things.

Although they're still marketed, avoid Apple's **GS BASIC**, Absoft's **AC/BASIC**, and **TML BASIC**. Multimedia packages, FORTH, and the more obscure compilers — any of which can be unbeatable when applied to a fitting task — will be examined in more depth at an appropriate time in an upcoming column.

A POSITIVE ENVIRONMENT

Beyond the language you choose is the environment. It's the programming environment that actually determines how productive you'll be during the development process. The **Apple Programmer's Workshop** (APW), like its first cousin **ORCA/M**, is an expandable UNIX-type (text-based) shell environment.

APW is recognized as the standard GS software-development environment, but that doesn't guarantee that it's the best choice for every job. For strictly assembly-language projects, **Merlin 8/16+** is so finely polished that it can cut APW development time — and bulk — nearly in half.

If you must choose between them, however, remember that APW (or ORCA/M) supports multiple languages and retains an advantage in resources for very large projects. And, because Apple maintains APW, it's more apt to stay on top of new developments.

Support for multiple languages means that you can write different parts of a program in whatever language is best for the job. For instance, you can write time-critical modem drivers in assembly, the data-file interface in Pascal, and the user interface in C. That's a great advantage, but it's also hard enough to do that only a well-grounded programmer can make it work.

Again, because choosing and using the right tool at the right time are critical in GS software development, our GS Basics program listings will be presented in the language deemed to be most appropriate for a particular month's featured project.

You may also obtain functionally similar source code written in the other chief languages, as well as valuable code fragments and utilities, by purchasing *inCider*'s GS Basics disk, or by sending a self-addressed, stamped envelope for a printed copy. (For details, see the ordering information in the box below.)

As part of this Apple IIGS Basics series, we'll also present resources and *resource editors/prototypers*. Simply stated, IIGS resource editors/prototypers let you design desktop program elements easily for your own programs. Using a desktop prototyper will save you dozens to hundreds of lines of the most intricate, manually encoded GS programming, not to mention the uncountable headaches.

Design Master from The Byte Works, **Genesys** from Simple Software, and **CallBox** from So What Software are the desktop prototyping systems now or soon-to-be available. APW C and Merlin 8/16+ also allow direct access to resource-language files, without the easy-to-use protoyping environment. **AppMaker GS** from Bowers Development provides similar utilities for GS desktop development, but operates only on a Macintosh.

DANCING ON THE DESKTOP

Programs that adhere to Apple's Human Interface Guidelines, or so-called *desktop* programs, are the most complex available for the GS. Yet the desktop interface, when approached properly, is easily composed and can be treated as a building block: Write the shell once and then simply fine-tune it for each new project by adding or subtracting code and data. A sample desktop program shell is provided in the accompanying **Program listing**.

Apple supports this desktop envionment on the GS as well as on the Macintosh through a set of built-in programmer's tools collectively called the Toolbox. Within the Toolbox are individual tool sets, such as Window Manager, Sound Manager, Dialog Manager, and QuickDraw II.

In turn, each tool set contains a number of individual procedures that are executed to accomplish individual tasks — for instance, *_DrawString* in QuickDraw II lets you print a line of text to the super-hi-res graphics screen of your Apple IIGS system.

Programs that use the GS Toolbox look somewhat different from what you might expect in a traditional Apple II program. GS desktop source code typically reads like a recipe: Set up the various data parameters and pointers for a particular tool procedure, tell the Toolbox procedure to do its work ("call" it), then, when control is returned to your program, check for errors and process any returned information.

This process as well as all tools and parameters are detailed in the two-volume *Apple IIGS Toolbox Reference* and the *Toolbox Reference Update*, available from Addison-Wesley Publishing Company or the Apple Programmers and Developers Association (APDA).

You design every desktop program fundamentally the same way: Activate your tool sets, then build the pull-down menus, the windows, and all other aspects of the user interface. The program then looks for your input, such as menu selections or clicks on a window item, to provide you with its response.

When you select *Quit*, you shut off the the program's tools — it's just like turning off the lights as you leave a room. The shell in the accompanying **Program listing** accomplishes all those basic tasks and ►

ORDERING INFORMATION

The ORCA/C shell listing presented here, along with similar versions written for ORCA/Pascal, Merlin, TML BASIC, AC/BASIC, and Micol BASIC, are available from inCider on disk (3.5-inch, 800K). Send check or money order for $8.50 to GS Basics Source Disk Volume I, c/o inCider, 80 Elm Street, Peterborough, NH 03458. (No cash or phone orders, please.) The disk includes more than 20 additional tools and utilities for the Apple IIGS software programmer.

To obtain a printed listing of GS Basics shells for ORCA/C, ORCA/Pascal, or Merlin, send a self-addressed, stamped envelope (preferably 9-by-12-inch size) to GS Basics Listings, <indicate language here>, c/o inCider at the address noted above. (Be sure to indicate on the envelope the particular language you want.) Please affix sufficient postage: 65 cents for ORCA/C, 45 cents for ORCA/Pascal, or $1.05 for Merlin. Allow four to six weeks for delivery.

provides hooks and directions for program expansion, as well.

If you gather GS procedures and standards, such as variable declarations, into a standard file that can be shared among programs, you can reuse the source codes. The list of *#include* statements at the beginning of the **Program listing** demonstrates the way you can attach these header files to a program.

We've also included a number of files unique to the APW and ORCA environments and definition files for each tool set. Note that these header files don't actually start the tools; they just provide the definitions you need to use them.

GETTING STARTED

Although ORCA's built-in StartDesk command doesn't activate all tool sets, we use it to start some of them; note the remarks for the *main()* procedure.

PRODUCT INFORMATION

AC/BASIC
Absoft Corp.
2781 Bond St.
Rochester Hills, MI 48309
(313) 853-0050
$125

Addison-Wesley Publishing Co.
Route 128
Reading, MA 01867
(617) 944-3700

America Online
Quantum Computer Services
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Apple Programmer's Workshop, $100
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10221 Slater Ave.
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(714) 964-4298
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DB Master Version Five, $45 shareware
DB Master Professional, $295
Stone Edge Technologies
P.O. Box 3200
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(215) 641-1825

Design Master, $99.95
ORCA/C, $150
ORCA/M, $69.95
ORCA/M 4.1, $99.95
ORCA/M 4.1 Small C, $39.95
ORCA/Pascal, $150
The Byte Works
4700 Irving Blvd. NW, Suite 207
Albuquerque, NM 87114
(505) 898-8183

Genesys
Simple Software Systems
4612 North Landing Drive
Marietta, GA 30066
(404) 928-4388
$150

GEnie
401 North Washington St.
Rockville, MD 20850
(800) 638-9636

GS16 FORTH II
GSF
1049 Shady Lakes Circle South
Palm Beach Gardens, FL 33418
$49.95

HyperStudio 2.1, $149.95
Merlin 8/16+, $124.95
Roger Wagner Publishing
1050 Pioneer Way, Suite P
El Cajon, CA 92020
(619) 442-0522

Logo Plus GS
Terrapin Software
400 Riverside St.
Portland, ME 04103
(207) 878-8200
$119.95

Micol Advanced BASIC
Micol Systems
9 Lynch Road
Willowdale, ON
Canada M2J 2V6
(416) 495-6864
$145 GS, $89.95 IIe/IIc

TML BASIC
TML Systems
8837-B Goodby's Executive Dr.
Jacksonville, FL 32217
(904) 636-8592
$125

The most recent Apple toolsets let you use StartTools, which are more flexible than StartDesk because you just list the tools you want to start. We'll revise our shells as this command is implemented by the various GS languages. (Some already support it.)

You can start other tools with the C shell the way it is now: Add the appropriate StartUp and ShutDown toolset commands as described in the *Toolbox Reference* to the *main()* segment of the shell and remove the comment marks (/* and */) from the appropriate *#include* header file. (See the examples for StartUp and ShutDown for the integer math toolset in the accompanying **Program listing** shell.)

BUILDING ON THE FOUNDATION

With the tools started, you can build your menu bar and pull-down menus. The procedure we use is called InitMenus, and it creates the Apple, File, Edit, and Font menus. To add a menu of your own, add an InsertMenu to the list in InitMenus that follows the directions in the **Program listing**.

Now that the menu is visible, add the appropriate definitions to the list at the top of the program after those for the Apple and File menus (*#define apple_About* through *#define font_ChooseFont*). For example:

```
#define mymenu_myoption    280 /* Mymenu is menu bar entry*/
#define mymenu_option2     281 /* Option2=name in menu list*/
```

Build these definition statements when you pull down the menu by adding the names of the menu and its options. You shouldn't renumber the existing definitions, but if you add any, choose a number you haven't used.

The next step is to add a SWITCH option to the HandleMenu procedure. Your program calls HandleMenu automatically (we'll tell you how in a moment); HandleMenu examines your last action and tries to match it to one of the options in the switch list — it's similar to the Pascal CASE statement. If it finds a match, HandleMenu will execute the procedure that performs the work. If it doesn't find a match, the program returns to its idle state.

The final step in adding a menu option is to write a procedure that performs the task you've selected. Each switch value is followed by the name of a procedure located elsewhere in the program. Look through those in the **Program listing** and you'll see that for each procedure there's an action you can invoke with a pull-down menu.

THE MAIN EVENT

With this background work out of the way, let's examine the *main()* procedure, which is, by C conventions, the first and master segment of the program executed.

The StartDesk command activates the toolsets; InitMenus builds the desktop; and the simple DO/WHILE loop manages the work. The TaskMaster tool call looks for your input by calling HandleMenu every time it recognizes valid user activity, such as a mouse click on a menu item.

HandleMenu then compares the user input or action to the list of actions it understands, calls a work procedure if it finds a match, then returns to the DO/WHILE loop to look for more actions. When you select *Quit* from the File menu, the program sets a flag to *true* (or *1*), making the DO/WHILE loop fail and

"drop through" to EndDesk, which shuts down the toolsets and exits the program.

Although syntax differs, the basics of desktop programming are the same in every language. Because space limitations prevent us from printing equivalent source code in every language, the conversions are available on disk or as a printout from *inCider* (details in the box on p. 69).

TOOLS OF THE TRADE

Make it a priority to gather a programmer's library. If you want to write HyperStudio stacks, your library may consist of pictures, digitized sounds, and extended command files. Use elements of other programs to create your own — you'll save time and get better results.

The purpose of a library isn't to appropriate the work of some other programmer, but to discover different ways to accomplish a task. Modular application design aside, comparatively little of the source code you obtain, not create, is directly useful in your own original programs. It's helpful, though, to see how others may have accomplished a particular task or to extract useful algorithms. Many times, even a routine written in another language can provide valuable guidance.

The easiest way to start your collection is to build a clip library. Just looking through your disks' directories you'll find dozens of pictures, color palettes, fonts, and digitized sounds.

If you plan to release your finished program to others, however, make sure your library contains only public-domain material; remember that anything on a commercial-program disk is copyrighted and can't be used in your programs without the publisher's written consent.

RIGHT TO THE SOURCE

While you're cataloging your disks, make sure you also look for source-code files, the text files you can compile directly to produce a working program or append to your own source code. They're included with thousands of public-domain programs.

A number of publishers sell source-code disks. Apple Computer, under the auspices of APDA, sells several such disks, as do most of the compiler vendors. Policy on commercial reuse of such source code varies, as does the quality.

Bulletin boards and on-line networks provide a constant fund of new source code. **GEnie**, **America Online**, and similar services are excellent resources for programmers. These networks and many bulletin-board systems (BBSes) offer robust libraries from which you can download.

BBSes with access to Usenet news groups provide a constant flow of descriptions and comments on the latest programming theory and public-domain source code, along with discussions of how to extend its value.

THE CARD CATALOG

To build the best library, you'll need a hard-disk drive — the bigger the better. You can do an adequate job with 3.5-inch disks, though. Group them appropriately: Keep assembly-language listings together, Pascal with Pascal, and the same with BASIC, C, or whatever you acquire. If you use both APW C and ORCA/C, separate their source-code files.

You may also want to subdivide your disk volume into separate classes of programs, such as utilities, games, and even individual program titles.

A number of public-domain utilities can create a text file, either on disk or in a subdirectory, containing the names of your files and other information. You can load these text files into an **AppleWorks** or **DB Master** database to access sophisticated searching and cross-referencing techniques. In code writing, library maintenance, and data management alike, organization is the key to smooth programming. □

Quickies

Who's responsible for GS/OS version 5.0? From the Finder, hold down the shift and option keys simultaneously and pull down the Apple menu. "About the Finder" becomes "About the System." Select it and a set of icons representing the various parts of the GS system will appear. Click on each one and the contributing engineers' names are displayed.

— David Seim
Altenkirchen, West Germany

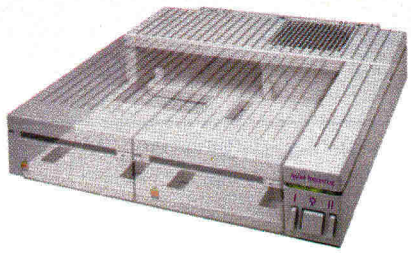
CONTRIBUTING EDITOR JOE ABERNATHY IS A JOURNALIST WITH *THE HOUSTON CHRONICLE*. HE'S A CERTIFIED APPLE DEVELOPER AND THE AUTHOR OF EIGHT APPLE II PROGRAMS. WRITE TO HIM AT P.O. BOX 66046, HOUSTON, TX 77098; VIA AMERICA ONLINE, JOEA17; VIA THE CORTLAND PROJECT, (713) 526-9607, 2400 BPS, SUPPORTING APPLE II, UNIX, AND MACINTOSH; OR VIA INTERNET, JABERNATHY@PRO-HOUSTON.CTS.COM. PLEASE INCLUDE A DISK AND HARDCOPY IF APPROPRIATE. ENCLOSE A STAMPED, SELF-ADDRESSED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

Program listing. Sample GS Desktop program shell.

```
/*********************************************************************
*  Program:  C Shell.  Version 1.0, 4/16/90.
*  Compiler: ORCA/C for the Apple IIGS (APWC defs included).
*  This is a desktop program shell that you can use as a basis
*  your own applications.
*  Original FRAME program by Mike Westerfield. Copyright 1989,
*  The Byte Works, Inc. Used with permission.
*  Commenting and CShell extensions by Joe Abernathy.
*  Copyright 1990, inCider/A+ magazine.
*********************************************************************
*  This shell creates the standard Apple, File, Edit, and Font
*  menus, along with work procedures or program hooks as
*  appropriate for the context of each menu option.
*  Refer to the August, 1990 IIGS Basics column, along with the
*  comments in the source code below, for information on how to
*  use this shell as the basis for your own desktop programs.
*
*  Our special thanks to Mike Westerfield.
*********************************************************************/
#pragma keep "CShell"      /* Put your prog name in this line  */

/* Minimum header files for printing and font manager:      */
```

```
#include <orca.h>              /* ORCA header file     */
#include <stddef.h>            /* ORCA header file     */
#include <menu.h>              /* Menu Manager         */
#include <desk.h>              /* Desk Manager         */
#include <quickdraw.h>         /* QuickDraw II         */
#include <window.h>            /* Window Manager */
#include <dialog.h>            /* Dialog Manager */
#include <print.h>             /* Print Manager        */
#include <locator.h>           /* Tool Locator         */
#include <memory.h>            /* Memory Manager       */
#include <misctool.h>          /* Misc Toolset         */
#include <control.h>           /* Control Manager      */
#include <qdaux.h>             /* QDII Auxiliary */
#include <lineedit.h>          /* LineEdit Toolset     */
#include <font.h>              /* Font Manager         */
#include <list.h>              /* List Manager         */

/* Remove comment marks around #include statement to activate tool.
   Note that some of these interface files are included only in
   either APWC or ORCA/C, as indicated.  */
/* #include <loader.h>  */    /* Tool Loader          */
/* #include <prodos.h>  */    /* ProDOS 16            */
/* #include <gsos.h>    */    /* GS OS interface*/
/* #include <event.h>   */    /* Event Manager        */
/* #include <stdfile.h> */    /* Standard File Ops    */
/* #include <sane.h>    */    /* Std Apple Numerics Env. */
/* #include <intmath.h> */    /* Integer Math Tools   */
/* #include <scrap.h>   */    /* Scrap Manager        */
/* #include <textedit.h> */   /* Text Edit Tools*/
/* #include <texttool.h> */   /* Sys 5.0 Text Tools   */
/* #include <sound.h>   */    /* Sound Manager        */
/* #include <midi.h>    */    /* MIDI Toolset         */
/* #include <noteseq.h> */    /* Note Sequencer Tools */
/* #include <ace.h>     */    /* Ace Toolset          */
/* #include <adb.h>     */    /* Apple Desktop Bus    */
/* #include <applesharefst.h> */ /* Ashare File Sys Translator */
/* #include <ctype.h>   */    /* Character types      */
/* #include <errno.h>   */    /* Error return numbers */
/* #include <scheduler.h> */  /* Scheduler Toolset    */
/* #include <shell.h>   */    /* Shell interface      */
/* #include <string.h>  */    /* String constructs    */
/* #include <strings.h> */    /* More strings - APWC only */
/* #include <assert.h>  */    /* Debugging - ORCA only */
/* #include <resources.h> */  /* Resource Tools - APWC only */
/* #include <stdio.h>   */    /* Extra File IO - APWC only?  */
/* #include <stdlib.h>  */    /* AT&T stuff - APWC only?    */
/* #include <time.h>    */    /* Time stuff - ORCA/C only  */
/* #include <limits.h>  */    /* Numeric limits - ORCA only  */
/* #include <types.h>   */    /* APW only - data types  */
/* #include <values.h>  */    /* Numeric values - APW only   */
/* #include <video.h>   */    /* APWC - Video Overlay Card   */
/* #include <math.h>    */    /* SANE Extensions - APWC only */
/* #include <notesyn.h> */    /* Note Synthesizer - ORCA only  */

/* Menu entries. You must add an entry to this list for each
   application-specific ability, then activate it using the
   directions given later in the program:                    */
#define apple_About     257   /* Menu ID numbers             */
#define file_New        258   /* These let you tell which    */
#define file_Open       259   /* menu item was chosen by user */
#define file_Close      260
#define file_Save       261
#define file_SaveAs     262   /* Your custom menu choices    */
#define file_PageSetup  263   /* should begin with ID 280. */
#define file_Print      264   /* (or 271, if sloppy doesn't  */
#define file_Quit       265         /* bother you.)          */
#define font_ChooseFont 270

enum alertKind {norml, stop, note, caution};   /* kinds of alerts */

/* Remove comment marks if you want to support printing: */
/* handle PrintRecord = NIL;  */
/* Ditto if you need a Program ID     */
/* int       MyID;            */

typedef   int BOOL;     /* simulate boolean types           */
BOOL      done;         /* tells if the program should stop */
WmTaskRec lastEvent;    /* last event returned in event loop */

/*****************************************************************
* DoAlert - Create one of the four standard alerts,
*           including an icon item.
* Input:
*           kind - kind of alert
*           msg  - alert message
*****************************************************************/
void DoAlert (enum alertKind kind, char *msg)
{
static ItemTemplate button =              /* button item  */
  {1, 36, 15, 0, 0, buttonItem, "\pOK", 0, 0, NULL };
static ItemTemplate message =                   /* message item */
  {100, 5, 100, 90, 280, itemDisable+statText, NULL, 0, 0, NULL };
static AlertTemplate alertRec =                 /* alert box    */
  {50, 180, 107, 460, 2, 0x80, 0x80, 0x80, 0x80, NULL, NULL, NULL };
SetForeColor (0);                         /* set text colors */
SetBackColor (15);
message.itemDescr       =  msg;           /* init. non-constant */
alertRec.atItemList [0] = (ItemTempPtr) &button; /* templates  */
alertRec.atItemList [1] = (ItemTempPtr) &message;
switch (kind)
   {
   case norml:     Alert (&alertRec, NULL);      /* normal alert */
                   break;
   case stop:      StopAlert (&alertRec, NULL); /* Stop */
                   break;
   case note:      NoteAlert (&alertRec, NULL); /* Note */
                   break;
   case caution:   CautionAlert (&alertRec, NULL);    /* caution */
                   break;
   default:        printf ("Error in DoAlert\n");
                   exit (-1);                  /* error - exit */
                   break;
   }
} /* DoAlert */

/*****************************************************************
* MenuAbout - Create the About dialog. Note that the more usual
*             way of generating the about dialog is by directly
*             creating a dialog. Using an alert, as shown here,
*             saves time and looks more elegant in programs.
```

```
*********************************************************************/
static void MenuAbout (void)
{
DoAlert (note, "\pCShell 1.1\r\r"
               "By Mike Westerfield\r"
               "and Joe Abernathy\r");
}/* MenuAbout */

/*********************************************************************
* MenuNew - New file.
*********************************************************************/
static void MenuNew (void)
{
 /* Your New file procedure goes here. */
}/* MenuNew */

/*********************************************************************
* MenuOpen - Open a file.
*********************************************************************/
static void MenuOpen (void)
{
 /* Your Open file procedure goes here. */
} /* MenuOpen */

/*********************************************************************
* MenuClose - Close a file.
*********************************************************************/
static void MenuClose (void)
{
 /* Your Close file procedure goes here. */
} /* MenuClose */

/*********************************************************************
* MenuSave - Save a file.
*********************************************************************/

static void MenuSave (void)
{
 /* Your Save file procedure goes here. */
} /* MenuSave */

/*********************************************************************
* MenuSaveAs - File Save As.
*********************************************************************/

static void MenuSaveAs (void)
{
 /* Your file Save As procedure goes here. */
} /* MenuSaveAs */
/*********************************************************************
* MenuPageSetup - Printer Page Setup.
* Support for printing is not provided in the standard ORCA tool
* startup call. To use this procedure, or any of those involving
* printing, you must write a Print Manager tool startup routine,
* then remove the comment marks from the following statements.
*********************************************************************/

static void MenuPageSetup (void)
{
/*   if (!(PrintRecord))      */    /* Create print record  */
/*       GetPrintRec(); */    /* if necessary.  */
/*   PrStlDialog(PrintRecord); */
} /* MenuPageSetup      */

/*********************************************************************
* MenuPrint - Print file.
*********************************************************************/

static void MenuPrint (void)
{
 /* Your Print procedure goes here. */
} /* MenuPrint */

/*********************************************************************
* MenuChooseFont - Choose Font.
*********************************************************************/

static void MenuChooseFont (void)
{
 /* Your Choose font procedure goes here. */
} /* MenuChooseFont */

/*********************************************************************
* Internal procedure GetPrintRec - Create Print Mgr print record.
*********************************************************************/

static void GetPrintRec (void)
{
/* remove remarks below to support printing     */
/*     PrintRecord = NewHandle(140L,MyID,0x8010,0L);
        PrDefault(PrintRecord);                 */
} /* GetPrintRec */

/*********************************************************************
* HandleMenu - Handle a menu selection
* To add application-specific menu items, you must add the
* item to the InitMenus procedure below,  add a DEFINE
* statement at the beginning of the program (see examples), and
* add a matching SWITCH CASE below, which will activate
* procedure.
* Several of the "standard" menu options actually differ in
* implementation from program to program, depending on what is
* desired. With this in mind, we have included all of the hooks
* for these items so that you can easily add the capabilities to
* your applications. But choosing those options from the basic
* CShell menu bar will produce no visible result.
* The traditional ChoosePrinter menu item is not included since
* it's handled as an NDA by GS/OS System 5.0.
*********************************************************************/

void HandleMenu (int menuNum)
{
switch (menuNum)
   {
   case apple_About:   MenuAbout ();      /* About this program   */
                       break;
   case file_New:      MenuNew ();  /* New file             */
                       break;
   case file_Open:     MenuOpen (); /* Open a file          */
                       break;
```



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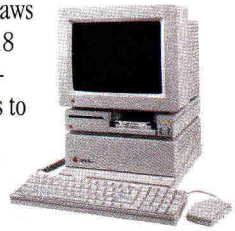

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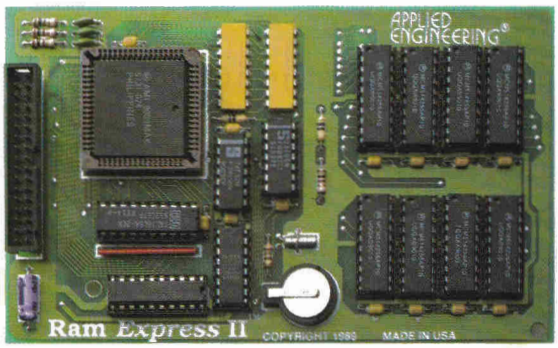
```
    case file_Close:    MenuClose ();/* Close a file         */
                        break;
    case file_Save:     MenuSave (); /* Save a file          */
                        break;
    case file_SaveAs:   MenuSaveAs ();     /* File Save As..       */
                        break;
    case file_PageSetup: MenuPageSetup ();  /* Page Setup          */
                        break;
    case file_Print:    MenuPrint ();/* Print a file         */
                        break;
    case file_Quit:     done = TRUE; /* Quit - set exit flag   */
                        break;
    case font_ChooseFont: MenuChooseFont ();     /* Choose Font */
                        break;
    default:            break;
    }
HiliteMenu (FALSE, (int) (lastEvent.wmTaskData >> 16));
} /* HandleMenu */

/*********************************************************************
* InitMenus - Initialize the menu bar
* Your first application-specific menu goes before the first
* InsertMenu call. It should have the menu number N5 (see below.)
* The first application-specific menu item should have the
* number 280; increment items under the same menu by one number
* each; increment between menus by 10, to maintain clarity and
* simplify the later addition of more items under a given menu.
* Refer to the IIGS Toolbox References for a breakdown of what
* the item name modifier letters mean. A "V" generates an under-
* line below a menu item. The "*Xx" generates a key-equivalent
* combination, and *Oo makes the item accept either
* OPEN-APPLE (OA) O or OA-o.
* No menu or menu item added below will have any effect, other
* than creating a menu entry, until you also add it to the
* HandleMenu procedure above, and write an action routine
* to be called from HandleMenu.
* Note that the Font menu appropriates application item IDs
* starting at 30. If you create a lot of dialog items or for
* some other reason need more than 30 slots, change the
* FixFontMenu call to use a larger number.
*********************************************************************/

void InitMenus (void)
{
InsertMenu (NewMenu (">> Font \\N4\r"          /* font menu      */
                     "-Choose Font\\N270V\r"
                     ".\r"), 0);
InsertMenu (NewMenu (">> Edit \\N3\r"          /* edit menu      */
                     "-Undo\\N250V*Zz\r"
                     "-Cut\\N251*Xx\r"
                     "-Copy\\N252*Cc\r"
                     "-Paste\\N253*Vv\r"
                     "-Clear\\N254\r"
                     ".\r"), 0);
InsertMenu (NewMenu (">>  File \\N2\r"         /* file menu      */
                     "-New\\N258*Nn\r"
                     "-Open\\N259V*Oo\r"
                     "-Close\\N260\r"
                     "-Save\\N261*Ss\r"
                     "-Save As\\N262V\r"
```

```
                    "-Page Setup\\N263\r"
                    "-Print\\N264V*Pp\r"
                    "-Quit\\N265*Qq\r"
                    ".\r"), 0);
InsertMenu (NewMenu (">>@\\XN1\r"         /* Apple menu      */
                    "-About CShell\\N257V\r"
                    ".\r"), 0);
FixAppleMenu (1);                  /* add desk accessories   */
FixFontMenu (4,30,0);              /* add fonts to font menu */
FixMenuBar ();                     /* figure menu widths     */
DrawMenuBar ();                    /* draw the completed menu bar  */
} /* InitMenus */

/*****************************************************************
* Main Program - TaskMaster is used to interpret all user input.
* The ORCA startdesk command starts only these tools: Tool
* Locator, Memory Manager, SANE, Misctool, QDII, Event Manager,
* QDII Aux, Window Manager, Control Manager, LineEdit, Dialog
* Manager, Menu Manager, Desk Manager, Standard File, Font
* Manager. Any further capabilities will require that you write
* a custom startup routine for tools not started by ORCA.
* Note also that a revision of ORCA/C should be available as you
* read this which supports the new tool startup call in System v5.0.
* This call eliminates the need for memory allocation, which is
* traditionally the difficult aspect of tool startup. Refer to
* APDA's IIGS Toolbox Reference Update. APWC owners already have
* access to the new tool startup procedure, which requires only
* a list of the tools you wish to start.
*****************************************************************/

int main ()
{
int event;                    /* event # returned by TaskMaster */
startdesk (640);        /* ORCA Desktop start call       */

/* Example StartUp for integer math toolset:
 extern pascal void IMStartIUp (); */

/* MyID needed only if you wish to support printing: */
/* MyID = userID();   */      /* Get program ID from ORCA      */

InitMenus ();                 /* set up the menu bar           */
lastEvent.wmTaskMask = 0x1FFFL;  /* let Task Master do most stuff */
ShowCursor ();
done = FALSE;                 /* main event loop               */
do {
   event = TaskMaster (0x076E, &lastEvent);
   switch (event)       /* handle the events we need to  */
       {
       case wInSpecial:
       case wInMenuBar:    HandleMenu ((int) lastEvent.wmTaskData);
       default:            break;
       }
   }
while (!done);

enddesk ();             /* ORCA Desktop shutdown call   */
/* ShutDown for integer math toolset:
    extern pascal void IMShutDown (); */
} /* CShell.cc */
```


Ram Express II™



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SPEAKING OF GRAPHICS

ANIMATED ANTICS 3

"Stretch" and "squash" take on new meaning — and lend realism to your graphics — as we explore Fantavision's capabilities in an easy-to-follow tutorial.

By ROBERTA SCHWARTZ and MICHAEL CALLERY

IF YOU'RE OF AN ANALYTICAL FRAME of mind, programming's the way to go for outstanding animated effects, as described in parts 1 and 2 of this column (June 1990, p. 74, and July 1990, p. 80). If you're a technological novice, though, the good news is that you, too, can animate your graphics — without typing a single letter. All it takes is the right software: **Fantavision**, from Broderbund Software, for instance — just one of many animation programs available for Apple II computers.

Let's explore Fantavision's exciting capabilities in the accompanying tutorial. You can use either the Apple IIe/IIc or the GS version of the program. If you have the new-model GS, you'll have to use the original IIe/IIc edition of Fantavision; changes in the Toolbox ROMs (version 3 and above) make Fantavision GS incompatible with the new machine.

Fantavision is a vector-based animation program. Recall that vectors are lines, and even though vector animation isn't particularly realistic, Fantavision is fun to work with and ideal for exploring the principles of successful animation.

Fantavision uses a technique called *tweening*, short for "in between" frames. You create key frames first — say, a frame with a box on the left side of the screen, and a frame with a box on the right. Fantavision computes the "difference" automatically and creates the in-between frames (as many as 64 intermediate positions) so that when you run the animation the square seems to travel across the screen.

STRETCH 'N' SQUASH

Now boot Fantavision and let's put it through its paces. We'll create the simplest animation possible, a bouncing ball, because it demonstrates one of the most important animation concepts: stretch and squash. Stated briefly: If you throw something in the air, it will stretch in the direction of the movement. When it hits the ground, its movement will stop and it will squash. Stretch and squash give an object the illusion of weight and lend realism to an action. The amount of stretch and squash is a direct result of the object's pliability: A soft rubber ball, therefore, stretches and squashes more than a hard golf ball.

Let's try squashing now:

1. To start a new movie, select *Clear* from the File menu.

2. With the circle tool, draw a circle in the upper-left area of the screen. Make it about 1 inch in diameter. You've just created your first frame.

3. From the Edit menu select *Clone Frame*, which copies the current frame to the end of the movie. Do this a second time. You now have three identical frames.

4. Go to frame 2 by clicking on the up or down arrow in the scroll bar to the right of the screen. You can tell what frame you're in by checking the frame counter directly above the scroll bar.

5. Using the capture box, select the circle and drag it to the bottom center of the frame.

6. Go to frame 3.

7. Using the capture box, select the circle and drag it to the upper-right area of the frame.

8. Click on the *Go* command at the bottom of the screen to run your movie. Fantavision has filled in the intermediate frames, and you see a ball moving in a triangular path. It works, but it doesn't look much like a bouncing ball. Let's fix it now.

9. Go to frame 2.

10. With the capture box, select the circle.

11. Choose *Squash* from the Goodies menu. Use this command to flatten objects or stretch them.

12. You want to squash the ball down, so click six times on the down arrow in the menu bar. Because squashing the ball has reduced its size vertically, drag the ball to the bottom of the frame.

13. Select the *Go* command to run your movie. That's better, but not realistic enough. When a ball bounces, it doesn't move in a straight line, but rather falls in a graceful arc. Trajectory! To give Fantavision the necessary information for this trajectory, we'll add two additional key frames between the existing frames.

14. Go to frame 1. ►

Not all modems are created equal.

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.

Not all modems are created equal. A new generation of 2400 baud modems, both internal and external, have appeared on the scene as of late. While Hayes AT compatibility and equivalent raw transmission speed can be expected, there are differences. Some are subtle. Others, quite significant.

Expensive features *and* low cost

Applied Engineering's entry into this market, the DataLink 2400,™ was designed to combine the features of expensive modems with the price of low-cost modems.

Frankly, some of the DataLink 2400's advantages are subtle. Like the ability of our firmware to intuitively accept commands in both upper and lower case, thus avoiding the nuisance of being ignored for forgetting to press the "shift" key.

Other advantages are more evident. Like the inclusion of sophisticated, genuinely useable communications software, something others offer as an expensive option.

Hardware considerations:

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

Our DataLink 2400 has two non-volatile ROMs for pre-setting and storing different configurations. It saves you the hassle of setting up configurations every time. We also included the ability to save phone numbers in non-volatile ROM, so you don't have to hunt for often-called numbers.

Some modems can't redirect hardware handshake lines even though most bulletin board software packages require these lines to be changeable - the DataLink 2400 can.

The software story.

We make sure you've got the right software. We include our own.

And the software we include *(OnLine 64** for the II+ and 64K IIe, *DataTerm* for the IIGS and IIe) comes thoroughly documented, *non-copy protected* on two 5.25" disks and one 3.5" disk, and positively loaded with features others don't have. Like VT52 terminal emulation, enabling you to address more bulletin boards and use them easier.

Our transfer protocols aren't limited to Xmodem. We include Xmodem, Ymodem, 4modem, ProDOS Xmodem and Turbo Xmodem. We also employ binary packing, squeezing and unsqueezing—techniques that divide, combine and compress files to save you time and long distance charges.

Some bulletin boards require different data formats. If you can't change formats you can't use them. Our software lets you change formats. Others don't.

More features:

- Full Hayes AT compatibility
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- Compatible with Bell 103 and 212, European CCITT V.22 BIS, V.22 and V.21
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**OnLine 64* and DataLink have most, but not all the features of *DataTerm* and DataLink 2400 respectively.

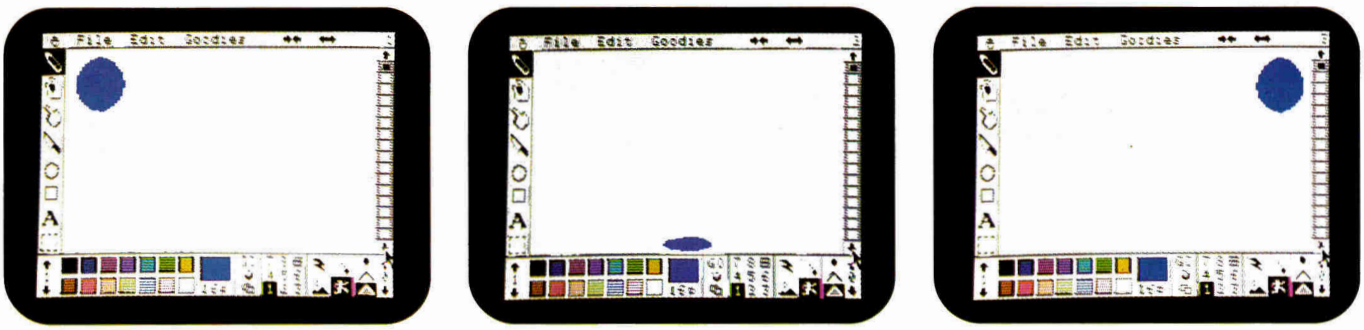

Figure. When an object hits a surface it's squashed; Fantavision's Goodies menu makes designing this sequence a snap.

15. Choose *Copy* from the Edit menu. Don't select the ball; you want to copy the entire frame, not just the object.

16. Choose *Paste* from the Edit menu. You've just inserted a frame between frames 1 and 2. This new frame is identical to frame 1 and now becomes frame 2.

17. Go to frame 2. (Your new frame.)

18. Using the capture box, select the circle and drag it about halfway down the screen and toward the center.

19. Pick *Squash* from the Goodies menu.

20. Click twice on the down arrow in the menu bar to squash the circle just a little.

21. Go to frame 4 and repeat steps 15 through 20 with that frame.

22. Select *Go*. We're getting there. In reality, a ball would not travel up at the same speed at which it travels down. You can use key frames to pace your animation.

23. Go to frame 5.

24. Choose *Copy* from the Edit menu. Don't select the ball; you want to copy the entire frame, not just the object.

25. Choose *Paste* from the Edit menu. You've just inserted a frame between frames 5 and 6. This new frame is identical to frame 5 and now becomes frame 6.

26. Choose *Paste* from the Edit menu. You've inserted another new frame.

27. Select *Go*.

Now that's better. (See the accompanying **Figure.**) We wanted the action at the end of the bounce to be slower than the action at the beginning, so we used four frames to take the ball from the ground to its highest point and only two frames to bring it down to the ground. The ball seems to come down quickly and travel up slowly, suggesting heaviness. If you want to suggest a lighter ball, use fewer frames on the upward bounce and more on the downward curve so that the ball seems to come down quickly and travel up slowly.

PRODUCT INFORMATION

Fantavision, $49.95
Fantavision GS, $59.95
Broderbund Software
17 Paul Drive
San Rafael, CA 94903
(415) 492-3200

DON'T STOP NOW

You can create many objects traveling at different speeds by moving some objects while keeping others stationary. Save your bouncing-ball movie and try this:

1. Start a new movie by selecting *Clear* from the File menu, and clear both *Movie* and *Screen*.

FURTHER READING

Laybourne, Kit. 1979.
The Animation Book.
Crown: New York.

Thomas, Frank, and Ollie Johnson. 1984.
Disney Animation: The Illusion of Life.
Abbeyville: New York.

White, Tony. 1986.
The Animator's Workbook.
Watson Guptill: New York.

2. Draw three small circles toward the left side of the screen, staggered vertically. Color one black, one orange, and one blue by selecting one circle at a time and clicking on the appropriate color in the palette at the bottom-left area of the screen.

3. Clone the frame. You now have an exact copy of the first frame.

4. With the capture box, select the black circle and drag it to the right a short distance.

5. Clone the frame.

6. Drag the black dot a little further to the right, then select the blue dot and drag it a little to the right.

7. Clone the frame.

8. Drag all the dots a little to the right.

9. Repeat steps 3 through 8 until the black dot is as far right as possible.

10. Select *Go*. You may have to adjust the speed of the move so that all balls appear to move. (Press key 1, 2, or 3.) Note that the black ball moves fastest, and the orange one moves most slowly. Fantavision is animating at a constant rate; the differences in speed are the result of the positions of the circles on the key frames.

You can apply these techniques to every animation you create. Stretch and squash together with timing give movement and life to animation. By varying the amount of stretch and squash and the timing of the action, you can create a wide range of effects. Do you want a squishy gelatinous ball landing on a hard surface? A hard handball ricocheting off the floor?

As a ball falls through the air, it stretches downward, becoming more oval in shape. When it hits the ground, it squashes into a flat oval before bouncing upward and stretching out again. At the peak of its bounce, the ball resumes its round shape before falling and going into a downward stretch again. Try to add some stretching to your bouncing-ball animation.

Just as they exaggerate most actions, animators usually exaggerate the amount of stretching and squashing for two reasons: first, to be sure the viewer realizes what's happening, and second, for greater comic effect. Try variations on your bouncing ball and then try these same effects on a character. Happy animating! □

ROBERTA SCHWARTZ AND MICHAEL CALLERY TEACH COMPUTER GRAPHICS AND DESKTOP PUBLISHING AT THE NEW SCHOOL FOR SOCIAL RESEARCH IN NEW YORK. WRITE TO THEM C/O *inCider*, 80 ELM STREET, PETERBOROUGH, NH 03458. ENCLOSE A STAMPED, SELF-ADDRESSED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

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Why pay over $175 for these utilities when for $59.95 ($39.95 from participating dealers) you could have them all in one easy-to-use program? EasyDrive, from Q Labs is the complete management system for your Apple II compatible hard-disk or 3.5" disk drive. And, unlike similar utilities, EasyDrive works with the Apple IIc and IIe as well as the IIGS. EasyDrive is even GS/OS compatible.

EasyDrive automatically installs itself onto your hard-disk or 3.5" disk drive, then goes to work installing your favorite software. Upon installation, complete disk drive management is at your fingertips with EasyDrive's Launcher, Selector, File Maintenance Program, Image Backup/Restore (with compression), Disk Optimizer, and Index Program. EasyDrive even comes with an informative guide to ProDOS 8&16 and GS/OS.

EasyDrive has been making disk drive management fast and easy for over 2 years. That's 2 years of listening to you, the Apple II user. With your help, we've made EasyDrive the most complete, easy-to-use disk drive manager available today. But, we're not done yet! EasyDrive is continually being equipped with new features and improvements to make it even better. Watch for update announcements!

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Circle 165 on Reader Service Card.

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Continued from p. 33

The *Print Text* option lets the student print the current file with a summary of the spelling errors or grammatical errors in the file. (Any spelling and grammatical error that the student previously corrected won't appear in the summary files.) From the Advanced Operations menu, youngsters can format a data disk, import or export a data file, and temporarily modify display settings that the teacher has configured with the Teacher Disk.

ESL Writer isn't a powerful word processor, but it's useful. Kids can copy, cut, and paste up to five lines of text at a time. They can delete or insert a line of text, undo a deleted line or block of text, and jump to the beginning or end of a line or file. Pressing Open apple-? (OA-?) brings up a list of command-key options, so that students don't have to memorize confusing keystrokes. Spelling and grammar hints are also available at the touch of a keystroke. Kids can save their files in ESL Writer, ASCII text, or Bank Street Writer III format.

The ESL Writer manual provides operating instructions, suggestions for classroom use, and ideas for motivational writing activities. It also includes a three-page student handout with helpful suggestions for program operation, and a summary of the command keys kids can use in the program's *Write* and *Proof* modes.

In keeping with Scholastic Software's new policy, the ESL Writer Student and Teacher Disks ship without copy protection. Although the absence of copy protection doesn't give you the right to make copies for simultaneous use on multiple machines, it does let you make a backup copy. Let's hope that other software publishers will follow Scholastic's lead.

Even though ESL Writer is useful, you may find some of its features a bit disconcerting. For instance, the 46-page manual has no index, so it's difficult to find information quickly. In addition, the word processor operates slowly in *Write* and *Proof* modes, you can't type as it flags errors, and the grammar checker isn't programmed to catch double words. It also discourages youngsters from writing with quotation marks, parentheses, or brackets because it flags these elements as grammatical errors.

Although the program has two options for checking a document for spelling and grammatical errors, switching from one method to the other is tedious and time-consuming. Kids can't reconfigure the spelling- and grammar-check modes from the Student Disk as they can with the screen-display options. If you want to change modes, you must first reboot the Teacher Disk, make the change, and then reboot again with the Student Disk.

Research shows that all non-English-speaking students move through the same stages of language acquisition as they learn English grammar; spelling errors, on the other hand, depend on the writer's native tongue. In keeping with the results of this research, the authors of ESL Writer have tailored their program to the differing language needs of Asian and Hispanics, as discussed above.

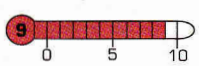
One last note: Kids would appreciate being able to dress up a final copy with different print sizes and fonts. Now if we can just get Scholastic to give the program a bit more sparkle, glamour, and glitz . . . .

Carol S. Holzberg, Ph.D.
Shutesbury, MA

LOGOWRITER GS

Logo Computer Systems, Inc.,
3300 Cote Vertu Road, Suite 201,
Montreal, Quebec, Canada H4R 2B7,
(514) 331-7090, (800) 321-LOGO

GS/OS graphics-enhanced version of LogoWriter; 512K Apple IIGS, 3.5-inch disk drive; no copy protection; $169 ($35 GS upgrade and User's Guide), $299 six-disk lab pack, $450 site license



Many youngsters think that turtles are just the latest craze, but some adults know another fun-loving turtle that's been around since the '60s. This turtle doesn't say "Cowabunga, dude"; instead, it teaches children a programming language called Logo — and now it's available for the IIGS.

As you can imagine, both the turtle and the program have undergone some changes in the last decade. In 1986, Logo Computer Systems integrated a word processor with the Logo programming environment and developed LogoWriter — a combination of stories or poems with animated images, sound effects, and music.

As children developed different strategies to move the turtle, they learned important math concepts such as angles, distance, shapes, and sequencing. When they integrated text and graphics, they began to build language and communication skills. And as they experimented with lines, colors, patterns, and designs, LogoWriter gave them a framework in which to express their creativity and individuality.

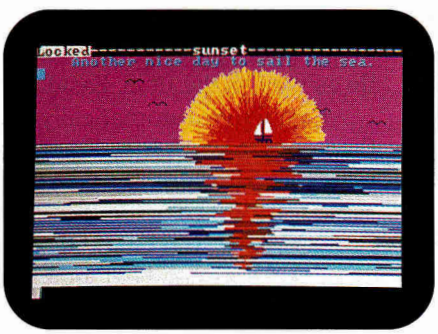
Currently, LogoWriter has three editions — Primary, for grades K–3; Intermediate, for grades 4–8; and Secondary, for junior high through grade 12. With the Secondary edition, teachers can even use LogoWriter with bricks, blocks, gears, and motors from Lego Systems' LEGO TC Logo to teach complex engineering and physics principles.

Now, with only $35 and an earlier version of LogoWriter, you can purchase the latest development — the IIGS upgrade. And you'd better believe this version is worth the money.

NEW TURTLE IN TOWN

The newest turtle in the pond proves that the *G* in *GS* stands for *glorious graphics.* LogoWriter GS lets kids work with 16 colors instead of six, 90 shapes instead of 30, and colored text that will also produce colored hardcopy if you use a suitably equipped ImageWriter II printer.

LogoWriter GS (LWGS) also takes advantage of the machine's additional memory. The more memory you have in your IIGS, the more memory available for graphics, text, and LogoWriter procedures.



The newest turtle in town has been teaching Logo for ages.

If you're already familiar with earlier Apple II versions of LogoWriter, switching over to the GS environment won't require much effort. Most of the ProDOS 8 primitives (the built-in LogoWriter procedures) ►

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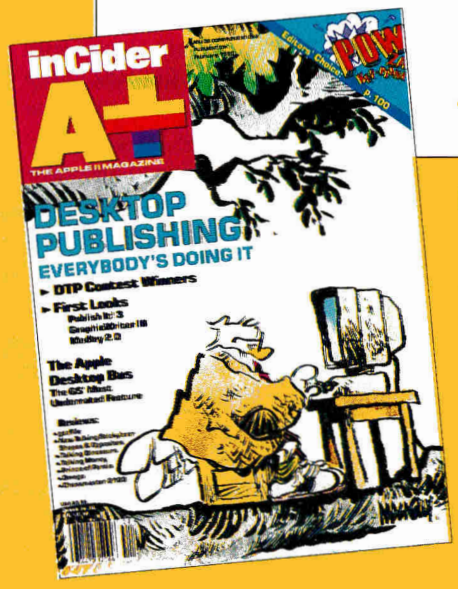

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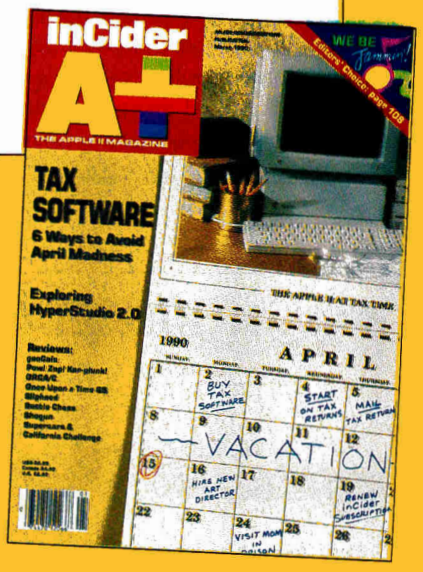

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will work in LWGS. Although the GS version sports some new commands that handle the program's enhanced color capabilities, turtle speed, file management, and assorted programming tasks, the learning curve isn't steep.

Teaching materials for the GS version are virtually identical to the IIe/IIc's. The new items include the 3.5-inch program disk, a 12-page supplement that describes program setup and printer installation, and an eight-page booklet listing the new features and instructions for upgrading ProDOS 8 format pages to GS/OS files.

Although LWGS lets you import text and Logo procedures from LogoWriter 2.0 (which runs under ProDOS 8), you can't import ProDOS shapes and graphics. Also, you may have to edit converted ProDOS procedures to run them under LWGS.

SHAPING UP

Children especially will appreciate the new Shapes Page in LogoWriter GS. It's easy to use and there's room for 90 different images. There are only 24 predefined shapes, however, and they're almost identical to the ones in LogoWriter 2.0. The old standards — such as the helicopter, train, car, truck, and boat — remain, and a few newcomers (a smiling face, a cat, and a bunny) have been added.

Kids can create their own shapes with the Shapes Editor on the flip side of the Shapes Page. Or they can edit any shape on the Shapes Page simply by selecting it with the cursor, then flipping to the editor. Youngsters no longer have to scroll through the list of shapes to find the one they want.

Once in the editor, a flashing orange square marks the cursor's position in the editing window. Kids can use the arrow keys to direct its movements. The spacebar either stamps or removes a pixel from an individual square, while cut, copy, and paste commands work on both the front and flip sides of the Shapes Page.

The GS Shapes Editor incorporates other enhancements as well. The editing window now measures 16 by 16 squares, a big change from the 10-by-16-pixel editing window in LogoWriter 2.0. With the GS Editor, shape designers can pay more attention to detail.

Even more importantly, LWGS lets youngsters preview a shape as they build it. As kids draw, a true-to-size image appears at the same time outside the window; they can make adjustments to the image in the window without flipping back and forth from the Shapes Page to the Shape Editor to see what they've drawn.

THE PRIMARY EDITION

Opening a LogoWriter package is always an exciting experience, because it contains a wonderful assortment of goodies. The LogoWriter GS Primary edition comes in a sturdy, colorfully decorated cardboard box that's tailored for a classroom setting.

Teaching materials include a reference guide, more than 50 activity cards, a primary-level teacher's guide, a wall poster, and an adhesive keyboard overlay. The 250-page *LogoWriter Reference Guide* includes information about LogoWriter scrapbooks, special keys, primitives, start-up hints, tools, messages, terms, and computer-specific platforms.

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Language Card/16K II+	$39.00

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ImageWriter Black Ribbons	6 for $10.00
Phone NET Compatible Connector	$29.95
CPrint (Use EPSON RX/MX on IIc)	$39.00
ImageWriter LQ Sheet Feeder, Second Bin, and envelope attachment	$275.00
ImageWriter LQ 4 Color Ribbon	$19.95
ImageWriter LQ Black Ribbon	$14.95
ImageWriter II 4 Color Ribbon	$5.95
Serial to Parallel Converter	$49.95
20 to 19 Pin Disk II Cable	$14.95
*ImageWrtr. I Accs. Kit, Mac 512	$29.00
*ImageWrtr-I Accs Kit, //e	$29.00
*Apple Parallel Cable Kit	$15.00
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*DaisyWheel Accs. Kit, Lisa	$25.00
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Circle 103 on Reader Service Card.

Laminated activity cards provide a framework for using LogoWriter. These cards introduce LogoWriter concepts in small chunks, so that even young children can master the program easily.

Activities are arranged in order of difficulty: They begin with simple procedures to introduce the turtle and LogoWriter primitives and then work up to more complex procedures that incorporate the word processor.

Kids learn to write stories for their turtle graphics, design new shapes, fill shapes with colors, draw with more than one turtle, and a lot more.

The LogoWriter Primary *Teacher's Guide* offers suggestions for using LogoWriter in kindergarten through third or fourth grade. It provides a teaching overview, information on the activity cards, and procedures for creating scrapbook disks.

The colorful 17-by-25-inch wall poster shows special LogoWriter keys and functions on an Apple IIe keyboard. Although special key positions on the Apple IIGS don't match those on a IIe, the functions remain unchanged. (Considering the price of LogoWriter IIGS, however, LCSI should include a poster tailored for the IIGS keyboard layout.) The company also designed the adhesive keyboard guide for the Apple IIe rather than the Apple IIGS.

TURTLE POWER

LogoWriter GS comes with printer drivers for ImageWriter II and Epson models, but it can also print on an ImageWriter LQ.

Like the earlier versions, the GS edition isn't copy protected. You may back up the software for archival purposes or create an infinite number of scrapbooks. Unlimited copying, however, is prohibited.

LogoWriter GS provides youngsters with an eloquent, versatile medium in which to carry out expressive and innovative school projects.

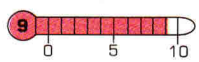
Computer programming by itself may not be an appropriate educational activity, but when it encourages individuality and leads kids to think in new and exciting ways, it becomes an invaluable teaching tool. Best of all, children have fun while they learn.

Carol S. Holzberg, Ph.D.
Shutesbury, MA

SPELLING RULES

Optimum Resource, Inc.,
10 Station Place, Norfolk, CT 06058,
(203) 542-5553, (800) 327-1473

Interactive spelling accuracy program; 48K Apple II; copy-protected; $49.95



If our elementary-school teachers realized that most of us have replaced their spelling rules with our word processor's spelling checker, they'd probably throw their chalk at at us. Spelling Rules, a new type of spelling-accuracy program, attempts to enhance a teacher's spelling lesson rather than undermine it. This program checks spelling, but if students press the ? key, a help screen displays the rule.

Spelling Rules is designed for third- through sixth-grade students, so it presents appropriate vocabulary words as practice exercises — usually these groups follow common spelling patterns. ►

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Either a student or a teacher selects the beginning level of difficulty, then the program tracks a student's progress and automatically selects the next level of difficulty. At any time, a student can see a word's spelling rule by pressing the question-mark key.

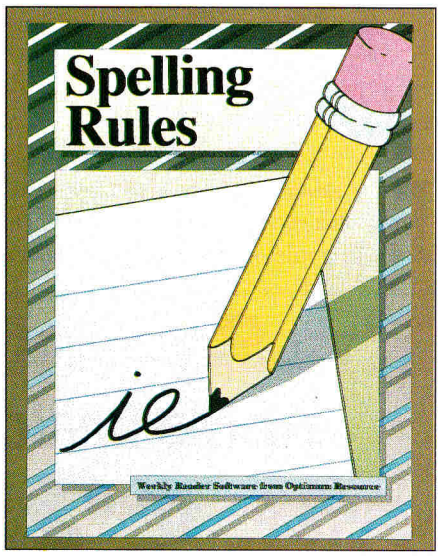
These rules include explanations for making words plural, spelling compound words, spelling words using the "i before e" rule, adding a suffix to a word that ends in a consonant, adding a suffix to a word that ends in a vowel or the letter *y*, adding a prefix, and a few irregular plurals, such as *feet* and *mice*.

RULES ARE RULES

In theory, this help screen seems ideal, but in fact it has some limitations. A student can't depend on this program to correctly explain the exceptions to some of the rules.

For example, if students follow this program's explanation when they add the suffix *ly* to the word *full*, they'll spell it incorrectly, as *fullly*: Rule 16 states, "When a suffix begins with the last letter of the root word, include both letters."

Also, the program may not even include



Learn the words behind the rules.

a word that's an exception. For example, when a child learns about making words plural, he or she won't find words such as *brethren*, *courts-martial*, *formulae*, *radii*, or *data*. Ironically, these words are often the most difficult ones for young students to learn.

Another caveat to consider is that the program doesn't require the student to type a word's correct spelling; instead, it offers a multiple choice and students must choose the correct one. If the child chooses the wrong answer, he or she has three more tries to choose the correct one. Then if it's still not chosen, the program displays the spelling rule.

Spelling Rules probably isn't a program a child will take off the shelf during play time. Although kids are challenged by it, they may become bored because the program doesn't sport any type of on-screen reward system.

Even though my ten-year-old daughter likes Spelling Rules, she'd use it for only a short time unless I was nearby to encourage and reward her. If the program included a bear or rabbit that hopped across the screen after she successfully completed a task, it would hold her attention longer. ►

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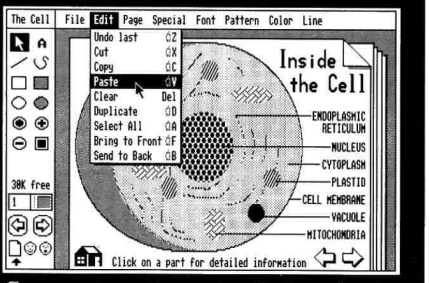

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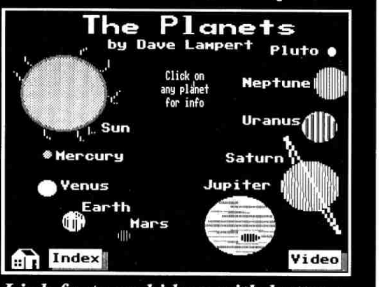

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The program is copy protected, which I find a negative point. You can buy backup disks, however, for an additional $10, and exchange its standard 5.25-inch for a 3.5-inch disk at no extra charge. The software carries a 90-day warranty from the date of purchase.

TEACHER SUPPORT

Spelling Rules' manual is only adequate, but students won't need it to use the program. (Parents or teachers, however, should read it so that they can answer any questions that develop.) Although the manual boasts that it includes 21 rules for teaching spelling, I believe that the number of rules isn't as important as how they're taught.

The first two-thirds of the manual explains how to enter student names (if you don't want students to enter their own) and how to turn sound on and off. It also discusses updating program options, checking records, controlling the student's automatic advancement, and entering new exercises. The last third of the 24-page booklet shows the spelling rules as they're displayed on the help screens.

The software's *Updating Program Options* feature lets you customize the program for each student so that the starting level of difficulty meets his or her needs. Also, you can limit a student's number of attempts from four to one.

Check Report Card lets you track and store information for up to 39 students. This list contains the starting level for each child, the current level, the number of questions answered, the number correct, and the overall score expressed as a percentage. You may also delete or print records from this mode.

Enter New Student lets you add new students and set their starting levels. *Automatic Advancement* lets you turn this feature on or off. When it's on, the problems increase in difficulty as a student masters the rules.

Enter Exercises lets you create new questions, which you can save for the students to use later. Then specify which (if any) of the 21 help screens apply to the new question. Unfortunately, the manual doesn't include instructions for creating new help screens as well; therefore most parents and teachers can't tailor the Spelling Rules program to include some of the exceptions.

Although omitting some of the exceptions to the rules is one of the drawbacks in this program, it isn't a fatal flaw — after all, English is a complex language.

TAKING A STAND

If youngsters use Spelling Rules either in a school environment or at home with a parent or an adult who can provide some encouragement, reward, support, and clarification of exceptions to the rules, the program can be a valid spelling tool.

Optimum Resource deserves credit for openly supporting the entire Apple II crowd by providing quality software that requires only 48K of RAM (random-access memory). At a time when "megs" of memory are taken for granted — even by the children for whom this program is written — that's a noteworthy position. □

Jerry D. Greer
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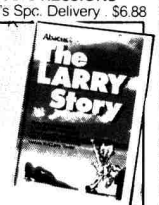

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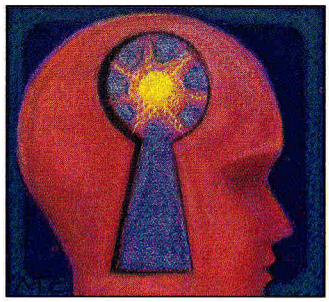

LEARNING CURVE

THEFT IN THE CLASSROOM

By DAVID D. THORNBURG, Ph.D.

The fragile symbiosis between hardware and software depends on one essential catalyst — the paying customer.

HAVE YOU EVER WONDERED WHY THE Apple II line continues to thrive in education while less expensive, but higher-performance, computers such as the Atari ST and the Commodore Amiga are rarely seen?

A major part of the answer is very simple: software. The volume of educational software for the Apple II line is probably larger than that for all other computer brands combined, although the underlying technology of the Apple II is more than a decade old.

Compatibility with its original product line is the key. Even the latest Apple IIGS lets teachers and students continue to use the massive library of software that had accumulated over the years, while giving them the opportunity to experiment with the newest, slickest 16-bit programs.

(See "II Be or Not II Be," the July 1990 Learning Curve column, p. 88, for an analysis of the delicate balance between Apple Computer's commitment to education and teachers' commitment to the Apple II.)

THE REAL PRICE OF SOFTWARE: HIDDEN COSTS FOR EVERYONE

What's involved in bringing a piece of software to market? The only time I created a commercial program, I invested about $75,000 of my own money before the first copy was sold. I was able to keep my costs down because my office rent was low and my partner and I were willing to work for royalties alone. Had either of us been paid anything up front, the cost would have been much higher.

In today's economy, I can't imagine a piece of high-quality software making it to market for under $150,000. Assuming a modest $50 selling price (of which the manufacturer gets $25, tops), you'd have to sell 6000 copies just to break even.

Of course, at this sales level you'd also need to hire one person full time just to handle phone calls from users. Think about that the next time someone complains about program prices: "Why is software so expensive? The disk and manual couldn't cost more than a buck apiece."

Sure — and Monet's brushes, paints, and canvas cost only a few bucks, too.

SHARE AND SHARE ALIKE?

The fragile symbiosis between hardware and software depends on one essential catalyst — the paying customer. At best, educational software is a low-profit business. Once software theft through copying is factored in, it becomes an endless drain of money.

Worst of all, it's the best software that's stolen most often. I can think of no faster way to ruin educational computing that to treat software as a commodity you're "free to share" with your colleagues.

FAILED TRUST

I thought about the piracy issue recently after receiving a letter from a software author who decided to develop a product for the Atari ST. After hitting the shelf, his product and documentation mysteriously appeared on a computer network, and his sales fell to zero. I've heard such stories from some Apple developers.

I also get letters from software pirates. One teacher said that she had the "right" to copy software if it was for the benefit of her students. Stealing a bus to take her kids on field trips would help them as well, but she probably wouldn't do that.

THE "RIGHT" TO COPY — AND THE RESPONSIBILITY

Software is easy to steal, and the theft is hard to detect. It's also a federal crime, and it drives good software developers out of the field.

Given a choice between spending a year on a $500 business program that users won't copy and spending the same time on a $50 educational program that will migrate in copied form from room to room, a software developer would ►

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have to care passionately about education to choose the latter course.

Educators complain about copy protection. I use both 5.25- and 3.5-inch disks, and I want to make backups of the programs I use regularly. That's my right, as I see it, and violates no law. On the other hand, removing copy protection invites theft, even if it hampers legitimate owners of the software. Of course you can break copy protection, but it at least slows down the migration of illegal copies.

LOOKING FOR A SOLUTION

What message do you receive when the software you buy is copy protected? If you perceive that developers don't trust educators, you're right.

Teachers who wouldn't dream of stealing an Apple II Video Overlay Card from a local computer dealer don't bat an eye at copying the same dollar amount of software for a friend at another school.

Is it simply because software theft is easy? Or that intellectual property doesn't seem to have the same value as material property? (That's a strange view for an educator to hold.) Is it just desperation?

None of these reasons is adequate. Even if school budgets are too low, why should we penalize developers, whose creativity helps make computers effective educational tools?

I understand that schools often can't afford the software they need. I believe that our lack of proper funding for education is an example of institutionalized child-abuse. So what should we do?

A COURSE OF ACTION

Let's direct our attention in a healthier direction: toward sources of public funding. If teachers are willing to risk federal indictment by copying software, they should be willing to engage in public protest. If teachers are fed up with the lack of meaningful support for education in this country, they should band together and do something about it.

If each of us were to donate an hour a week speaking at community meetings, writing legislators and the local papers, getting the facts in front of the public eye — and if concerned parents joined in this effort — we could shape public policy.

But if, on the other hand, we sit back and grouse among ourselves, blaming our woes on "the system" and coping in ways that demean our dignity as human beings, we have only ourselves to blame.

I've written to our "education president" about this issue. Have you? Sit down right now and let President Bush know what you think. Ten minutes and a quarter stamp are all it takes.

And, please, the next time you introduce a new software program to your class, be sure it's paid for.□

DAVID D. THORNBURG IS INVOLVED IN THE CREATIVE USES OF COMPUTERS IN EDUCATION. PRINCIPALS OF SCHOOLS WITH STUDENTS IN GRADES K THROUGH 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. DR. THORNBURG NOW PUBLISHES COMPUTER PROGRAMS AS PART OF HIS LEARNING CURVE COLUMN HERE IN *INCIDER*. HE INVITES YOU TO COPY THOSE PROGRAMS AND GIVE THEM TO ANYONE YOU WISH. WRITE TO HIM AT 1561 LAUREL, SUITE A, SAN CARLOS, CA 94070. PLEASE ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

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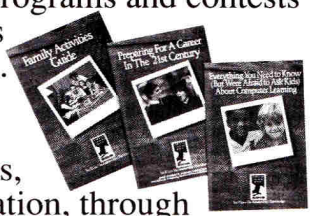

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"Consumer information on [software] programs remains spotty at best. A potential solution...the Computer Learning Foundation will evaluate and recommend software for its educational value, as well as provide information to both schools and families on how to integrate computer-based learning into everyday life." **--NEWSWEEK**

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WORD POWER

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

SCRAMBLE IT

By Gary McFarlane

ARE YOU A TEACHER LOOKING for a new way to give your students vocabulary practice? Or are you someone who just enjoys a good brain teaser? Try Word Scramble, a program that mixes up the letters in the terms and phrases you enter to form a puzzle. To solve it, you or your students must restore the letters to their original positions. Word games provide a nice break from the usual routine of vocabulary exercises.

Type in the accompanying Applesoft BASIC **Program listing**, and SAVE it as Word.Scramble on disk. Now RUN it. The program begins by asking you whether you want to load a saved list of words from disk. Type *y* (or *Y*) if so or *n* (or *N*) if not, and press Return. If you're loading a file from disk, type in the filename and press Return, or, if you can't recall the name, press Return alone to see the disk catalog.

When you enter a new list, type in (one at a time) the words you want the program to scramble, and follow each with a Return. Limit the number of words to 20 if you want the scrambled list to appear on screen, or no more than 15 for printed lists. Press Return without entering a word when you're done.

Word Scramble then rearranges the letters from your original list randomly. At the prompt, type in the slot number for your printer (1–7, usually 1) or 0 (zero) if you want the program to print the scrambled list to your screen. An answer key appears first, followed by the word puzzle. If you print, the program will stop after the answer key to let you insert a ditto master for problem sheets. □

Write to Gary McFarlane at P.O. Box 1297, Florence, OR 97439.

Program listing. Word Scramble.

```
10  REM   Word Scramble  [2686]
20  REM   By Gary McFarlane  [3471]
30  DIM W$(100),SC$(100),L$(25),S$(25)  [6379]
40 D$ =  CHR$ (4): HOME   [1102]
50  PRINT  TAB( 8)"W O R D  S C R A M B L E"  [2217]
60  PRINT : PRINT  TAB( 12)"By Gary McFarlane"  [4868]
80  GOSUB 870  [982]
90  HOME : INPUT "Do you want to use a list of words saved on the
    disk? ";Q$: IF  LEFT$ (Q$,1) = "Y" OR  LEFT$ (Q$,1) = "y" THEN
    GOSUB 760  [7746]
100  HOME : PRINT "Enter your words one at a time"  [2561]
110  PRINT "Press RETURN when finished.": POKE 34,2: PRINT : PRINT
    [6298]
120 N = 0  [618]
130 N = N + 1  [769]
140  IF N > 99 THEN N = N - 1: POKE 34,0: GOTO 210  [3361]
150  PRINT  SPC( N < 10)N":";;  [1171]
160  INPUT "";W$(N)  [513]
170  IF  LEN (W$(N)) = 1 THEN  PRINT : PRINT "A one letter word
    can't be scrambled.": PRINT : GOTO 150  [10781]
180  IF  LEN (W$(N)) > 18 THEN  PRINT : PRINT "Your word is too
    long for the printer to handle.": PRINT : GOTO 150  [13461]
190  IF W$(N) = "" THEN  PRINT :N = N - 1: INPUT "Have you finished
    entering words? ";Q$: IF  LEFT$ (Q$,1) = "Y" OR  LEFT$ (Q$,1) =
    "y" THEN  POKE 34,0: GOTO 210  [9729]
200  PRINT : GOTO 130  [1257]
210  IF N = 0 THEN 630  [924]
220  HOME : INPUT "Do you want your words saved on a disk? ";Q$: IF
    LEFT$ (Q$,1) = "Y" OR  LEFT$ (Q$,1) = "y" THEN  GOSUB 660  [13231]
230  HOME : VTAB 12: HTAB 8: PRINT "Scrambling the words..."  [6856]
240  FOR A = 1 TO N  [944]
250 B = 1:L =  LEN (W$(A))  [1488]
260  FOR X = 1 TO L  [769]
270 L$(X) =  MID$ (W$(A),X,1)  [1499]
280  IF L$(X) = " " THEN S$(X) = " ":E = X - 1: GOTO 320  [4765]
290 S$(X) = ""  [1101]
300  NEXT   [220]
310 E = L  [569]
320  IF B > E THEN 380  [1497]
330  FOR C = B TO E  [907]
340 R =  INT ( RND (1) * (E - B + 1)) + B  [2312]
```

```
350  IF S$(R) < > "" THEN  GOTO 340  [2545]
360 S$(R) = L$(C)  [1597]
370  NEXT  [356]
380  IF E < > L THEN B = X + 1: GOTO 300  [1976]
390 S$ = "": FOR X = 1 TO L:S$ = S$ + S$(X): NEXT  [3577]
400  IF S$ = W$(A) THEN 260  [1793]
410 SC$(A) = S$: NEXT  [1838]
420  HOME : VTAB 12: HTAB 10: PRINT "Print words to slot#?";: GET
    S$  [5886]
425 S =  VAL (S$): IF S = 0 AND S$ < > "0" THEN S = 8  [3092]
426  IF S > 7 THEN  PRINT  CHR$ (7): GOTO 420  [1714]
430  HOME : PRINT : PRINT : PRINT D$"PR#"S  [2563]
440  PRINT : PRINT "Here is your answer key:": PRINT  [5624]
450  FOR A = 1 TO N  [845]
460  PRINT  SPC( (A < 10))A".  "SC$(A); SPC( 30 -  LEN
    (SC$(A)));W$(A)  [5972]
470  NEXT  [300]
480  PRINT : IF S = 0 THEN  GOSUB 870: GOTO 510  [1793]
490  PRINT  CHR$ (12): PRINT D$"PR#0"  [2089]
500  HOME : VTAB 12: HTAB 3: PRINT "Insert a ditto master if you
    wish.": GOSUB 870  [9021]
510  HOME : PRINT D$"PR#"S  [2127]
520  PRINT : PRINT "Unscramble each of the following words and
    write the word(s)"  [4192]
530  PRINT "in the blanks to the right."  [5858]
540  PRINT : PRINT  [388]
550  FOR A = 1 TO N  [840]
560  PRINT  SPC( (A < 10))A".  "SC$(A); SPC( 20 -  LEN (SC$(A)));  [4764]
570  FOR B = 1 TO  LEN (W$(A))  [1025]
580  IF  MID$ (W$(A),B,1) < > " " THEN  PRINT "___";  [2461]
590  IF  MID$ (W$(A),B,1) = " " THEN  PRINT "  ";  [3458]
600  PRINT " ";: NEXT  [1437]
610  PRINT : IF S THEN  PRINT : PRINT  [1293]
620  NEXT : IF S THEN  PRINT  CHR$ (12): PRINT D$"PR#0": GOTO 630  [3773]
625  GOSUB 870  [1017]
630  HOME : INPUT "Do you want to make another puzzle? ";Q$: IF
    LEFT$ (Q$,1) = "Y" OR  LEFT$ (Q$,1) = "y" THEN 90  [6854]
640  HOME : END  [373]
650  HOME : VTAB 12: HTAB 9: PRINT "Insert your data disk":
    GOSUB 870: RETURN  [5633]
660  PRINT : INPUT "What is the name of the list? ";WL$: GOSUB 650
    [7432]
670  IF WL$ = "" THEN  GOSUB 900: GOTO 660  [1971]
680  HOME : VTAB 12: PRINT "Saving "WL$"..."  [1712]
690  PRINT D$"OPEN"WL$  [983]
700  PRINT D$"CLOSE"WL$  [818]
710  PRINT D$"DELETE"WL$  [1100]
720  PRINT D$"OPEN"WL$  [881]
730  PRINT D$"WRITE"WL$  [1098]
740  FOR X = 1 TO N: PRINT W$(X): NEXT  [2440]
750  PRINT D$"CLOSE"WL$: RETURN  [1311]
760  PRINT : INPUT "What is the name of the list? ";WL$: GOSUB 650
    [8449]
770  IF WL$ = "" THEN  GOSUB 900: GOTO 760  [1960]
780  HOME : VTAB 12: PRINT "Getting "WL$"..."  [4300]
790  PRINT D$"VERIFY"WL$  [2863]
800  PRINT D$"OPEN"WL$  [2436]
810  ONERR  GOTO 850  [319]
820  PRINT D$"READ"WL$  [2431]
830 N = 0  [542]
840 N = N + 1: INPUT W$(N): GOTO 840  [2417]
850  IF  PEEK (222) < > 5 THEN  PRINT "An unexpected error has
    occurred!": END  [3803]
860  POKE 216,0: PRINT D$"CLOSE"WL$:N = N - 1: GOTO 230  [4198]
870  VTAB 24: HTAB 6: PRINT "[Press any key to continue...]";  [7937]
880 KEY =  PEEK (49152): IF KEY < 128 THEN 880  [2714]
890  POKE 49168,0: PRINT : RETURN  [2533]
900  HOME : PRINT D$; MID$ ("CATALOG",1,3 + 4 * ( PEEK (190 * 256)
<         > 76)): RETURN  [4986]
```


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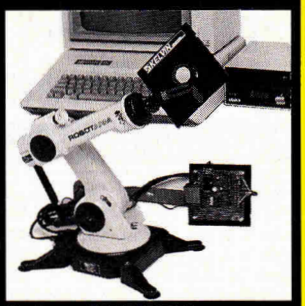

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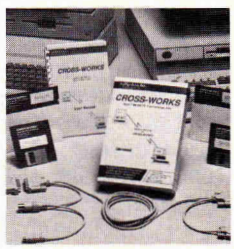

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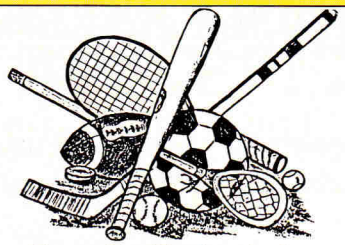

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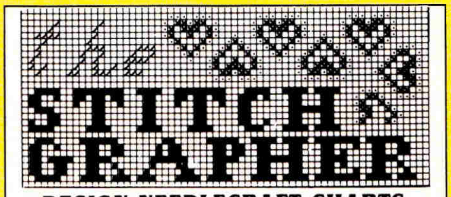

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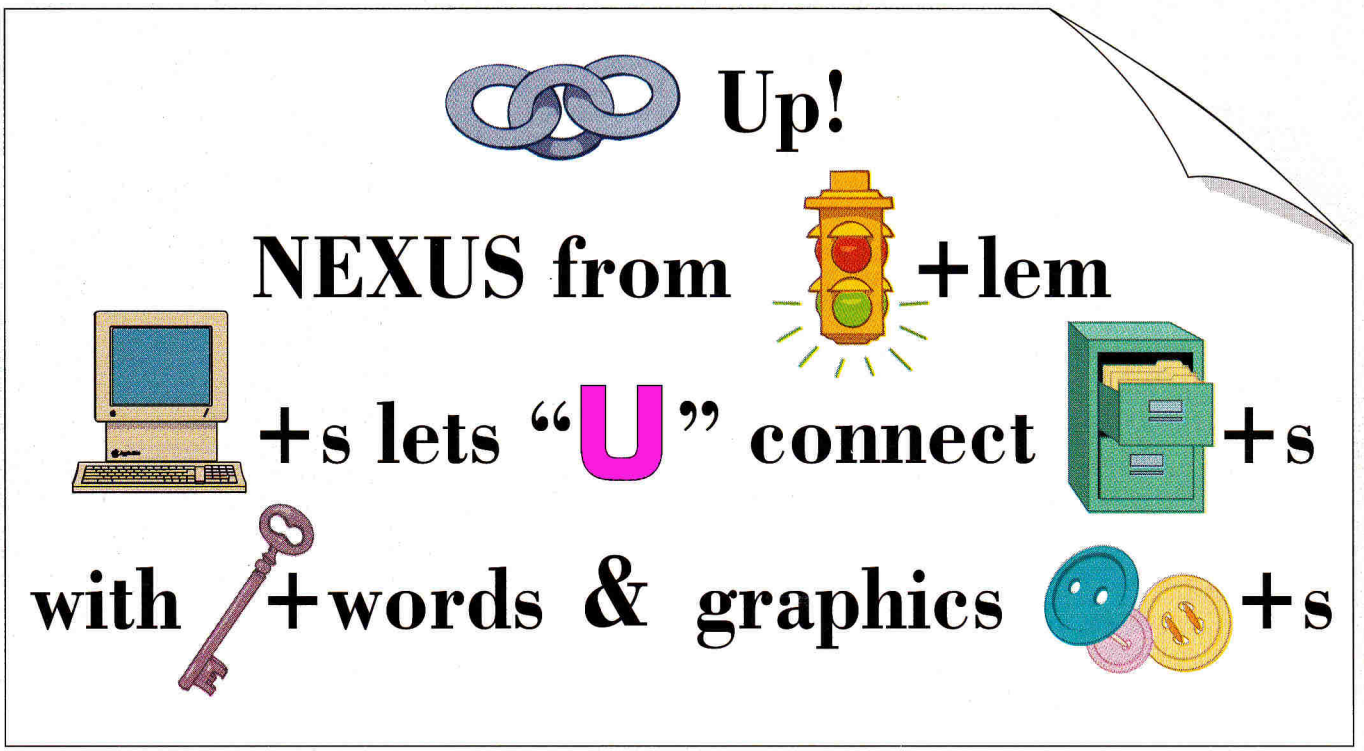
EDITORS' CHOICE



Hypermedia, buttons, stacks — nearly everybody has heard all those buzzwords and catch phrases associated with the latest rage in computer applications: using hypermedia software to link text and graphics. **Nexus**, from Golem Computers — the latest contender in the world of GS hypermedia — takes a slightly different tack. Nexus lets you interconnect your existing text files and graphics any way you like.

You can call up a standard text file — something you've created with AppleWorks, for instance — and link keywords within the document to another text file. For example, in a brief document describing skiing, you could link the word *ski* to a file that describes in more detail what a ski is and how it works. The word *binding* would take the reader to a discussion of that particular piece of equipment. In a Nexus document, you can see any links you've established, add links to another file, or remove a particular link word. The program is completely menu driven, and all commands have keyboard equivalents.

Nexus links your work in two ways — in *context* and *expanded* modes. In context mode, Nexus retrieves documents linked to the particular file with which you're working. In expanded mode, Nexus can retrieve documents relating to a keyword, even if you haven't linked that word in the current file.

Using our example above, if you were looking at a separate document about winter sports and selected the word *ski*, Nexus' expanded mode could then retreive the ski file, even though you linked it originally to another document. Activating expanded mode is simple — just select it from the Link menu or press Open apple-E. Links remain intact even if you edit the document containing the link, as Nexus searches out keywords for links rather than physical position.

Nexus can also link files to graphics, although in context mode only. Simply designate an area of your graphics screen as the spot where the reader should click, and that becomes your link. For graphics links, Nexus does use physical position, and that's why expanded mode doesn't work with graphics files.

"Hypertext is hardly a new idea — it's as old as cross-references and illustrations with captions," says Senior Editor Paul Statt. "What's new in the '90s is the ability to connect any text with any other text or with any other picture. Nexus lets you use standard text files and standard Apple IIGS graphics — it's simple. That ease of use means that Nexus can serve as a low-cost, free-form database manager or as a HyperCard-like encyclopedia."

Nexus was written by Tracy Valleau, and is distributed by Golem Computers, 1111 Rancho Conejo Boulevard #407, Newbury Park, CA 91320, (800) 248-0363, (805) 499-0197. Nexus retails for $59.95, and requires an Apple IIGS with GS/OS 5.0.2 and 1.25 megabytes of memory. It's a nice way to make the link to the world of hypermedia. □

EDITORS' CHOICE SINGLES OUT ONE PRODUCT EACH MONTH THAT THE *INCIDER* EDITORS FEEL IS A SIGNIFICANT ADDITION TO THE APPLE II FAMILY OF PRODUCTS. PRODUCTS EVALUATED IN EDITORS' CHOICE ARE AMONG THE MOST RECENT RELEASES AND MAY NOT BE AVAILABLE YET FOR RETAIL DISTRIBUTION.

"Elegant, innovative, flexible and in all aspects the leader of the field." — *Incider Magazine*

Accolades continue to pour in. Vulcan hard drives were recently awarded FIVE stars by Incider Magazine, a rating reserved for products judged "excellent and remarkable". Incider went on to say, *"The Vulcan sets a new performance standard for hard drives . . . Applied Engineering has done it again."*

Hard drives tremendously boost your productivity. The Apple II's operating system, hardware and memory-gobbling software take on a new agility and finesse with the addition of a hard drive.

Speed? The IIGS Buyer's Guide put it this way, *"Everything this drive does is fast. TimeOut modules, installed in AppleWorks and configured as disk-based, came up as fast as if they were memory-based. Graphics load almost immediately. Even that damnable lie, 'One Moment Please' suddenly delivers its promise. We recommend the Vulcan wholeheartedly."*

And Incider said, *"The Vulcan walks all over the competition. Twelve seconds to the GS Finder; 10 seconds to AppleWorks GS. Sounds good doesn't it? It is. That sizzling speed is achieved thanks to a high-quality internal tracking unit."* Vulcan incorporates an ultra-fast 16-bit data bus controller, not the less expensive 8-bit others use.

Features? As Nibble Magazine said, *"AE drives support more operating systems and have more features in the supporting software."* And Incider added, *"Applied Engineering has put together the most complete set of utilities to date for an internal hard drive that leads the market."* And since Vulcan's made by Applied Engineering, you're assured of full compatibility with current and future AE products.

Power? Vulcan's high-efficiency power supply is rated in excess of 70 watts, *nearly double* the capacity of other hard drives. The power supply components are heatsinked to the aluminum case for cool operation and long life. To harness all that power, Vulcan incorporates an ultra-quiet, flush mounted cooling fan, keeping the temperature inside the Vulcan, and inside your Apple lower than before.

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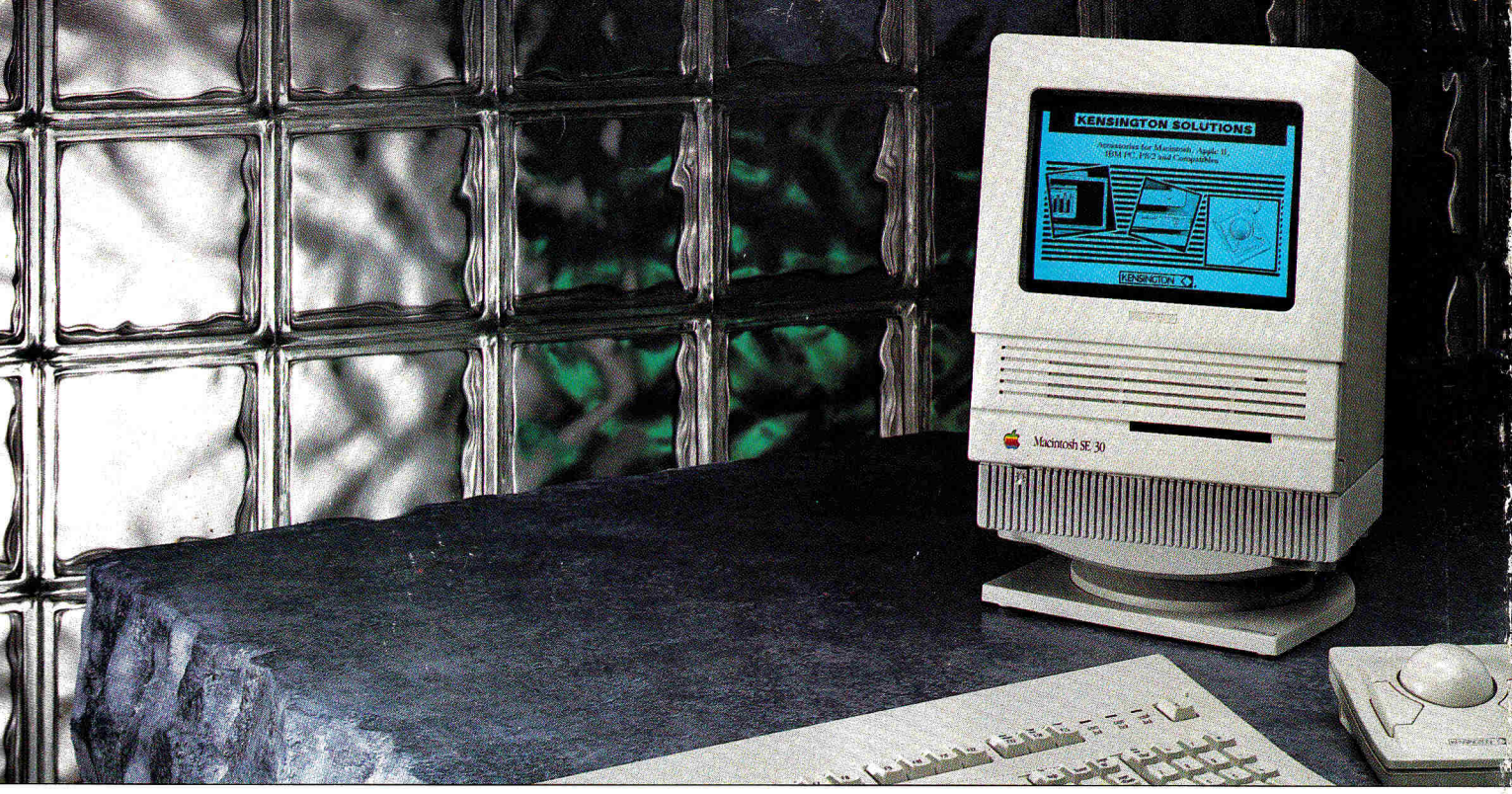

EYESORE VS. EYE PROTECTION

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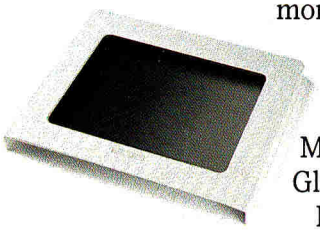

An example is our Maccessories® SE Anti-Glare Filter.

It looks so much a part of the SE, you would think it was designed by the same people who designed the SE.

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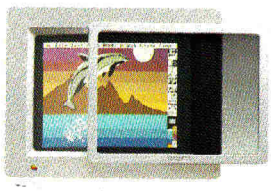

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