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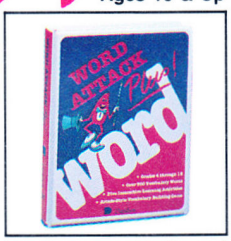

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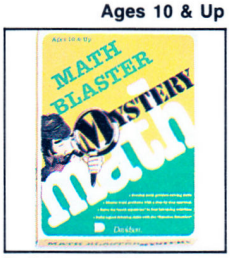

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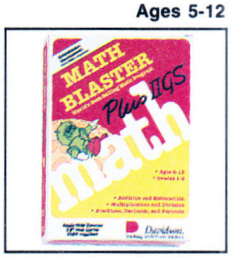

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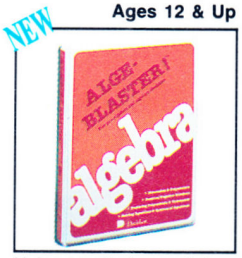

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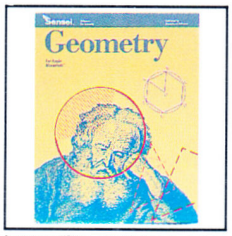

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BIG TALKERS

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

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

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

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

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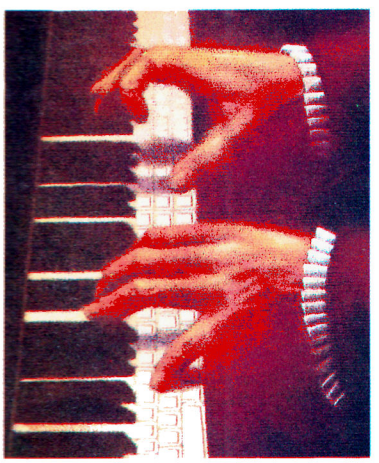

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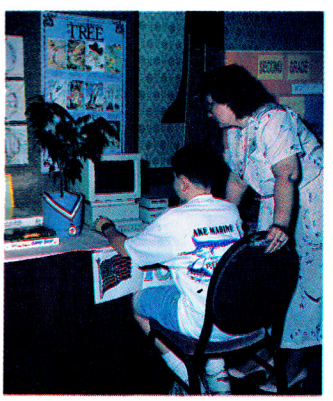

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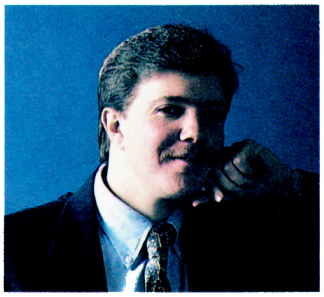

INCIDER'S VIEW

FIGHTING TEMPTATION

By DAN MUSE * EDITOR IN CHIEF

As technology advances, doing the right thing is more and more difficult. In fact, it's difficult to always know what's right.

"THIS BROADCAST IS INTENDED SOLELY for the use of our audience; any rebroadcast, retransmission, description, or account of this game without the expressed written consent of major-league baseball is strictly prohibited."

If you grew up watching sports, you've probably heard that warning a thousand times. Until recently, however, it never meant much to me. How could I rebroadcast or retransmit a program?

Then came the videocassette recorder (VCR); it's now easy and tempting to record any broadcast: a sporting event, a movie from a pay-TV channel, and so on. If I record a boxing match or a movie and then give it to a friend or relative, I'm breaking the law. I'm pretty sure no one would catch me, but I'd feel too guilty. The technology available lets me break the law without giving it a second thought, but, as Shakespeare says, "Conscience doth make cowards of us all."

We face the same dilemma when it comes to computer software. How do you convince someone not to copy software illegally when that person knows he or she won't be caught? Many users rationalize that software is too expensive, so they have to make illegal copies. This logic has created a "chicken-or-egg" paradox that we've lived with since the early days of personal computers: Is software pirated because it's too expensive? Or is software expensive because people pirate it?

How common is pirated software? The number of books about productivity software is a good indication. While there's certainly a need for books dealing with the advanced features of popular software, there's a flood of beginner-oriented books that seem to replace documentation rather than supplement it. While pirated software may not have created the computer-book publishing business, it has helped it grow. Do you think people buy books about AppleWorks because they're thirsty for more documentation? There's no scientific way to know, but you can bet that for every copy of AppleWorks sold, there's at least one illegal copy made. Companies such as Claris and Beagle Bros tell countless, often humorous, tales of people who have called to inquire about buying only the documentation, the reasons ranging from "The dog ate the manual" to elaborate stories about floods and other natural disasters.

That's why software publishers, especially educational-software publishers, have been reluctant to sell unprotected programs. On August 1, however, Scholastic Software announced that all its future releases will have no copy-protection code. It will also re-release its major current titles without protection code.

You're probably thinking, "Good. It's about time software publishers woke up. They should have done that years ago." Just make sure you're ready to live up to your end of the bargain. Are you ready to prove to software companies that they can trust you? By removing copy protection, Scholastic isn't saying, "Go ahead. Make copies of our software." It's letting you make one "legal" copy of the disk (or set of disks) for use at any one time. In addition to prohibiting you from making multiple copies, it forbids you from "multiloading" RAM-resident programs for simultaneous use. How will Scholastic know whether you've made more than one copy, or loaded it onto every RAM disk in the school? It won't. It's trusting you to do the right thing—the legal thing.

As technology advances, doing the right thing is more and more difficult. In fact, it's difficult to always know what's right. On-line databases and CD-ROM (compact-disc read-only memory) put megabytes of information at the fingertips of students. I'd never retype 2000 words out of an encyclopedia, but when it's a matter of just printing them, the temptation's there. People aren't any less ethical then they were 10 or 15 years ago, but temptation disguised as technology wasn't as great then. People weren't tempted to speed before the automobile was invented.

October is Computer Learning Month. What better time for us to set an example for young people? Making illegal copies of software (or movies, tapes, and so on) is nothing short of theft. That the technology exists is irrelevant.□

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Programmed Chaos?

YOUR AUGUST STATTUS REPORT ("Something Strange," p. 20) was both interesting and timely. However, Paul Statt dealt little with the order of chaos. I have a copyrighted program that shows graphically the order within a chaotic system. I'd be happy to send a copy of the program to anyone who mails in a check for $10.

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Paul Statt thanks you for sending him the program and says it exploits some of the ideas about "random" graphics generation covered in Nova's *television special on chaos. According to Paul, "It's a neat program I wish I had written myself—in fact, I tried to create one like it, but it wouldn't fit into Stattus Report."* —*eds.*

A Nation at Risk?

I'M PROFUSELY DISAPPOINTED TO discovery the removal of The graphics gallery from the *inCider* selection of topics. My computer graphics teacher enlightened me upon this perplexing and disturbing situation after her lugubrious trek to the Applefest. I would enjoy to see the replacement of the intriguing graphics gallery in the *inCider* magazine.

IN RESPONSE TO THE RECENT merger between the Incider and A+ I dreaded to find that the Graphic Gallery Section has been omitted. In correspondence to this finding I am writing you to plead for a re-evaluation of your decision. In conclusion I hope to see this section returned for the benefit of the amateur computer artists everywhere.

The two letters above represent about 30 sent to us from Sachem High School North, Lake Ronkonkoma, New York. Judging from the correspondence, there's a greater need for a "Grammar Gallery" than there is for a "Graphics Gallery."

Discontinuing Graphics Gallery wasn't an easy decision to make. We felt that while the section was fun to look at, it didn't educate or inform readers about computer graphics. Those two pages were simply a forum to show the efforts of a handful of computer artists. But we do realize that when it comes to graphics, seeing is as important as reading, so you can expect our Speaking of Graphics column to feature more artwork.

To the computer-graphics class at Sachem High: We appreciate the effort, and several of your points are well taken, but—to use the words of your classmate—we're profusely disappointed by your lugubrious letters. —*eds.*

Mac Attack

YOUR JUNE EDITORIAL (*INCIder*'s View, "Oh Mama, Can This Really Be the End?" p. 8) expressed many of my concerns about Apple ignoring the II line. As a member of the Apple Programmers and Developers Association (APDA), I've felt alone in the computing world, because of the way the IIe, IIc Plus, and especially the IIGS have been treated. It's hard to be optimistic when Apple has introduced five new Macintoshes since the GS' arrival.

I also work in an authorized Apple dealership and am one of only two Apple II support people—the rest of the employees are Macintosh people. The computing community seems to think II computers aren't powerful enough or good enough. I beg to differ; I've used them since 1979 and have been very happy with the series.

There are about ten million Apple users out there. We're a powerful force, and there are some of us who won't buy a Macintosh if Apple discontinues the II. The Mac is a nice computer, but it isn't for me. The two worlds of Apple computers—the II and the Mac—don't need to be merged and don't need to compete. Apple needs to recognize that the II made the Mac a reality and it's still a viable computer choice.

John K. Gibson
536 Creekwood Court
Westmont, IL 60559

Have IIc, Will Travel

I'VE INCORPORATED COMPUTER education into my home-teaching program (grades K–12) for the past two years. My students share one feature—they're all confined to their homes or to hospitals. These youngsters are affected with such maladies as broken legs, head trauma, leukemia, brain tumors, and emotional handicaps. Nestled in my "high-tech knapsack" is an Apple IIc computer system, which I've integrated into all my "classrooms," wherever they may be—living rooms, kitchens, dens, even hospital rooms.

I use the computer for a variety of purposes according to subject, grade level, ability, and each student's previous computer use. Younger children become familiar with the hardware and keyboarding, while the software often initiates a topic, motivates a student to learn a skill, or helps explain a concept or a rule. Thanks to the Apple, I can present more than one objective in a lesson.

One learning-disabled eighth-grader, for instance, related that he finally understood fractions after using a series of software ►

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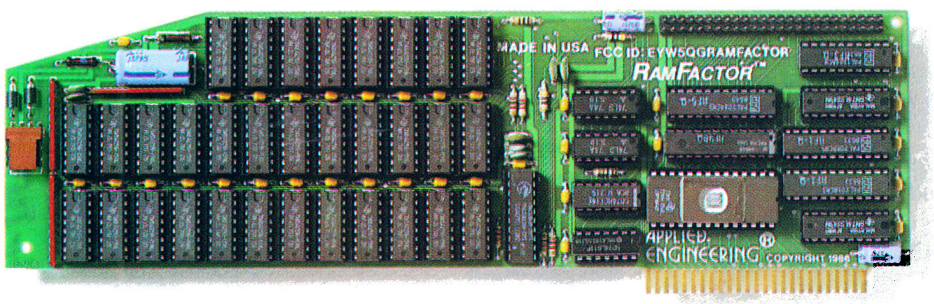


RamFactor is automatically recognized as additional workspace memory by AppleWorks 1.3, 2.0 and 2.1. In addition, RamFactor's memory can be used for creating the ultimate in program speed—a lightning-fast RAMdisk for the Apple IIGS, IIe, II+, Franklin and Laser 128. A RAMdisk does not depend on the slow moving parts of a conventional floppy drive. RAMdisks eliminate wear and tear on your disk drive plus your programs run up to 20 times faster! When a program is in RAM, your computer won't have to search for it in the mechanical disk drive during program operation. With RamFactor, you can have up to 9 separate simultaneous RAMdisks—even in different operating systems! Now you can instantly switch from one program to another or even switch from AppleWorks to DOS 3.3 to CP/AM to Apple Pascal 1.3 to ProDOS.

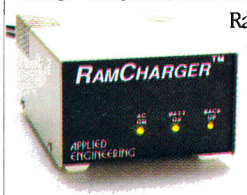
Apple Memory Expansion Card Compatible

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

2.0 AppleWorks Power

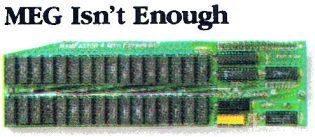
Other slot 1-7 cards can give AppleWorks a larger desktop, but that's the end of their story. RamFactor provides many more powerful functions. It's the only slot 1-7 card that increases AppleWorks 2.0 internal limits by increasing the maximum number of records in the database to 22,600, increasing the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

The "Electronic Hard Disk"



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

If 1 MEG Isn't Enough



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

Features

- Compatible with Apple IIGS, IIe, II+, Franklin and Laser 128
- 256K to 1 MEG on main board with 256K memory chips; expansion port supports up to 5 MEG with Expander option
- 100% Apple Memory Expansion Card compatible
- RamCharger battery back-up option available for permanent storage
- Reduces power strain to internal power supply with RamCharger option
- Fully socketed and user upgradeable
- Expands internal limits of AppleWorks 2.0
- Automatically recognized by ProDOS, DOS 3.3, Apple Pascal 1.3 and CP/AM
- Built-in RAMDrive software (true RAMdisk not disk caching)
- Graphic memory test included
- Allows Apple II+ to run AppleWorks 2.0 without buying additional software
- Automatically recognized by AppleWorks 1.3 and 2.0
- Fits in any I/O slot except slot 3
- 5 year warranty — parts and labor
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LETTERS TO THE EDITOR

packages. A first-grade leukemia patient increased his IQ four points after using a IIc in his home-teaching program twice a week for several months. Most importantly, the computer seemed to precipitate a turning point for several emotionally handicapped boys. Their interaction with a nonthreatening, impersonal machine increased their interest and attendance at learning sessions significantly.

Linda R. Cooper
4805 Royahn Avenue
Baltimore, MD 21236

Complete Alliance

YOUR APRIL ISSUE LISTED SEVeral of the National Special Education Alliance centers, a program sponsored by Apple Computer ("Partners in Special Achievement," p. 56). Unfortunately, there were a few inaccuracies. Two California centers you omitted are Special Awareness Computer Center (Rehabilitation Center, 22975 North Sycamore Drive, Simi Valley, CA 93065, 805-582-1881, AppleLink: SACCLINK, contact: Suzanne Feit) and Team of Advocates for Special Kids (18685 Santa Ynez, Fountain Valley, CA 92708, 714-962-6332, AppleLink: CATASK, contact: Joan Stoddard). You also excluded two centers in Kentucky: Blue Grass Technology Center for People with Disabilities (898 Georgetown Street, Lexington, KY 40505-1392, 606-233-1483, AppleLink: BTRCFPD, contact: Jean Isaacs) and SpeciaLink (36 West 5th Street, Covington, KY 41011, 606-491-2464, AppleLink: X1272, contact: Walter and Elaine Hackett).

Also, please delete the centers in Texas, Georgia, and the District of Columbia from your list.

Pam Patton
Special Education Programs
Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014

Chip Off the Old Kit

I UPGRADED MY APPLE IIGS recently from 512K to 1 megabyte. I purchased two RAM kits, each one consisting of eight chips. While installing one of them, I broke off a prong accidentally. To replace that individual chip, do I have to buy another RAM kit—when I won't be using the remaining seven chips?

Denyse Altagracia
219 East 97th Street #9-G
New York, NY 10029

Check out Microprocessors Unlimited (24000 South Peoria Avenue, Beggs, OK 74421, 918-267-4961). The company will be happy to sell you just one. See "Fast RAM Chips," Apple Clinic, May 1989, p. 22. —*eds.*

More Zip

I'VE JUST READ "ZIP NEWS" IN August's What's New section (p. 16). If that's marketing savvy, I'd just rather have a working chip. It's my guess that I'm not alone in my opinion. My chorus is:

Zip-pity-do-DUD! Zip-pity-ay!
My oh my, what a wonderful wait!
Plenty of dollars have flitted away,
Zip-pity-do-DUD! Wasting away!

E. Steve Zapiain
2287 Grouse Way
Union City, CA 94587

Personally Taught

I AGREE WITH DAVID THORNBURG that schools must shift their focus from worksheets to literature and from multiple-choice questions to essays ("Taking Chances," Learning Curve, August 1989, p. 92). His conclusion, "Fires are kindled with ideas, not computers," is equally moving. I feel, however, that his perception of the "proper" use of technology is skewed. Dr. Thornburg's implication that you can use technology to accomplish his philosophical goals seems ironic at best.

Education can have two results: short-term or long-term retention. You can teach students, with or without technology, how to memorize information in a minimum of study time.

This skill will increase confidence and expand the student's pool of knowledge. Once youngsters can retain information for the short term, they can apply themselves intelligently to an interactive curriculum that fosters long-term retention and creative understanding—a strictly human process. Only personal contact between students and their instructors—not

between man and machine—can nurture the creative and interactive learning Dr. Thornburg encourages.

Dr. Thornburg criticizes educators who use software that teaches facts without fostering higher-order thinking. I disagree with his premise: students must first learn basic facts before they can have a coherent understanding of classroom lectures and discussions.

Even though I'm the CEO of an educational-software company, I discourage using computers in schools more often I encourage it. Software companies are making money whether they sell good products or bad. Until teachers demand software programs that function as tools to enhance education through simplicity, not extravagance, many companies will continue to make products that, although visually appealing, offer no substantive educational value.

I urgently recommend parents, teachers, and students to use only educational software that clearly achieves a goal that more traditional methods of instruction can't accomplish.

Jeffrey Gold
Cyberlearn, Inc.
20863 Stevens Creek Blvd.
Suite 330
Cupertino, CA 95014

MIGRAINE MATERIAL?

I HAVE ONE PROBLEM WITH *inCider*—after reading the magazine for a short time, I get a headache. I cancelled my subscription because of this problem, but missed the up-to-date information and expert advice so much that I started it back up again.

This weekend, after enduring my normal headache, I decided to see whether I could determine why *inCider*, out of all the magazines and newsletters I read, is the only one to pose this problem. I discovered that the magazine's print is generally smaller in height and there are considerably more characters per inch on average than in other publications.

Terry W. Robertson
4901 Carriage Drive Circle
Charlotte, NC 28205

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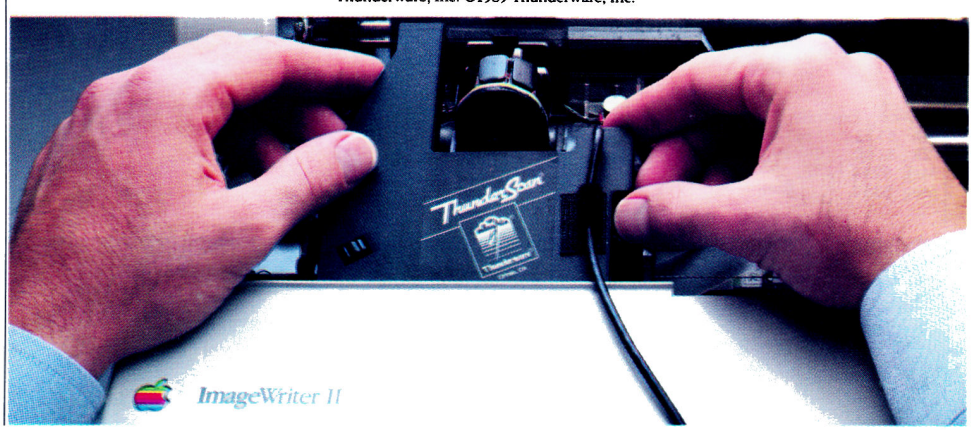

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WHAT'S NEW

By Paul Statt, Senior Editor

NEW GS: MORE FOR YOUR MONEY

That new-and-improved Apple IIGS you've been hearing rumors about is finally a reality. On August 15th Apple officially released an updated version—same name, same case, but with expanded memory and some extra features that will make the machine easier for disabled users to operate.

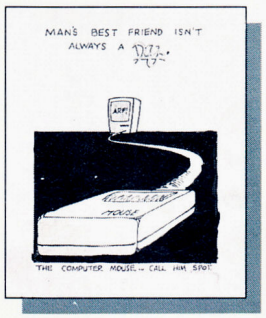
This latest GS comes equipped with 1.125 megabytes of RAM, plus some of the tools from System Software (GS/OS) Version 5.0 built into ROM. Design enhancements include the Macintosh feature Sticky Keys, a macro-like capability that activates several keys with one stroke. Scaling has been adjusted for a more precise mouse-to-cursor relationship. More mouse commands now have keyboard equivalents, as well, a feature that will help users who are unable to manipulate that peripheral.

Some slot allocations have been changed in the new computer, making for more flexible add-on arrangements. In the original GS certain devices worked only in particular slots; these requirements are no longer hard-and-fast.

No upgrade kit will be offered for the new model; most current GS owners have already added extra memory, Apple says, and System Disk 5.0 gives you 90 percent of the enhancements. Apple has not raised the machine's price ($2506 suggested retail for a setup that includes CPU, RGB monitor, 3½-inch drive, and 5¼-inch drive)—good news indeed. **—Lafe Low**

ARTISTIC FLAIR

Below and right are some of the winning Apple II and Commodore Amiga entries in last year's Computer Learning Month Art Contest. To find out how you can enter the next contest, write The Computer Learning Foundation at 3098 Ramona Street, Palo Alto, CA 94306.



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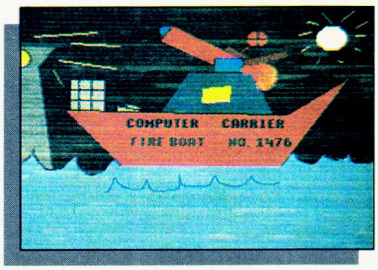

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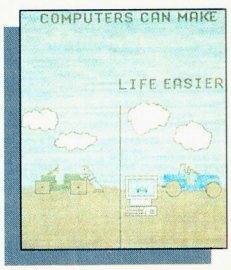
INSIDE STORY

HARDWARE

An internal 40-megabyte hard-disk drive may arrive soon from Scotland. Then again, it may not. **Cirtech** (Scotland), maker of the PlusRAM memory-expansion card for the Apple IIGS and the StatDisk solid-state electronic disk drive, will build the **Insider**, a 20- or 40-megabyte **hard-disk drive** that fits any Apple II.

The Insider, Cirtech claims, "uses unique 2½-inch hard-disk mechanisms, with an integrated SCSI controller and interface. The result is a totally self-contained plug-in card that fits directly into any Apple II slot. No cables, no extra power supply, no modifications to the computer, no tools required, no special installation.... It consumes less power than the average printer-interface card—a miserly 1.7 watts."



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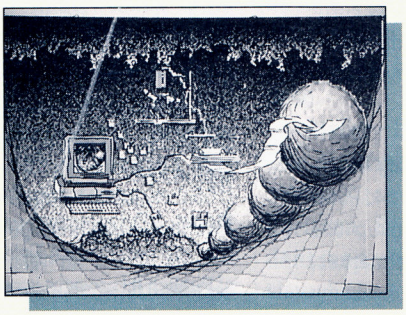

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1. **T.R. Boyce, age 17, LBHS, Altamonte Springs, FL.**
2. **Michael Krause, age 9, Thos. Jefferson School, Euclid, OH.**
3. **Paula Brooks, age 17, DuPont Manual High, Louisville, KY.**
4. **Michael Hopkins, age 11, Penn Wood, West Chester, PA.**
5. **Jeff Canary, age 17, DuPont Manual High, Louisville, KY.**
6. **Gregory King, age 17, DuPont Manual High, Louisville, KY.**

STICKYBEAR'S BACK

SOFTWARE

Bedford Stickybear's latest explorations take him into shapes and opposites. Both **Talking Stickybear Opposites** and **Talking Stickybear Shapes** use spoken words and charming pictures to intrigue 3- to 6-year old children.

Kids playing Opposites, for instance, will see Bedford pilot his plane over and under a bridge, ride his unicycle, frown when he's sad, and smile when he's happy.

Shapes teaches children to identify circles, squares, reactangles, triangles, and diamonds—important facts to know in preparation for first grade. Bedford's bearish voice and roly-poly figure make kids feel right at home with geometry.

Talking Stickybear Opposites and Shapes require 512K and cost $49.95 each. (Lab packs of five disks are priced at $85 per set.) They require the Echo card for speech synthesis, and are available from Optimum Resource/Weekly Reader, 10 Station Place, Norfolk, CT 06058, (203) 542-5553. Circle number 350 on the Reader Service card for more information. ►

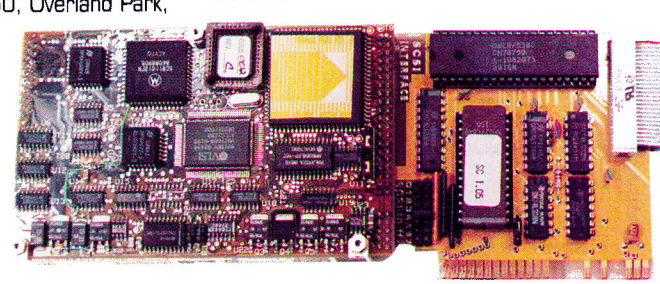
That sounds like Scottish thrift, but in July Tom Vanderpol at A2-Central, Cirtech's American distributor, remained cautious. He stated that although the Insider looks as if it would be really neat, the people at Cirtech haven't been able to get the pricing where they want it.

Vanderpol praised the Insider's low power draw, but said that A2-Central was not yet certain it would sell in the States.

Cirtech claims the Insider is compatible with any Apple II operating system—even more than one at a time—and you can use it to anchor a local-area network with optional software.

Curious North Americans should contact A2-Central, P.O. Box 11250, Overland Park, KS 66207, (913) 469-6502; others should write or call Cirtech, Currie Road Industrial Estate, Galashiels, Selkirkshire, Scotland TD1 2BP, (44) 896 57790, for details.

Scottish thrift? Cirtech's internal hard-disk drive requires no cables, no extra power supply, no tools, no modifications, and only 1.7 watts—but pricing problems may hold up distribution in the States.



APPLE BITS

■Does **Claris** (Santa Clara, CA) have something personal against AppleFest?

■Apple's next software product should be **Apple II HyperCard**, which we think will look more like Tutor-Tech (TechWare) than HyperStudio (Roger Wagner Publishing).

■We hear that Don McIntyre, a former exec at Zip Technology (Los Angeles, CA) has taken over the mail-order distribution of the **Zip Chip** accelerator.

■**Nature Boy Software** (South Lancaster, PA) hopes to follow up the monumental success of Animal Tracker with Bird Watcher.

■Jeff Gold, boy-wonder president of **CyberLearn**, (Cupertino, CA) has been giving away tons of software to teachers.

■**PyGraphics** (Grapevine, TX) is talking with top chip maker Frito-Lay about creating a game featuring the famous Chester Cheeto (TM) character.

■The **Jostens Learning Corporation** (San Diego, CA, and Phoenix, AZ) is gobbling up the **curriculum-software market**, acquiring Education Systems Corporation, Hartley Courseware, and Prescription Learning Corporation. Jostens offers "integrated learning systems"—software and service—to 25 percent of the nation's schools.

■Look for an AppleWorks Programmers Association to form as soon as Beagle Bros makes public the secrets of writing **TimeOut** applications.

■Alert *inCider* readers will note that our own Cynthia Field's disk of **Publish It!** projects is available from the Public Domain Exchange (Santa Clara, CA) for only $5 (plus a $20 membership fee, and a $10 shareware donation to the author).

■Is **Chinook Technology** (Longmont, CO), makers of hard-disk drives, looking to pick up one of its competitors?

■Unconfirmed rumors out of Maryland are that General Electric would like to be rid of the **GEnie** electronic network.

■What's holding up the new **accounting package** from **Beagle Bros** (San Diego, CA)?

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HISTORY *MYSTERY*

SOFTWARE

Where in Time Is Carmen Sandiego? **is the latest adventure of Broderbund's infamous globe-trotting thief.**

The first three Carmen mysteries, Where in the World, Where in the USA, and Where in Europe Is Carmen Sandiego?, delighted geography teachers everywhere, as Carmen thrilled students with exciting travels that forced kids to study maps and atlases.

Where in Time should make history teachers happy. The gang have gotten their hands on a time machine that lets Carmen and her cohorts practice their underhanded craft anytime from 400 to 1950 A.D.—lifting Queen Isabella's jewels in 1492 before she has a chance to bankroll Chris Columbus, or snatching England's Magna Carta in 1215 before King John gets to see it, let alone sign it.

Luckily for history, the Acme Detective Agency—that's you when you play Carmen—has an identical time machine, a copy of the 1300-page *New American Library Desk Encyclopedia*, and an on-line graphics database of historical information to help crack each case.

"History is a logical extension for the Carmen Sandiego series," according to Gary Carlston, Broderbund's president and co-founder. "Even though the emphasis has been on geography, the earlier games have all included some historical information."

Where in Time Is Carmen Sandiego? costs $44.95; a school edition with teacher's guide and backup disk (the program is copy-protected) is $54.95, and a lab pack with five sets of disks is $109.95, from Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101, (415) 492-3200.

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PLUS also features a Label Maker, Bookmark Maker, and five other utilities. To order **PLUS**, send **$39.95** to Big Red Computer Club. Ask for product number **PS01.** (64K required.)

PLUS-GS

PLUS-GS is a set of utility programs designed especially for Print Shop IIGS. In addition to printing catalog sheets of multi-color graphics, borders, fonts, pixels, and patterns, **PLUS-GS** converts GS fonts to Print Shop fonts. You can also create your own multi-color borders and patterns, capture Print Shop graphics from SHR pictures, and convert IIe graphics and borders. Order product number **PS51** for **PLUS-GS.** Price is **$39.95**. (512K required.)

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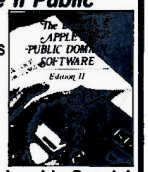

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WHAT'S NEW

INFOCOM'S ON A *ROLL*

GAMES

Infocom has certainly been keeping busy—the company's coming out with a trio of titles that are certain to keep true Infocomaniacs happy.

Did you ever wonder what happened to the royal Flathead family of Zork fame, or what became of the Great Underground Empire? You'll probably find the answers in **Zork Zero**, a "prequel" to the popular Zork trilogy. The newest Zork, although it "occurs" before the other three, features more than 200 bizarre locations and as many peculiar puzzles as all the previous Zorks combined. True Zorkheads won't want to miss this one.

For an experience a bit closer to reality, you can travel to 16th-century Japan as the lead character in **Shogun**, an electronic version of James Clavell's epic novel. As the British sea captain John Blackthorne, you'll have to make decisions that affect your own fortunes and that of Mariko, the court translator with whom you become involved, and Toranaga, one of the regents enmeshed in a vicious power struggle to become the Shogun.

The illustrated fantasy role-playing game **Journey** rounds out the company's new threesome. Journey starts you off in a village that has endured five years of suffering; you join a party setting out to find the great wizard Astrix for a much-needed dose of wisdom. Menu commands control your party, casting spells throughout combat and other explorations.

All three games sell for $49.95 each, and should be on software shelves this fall. Since the early days of Zork, Infocom has left its previous home in Cambridge, Massachusetts, and is now based in Menlo Park, California. For more information, circle number 351 on the Reader Service card or contact Mediagenic, Infocom's distributor, at 3885 Bohannon Drive, Menlo Park, CA 94025, (415) 329-0800. **—Lafe Low**

UPDATES

■Applied Ingenuity (Baldwin Park, CA) has reworked its popular **InnerDrive** internal GS hard disk. For $49.95 InnerDrive owners get a new controller card and system software. The InnerDrive uses standard GS/OS.

■Applied Engineering (Dallas, TX) has slashed the **PC Transporter**'s retail price by 26½ percent. The add-on board that lets Apple IIs run IBM software now costs $499. Prices of IBM-type disk drives and cables are unchanged.

■**Scholastic Software** (New York, NY) has released network versions of more than 50 popular educational programs, such as Bank Street Writer, Super Story Tree, Math Shop, Algebra Shop, Success with Writing, Super Print, and many, many more. Scholastic supports **AppleShare, Corvus, Velan,** and **Digicard** networks.

Circle 269 on Reader Service Card.

DO THE *Write* THING

RESOURCES

A group of inner-city kids aged 7–12 learn to type articles, draw illustrations, and lay out a newsletter's pages on a computer in a new 15-minute video film, ***Teaching Kids Desktop Publishing.***

"The purpose of the film isn't just to demonstrate basic techniques most desktop-publishing programs use," notes Dina Cukier-Schlesinger, the New York City computer teacher who wrote and produced the video. "It also shows how quickly—almost intuitively—kids learn to express themselves on computer."

The spontaneity and intensity of these kids, many of whom had never used a computer before, really show. Watching this film, you feel you're seeing people learn.

Teaching Kids Desktop Publishing is an excellent motivational tool for teachers thinking about getting started in DTP, but many students are also moved by it. One 10-year-old commented, "I want to write my own story on the computer." The movie features Springboard's Newsroom software, but its lessons are applicable to all other popular publishing programs.

Teaching Kids Desktop Publishing is available only by mail on VHS for $29.95, and in ¾-inch videotape for $44.95, from Schlesinger Associates, 210 Fifth Avenue, Suite 106, New York, NY 10010, (212) 689-6418.

"The Apple II continues to be an important part of our business."

"Just because the world now has automatic transmissions, that doesn't mean that we no longer have stick shifts."

—Jean-Louis Gassee, President, Apple Products

QUOTES

"The Apple II will continue to be a viable choice for many customers into the 1990s."

"Apple's philosophy is to change the world by providing tools that enable individuals to be more creative and efficient—as well as do things never done before. The Apple II has been a powerful start in that direction."

"Apple's customers are finding that both the Apple II and the Macintosh provide excellent value, and that in environments calling for multiple computers, both products work well together for complementary tasks. This co-existence is fostered by the AppleTalk network and many peripherals such as printers, file servers, and disk drives."

—from an "Apple II positioning paper" given to the press by Apple, May 1989

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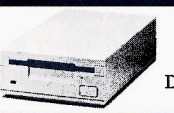

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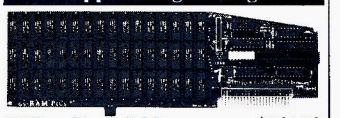

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STATTUS REPORT

APPLES AND ORANGES

By PAUL STATT • SENIOR EDITOR

Give me Bob Lissner or a small litter of Beagles. Lotus can keep its "professional" software team.

APPLEWORKS 3.0 ARRIVED AT OUR OFFICES the same week that Lotus 1-2-3 Release 3 finally made it to stores. I'm no fool—I won't compare the two programs. I've been comfortable with AppleWorks for years, and 3.0 fits me perfectly.

On the other hand, I haven't tried to understand 1-2-3 (an integrated spreadsheet, database manager, and graphics program) for years. I hear that Release 3 prints sideways, has its own programming language, and analyzes three-dimensional spreadsheets. 1-2-3 would obviously win the competition. But you can tell something about an apple even by holding it next to an orange.

Programmer Jonathan Sachs wrote Lotus 1-2-3, by himself, in 1983, for the (standard) 256K IBM PC. "I don't have anything against the team approach, it's just not the way I work best," he said in an interview published in *Programmers at Work* (Microsoft Press, 1986). When he met Mitch Kapor, the man who founded Lotus Development, "the spreadsheet was already done, and within a month I had converted it over to C. . . 1-2-3 began with a working program, and it continued to be a working program throughout its development." Sachs says that's why it was such a success. He knew at every moment during its development what features 1-2-3 had, what he wanted it to have, and what it could do. One man understood the whole project.

Release 3 was released a year late. It's squeezed onto 14 floppy disks that a team of 40 programmers took years to write. I don't know their names. Release 3, according to Lotus, was "redesigned" in C. Whatever else that means, it will be portable. Lotus wants to be sure that Release 3 will work with OS/2, MS-DOS, whatever IBM does next, and probably even the Macintosh someday. Nobody's quite certain what the standard business computer system is. Release 3 requires an 80286 or 80386 microprocessor, a hard-disk drive, and a megabyte of RAM.

Bob Lissner wrote AppleWorks in 1983, alone. After a brief flirtation with the Apple III, AppleWorks settled down with the (standard) 128K Apple II with a single 5¼-inch disk drive. It came on a single disk; AppleWorks 3.0 requires two double-sided disks. AppleWorks 3.0 works on any Apple II—even that 1985-standard 128K Apple II with a single disk drive. It's written in assembly language.

Three programmers wrote AppleWorks 3.0; their names are Alan Bird, Randy Brandt, and Bob Renstrom. They're all employed by Beagle Bros of San Diego. Beagle Bros didn't get the AppleWorks 3.0 contract because Claris' affirmative-action lawyers suggested hiring small dogs. Beagle Bros had already written most of AppleWorks 3.0 as TimeOut AppleWorks accessories. As Jonathan Sachs might say, AppleWorks 3.0 was a working program from the start.

Pundits in the IBM PC and Macintosh industries—often and incorrectly called the microcomputer industry—complain that "hardware is advancing faster than software." IBM, Compaq, Apple, and the rest are building better machines faster than Microsoft and Lotus can write better software for them.

It's too bad that software-industry pundits won't look closely at AppleWorks 3.0: They'd see software pacing its hardware. AppleWorks 3.0 proves how good software can be if it runs on—what can I call it but old?—hardware. Lotus 1-2-3 shows what happens when software developers struggle to remain "state of the art."

A single programmer does the job best, a small team well, and a large team badly. Frederic Brooks wrote an essay called *The Mythical Man-Month* (Addison-Wesley, 1974), proving that if one programmer can write 10,000 lines of code a month, it doesn't follow that 30 programmers can do it in a day. Give me Lissner or a small litter of Beagles. Lotus can keep its professional software team.

By the way, buy AppleWorks 3.0. Don't complain to me that you have to pay $79 to upgrade—if you had bought Lotus 1-2-3 in 1983, you'd have to buy a whole new computer to run Release 3. AppleWorks 3.0 proves there's a future for the Apple II and, more importantly, a chance in the future for a single person (or a small group) to create something of lasting value.□

Man's Best Friend

Yes, InnerDrive has surpassed the dog as "man's best Friend". While InnerDrive may not bring you your newspaper or your slippers, it offers some "dog-gone" good features that make your life a lot easier... like bringing you AppleWorksGS at lightning speed. InnerDrive is the best value of any Apple II hard drive, and no bones about it!

As we've said before, there are two kinds of Apple II users - those who know they need a hard drive and those who don't know they need a hard drive, yet. What we mean by that is, a hard drive is one of those misunderstood peripherals that can greatly increase the productivity and simplicity of your computer, if only you were to realize its potential.

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DEATH AND THE IIGS

Don't panic when your GS' battery dies; it's going to wear out, and it'll happen sooner than you think. Just open up your machine and clip on a fresh one.

By WILLIAM P. KENNEDY, Ph.D.

GS SENILITY

MY GS' CONTROL-PANEL settings have all reverted back to their default (factory-set) states—for instance, the screen colors switch back to white on medium blue. I can still change the Control Panel, and it stays that way only as long as I keep the computer on. Turn the GS off and wham—it's Control-Open apple-Escape time again. Everything else seems to work okay. What's happening? Is this a prelude to disaster?

Steve Muskiewicz
Hudson, NH

Sounds like your GS is getting senile, Steve. And it's not all that old. Fortunately, all it needs is a new battery.

We talked about dead GS batteries in Apple Clinic last March (p. 22), but the case bears reviewing: Your GS battery is going to wear out and it'll happen sooner than you might expect (after about two years of normal use). Just keep these symptoms in the back of your mind so that you can avoid panic: Overnight, your screen's border, background, and text colors change; your cards (except slot 7) don't work anymore; a fast mouse becomes lethargic; the calendar thinks it's January 1, 1912; and so on.

When the inevitable happens, just open up your GS and clip on the fresh battery you purchased for the occasion from Night Owl Productions (5734 Lamar, Mission, KS 66202, $9.95 including installation instructions).

Or, for those of you lacking rudimentary technical skills or the nerve to find out that you lack them, pack up your GS (save your back and leave the drives, keyboard, monitor, and so on home) and take it to your local dealer, who'll install a new battery for you.

GS TEXT COLORS

JUST A QUICK QUESTION: HOW can I use the programming language Applesoft BASIC to change the color of my GS' text and background?

Matthew Huck
Pocatello, ID

Forget Applesoft! Grab a can of spray paint and go wild, Matt.

*Or simply POKE the colors for text and background into a single memory location: POKE 49186, TC*16 + BC, where TC is the text color and BC is the background color. To examine the current colors, use the statements TC = INT(PEEK (49186)/16) and BC = PEEK(49186) – TC.*

As you probably already know, the GS can display colored text characters on top of a colored background, each in 16 different hues. Colors are numbered zero (0) through 15; these values should be used for TC and BC above. Text and background for the entire screen, not just a single character, are changed simultaneously.

RAM CRASH

MY GS IS GETTING WEIRD. Every so often, more so in recent weeks, it just crashes into the monitor when I use GS-specific software such as AppleWorks GS or Paintworks Gold. But it never dies when I use regular Apple II software like 8-bit AppleWorks. Is GS software normally so buggy, or is there something wrong with my computer?

Molly Pistatt
Newborne, PA

There's no hiding the fact that much of the software available for the GS has problems—a bit "buggy," as you termed it, when compared with that for earlier Apple IIs. But the GS is relatively new, and the awesome software you see is made possible by the machine's much more sophisticated hardware and ROM-based support firmware. It takes time and experience to produce such complicated software; let's give the development community a chance to learn and perfect its work for the GS. In the meantime, have patience, send in those warranty cards to the manufacturers, and keep the pressure on them to provide timely upgrades at reasonable prices.

I don't think buggy GS software is your problem, though, Molly. Overheated, corroded, or loose components could be the source (see "Fatal Error 0911" in this column), but I suspect that at least one faulty RAM (random-access memory) chip on your GS memory-expansion card is crashing your GS software.

Most software programmed for earlier Apple IIs uses only the first one or two banks (64K or 128K) of RAM on your GS' main component board (motherboard). The GS uses the other 128K on the motherboard for system-related activities. GS-specific software uses most if not all of that 256K to 6 megabytes of available memory. Because the errors occur only with GS software, the errant memory chips are probably on your RAM-expansion card. ►

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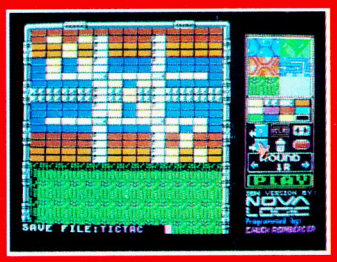

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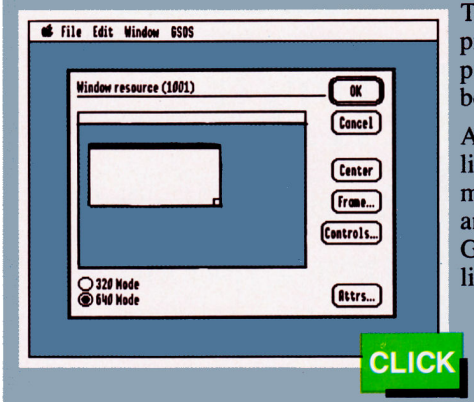

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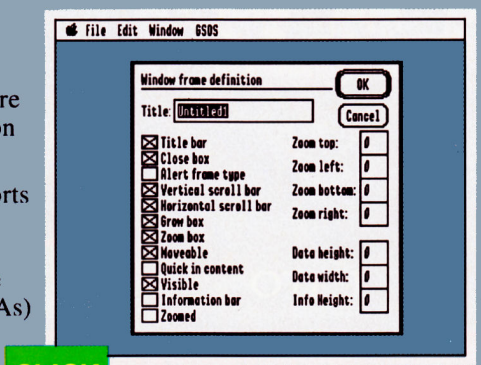

Of course your programming efforts are not limited to only Textbook and Desktop applications. TML Pascal II also allows you to create both New Desk Accessories (NDAs) and Classic Desk Accessories (CDAs) with style. All within the same tightly integrated environment.

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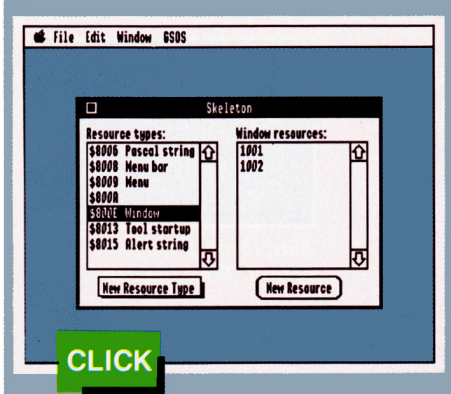

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APPLE CLINIC

Find a competent dealer; locating the faulty RAM chip yourself is almost guaranteed to be frustrating. And heaven help you if several are bad and you attempt to discover them hit or miss. If you're fairly experienced with your hardware, though, a good RAM-card testing program is essential. GTEST is distributed with Applied Engineering's RAM cards; On Three has a RAM tester for the Apple memory card (8920 Yolanda Avenue, Northridge, CA 91324, 818-701-1355). Both display a picture of your RAM card and mark the unused or bad RAM chips graphically so that you can find them easily and replace them. Serious GS owners should learn to use these RAM testers in anticipation of possible problems. You could save yourself a lot of time and money.

FATAL ERROR 0911

I HAVEN'T A CLUE WHAT'S HAPPENing happening or why, but every so often, usually at the least opportune moment, my GS commits suicide with a fatal system error 0911. This didn't start happening until I installed a Fingerprint GSi and a TransWarp card along with my hard-disk-drive controller and internal modem. I use an MDIdeas Conserver to keep things cool, so I don't think it's overheating. What's a 0911 error and what's causing the problem?

Larry Hinz
Burlingame, CA

That cryptic error code means that your Apple Desktop Bus (ADB) toolset (09), which controls peripherals such as the keyboard and mouse, has encountered a system timing error (11).

Several conditions can make your GS strike a discordant note and die, sometimes in 0911, sometimes into the system monitor. The metal connector pins in your mouse and keyboard cables or on the integrated-circuit chips (those bug-like devices plugged into the motherboard or your interface cards) are subject to corrosion and, hence, may weaken or lose contact with their sockets.

Electronic devices, including some in your GS, emit ozone and other corrosive gases. And corrosion is particularly prevalent in cities, where air-borne ozone and acid levels tend to be elevated. Contacts also can degrade as the connectors or chips work themselves up out of their sockets as they're heated repeatedly, then cooled in the course of normal use.

In these cases, reseat the errant cable connections or chips: Press down on each one firmly but gently with your thumb. (Make sure the power's off!) That

Circle 243 on Reader Service Card.

will usually solve the problem, albeit temporarily. Installing a fan will reduce the heat, hence the expansion and contraction that unseat the chips, while removing corrosive gases that can accumulate in a stagnant environment.

The conditions you describe, however, Larry, suggest that the direct effect of heat on your GS' components, exacerbated by the inclusion of a TransWarp card, is the culprit in your 0911 errors. Other readers also have complained of fatal problems with similar equipment.

Apparently, GS timing becomes even more critical in its TransWarp-accelerated state. Heat will force the electronic devices nearer their operating limits — timing included. Although your MDIdeas fan is fine for light duty, you need the industrial-strength air flow of an internal fan to keep components cool. Several companies, including Apple, make internal fans that plug into a power socket right in the GS, eliminating extra line cords and the threat of electrocution. I recommend the Cool-It fan from Cirtech ($49; order from A2-Central, P.O. Box 11250, Overland Park, KS 66207, 913-469-6502).

QUICKIES

Update for July 1989 Apple Clinic double-high-resolution (DHR) graphics program: Clear the entire DHR to black in lines 150 and 170 with the simple statement CALL 62450.

—Robert Strong
Charlottesville, VA

Hi-res picture inverter: Type in from monitor and BSAVE HIRES.INVERT, A$300,L$35. Load a hi-res picture to page 1 ($2000) and BRUN inverter from disk or execute it using $300G from monitor or CALL 768 from BASIC:

```
300:A0 20 8C 0E 03 8C 11 03
308:A2 00 A9 FF 5D 00 32 9D
310:00 32 E8 D0 F5 EE 0E 03
318:EE 11 03 AE 0E 03 E0 40
320:D0 E6 60
```

—John Chiang
Calgary, Alberta, Canada

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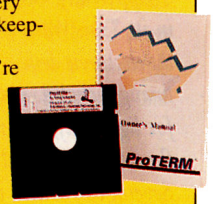

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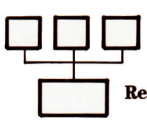

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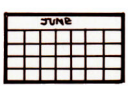

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EASYDRIVE: The complete hard-disk management system for the Apple II. ProDOS 8, 16, GS/OS compatible, and menu-driven. Features include: quick launch, backup/restore, optimizer, and indexing. The treesurgeon utility puts you in control by displaying a map of the directories, the files, and the commands. You see your hard-disk in terms you can understand **$69.95.**

RAMUP: Load AppleWorks, Timeout Series Dictionaries, Proterm and all of your favorites onto your ramcard at once. RAMUP makes using a ramdisk a snap. Menu-driven RAMUP lets you reboot your system to work with unloadable applications like CPM, PASCAL, copy protected games, and then later return to the programs still intact on the ramcard. Features include: backup / restore, auto load, and more. Three years as the top-selling ram disk utility. **$39.95.**

REPAIRWORKS: In a perfect world a program like RepairWorks wouldn't be necessary. Unfortunately the world isn't perfect and for those who have peered tearfully into a monitor filled with the dying gasps of our precious work, it can almost seem cruel. But, don't despair! RepairWorks can soften the blow of cruel fate when it involves your AppleWorks files. RepairWorks will examine your files and surgically remove the offending problems, reducing or eliminating the need to recreate your work. Available on 3.5 and 5¼ disks. **$39.95.**

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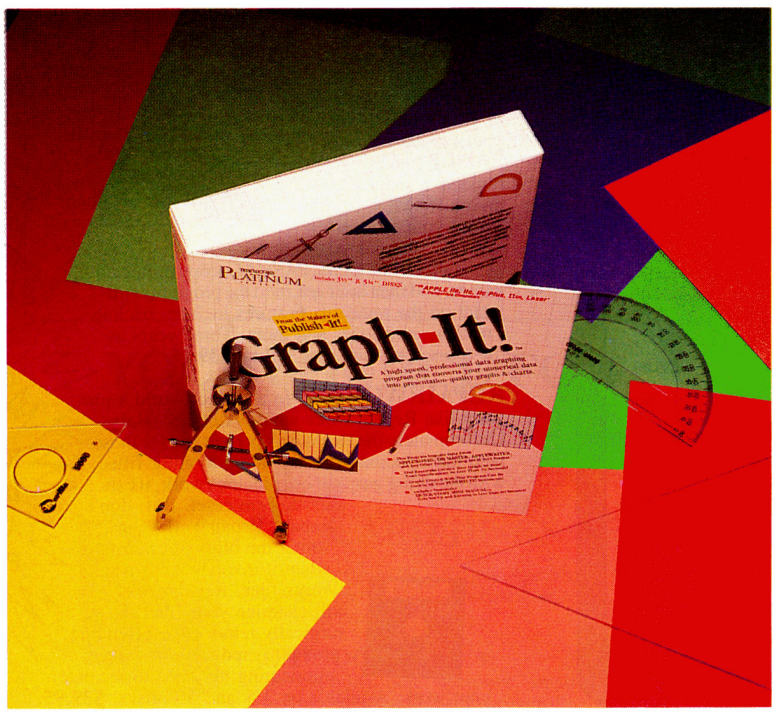

GRAPH IT! 1.0

TIMEWORKS, INC.,
444 Lake Cook Road, Deerfield,
IL 60015, (312) 948-9202

Graphing utility;
128K Apple IIc, IIc Plus, IIGS, enhanced IIe;
$49.95

Rating: ◆ ◆ ◆

Memo to all business users: Do you understand all the numbers in your spreadsheet? Do you need to look at where your company has been and where it's going—but you're buried in printouts and can't see the forest for the trees? Timeworks has a solution. Graph It! transforms all those figures into charts and graphs that can help you understand what your numbers mean.

You can enter data into Graph It!'s spreadsheet-like grid or import numbers from other programs (such as AppleWorks or DB Master) as ASCII text files. Graph It! can handle up to 400 data points in any combination of columns and rows.

When creating a Graph It! chart, you must first indicate how many rows and columns you expect to have. Because you can't change a file's size once you've created it, you'll have to do some planning to make sure your initial settings are sufficient.

The 128-page indexed manual can get you started quickly, and working with the sample data files will help you get your feet wet. Graph It! comes on both 3½- and 5¼-inch noncopy-protected disks.

Initial configuration is easy: Select your printer and interface card by scrolling through a list and highlighting your equipment. The program supports more than 60 printers and nearly that many interface cards.

Graph It! is designed to work with a mouse. (It doesn't support a joystick.) If you're mouseless, you'll spend a lot of time using the arrow keys to move around the keyboard, even though many functions have shortcuts. For example, Open apple-G graphs your data, Open apple-P prints, and so on. The Graph It! package isn't kidding when it says a mouse is "highly recommended."

CHARTING VARIETY

Graph It! produces all the different types of charts you'd expect from such a package, including line, column, and bar charts, as well as area graphs, scatter charts, and stacked-column graphs. The most interesting Graph It! design is a 3-D chart, which gives depth and perspective to your figures. The combination line and column chart, however, connects only the tops of columns. I'd prefer that Graph It! plot one data set as a column and another as a line in the same image.

Graph It!'s strength lies not only in the variety of charts it offers, but also in the control you have over the pictures you create—even down to printing your images in two different sizes and print densities. You can rotate the images, too, which may help you interpret your figures.

The program offers a choice of patterns if you'd like borders around your graphs. You can also include a background, and adjust the spacing between columns and the depth of each individual column. In addition, Graph

Photography • Paul Avis

Live Long and Prosper

Permit us a logical prediction. With Vulcan™, the Apple II series will continue to live long and prosper. Applied Engineering's latest triumph, Vulcan, lives!

Vulcan high-speed internal hard disks for the Apple IIGS, IIe, II+ and II, combines a wide range of upgradeable sizes with the speed and power lacking in other systems. The result? A quantum leap forward into the Apple II future. Finally, a reliable and affordable way to store massive files while speeding up booting time and saving wear on disk drives.

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Easy to use.

Our built-in firmware automatically installs itself as a Desk Accessory for write protection and partitioning. The software we provide lets you easily back up and reformat. Vulcan easily installs under your computer's hood, replacing the Apple power supply with 70 watts of power.

Upgradeable flexibility.

Choose a Vulcan from 20, 40, 100 - all the way to a staggering 200 MEGs. Vulcan is upgradeable, so it can grow as your needs grow. Use virtually any operating system: GS/OS, ProDOS 8, DOS 3.3, CPM or Pascal 1.3. Vulcan supports them all with sixteen partitions (up to four can be accessed simultaneously). Partitioning and backup utilities are included. Choose slot 1, 2, 4, 5, 6 or 7. Even psuedo-slot to slot 7 from elsewhere. Vulcan works on 110/220 VAC, even European 115/230 VAC at 50-60 Hz.

Sheer, raw power.

Vulcan's power supply was custom-designed by Applied Engineering to provide the power lacking in other systems. It checks in at 70 watts, nearly twice the capacity of competing systems . . . enough punch to safely handle a motherboard full of expansion cards. Power components are heatsinked to the aluminum case. To harness all that power, Vulcan contains an ultra-quiet cooling fan. For speed, Vulcan incorporates an ultra-fast 16-bit data bus controller, not an 8-bit like others.

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The ***Laser 128EX*** is the newest Laser Computer. Features include 192K of ram, 128K of user ram, 64K of video ram. Built-in Triple Speed Processor 1 mhz, 2.3 mhz and 3.6 mhz. Able to add up to 1 meg of ram on the internal motherboard. Built-in 5¼ disk drive, parallel port and serial port. Other options included are expansion slot, joystick/mouse port and 40/80 column card. ..... **$449.**

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Activision		**Checkmate Technology** ProTERM *(IIGS,IIe,IIc)*	95.
Teleworks Plus *(IIGS)*	66.	**Compuserve** Compuserve Starter Kit	24.
Applied Engineering EasyLink	85.	**United Software Industries**	
Beagle Bros. TimeOut TeleComm	45.	ASCII: Express Pro: Prodos	72.
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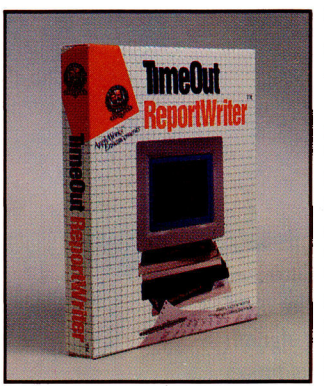

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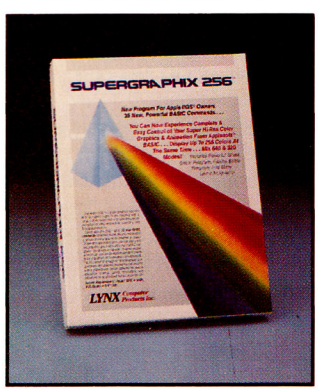

Supergraphix 256 & Music by LYNX Computer

Supergraphix 256 is a powerful, unique, Super Hi-Res graphics, music and animation program for Apple IIgs users. With 36 new graphics and 6 music commands added to Applesoft BASIC, you can access all 4096 colors, 320 and 640 modes, display 256 colors, Draw and Animate shapes, play and digitize sound. Access time, Mouse and print on SHR... Perfect for beginners, professionals, teachers and students. ..... **$69.**

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(Int II+, IIe or IIGS)	183.	Supra Modem 2400 *(Hayes Compatible)*	149.
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Practical Peripherals		U.S. Robotics Courier 2400E	379.
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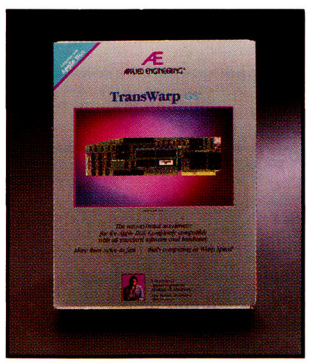

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Centech 3½" DS/DD Color Disks *(box of 10)*	19.	3M 3.5" DS/DD *(box of 10)*	20.
Sony 3.5" DS/DD *(box of 10)*	16.	C. Itoh 3.5" DS/DD Color Disks *(box of 10)*	25.

PRINTERS

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

HyperStudio by Roger Wagner

HyperStudio brings the newest computer revolution to IIgs owners! *HyperStudio* combines Super Hi-Res graphics (from popular paint programs or built-in paint tools), text from AppleWorks, or built-in editor, and digitized sound files from your own hardware or the included hardware, all in one integrated environment. Includes sound digitizing software, digitizer card, microphone and speaker. Create applications from interactive lessons to adventure stories, and more! .... **$95.**

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AT A GLANCE

Instant Synthesizer (September 1989, p. 28, by Sharon Webb), Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171; 768K Apple IIGS; $79.95
Rating: ◆ ◆ ◆ ◆

Instant Synthesizer will tweak your Ensoniq chip as it's never been tweaked before. If your computer's hooked up to a set of amplified stereo speakers, you'll be amazed at the sound quality.

The main screen consists of two parts divided by a piano-keyboard panel. At the top is the Song Machine where you load and play songs, fills, and instruments with a click of the mouse. You can also control the tempo or trigger assorted fills to flesh out a song. By clicking on the transposition arrows at either side of the keyboard display, you can adjust the pitch up or down an octave at a time. Clicking on a note sounds whatever voice you have highlighted above.

Taken for what it is—an adjunct to EA's Instant Music—Instant Synthesizer is an excellent program that can instruct, entertain, and show off your GS. But if you were hoping to hear your GS join in with your bank of MIDI synthesizers to play your sequenced compositions, you'll have to look elsewhere.

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

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

Continued

It! lets you position the main title on the top or bottom, and enter labels on both X- and Y-axes.

While the program scales your graphs automatically, Graph It! also provides a "normalized" scale. This feature plots the smallest figure as a zero, then subtracts the original amount from all other values. In essence, this gives your lowest figure a zero value, then relates all other numbers to that point. A normalized scale is especially useful when all your figures are so close in value they'd plot at about the same point on a standard scale.

On-line help is always available in Graph It!. The manual also offers good advice on choosing a type of chart to use for some specific type of information, as well as a useful glossary of terms.

ALL'S NOT PERFECT

Entering data into the Graph It! worksheet can be a bit awkward, especially if you're accustomed to working with a regular spreadsheet. Rather than moving your cursor to a cell and simply entering your data, you must first click on the cell, type in your number, then press Return to let Graph It! know you're done. Only then can you move to the next cell. Also, the program can't print the data you create in its worksheets.

The biggest problem I have with Graph It!, though, is that it uses exponential notation to display your figures. The manual says it's an "arithmetic shorthand used to handle very big and very small numbers with as few digits as possible." Exponential notation moves the decimal point, so you're working with a smaller whole number. It then indicates how far you'd have to shift the decimal point with a number following a small *e*. Whole numbers do display with fewer digits—12,000 shows as 12.e3, and 30,400 shows as 30.4e3, for instance. But the number 1001 displays as 1.001e.3, and 8888 shows as 8.888e3—hardly a space-saving technique. I'm sorry, Graph It!, but I can't share your enthusiasm for this distracting and unnecessary way of displaying information.

Pie charts appear as egg charts, but the manual advises that Graph It! "does this intentionally so that a correct circle will be created when printed." I'm not convinced that's accurate, because other programs can display a round pie chart. Also, I tried a number of variations in my printouts, including rotated and double-height images, and the pie charts I created with Graph It! still came out a little egg-shaped.

GOOD VALUE?

Graph It! is indeed a workable, easy-to-use system that can create a great variety of charts from your business numbers. The program is easy to learn, and the manual is interesting and well written. Graph It! draws pictures quickly on your screen, and its ability to import information from AppleWorks and other packages is a major plus. The program's 3-D charts are more than unusual—they provide a particularly graphic way to look at information.

Like any other software package, Graph It! has its own way of doing things. I'd like to see it eliminate exponential notation and convert to numbers you can readily understand. Data entry could be speeded up, too; the process is cumbersome without a mouse. On the whole, however, Graph It!'s a good value—it offers a flexible way to examine your data and understand just what all those figures mean.

Gregory Glau
Prescott, AZ

MATH BLASTER MYSTERY

DAVIDSON & ASSOCIATES, INC.,
3135 Kashiwa Street, Torrance, CA 90505,
(800) 556-6141, (213) 534-2250

Advanced-math game;
128K Apple IIe, IIc, IIGS; $49.95

Rating: ◆ ◆ ◆ ◆

It's no mystery why Davidson is so successful. The company's titles have always proved entertaining and educationally sound. Now it latest release, Math Blaster Mystery (Editors' Choice, September 1989, p. 124), is tackling problem-solving and math skills with logic games and word problems.

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AT A GLANCE

Continued

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

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

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

Flodd, the Bad Guy (September 1989, p. 38, by Jeanne Dietsch), Tom Snyder Productions, 90 Sherman St., Cambridge, MA 02140, (800) 342-0236; 128K Apple IIe, IIc, IIGS; $34.95
Rating: ◆ ◆ ◆

The concept behind TSP's Reading Magic Library is simple—you and your child read a story together. The primary differences between this computerized story and a book are that the pictures are animated, your child is addressed by name, and you and your child can select a variety of ways to reach the story's climax.

When the story begins, all's well in the kingdom of Alex and his dog, Ollie. Then Flodd, the Bad Guy, comes to town and empties the water tower. The king and Ollie use magic wishes and their own ingenuity to refill the tower and circumvent Flodd's other nasty tricks.

The plot, characterization, pacing, prose, and artwork are similar to those of the average children's book. Flodd, the Bad Guy is an excellent story for preschoolers.

Like any good book, sharing it with your child will help prepare him or her to read. Parents who don't mind paying more for this storybook will probably find their children delighted.

Continued on p. 102

Four activities, couched in a mystery motif, cover positive and negative numbers, fractions, decimals, percentage, interest, and pre-algebraic concepts. You can choose from four levels of difficulty in each of the four activities. Math Blaster Mystery is aimed at a somewhat higher age group than previous Davidson titles; it's suitable for grades 5–12, depending on the individual's mathematical ability.

ONE STEP AT A TIME

The program's first activity is Follow the Steps. Here Math Blaster stresses inductive reasoning through a series of 100 word problems. Each entry follows a four-step strategy toward problem solving: determining the problem you're asked to find; the information you need to solve that problem; the correct mathematical expression; and the actual solution.

Using a multiple-choice format, each word problem takes a youngster through the step-by-step process. More advanced students, however, can skip any of the first three steps.

Follow the Steps illustrates one of the strengths of Davidson's software and why its products are so highly regarded. This activity not only drills students in math functions, but also teaches them to form a plan of attack—a methodology they can apply to similar problems. You can also create Math Blaster Mystery data disks with the Editor utility.

Math Blaster Mystery's second activity, Weigh the Evidence, challenges students to move a set of weights from one scale to another to achieve a target sum.

Weigh the Evidence emphasizes spatial relationships as well as advance planning. It starts out with four weights on one scale and a target sum shown at the top of the screen. Three of the four numbered weights will equal the desired total. Students must stack those in ascending order on one of the two remaining scales.

Decipher the Code, Math Blaster's third activity, resembles the word game Hangman. Because of this similarity, encouraging students to think of Hangman will help them grasp both the mechanics and nuances of Decipher the Code.

A row of boxes appears at the bottom of the screen, some of them containing mathematical operators (+, −, *, /, =). Students place numbers in the remaining boxes to create an equation. A second row will then appear above the first. Unused numbers turn black, correct numbers in the proper spot remain the same, and correct numbers in the wrong location remain white.

The student continues to fill in boxes with numbers, basing his or her choices on the clues given in the previous row. When the correct equation is completed, the game round is over.

Decipher the Code introduces deductive reasoning and teaches students how to form a hypothesis and test it. Difficulty levels increase the game's complexity by providing more operatives and offering fewer clues.

The final segment of Math Blaster Mystery is Search for Clues. From a pure-enjoyment point of view, this activity is tops, thanks largely to graphics featured in the game play.

Search for Clues is a guess-the-number game. The screen displays a series of Victorian rooms, filled with people and furniture. With the mouse or keyboard, students select an object or person, which becomes animated and displays a clue.

The clue will be something like *N is divisible by 5* or *N is larger than 39*. After the program provides each clue, it asks the player to guess the number. Obviously, the sooner you guess the number correctly, the more points you'll score. Search for Clues reinforces logical thinking and calls on knowledge of math facts and terminology while also subtly stressing inference and "educated guessing."

The last three activities in Math Blaster Mystery don't include an editor for designing your own problems. Through the use of randomizing, the program consistently generates an infinite number of problems, however.

HAVE A CLUE

Math Blaster Mystery includes all the bells and whistles you'd expect in an educational "game." An animated detective appears at the end of each correctly solved problem to provide positive reinforcement.

The program also tracks the number of problems attempted and solved at each difficulty level and "promotes" students from Computation Cadet to Chief Problem Solver (with intermediate levels on the way); a scoreboard appears at the end of each activity, displaying scores and progress.

Other features that enhance Math Blaster Mystery are its ability to print problems and certificates and a built-in calculator to help with computation.

Math Blaster Mystery lets you print all word problems in Follow the Steps in any of three ►

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Audio Animator even has an on-board Analog to Digital converter to sample at an extremely fast rate (37,000 times a second), and with sound quality near that of a compact disk. With it, you'll obtain far higher levels of fidelity than with the GS's Ensoniq chip alone.

Play back on your own speakers

The Audio Animator includes *input/output and thru* for MIDI (Musical Instrument Digital Interface) devices. Play and record melodies on a MIDI instrument, edit them and play them back through any MIDI compatible instrument. If fact, Audio Animator lets you daisy-chain up to sixteen MIDI devices.

Audio Animator comes complete with an external mixer to allow easy access to volume and record levels and microphone controls. Connect a drum machine, keyboard, stereo, CD player, even another computer... all without disturbing the GS.

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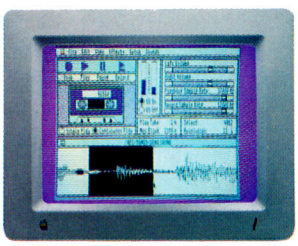

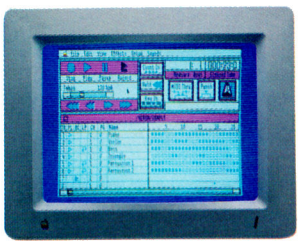

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ways: in their entirety with all steps and correct answers provided; alone without the four steps; or with the four steps but without the correct answers indicated (to allow for creating a printed test).

Students can use the pop-up calculator during any of the four activities. Doing so opens a window with the multifunction calculator. Kids can't transfer their calculations to the main program, however, so they must remember their answers after closing the calculator window. If you like, you can disable the pop-up calculator during any activity.

Math Blaster Mystery's challenging number of problems and the skills they address make for a significant program. True, the game element isn't strong, except in Search for Clues, and the graphics animation is minimal in several of the activities. Still, the wide range of concepts and the varied difficulty levels make Math Blaster Mystery well worth the money in terms of both content and longevity.

James Trunzo
Leechburg, PA

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3444 Dundee Road, Northbrook, IL 60062,
(312) 480-1948

Custom-design and printing program; Apple IIe, IIc, IIGS, printer required; $49.95

Rating: ◆ ◆ ◆ ◆

Just when you thought the Apple II market had an elegant assortment of low-end desktop publishers, along comes another one that will knock your socks off. Certificates and More! from Mindscape is an easy-to-use, menu-driven program that lets you produce one-page awards, worksheets, diplomas, you name it. On-screen prompts and command-key instructions take you through the design process with minimal effort. Within moments after startup, you'll be producing high-quality printouts and useful teaching aids.

MORE AND MORE

Certificates and More! operates equally well with keyboard commands or a mouse, and you can print your results in color on an ImageWriter II with a color ribbon. If you're familiar with Learning Lab's Creative Writing series (Monsters & Make Believe, Dinosaur Days, and so on), you'll recognize Certificates' user-friendly interface. Both were developed by the people at Pelican Software.

The program features all the goodies you'd expect to find in an entry-level design and printing program, plus many more. It offers 20 different border styles suitable for framing

Circle 297 on Reader Service Card.

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

There are 15 fonts ranging in size from 10 to 24 points. You can also print text in standard, outline, or bold style. If you need to set off any printed item with a headline, you'll appreciate the 24-point fonts especially. The well-written user's manual displays each border style, clip-art graphic, and font for easy reference.

The package comes with two double-sided 5¼-inch floppies. One disk boots the program, while the other contains the templates, clip art, borders, and fonts. A 3½-inch single-disk version is also available (eliminates disk swapping). Copy protection on the 5¼-inch program disk prevents you from transferring the software to a hard disk or a blank 3½-inch disk, however.

FLEXIBLE DESIGN

Certificates and More! offers greater flexibility than Springboard's Certificate Maker or Baudville's Award Maker Plus when it comes to positioning text and graphics on screen. You can place design elements exactly where you want them, because the program doesn't restrict you to preset locations.

For instance, to determine how far the cursor will move when you press the arrow keys in text mode, press the open-apple key along with a number from 1 to 9. The smaller the number, the less the cursor will move each time you press an arrow key. You get even more flexibility when you use the mouse instead of the keyboard.

You begin your creation by selecting one of three options from the main menu: Make a new certificate or load either a certificate template or a previously saved certificate file. The ten templates include one that will print a sheet of wide-lined primary paper for penmanship practice, a blank bingo card, and a board game. There's also a checklist, a five-column chart, and a calendar. You can modify any template or previously saved certificate file with the same tools provided for creating a certificate. Refer to the manual for thumbnail sketches of the certificate templates.

If you want to make a new certificate from scratch, you must decide whether you'll print the certificate horizontally or vertically. Certificates and More! provides other display tools as well, such as right and left page rotation and horizontal and vertical flipping.

When it's time to print, you have several other options. Choose *Small* to print the design on a half page. This feature lets you publish two complete certificates on a single 8½-by-11-inch sheet of paper. You can also print your design on a single sheet (*Medium*), four separate sheets (*Large*)—which you'll then have to tape together—or three-quarters of a page (*Tall*). You can also print in draft or high-quality mode.

EXTRA GOODIES

Certificates and More! offers several other nifty features as well. For instance, select *View* from the Tools menu whenever you want to preview the design on screen.

The program offers two options here: *Show Page* presents a reduced display with the entire design on screen; *Scroll Page* lets you view your creation in full scale, using the arrow keys to

Continued on p. 100

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GAME ROOM

THE DUEL: TEST DRIVE II

Accolade,
550 South Winchester Boulevard, Suite 200,
San Jose, CA 95128, (408) 296-8400
Driving simulation;
512K Apple IIGS, joystick recommended; $44.95
Rating: ◆ ◆ ◆ ◆

They call it "The Duel" because unlike the first Test Drive, this game doesn't leave you all alone. I'm not talking about the highway traffic you'll zoom past at 140 miles per hour, or even the cops who'll try their best to catch you. I'm talking about the car you're trying to beat across the finish line (or to the gas station, as the case may be).

You race against another car driven by a human or computer-controlled opponent. (You can also take the easy way out and race against the clock—but you'll miss the competition.)

Pick the Ferrari F-40 and race against the Porsche 959—or vice versa. You can even race against the same car driven by someone else—a true test of your driving prowess. Either way you'll have to pound on the gas pedal, keep your hands tight on the wheel, and glue your eyes to the road.

You could almost consider The Duel a flight simulation. That's how fast things move when you're at the controls of one of these ultra-high-performance sports cars.

Everything's been improved since the first version—the graphics, sound effects, music, speed of play, responsiveness, and variety of scenery. (Accolade has also simultaneously released The Supercars, which gives you five additional rocket sleds from which to choose, and California Challenge, which takes you on a seven-leg journey down the California coast.)

The driving experience in The Duel is amazing. As you scream down the highway, trees and road signs whip by your window in a blur; cars you pass disappear in your rear-view mirror in a heartbeat; and—most satisfying of all—when the police start chasing you, you can just stomp on the accelerator and wave goodbye in a flash.

You'll find yourself leaning in your chair as you fly through high-speed corners. You'll blaze down desert highways, twisting mountain roads, and through cavernous tunnels.

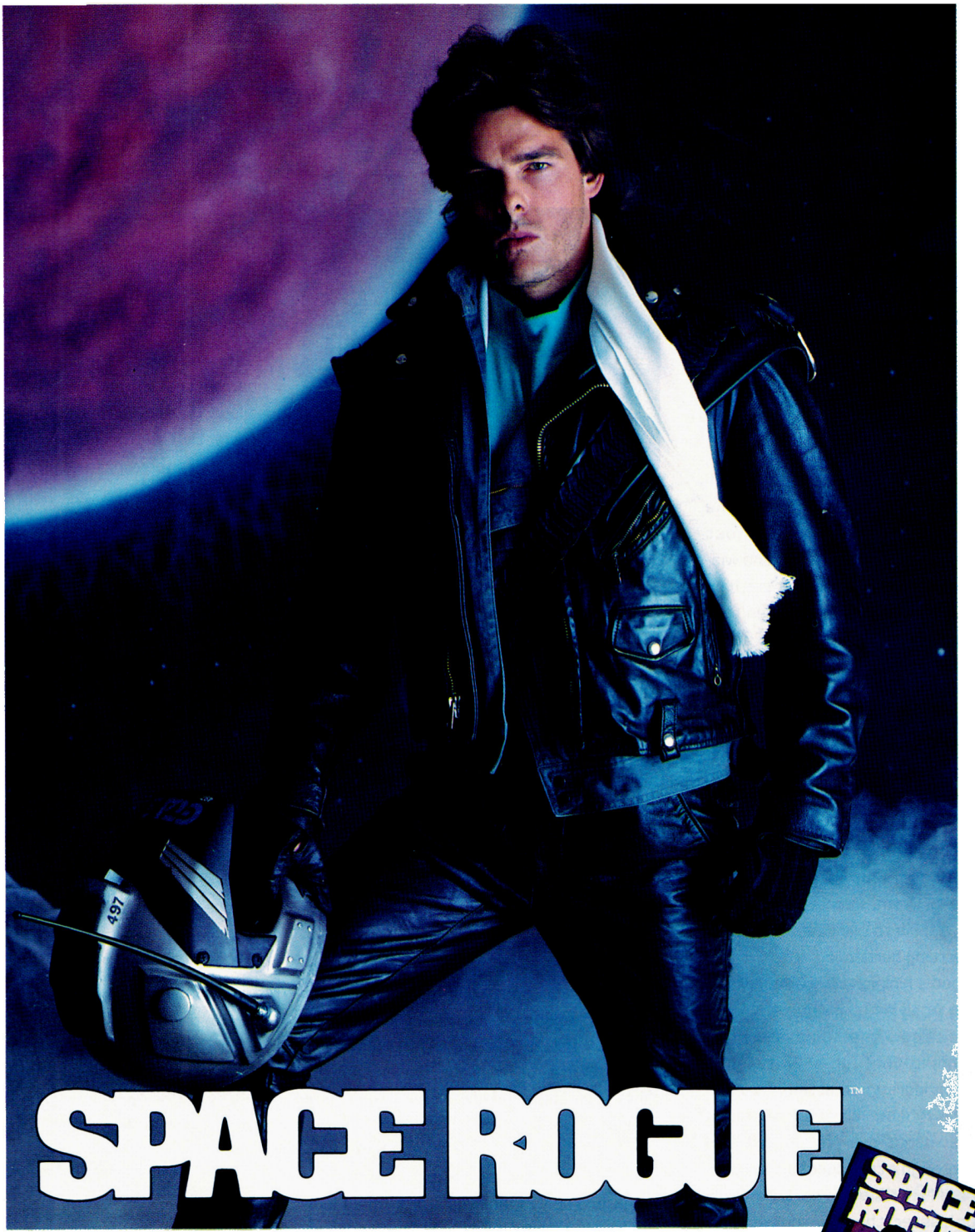
When you finally come to a stop at the gas stations along the way, you'll get a score sheet showing how you did in the last leg and how you've done overall.

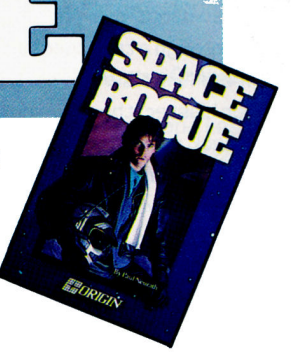
I'll admit it—I went into the side of the mountain and over the cliff more times than I care to remember. It's a good thing I really don't have a $200,000 car to play with. I'd be extremely hazardous to my own health (not to mention the health of anyone within a 50-mile radius).

Until I write a few best-sellers, I'll content myself by taking one of the cars in The Duel out for spin. That's enough of a hair-raising experience for now.

Lafe Low
***inCider* staff**

Photography • Paul Avis





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Tip Sheet

This month we introduce the "Tip Sheet" section of *inCider*'s new and improved Game Room entertainment review section. If you're trapped, mystified, or stuck, look here for help. On the other hand, if you've found a trap door, shortcut, or any other helpful hint for getting through a game, let us know and we'll print it here in Tip Sheet.

James Hockenberry of Carlisle, Pennsylvania, has a hint for getting through level 12 of the arcade action game **Warlock**, from 360 Pacific. He just blazed right ahead, shooting at the wizard repeatedly and jumping over the fireballs he shoots off. When you can't go any further forward, wait until he pokes his head out again and let him have it. It takes precise timing, but according to James, you should be able to hit him.

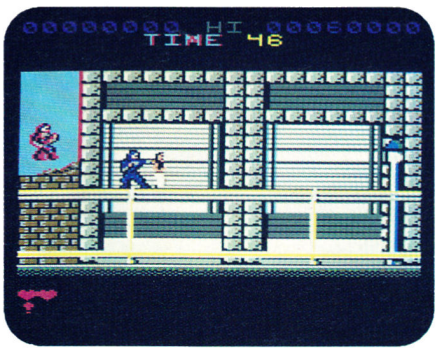
Chris Spencer of Fort Worth, Texas, has a trick for getting by the dragon in the first level of Activision's **Last Ninja**: Go to the far left-hand corner of the screen, throw a smoke bomb, then hurry past the dragon. That ought to help out all of you who, like me, were stuck on that first level, unable to get past the dragon without getting barbecued.

We've got a hint for the game **Aliens**, also from Activision, if you're playing Ripley. You know the sequence when she's running through that twisted maze of corridors in an attempt to find Newt? When you run through the hive of alien eggs, scoot over to the left and you'll go through a trap door into the corridor where Newt's being held. Be ready with your blaster, though—you won't be able to back up if there are any hungry aliens waiting on the other side. Once you've found Newt and are trying to bring her back, only to be thwarted by the queen alien, try moving over to the left, shooting a few rounds, and dashing by when the queen alien moves.

Remember, if you have a tip or hint you'd like to share with all the other game players out there, send it along to Tip Sheet, c/o *inCider*, 80 Elm Street, Peterborough, NH 03458. Thanks!□

—Lafe Low

BAD DUDES



Data East,
1850 Little Orchard Street, San Jose, CA 95125, (408) 286-7080

Fantasy role-playing adventure; 128K Apple IIe, IIc, IIGS; joystick required; $34.95

Rating: ◆ ◆

Are you "bad" enough to save the President? Do you have what it takes to beat countless numbers of ninja henchmen, vicious dogs, and samurai warriors? Data East thinks Bad Dudes is the challenge you've been looking for.

You've been called on to rescue the President, who has been kidnapped by the Dragon Ninja and will soon be flown out of the country. To save him, you'll have to fight your way through hordes of villians with your bare hands and whatever weapons you find along the way. There are seven levels to work through—the city, the big rig, the sewer, the forest, the freight train, the cave, and finally the factory. At the end of each level, you'll have to fight a super warrior.

Graphics screens are rather weak here; characters are small and their features hard to distinguish. The weapons you'll pick up all look similar, so it's hard to tell what you've taken. The backgrounds are well drawn, but the characters are more important. Use a color screen—monochrome will just make things worse.

Animation is lacking; characters slide along rather than walk or run. When you jump, you hang in the air for a few seconds—just enough time for your opponents to surround you when you land. When you finally get to hit someone, you can often strike an opponent who should be out of reach, but miss someone nearby. You'll die early and often in this game.□

Tim Moore
Metairie, LA

Short Takes

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

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

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

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

Impossible Mission II (September 1989, p. 100, by Joe Abernathy), Epyx, P.O. Box 8020, 600 Galveston Drive, Redwood City, CA 94063, (415) 366-0606; 512K Apple IIGS; $19.95
Rating: ◆ ◆ ◆ ◆

Impossible Mission II includes a great combination of arcade-style action and strategy with clean stereo sound and fluid animation. This is a nice change from straight shoot-'em-ups— you have to use your wits and your reflexes.

Correction

In our September column (pp. 98–100) each game we played somehow lost a star along the way. Correct ratings are four stars for Crystal Quest, three for Déjà Vu II, and four for Impossible Mission II.

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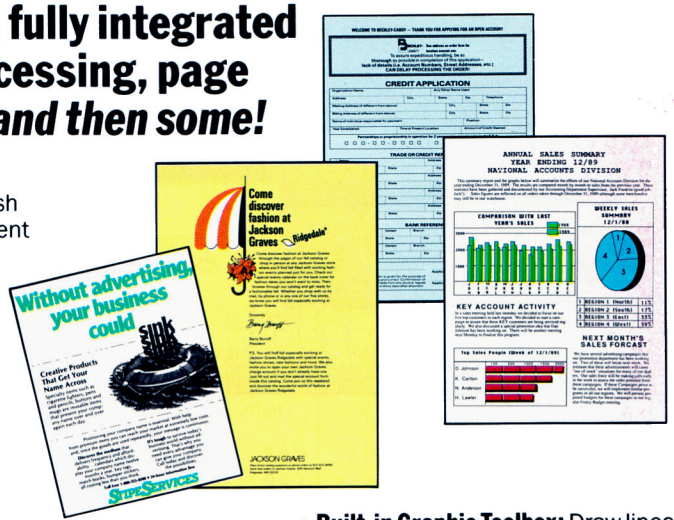

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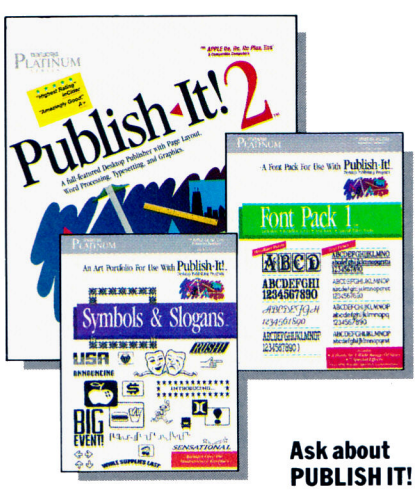

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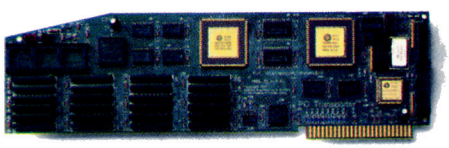

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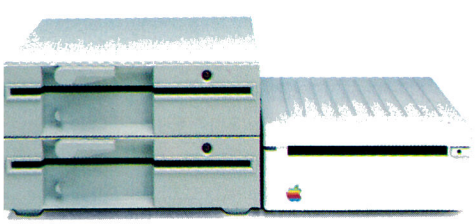

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WHERE THE

By CYNTHIA E. FIELD, Ph.D.

BAEDEKER'S GOT NOTHING ON YOUR Apple II. Whether you're livening up geography lessons or dreaming of your next vacation, at least *two dozen* software programs offer you the opportunity not only to "visit" near or distant lands, but to appreciate their respective cultures, as well. A variety of formats, storylines, and settings will have you chasing crooks across Africa one day and talking to Bogie the next; then it's on to a diplomatic crisis in Asia or a comparison of populations and resources among allies and adversaries in Europe. Tobago, Tunisia, Tampico, Tashkent—countries you've read about, cities you've wondered about, places you've never even heard of before—all come alive on your screen.

The undisputed "grandmommy" of geographic simulation programs is probably Broderbund's **Where in the World Is Carmen Sandiego?**, a playful adventure game that will keep you happily sleuthing for hours on end. (See the accompanying product-comparison **Table** to determine each program's hardware requirements.)

Carmen and her V.I.L.E. (Villains' International League of Evil) gang display a penchant for lifting national "treasures"—such as the Abominable Snowman from Kathmandu. Log in at the Acme Detective Agency, accept your assignment, and catch the thief within the time limit listed. A string of successful captures guarantees you a promotion up the ranks.

The program's factual information helps you learn more about each city you visit in pursuit of the perpetrator. While there, solicit clues from the likes of hoteliers, waiters, sports-club managers, and airport personnel. Tips are purposely cryptic: A library archivist, for example, may offer, "He checked out all books about Sikh temples." To pinpoint the thief's destination, dig deep into the *World Almanac and Book of Facts*, a handy everyday reference work that accompanies the program.

Other information you glean, such as a crook's penchant for mountain climbing, gives you insight into his or her personality. The program manual incorporates a printed dossier on card-carrying V.I.L.E. members like Merey LaRoc, the free-lance aerobic dancer. When you think you've correctly deduced the thief's identity, work the Interpol Crime Computer to obtain a search warrant. Be quick—if an investigation takes too long, slick guys like Fast Eddie B can slip right through your fingers before you know it.

The special GS version of Where in the World plays the same way, but the program's graphics and sound effects are superior, as you might expect. Use the mouse to click on icons and to pull down menus—such as Dossiers, which accesses each suspect's mug shot and rap sheet.

Where in the USA Is Carmen Sandiego? and **Where in Europe Is Carmen Sandiego?** are less global in scope. The domestic game features more than 1500 clues and 16 suspects, including "lobsterman and safe cracker" Titus Canby. The program comes with a copy of *Fodor's USA* travel guide. The European game covers 34 nations, introduces a whole new slew of suspects (including Chips Motherboard, who "tapped his grandmother's hearing aid when he was six"), and packs the *Rand McNally Concise Atlas of Europe*.

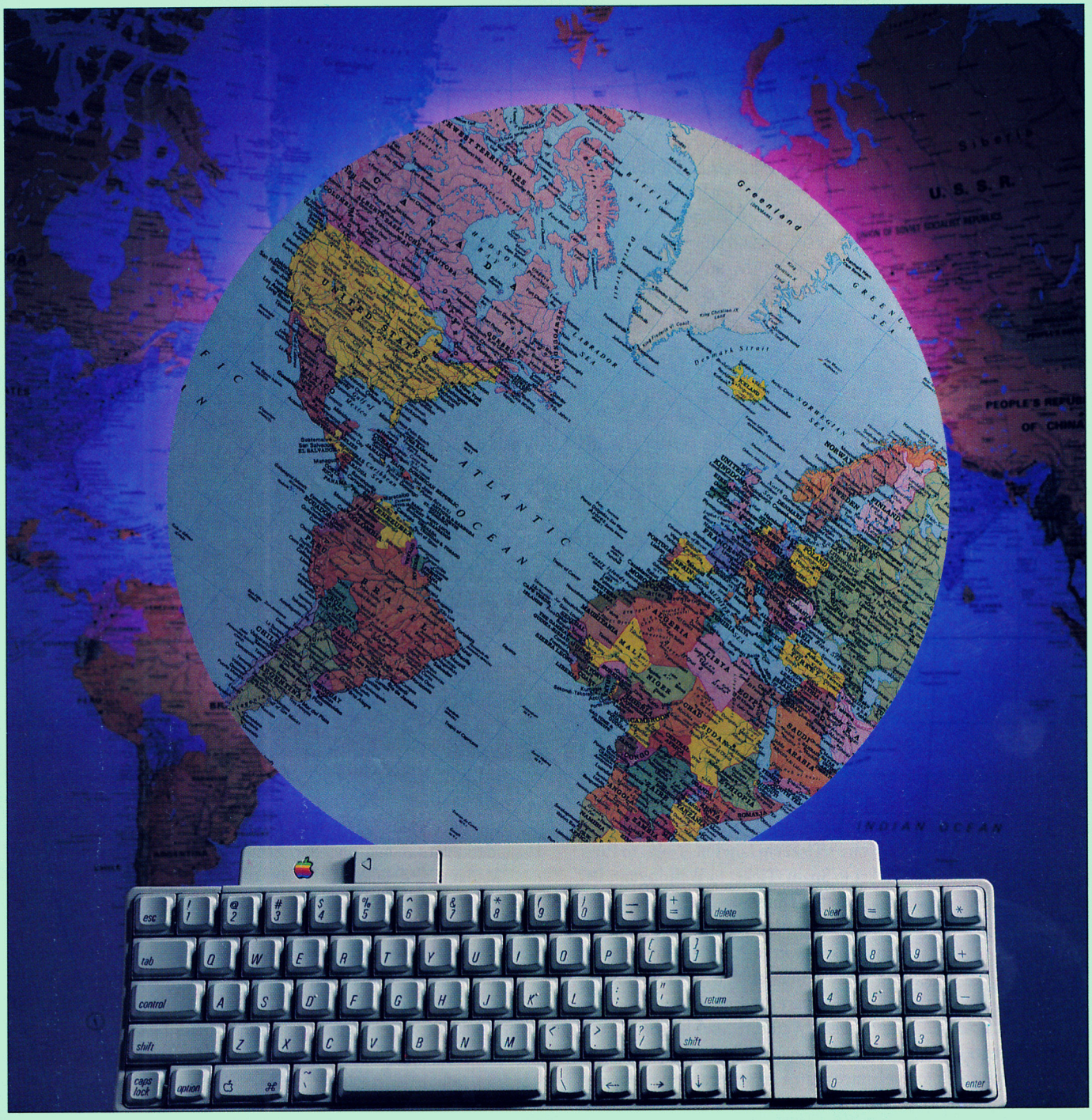
Go first class on a shoestring—around the globe with geography software. For armchair travelers and accidental tourists, students and amateur explorers, your peripatetic Apple II's your passport to new frontiers.

Sleuths in hot pursuit of a more historical perspective should spy Broderbund's newest release, **Where in Time Is Carmen Sandiego?**, said to "bring history to life" via its focus on events that occurred during the period from 400 A.D. to the 1950s. According to a Broderbund informant, who says the program should be ready by the time you read this, Carmen's gang will be stealing, among other treasures, the Magna Carta and Queen Isabella's jewels. (See "History Mystery" in this month's What's New, p. 21.)

If low-budget travel is your aim, The Spy's Adventures series from Polarware is your ticket to entertainment. Each randomly generated game in **The Spy's Adventures in Europe**, **The Spy's Adventures in North America**, and **The Spy's Adventures in South America** pits you against Dr. Xavier Tortion, internationally infamous jewel smuggler. Finding Dr. X isn't easy: Both time and money—appropriately converted to native currency in each land—are limited.

As Agent H2O, you select the country (among the 29 featured in the European program, for instance) where you'll begin your search. The Spy's Adventures boast full-screen graphics scenes. When you

HECK AM I?



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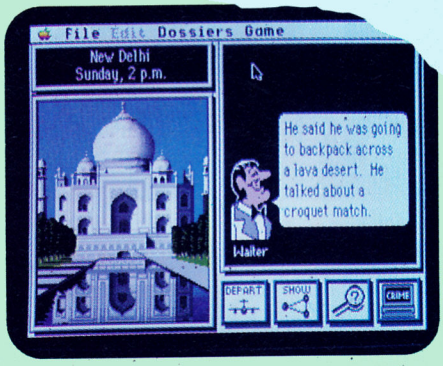
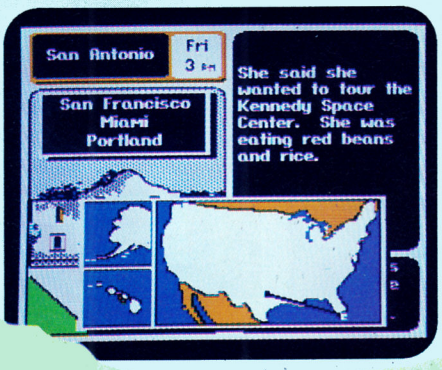


Super-hi-res graphics makes Where in the World Is Carmen Sandiego? (GS version) a delightful romp for sleuths of all ages.



Track Carmen across the States in Where in the USA.

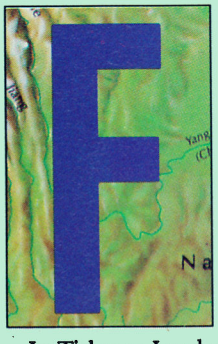
arrive in Paris, for example, the script below the Parisian cityscape reads, "Paris is the busy and famous capital of France. You can see the Eiffel Tower, built in 1889 for Paris' World's Fair."

Investigative efforts may sometimes prove fruitless. That's not to say humorless, however. If you're tempted to sample wine during your travels, for instance, don't be surprised when the vintner warns, "Better not—you have to stay alert in the spy business."

When least expected, informants pop up and offer you the chance to barter jewels you've purchased along the way for letter clues befitting TV's *Wheel of Fortune*. If a completed clue reads "BLUE MOSQUE," for instance, you'll know that Dr. X is in Turkey—or at least you will with practice.

> "Jet-setting Apple II enthusiasts really do have the world at their fingertips! Geography software sparks a lifelong interest in foreign lands, distant peoples, and different ways of life around the world."

The Spy's Adventures add yet another twist: You can play alone or with fellow spies—either cooperatively in a network or competitively as spy against spy.



Fun and games aside, if you prefer more realistic simulations, be sure to pack Blue Lion Software's **Ticket to London**, **Ticket to Paris**, **Ticket to Spain**, **Ticket to Washington, DC**, and **Ticket to Hollywood** in your electronic carry-on bag. Maps, screen displays, and storylines vary in each Ticket program, but the underlying *raison-d'etre* remains the same: to impart an appreciation for geography, history, culture, and language.

In Ticket to London your objective is to obtain the plane ticket you need to return to the United States. As you traverse the byways of London, bobbies and taxi drivers are sure to quiz you on English history, food, politics, and colloquialisms. Select appropriate responses from the multiple-choice "mouth bubbles" in screen dialogs. Answer adequately and receive a hint about where to find, of all things, a bowler hat!

When you track down the hat, it provides you with a factual clue pertaining to a famous English person. Piece together the clues, return to Victoria Station, and type the mystery person's name. You'll soon be winging your way home to the States!

Ticket programs track your status in time, physical well-being, and money. In London, it seems to rain a lot in May; you don't have any time to waste recuperating in your hotel room!

Watch your pounds (in both senses of the word): Eating at Simpson's *really* costs, but meals at the Dickens Inn are more reasonably priced. As the days pass, there'll be books to buy and theatre tickets to purchase, so conserve funds by choosing your mode of transportation wisely.

Ticket to Paris and Ticket to Spain add even more international flair to simulated journeys—you can play in French and Spanish, respectively. Before they give you the clues you need to find your errant cousin (Paris) or your family's heirloom (Spain), hoteliers, travel agents, and natives will ask you to converse in *their* language or to translate phrases. In Ticket to Paris use the on-line dictionary; in Ticket to Spain, refer to the phrase book included in the box.

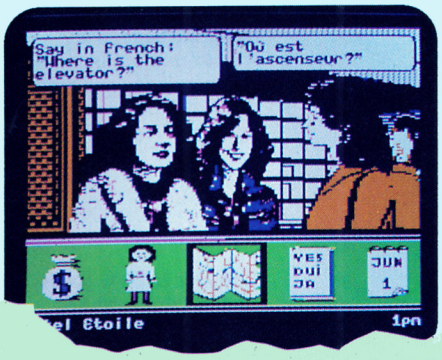
Ticket to Washington brings your exploits a little closer to home. Study the program's seven maps and visit some four dozen places in the capital to gather clues about the identity of a famous American.

Meanwhile...on the West Coast Ticket to Hollywood has you traveling around Tinsel Town in search of the clues you need to identify a mystery film star. Answer questions posed by the Movie Madame and follow leads you discover in the tabloids. Ticket to Hollywood sports six maps with about three dozen locations and more than 2000 facts pertaining to 80 years of film history.

Another Blue Lion program, **RSVP**, serves as a unique store of information about world customs, etiquette, and propriety. Use RSVP for drill-and-practice in decorum, or play a simulation.

Select a career in politics, the arts, publishing, or another field. Work your way to the top by choosing the most diplomatic course of action in the situations presented. Ironically, some of the negative feedback the program gives seems to be more snide than helpful

You'll practice your French when you buy a Ticket to Paris.



You'll travel to many an ancient Iberian city in your hunt for a family heirloom in Ticket to Spain.

("Lost track of the fast track?"), but the program is a unique resource for rehearsing more than 700 situations in 17 categories and 18 countries—without really stepping on anyone's toes.

Back on home turf, Compu-Teach's "traveling game," **See the U.S.A.**, provides a wealth of opportunities for children to become familiar with the relative locations of the 50 states and their capitals.

In Practice mode, move the cursor from state to state on the hi-res map while the program displays the state's (or capital's) name. In Play States, try to complete a trip from Alaska, say, to Rhode Island by moving only through contiguous states. In Play Capitals, your trip progresses from city to city. In either case, See the U.S.A. charts your course on screen. If you get stuck on names, check *Cram's Quick Reference Map of the United States*, the detailed, wall-sized map that comes with the program.

A standard See the U.S.A. game is played against an imaginary clock, but you can elect to set no deadline. Upon reaching a destination, you're entertained with one of 100 full-screen paintings depicting scenes characteristic of the state.

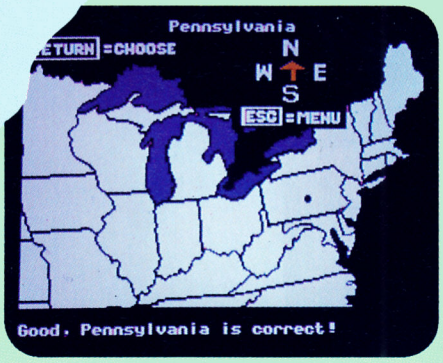
See the U.S.A. offers an editing utility for creating quiz-question files. Students select from these files when they choose the Quiz Game option from the main menu. A sample disk includes questions on topics such as Famous Places, State Flowers, and State Mottos.

What if seeing the U.S.A. in super-hi-res is more your style? Take Orange Cherry's **Global Express Atlas: The United States** for a test flight. In this simulation, you're a Global Express jet pilot delivering cargo from New York City to various destinations.

State maps are as stunning in appearance as you might expect from this GS-specific program. Pull down the Information menu to determine a destination state's capital city, to activate the route your jet will take, or to open the Tourist Data information window. Click

PRODUCT	MEMORY	FORMAT	AGES
Atlas Explorer	128K	5¼ or 3½	8–18
GeoWorld	64K	5¼	10–18
Global Express Atlas: The United States	512K GS	3½	10–adult
Global Express Atlas: The World	512K GS	3½	10–adult
National Inspirer	64K	5¼ or 3½	10–18
RSVP	128K	5¼	14–adult
See the U.S.A.	64K 2 drives 128K 1 drive	5¼	8–adult
Spy's Adventures in Europe	64K	5¼	8–adult
Spy's Adventures in North America	64K	5¼	8–adult
Spy's Adventures in South America	64K	5¼	8–adult
Ticket to Hollywood	128K	5¼	14–adult
Ticket to London	128K	5¼	10–adult
Ticket to Paris	128K	5¼	12–adult
Ticket to Spain	128K	5¼	12–adult
Ticket to Washington DC	128K	5¼	10–adult
Where in Europe Is Carmen Sandiego?	128K	5¼ or 3½	9–14
Where in the USA Is Carmen Sandiego?	128K	5¼ or 3½	9–14
Where in the World Is Carmen Sandiego?	128K	5¼ or 3½	9–14
Where in the World Is Carmen Sandiego? GS	512K GS	3½	9–14
World GeoGraph	768K GS	3½	12–adult

Link up with Canada's finest in Spy's Adventures in N. America.



See the U.S.A. gives young geographers practice in identifying states and capitals.

on choices in the Options menu to depart or to obtain ground clearance.

In Global Express Atlas: The World it's international shipments—such as paintings to the United Kingdom or earthquake-relief supplies to Turkey—that you're delivering. To "qualify" for ground clearance, activate the Language Translator. Global Express calculates the tariff on your cargo in units of local currency.

No question about it: Global Express Atlas programs are attractive in their appearance and appealing in their sound effects (which include some digitized human speech). But instead of challenging you to navigate routes, plan your time, translate words, or calculate exchange rates, the programs fly on autopilot, resulting in a learning environment that's at once disarmingly handsome and distressingly shallow.

Let's say you're a mouse potato who prefers to pursue geographic studies in a more traditional way. If so, investigate Springboard's **Atlas Explorer** and MECC's **World GeoGraph**.

Atlas Explorer features multiple layers of on-screen maps. Click on Europe on the world map to see an enlarged view of the continent. Click on the United Kingdom for a closeup of the region. Click on Scotland to zoom in on that country.

Programmed in mousetext, the Atlas Explorer screen is black-and-white only and sports three pull-down menus: Apple, Play, and Review. The mouse is recommended, but keyboard alternates suffice.

Atlas Explorer's integrated database contains information compiled from sources such as the *1988 Demographic Yearbook*, published by the United Nations. To access a given country's record, select the Begin Tutorial option in the Play menu. Each country's profile includes its capital city, size, population, currency, and native languages.

Quiz options let you test your memory and track your progress. The Review pull-down lets you go over questions you missed and retake quizzes. A Record Keeping utility lets teachers save student progress reports on data disks.

Arguably the most sophisticated of the programs reviewed here, World GeoGraph is a "gotta-have" for any serious student of geography or for any classroom equipped with an Apple IIGS. (See "Databases in Disguise," Field Trip, September 1989, p. 102, for details.)

From the moment you double-click on the globe icon at the GS/OS Finder screen, you can't help but be impressed with World GeoGraph's superiority, an opinion obviously shared by the Software Publishers Association, which recently honored the program with its Best Education Program award.

World GeoGraph is an electronic atlas of super-hi-res, full-color maps enhanced by a 55-category interactive database. Use plain-English selection rules contained in dialogs to search and sort information pertaining to the 177 nations included in the program's database.

Zoom in for a closer look at a continent or a region, or select a theme map—climate, population, and so on. Display an individual country's Data Card, or expand your relative knowledge of nations by generating a Data Table. And at the click of the mouse, World GeoGraph can display selected tabular data in bar-graph form.

Among World GeoGraph's most appealing features is its ability to print *everything*—raw data, tables, graphs, and full-color maps—for inclusion in research reports.

PRODUCT INFORMATION

Atlas Explorer
Springboard Software
7808 Creekridge Circle
Minneapolis, MN 55435
(800) 445-4780
(612) 944-3915
$49.95
$100 lab pack (5 disks)

GeoWorld, $79.95
$240 lab pack (10 disks)
International Inspirer, price undetermined at press time
National Inspirer, $69.95
$140 lab pack (5 disks)
Tom Snyder Productions
90 Sherman St.
Cambridge, MA 02140
(800) 342-0236
(617) 876-4433

Global Express Atlas: The United States, $49
Global Express Atlas: The World, $79
Orange Cherry Software
Box 390
Pound Ridge, NY 10576
(800) 672-6002
(914) 764-4104
$125 both

RSVP
Ticket to Hollywood
Ticket to London
Ticket to Paris
Ticket to Spain, $39.95 each
Ticket to Washington, DC, $44.95
Blue Lion Software
90 Sherman St.
Cambridge, MA 02140
(800) 333-0199
(617) 876-2500

See the U.S.A.
Compu-Teach Inc.
78 Olive St.
New Haven, CT 06511
(800) 44-TEACH
(203) 777-7738
$49.95
$99.95 classroom edition (5 sets)

Strategic planning helps your team collect resources and commodities in National Inspirer.

World GeoGraph: super-hi-res atlas and interactive database.

lthough nearly all programs described so far are appropriate for home or school use, Tom Snyder Productions' **National Inspirer** and **GeoWorld** are intended specifically for the one-computer classroom.

National Inspirer is one of those rare programs that defies our proclivity to pigeonhole things. Does National Inspirer teach geography? Resource economics? Teamwork? Or all three, as groups of students work together planning multistate sweeps across the U.S.?

Each team's goal is to collect assigned resources and commodities like copper or corn, gold or grain. Upping the ante, the program requires that each team's final move take it into a state with a specified population, area, or elevation.

Planning is key: Number of moves and time to execute them are limited. Chart your course strategically with the help of resource materials like the reproducible maps in the manual.

According to Althea Kaemmer, TSP's director of marketing, the company plans to release **International Inspirer**, a world-geography version, by the time you read this.

Now if you don't miss a beat seeing the words *geography* and *igneous* in the same sentence, you're the kind of teacher who should take a close look at GeoWorld. This "World Mineral Exploration" simulation—part of TSP'S Living Database series—sends students on hypothetical geological expeditions in search of any of 15 mineral (or fossil fuel) resources, ranging from *aluminum* to *zinc*.

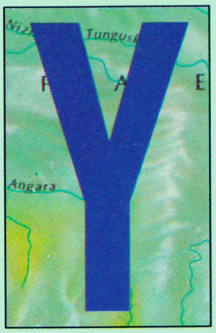
Once again TSP ventures beyond "mere" geography. Evaluating simulated test results, interpreting charts and diagrams, and deciding optimum mine sites are among the skills your students can hope to acquire. Other skills—such as reading maps and keeping track of research budgets—seem to come to them as if by accident with programs like these. The result? Whether you integrate GeoWorld into your geography, earth-science, or social-studies class, your students can't help but be enriched by the experience.

The Spy's Adventures in Europe
The Spy's Adventures in North America
The Spy's Adventures in South America
Polarware Software
1055 Paramount Parkway
Suite A
Batavia, IL 60510
(800) 323-0884
(312) 232-1984
$17.95 each

Where in Europe Is Carmen Sandiego?
Where in Time Is Carmen Sandiego?
Where in the USA Is Carmen Sandiego?
Where in the World Is Carmen Sandiego? GS
$44.95 each,
$54.95 each school edition
(teacher's guide, backup disk)
$109.95 each lab pack
(teacher's guide, 5 disks)

Where in the USA Is Carmen Sandiego? GS, $49.95
$59.95 school edition
(teacher's guide, backup disk)
$119.95 lab pack
(teacher's guide, 5 disks)
Where in the World Is Carmen Sandiego? IIe/IIc, $39.95
$49.95 school edition
(teacher's guide, backup disk)
$99.95 lab pack
(teacher's guide, 5 disks)
Broderbund Software
17 Paul Drive
San Rafael, CA 94903-2101
(415) 492-3200

World GeoGraph
MECC
3490 Lexington Ave. North
St. Paul, MN 55126-8097
(612) 481-3500
$139

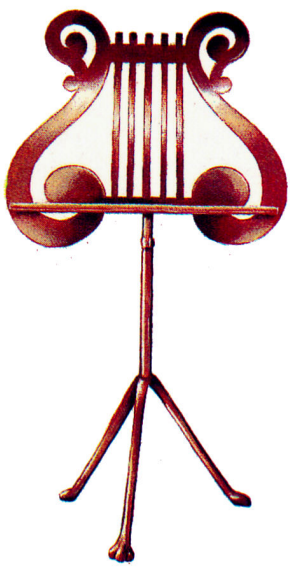


ou've got nearly two dozen "geography" programs to choose from—jet-setting Apple II enthusiasts really do have the world at their fingertips! Abilene to Zanzibar, Abu Dhabi to Zagreb in a week, a day, or an hour: Nothing beats the experience of travel—at home or abroad—but if you can't get there from here just at the moment, boot up a program and dream. Let your kids in on the fun—geography software will almost undoubtedly spark a lifelong interest in foreign lands, distant peoples, and different ways of life around the world. The next time Karl Malden says, "Don't leave home without it," you may even be tempted to think he's referring to your Apple II. Bon voyage!□

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

Face the Music

A symphony of hardware and software products for novices, students, and pros will help you turn your II into a rehearsal room or a recording studio. From baroque and the classics to jazz, pop, and rock, the sound of Apple music is garnering rave reviews.



By Sharon Webb

BACK IN 1983 WHEN THE ALF MUSIC card for my Apple II arrived, I opened the package with trembling hands—this ALF synthesizer was going to turn my computer into an honest-to-God musical instrument. But anxious as I was to plug it in and hear it play, I took a few minutes to look at the manual, and on the first page I read this: "The amazing thing about a Dancing Bear is not how well he dances; but that he can dance at all."

But surely this was no dancing bear. Patched into my stereo system, the ALF filled the house with sound. It didn't matter at all that the card's square-wave synthesis made everything sound like an organ. This was state of the art—a giant step over the Apple II's humble musical beginnings.

In the Apple II's infancy all the so-called "music" there was came bundled with the machine: the Applesoft BASIC command PRINT CHR$(7), which made the tiny speaker emit a beep. With judicious loops and PEEKs and POKEs you could program siren sounds and bird warbles and, with patience, even a tune or two. But the amazing dancing bear was still clumsy at best.

Time and technology have tamed the beast. Today the Apple IIe and II Plus have learned exciting new tricks, and the GS with its superior sound can bring concert-quality music into your home. Through the magic of MIDI (an electronics standard known as *musical-instrument digital interface*) the Apple II has become a tool that lets professional musicians create original television and film sound tracks, and makes even weekend hobbyists sound terrific.

So what's out there? What kind of hardware and software should you buy to get started in music? Well, that depends on what you want to do. Do you own a MIDI synthesizer? Are you a music teacher or a composer? Maybe you're a beginner hoping to learn to read music and play a few tunes. Or maybe you'd just like an impressive showcase for your Apple. Whatever your goal, there's a program for you.

Before we take a look at the hardware and software available, first a caveat for Apple IIGS owners: Although the majority of music programs designed for the IIe and II Plus can run on the GS, they won't take advantage of the Ensoniq sound chip, and they won't display super-hi-res pictures. If you want to activate your GS' sound and graphics, you must run GS-specific programs.

Now a warning: Sound files and music programs may be hazardous to your RAM disk's health. It's not the software's fault; it's the way your GS handles sound data. Best bet is to disable your RAM disk before running music software.

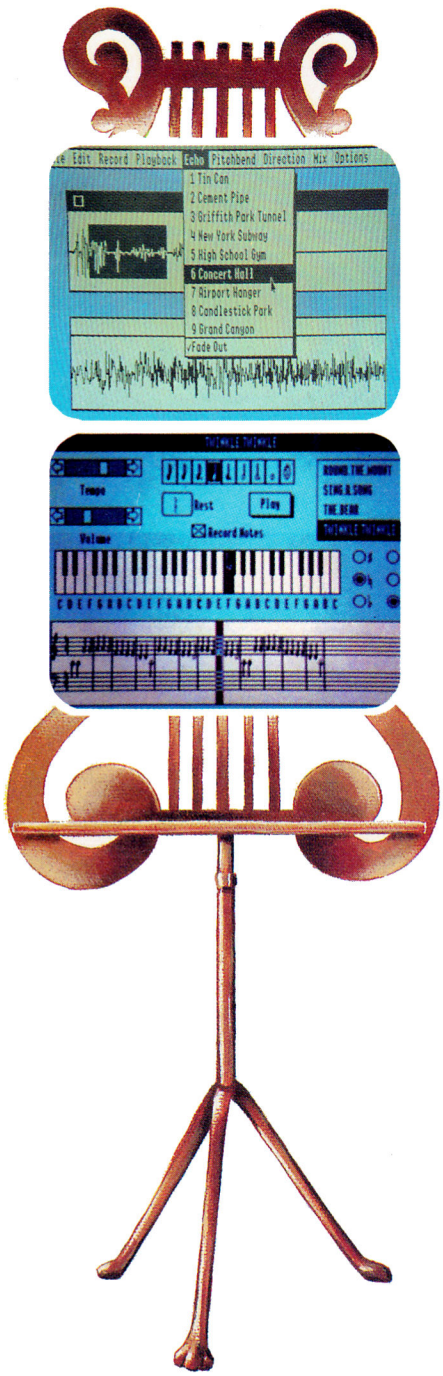
THE WELL-TEMPERED APPLE

Although ALF no longer manufactures its music card, Applied Engineering has stepped into the breach with the **Phasor** board. Designed for the Apple IIe and II Plus, Phasor also runs on Apple compatibles and the GS. It looks and sounds much like the original ALF; in fact, ALF files, once converted to ProDOS, are compatible. But there's one big difference: Phasor comes with an on-board voice synthesizer, a sound-effects generator, and a 4-watt stereo amplifier. There's more: It can emulate the Mockingboard and Echo Plus.

If you connect the card to your stereo receiver, as I did, and if you ►

Illustration • Greg Mackey

gmackey



Sound Ace, Parallax.

Stickybear Music, Weekly Reader.

care about your eardrums, be sure to follow AE's directions and set Phasor's audio output to minimum. This card is loud! The sophisticated program that comes with the board allows music entry in standard notation on the graphics screen. Stereo playback is accompanied by animation that shows dynamics in changing colors.

Want to start your computing day on the Starship Enterprise? Applied Engineering also offers **Sonic Blaster**, an exciting GS sound digitizer that lets you transfer sound effects or music from videotapes, compact discs, or any audio source. Digitized sounds play back through the Apple's Ensoniq chip—and they're terrific. (See Editors' Choice, May 1989, p. 108, and Reviews, June 1989, p. 36.)

You can use the files you create to generate startup sounds, and as instruments in a number of music programs. Add an inexpensive microphone and you can record your own voice, or various clangings and clatterings to create sounds unique to your setup. Once you digitize a sound, you can edit it in a number of ways. Volume and rate of play are adjustable, and you can loop sounds for continuous play, echo them, fade them, or play them backwards. Another nice feature is the card's *Append* option, which lets you patch several files together seamlessly. By first opening a stereo file and then adding a monophonic voice file, Sonic Blaster can render the mono voice in pseudo stereo by routing it into two channels.

Never a company to stand idly by, Applied Engineering is at it again. Watch for its new **Audio Animator** coming soon to your dealer.

Sound Ace from Parallax is another great-sounding GS digitizer. (See Reviews, June 1989, p. 36.) How great? When I booted the accompanying program, a disembodied voice said, "Hi there," with so much presence that I nearly jumped out of my skin. Less expensive than AE's entry, Sound Ace comes complete with a small microphone. The card is set up for direct line feed and also lets you record from tapes, compact discs, or synthesizers. A sound file's maximum length is eight seconds, but that's not as limiting as it may seem. Sound files eat up a lot of memory; in most applications, eight seconds is sufficient, because you can loop the files for continuous play. This easy-to-use software can add special effects to your sounds or mix two together for voice-overs; an auxiliary program makes creating startup sounds a snap. In case you want to hear your voice or your food processor as a musical instrument, Sound Ace files are compatible with Mediagenic's GS program Music Studio (see below).

You might want to try an inexpensive GS public-domain program to accompany your digitization. The Public Domain Exchange offers GS16, **Sounds, StartSounds, & SysBeeps**, a disk chock full of sounds and utilities for those who like to experiment. If you hate the "boing" your computer makes when you goof, you'll love this disk. Its SysBeep program lets you substitute a sound file for that annoying noise. In addition to a number of interesting digitized sounds on board, GS16 also contains StartPic and StartSound utilities, which let you begin your computing day with custom graphics and sounds.

MUSIC LESSONS

In general, music software falls into three categories: educational, hobbyist, and professional, but you'll find a certain amount of overlap among them. Apple has always been a champion of education, and music education hasn't been slighted. If music theory is what you're after, MECC, a pioneer in computer

Glossary

MIDI—Musical-instrument digital interface, a protocol developed in 1984 and still evolving. Think of MIDI as a modem for music—it lets your computer communicate with one or more electronic *synthesizers*.

MIDI INTERFACE—MIDI board or box attached to your computer. Two cables plug into the interface: MIDI OUT sends directions to your synthesizer; MIDI IN receives information from your *synthesizer*.

PATCH—Musical voice or sound played by a *synthesizer*. Also called a *preset* or *program*.

QUANTIZE—Adjust the start time and length of musical notes so that the duration of each note of a given value—a quarter note, for example—is precisely the same as that of all other notes of the same value in the piece. Quantization is performed by a *sequencer*.

SAMPLER—Electronic instrument using realistic sound originating from an audio source—compact disc, videotape, human voice, or live instrument played into microphone attached to sampler.

education, offers an excellent course suitable for the older child or adult. Though not new, MECC's **Music Theory** for the Apple IIe and II Plus (compatible with the GS) is as sound today as it ever was. Music Theory offers 18 applications you can configure, from simple to difficult. Master these no-frills programs and you'll know a lot of music.

In a similar vein, Coda's **Music Class** covers Fundamentals, Rhythm, Ear Training, Music Symbols, and Note Reading. Running on the entire Apple II line, the five programs can utilize the ALF music card or compatibles for enhanced sound. Coda's animated "Mr. Metro Gnome" will appeal to younger children, but Music Class is suitable for anyone interested in learning the basics. The programs are intended especially for the classroom. A management system with password functions lets a teacher keep records for up to 125 students.

If you want to introduce your preschoolers to music, Great Wave Software offers a program for the GS that will enchant them. **KidsTime II** features KidsNotes, an introductory music program with on-screen piano keyboard and notation area where you can enter a monophonic song. When you play the song back through the computer's Ensoniq chip, each note is highlighted on the screen keyboard as well as on the score. KidsTime also includes ABKey, a letter-recognition program offering musical rewards; version 2 adds Dot-to-Dot, a connect-the-dot puzzle.

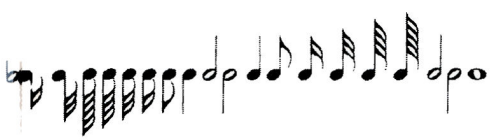
Similar to KidsTime in concept, Weekly Reader's highly commended **Stickybear Music** requires only 48K to run and is easy to use. Meant for children aged 7 and up, the program allows monophonic music entry in standard notation through a graphics interface with on-screen piano keyboard. You can save, edit, print, and play back your songs. A companion program, **Stickybear Music Library 1**, provides 39 additional songs, ranging from classics to folk tunes.

Though not a music program, Pygraphics' **Mr. Py and I**, an electronic coloring book for the GS, includes a section featuring music terms and notation. Unfortunately, some of the musical terms used—*fermata*, for example—are too advanced for the young children. Each coloring "book" can be displayed as a clever animated musical show. Though entertaining, the program would be educationally sounder if the music played back the notes displayed instead of a different tune.

If you have a color monitor, **The Notable Phantom** for 5- to 10-year-olds turns music theory into an arcade game, complete with zapped spiders and ghosts. But that's not all—The Notable Phantom lets young users play and save original songs as well. Running on the Apple IIe, IIc, and II Plus, the program comes with a cardboard overlay that turns your Apple's keyboard into a piano.

For the older child, **Music Shapes** is a GS-specific program that creates short tunes by combining seven-note phrases into a series of "boxes." (See Reviews, June 1989, p. 40.) You can edit them, then play them back through the GS' music chip or an outside MIDI keyboard if an interface is attached. This program's free-form experimental approach to music is unique, but its single-hi-res graphics, unusual interface, and distorted sounds may be disappointing if you're used to standard music programs and interfaces.

Don't feel neglected if you're a guitar player. You won't hear a sound when you run Baudville's **Guitar Wizard**, though. That's not this program's purpose. Guitar Wizard is a nifty computerized scale and chord guide for the Apple IIe, IIc, and II Plus that analyzes ►



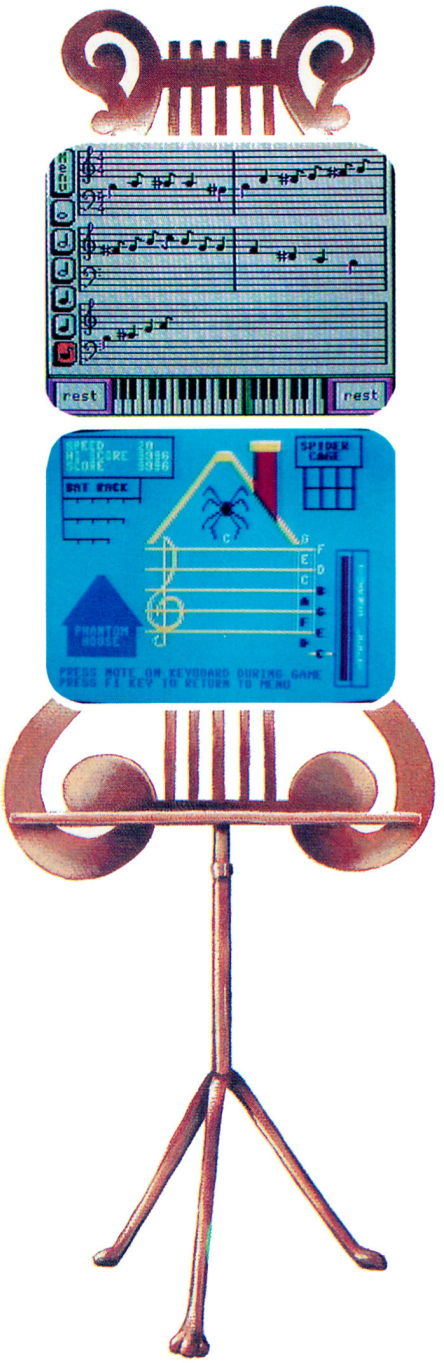
The GS' Ensoniq chip is a sampler.

SEQUENCE—Music file.

SEQUENCER—Computer program that creates music files by receiving keypress information from a *synthesizer*—a word processor for music. Files created with a sequencer may be edited, saved, replayed, merged, and so on.

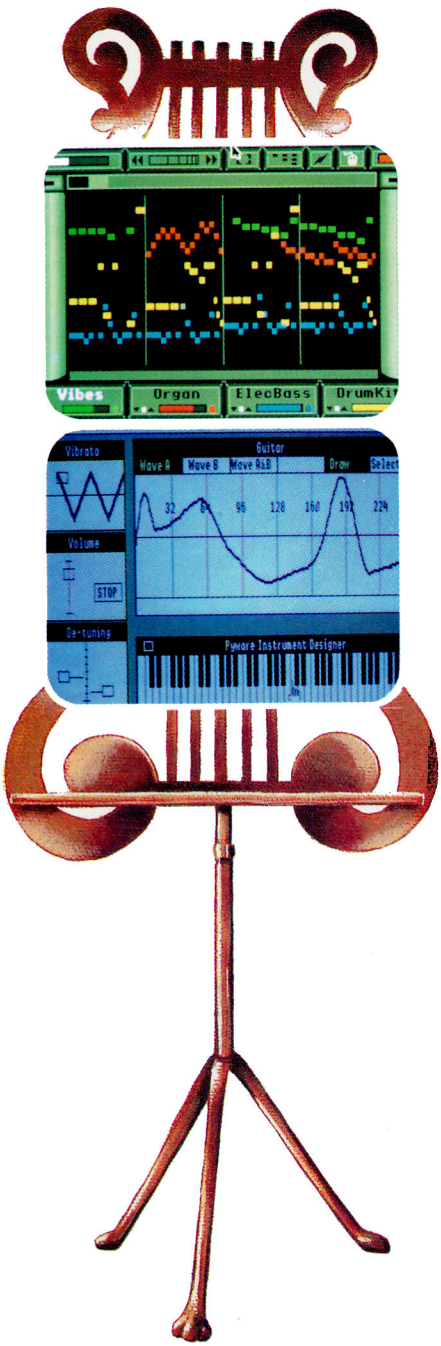
SYNTHESIZER—Musical instrument, usually a keyboard, that creates sound electronically. A *MIDI*-equipped *synthesizer* has round MIDI ports on the back where the two cables coming from a MIDI interface can be attached. Only MIDI-equipped synthesizers can be controlled by computer.

TRACKS and **CHANNELS**—System for routing *MIDI* data. MIDI has 16 channels, each of which can lead to one or more *synthesizers*. A synthesizer set to receive on channel 1 can't receive information sent to channel 9. Just as a highway may have many lanes, a MIDI channel may have multiple tracks. Each track can carry different information, but the destination of all tracks on a given channel is the same. □ —**S.W.**



KidsTime II, Great Wave.

Notable Phantom, Britannica.



Instant Music, Electronic Arts.

Instrument Designer, Pygraphics.

fingerings and chord patterns.

The program is fast and the graphics screens are tops. If you want a chord book to suit your personal needs, you can dump screens to a printer. The documentation is quite good and includes a guitar-theory primer.

ALL THAT JAZZ

If you expect entertainment from your computer, welcome to the realm of hobbyist software. Although these programs include many professional features, they appeal to a broad spectrum of musical types—beginners to old hands—and their price tags are lower than those of professional programs.

One of the first music-entry programs for the GS, **Music Construction Set** has become a classic. This package requires only 256K, the lowest for any GS-specific music program. MCS lets you enter sheet music or create your own compositions by choosing notation from the graphics screen. If you make a mistake, the program's editing functions will take care of it. Playback through the Ensoniq chip can sound up to 15 notes at a time from two different sampled instruments.

To add to your enjoyment of it, you might like to hear what other people have done with MCS. The Public Domain Exchange's inexpensive GS90 disk, **Blowing in the Wind**, features dozens of songs ranging from Beatles tunes to classics, plus Christmas carols, show tunes, rock, and folk music. Just boot MCS, load the songs, and play. Swap instruments if you like or try a little rearranging. GS90 has music enough to suit nearly every taste.

You don't need a music program at all to sample PDE's GS64, **Rock N Roll Gold**, direct from France. Created with Music Studio, GS64 is a great-sounding music video on disk, complete with super-hi-res slide show.

But beware—listening to it whets your appetite for **Music Studio 2.0**, another classic music-entry program. Although Music Studio includes a full complement of synthesized and sampled instruments that play back on the Ensoniq chip, it can also trigger your MIDI-equipped synthesizer. Click with the mouse or play your MIDI keyboard to enter music.

You don't have to know one note from another to enjoy Electronic Arts' **Instant Music**. Boot your GS, shake your booty, and jam with your mouse. You'll play along with three other instruments in key and in the right rhythm—and you'll sound terrific. If you get tired of jamming, the program allows free-form experiments using a musical sketchpad that lets you try out new ideas. Create your own rhythms, design new drum patterns, try out polyrhythms and progressions, transpose, fiddle with the tempo, change instruments in midstream. Doodle your initials and play them back. Then let the kids in on the fun for a wonderful unstructured introduction to music.

If you own Instant Music you'll want to take a look at its companion program, **Instant Synthesizer**, which turns your GS into an instrument designer. (See Editors' Choice, July 1989, p. 108, and Reviews, September 1989, p. 28.) Play with the sounds provided or port in patches from Instant Music and echo or double them, change the envelope setting, add delays and stereo panning. If you have a MIDI interface, hook up your synth and try out the new sound you've created. Instant Synthesizer supports SMUS and ASIF files so that your Instant Music scores will play and you can edit the sounds as you go.

Bill Basham's **Diversi-Tune** is truly unique. (See Editors' Choice, September 1988, p. 112.) It's an electronic multitrack tape recorder, a player piano, and an old-time movie singalong in one package. If you're a musician, you'll appreciate the MIDI sequencer. But don't expect the program to quantize notes for you. You'll get your music back the way you played it—warts and all—performed on the program's sampled instruments, which include one of the most realistic pianos you'll ever hear. If you have MIDI keyboards, they can join in. You don't need to be a musician—you can listen to the songs and sing along with the bouncing ball and the on-screen lyrics. A click of the mouse changes the display to a player piano or an 88-note keyboard.

"But I'm a singer," you say. "Isn't there a program for me?" You bet there is. Advanced Software's **Sound, Song & Vision** may be just what you're looking for if you have the hardware it requires. SSV for the 48K Apple IIe and II Plus converts voice input to MIDI data, which can trigger your synthesizer. Sing to your synth and it sings back. Using the cassette port on your computer, SSV requires a good-quality unidirectional microphone, a Passport MIDI interface card, headphones or a stereo system, and a MIDI-equipped synthesizer with a one-octave pitch-wheel range. The results are amazing. SSV just misses professional status—it lacks overdub and multitrack sequencing—though if you have a multitrack tape recorder you can make up for it.

THE MUSIC MAN

Professional software for the Apple includes MIDI sequencers and music-notation

programs. Offering a wealth of tools, Passport's DOS 3.3 **MasterTracks Pro** is still the top-rated sequencer for the enhanced 128K Apple IIe. The program uses expanded memory, delivers real-time and step-time music entry, and features a song mode in which you can use 1500 steps to assemble 256 sequences.

For the GS, Passport's new entries are **MasterTracks Jr.** and **MasterTracks Pro**. With its graphics interface, "Jr." is quite a kid—an advanced music processor that can control a bank of synthesizers, drum machines, and effects boxes, and record your sequences on 64 tracks. (See Reviews, June 1989, p. 110.) Jr. lets you create a conductor track for subtle tempo changes that mimic live performance, and the program supports all MIDI controllers. It's impossible to enumerate all its features here—there are far too many of them.

Converted from the acclaimed Macintosh program, Master Tracks Pro for the GS is unequaled. Incorporating all the features of Jr., Pro adds many more, and the result is pure luxury. You don't have to hop back and forth between your synth and your computer. Instead, you can custom-map your synthesizer keyboard to control many aspects of the program. There's full note quantization, of course, but in addition to Jr.'s shifts, slides, and echo effects, Pro lets you "humanize" by inserting small random changes to note start times, duration, and velocity.

Is there anything MasterTracks Pro doesn't do? Just one thing: It won't turn your MIDI files into music notation. You need Pygraphics' **Pyware MIDI Translator** for that. This slick utility lets you convert your MasterTracks Pro sequences to Pygraphics' Music Writer format (see below) for printing. Conversely, you can port original Music Writer compositions into Pro. MIDI Translator also converts Macintosh MIDI files for use on the GS.

Pyware Music Writer 1.3 is an innovative GS-specific program that turns MIDI sequences into sheet music. (See Reviews, June 1989, p. 40.) Enter music from the computer keyboard or play your synthesizer. Print quality is superb—and fast, too. The three versions available range from three staves to 32 for full orchestral scores, with numerous features. There's a four-staff version for the IIe and IIc too, but if you don't have a hard drive, expect a workout. This disk-intensive program comes on four 5¼-inch floppies and requires two disk drives and a mouse.

Music Writer isn't just a printer, though—it's a limited sequencer, as well. You can play your Music Writer files simultaneously on your GS and your synthesizer. Though the program comes with only 16 sounds on board, you can enter patch heaven with Pygraphics' companion program, **Instrument Designer**. Designer can give your Ensoniq chip real synthesizer functions, such as vibrato and detuning to yield a thicker sound. Editing is quick, easy, and full-featured.

CODA

These professional programs are state of the art. They rival the best that any computer, including the Mac, has to offer. So where do we go from here? What's on the horizon?

Would you believe the brain-to-MIDI connection? It's closer than you think. Hugh Lusted and Benjamin Knapp, researchers at Stanford University, have created Biomuse, a remarkable invention that reads a human body's electrical transmission as MIDI code. With Biomuse, the almost imperceptible movement of a finger can instantly change pitch on a distant synthesizer, while tension in an arm muscle triggers modulation. Eye movements control stereo imaging; alpha brain waves produce patch changes.

New York's Center for Electronic Music is currently exploring Biomuse as a way to open the world of music to the disabled. Someday soon even people with extremely limited movement may find an entire electronic orchestra under their control.

Some dancing bear.□

SHARON WEBB IS A NOVELIST AND FREE-LANCE JOURNALIST. WRITE TO HER AT ROUTE 2, BOX 2600, BLAIRSVILLE, GA 30512.

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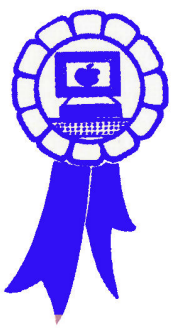
Apple Computer Clubs
A Class Act

Thanks to Apple Computer Clubs, young Apple II enthusiasts are getting together to discover fascinating new ways to use and enjoy their computers. Meet 1989 club members who accepted the ACC's ultimate challenge, the National Merit Competition—a chance to test ideas and win country-wide recognition.

MENTION APPLE COMPUTER'S EDUCATIONAL-grant policy, and you'll receive an enthusiastic response. The company's legendary philanthropic program has played a key role in bringing computer technology to special-student populations. Mention the Apple Computer Clubs (ACC) plan, though, and you'll most likely receive blank stares. Apple's "other" assistance program may be the best-kept secret in Cupertino.



The ACC system provides educators with an organization to help them implement creative computing ideas. Enrolling in the program is painless: no eligibility restrictions, no lengthy application process, no limit on the number of participants—plus published guidelines offer a surefire formula for fun. For participants willing to go the distance, ACC also offers the chance to win computer equipment and national honors.

Second-grade ACC Merit finalists from York, PA, used Apple IIs to study the ecology of trees.

ANATOMY OF A CLUB

An Apple Computer Club consists of an adviser (usually a teacher) and students who meet because they share an interest in computers. Advisers don't need to be computer experts; they just need to be enthusiastic and imaginative.

You can set up your computer club in any educational environment. As a classroom-based activity, it fits perfectly into a computer-literacy or programming class. It can also add a new twist to programs for special-student groups or liven up traditional subject-area courses. As an extracurricular organization, a computer club lets students go beyond the standard academic courseware and experiment with other computer applications.

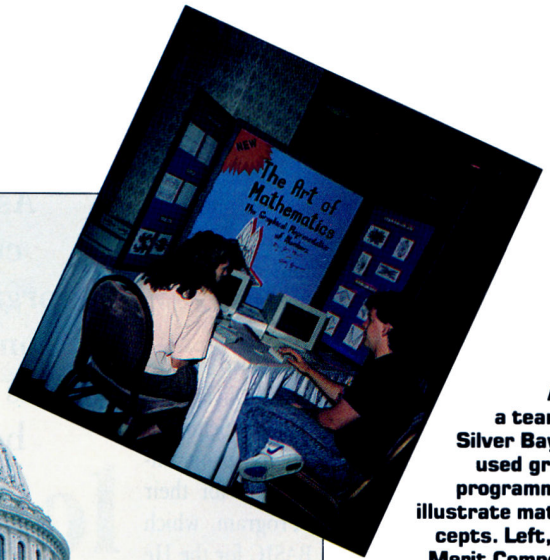
For an annual membership fee of $19.95, the ACC program furnishes a variety of informational materials to help you plan and launch a computer club. New members receive an ACC Membership Welcome Kit, which includes the official *ACC Handbook*. This little gem is packed with essential information that'll help you progress from the idea stage to a fully functioning club. For example, you'll find hints for maintaining student interest, acquiring your school administration's support, and raising funds.

In addition to the handbook, the Welcome Kit comes with an *Activity Plan Book*, a *National Merit Competition Winning Ideas Book* (a collection of articles describing successful computer-club projects), and a supply of student-incentive items. During the school year clubs receive subscriptions to two newsletters—one for advisers, written by the ACC staff, and the other for students, written by other student club members.

NATIONAL MERIT COMPETITION

Each year clubs around the country enter the Apple Computer Clubs' National Merit Competition. This event gives members the chance to test the mettle of their computing projects against those of other clubs. It also

By JENNIFER BRAWER



Above, a team from Silver Bay, MN, used graphics programming to illustrate math concepts. Left, 1989 Merit Competition finalists tour Washington.

enables educators to achieve national recognition and receive a substantial reward for their creativity and dedication to educational computing.

Competition-entry requirements vary from year to year. In general, ACC looks for unique community-service projects; successful attempts to integrate computers into the curriculum; original student-programming ventures; and examples of how computers enhance school productivity and service delivery.

In the past, all clubs entering the competition vied for first-place honors. Now they compete only with other clubs in their particular geographic regions. For example, in 1989, judges selected winners in three areas: East, Central, and West. Because ACC's policy is to award Apple computers as both first- and second-place prizes, two '89 winners in each region received computers. In addition, first-place winners received an invitation to join the ACC staff on a "V.I.P. adventure" to celebrate their accomplishments.

A CELEBRATION OF EXCELLENCE

Last June Apple Computer invited the 1989 Merit Competition finalists to gather for four days in Washington, D.C. Treated like true V.I.P.s, the winners went sightseeing in the city by night, attended a congressional breakfast on Capitol Hill, and received special tours of the Smithsonian's Museum of American History and the National Air and Space Museum. They also enjoyed motoring by boat up the Potomac to visit Mt. Vernon, George Washington's home, and survived a make-your-own ice-cream-sundae party, a pizza party, and a dance.

The trip's highlight, though, was the National Merit Competition Awards Banquet, when winners received their honors, trophies, and accolades. Here's a glimpse of the winning projects.

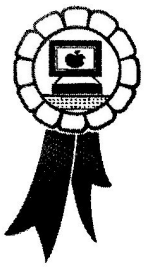
Students in the Microworms computer club at Edinburg Middle School in Edinburg, Virginia, devoted their computing expertise to a special cause. With the assistance of adviser Elsie Howard, the Microworms used their Apple IIs to manage a series of fund-raising activities that helped them buy computer equipment for a police officer who was severely injured in a car accident while on duty. Computers also played a key role in the students' production of a video and companion printed materials on seat-belt safety.

The community of Nixa, Missouri, received a boost from Annice McLean's Nixa Junior High Computer Core club. Students used their machines to assist the local Boys and Girls Club with a fund-raising drive, and, in cooperation with a local business, desktop-published their local PTA newsletter. At holiday time club members delivered computer-decorated goody bags to the residents of an elderly-care facility, and put their computers to work organizing the town's Christmas parade.

The ethnically diverse South Whittier Panther Komputer Klub in Whittier, California, exemplified the way computers can bring people of different backgrounds together. Adviser Irene Hubert and her students committed themselves to sharing cultural diversity through a series of parent parties, each with a different international flavor. Students used computers in every aspect of party planning—creating invitations, flyers, decorations, and computer how-to books. Moreover, they produced these resources in three languages: English, Spanish, and Laotian. Party activities included software demos, computer-based bingo games, and hands-on computer instruction. ►

On the opposite coast, Lewis Girod, an 11th-grader in the 115 Computer Club in Kenmore, New York, created two software programs in Apple Pascal. Teachers can use his CAT Converter Program to translate individual California Achievement Test scores into an appropriate set of remedial-skills lessons. Girod also put together a menu-driven AIDS-Education Package containing two games: Mr. T-Cell and the AIDS Gang, and Guillotine. Both test students' knowledge of AIDS facts and fallacies, and conform to the New York State AIDS Curriculum.

Talented duos produced the next two award-winning projects. Julissa Gonzalez and Olivia Moreno, fifth-graders at Tijerina Elementary School in Houston, Texas, used their combined programming talent to create tutorial software for their schoolmates. The Safety Patrol Program, which Gonzales and Moreno wrote in BASIC for the IIe and IIGS, uses low-resolution graphics, animation, and music to introduce students to the requirements for becoming a member of the school's safety patrol.



"As an extra-curricular organization, a computer club lets students go beyond the standard academic courseware."

To the far north in Silver Bay, Minnesota, are James Martin and Amy Jorgenson, who attend William M. Kelley High School. This computer team designed seven programs to show a different side of mathematics. Instead of formulas, Martin and Jorgenson used graphics programmed in BASIC and assembly-language routines to illustrate obscure concepts, such as mathematical limits and infinity.

How about a repeat finalist? David Harris, a 10th-grade student at Murray Junior High in Ridgecrest, California, is a veteran Merit Competition winner. This year he submitted a potpourri of programming projects for the Apple II and the Macintosh, including utilities, games, mathematical amusements, and a simulation of the 6502 microprocessor.

Barbara Kuhl, from Ferguson Elementary School in York, Pennsylvania, and her second-grade computer club embarked on a year-long study of trees and their importance to local and global ecology. Students used Apple IIes to construct information databases, create charts and graphs, write stories and poems, and conduct a public-awareness campaign. The Pennsylvania Governor's Office recognized the students' efforts at the end of the school year with a firm commitment to environmental conservation.

Mike Slootmaker's science class/computer club at Fremont Middle School in Fremont, Michigan, used Apple computers to gain an understanding of a number of scientific concepts. Students attached Apples to roof-mounted probes, then analyzed the weather data they collected. Club members also used their computers to study real-time graphing of moving objects, rocketry, solar heating, temperature, and light.

From the science lab, we move on to Rosemarie Orlick and Jackie Cleveland, who ran a writing-lab computer club at Frost Elementary School in Chandler, Arizona. Students used the lab's IIes to develop their writing skills. After they completed the program, Orlick and Cleveland put them to work in the school's own business—a publishing company that produces hard-bound volumes of student compositions. Company CEOs were teachers, but students held all other management and staff positions. Their responsibilities included evaluating and editing manuscripts, desktop publishing, printing, and binding.

As you can tell by the 1989 winning projects, Apple computer clubs come up with some creative computing ventures. But be warned: The Merit Competition is tough. If you're up to the challenge and want to participate, the following information can get you started.

ACC members can enter their 1990 projects in one of three categories: community service, computers in the curriculum, or student programming. The first category is for clubs that use computers to help their local communities or to solve a social problem. Submissions must communicate club members' social involvement and teamwork. In this category the club wins the computer system.

The curriculum division is designed for individual teachers who use the club format to integrate computers into regular education. Entries must include sample lesson plans, information about the integration process, and an evaluation of student reactions and progress. ACC will award the computer to the winning teacher.

The third category, programming, challenges individual students to create original software for the Apple II or the Macintosh. Programs must be original and written entirely by the student in the language of his or her choice. While an ACC adviser has to supervise the project, Apple will award the computer system to the student.

Chances of winning a computer this year are better than in 1989 because ACC has increased the number of regions from three to five—Northeastern, Central, Southern, Northwestern, and Southwestern. As in past competitions, both first- and second-place winners in each region will receive computer systems. That means ACC will award 15 first-place and 15 second-place prizes—a total of 30 computers.

Unfortunately, if you enter the contest with your heart set on winning an Apple IIGS, you can forget it. In 1990 ACC Merit Competition prize winners will receive a Macintosh SE with one 800K floppy drive and a 20-megabyte internal hard drive. (Apple's going to make Mac users out of you one way or another.)

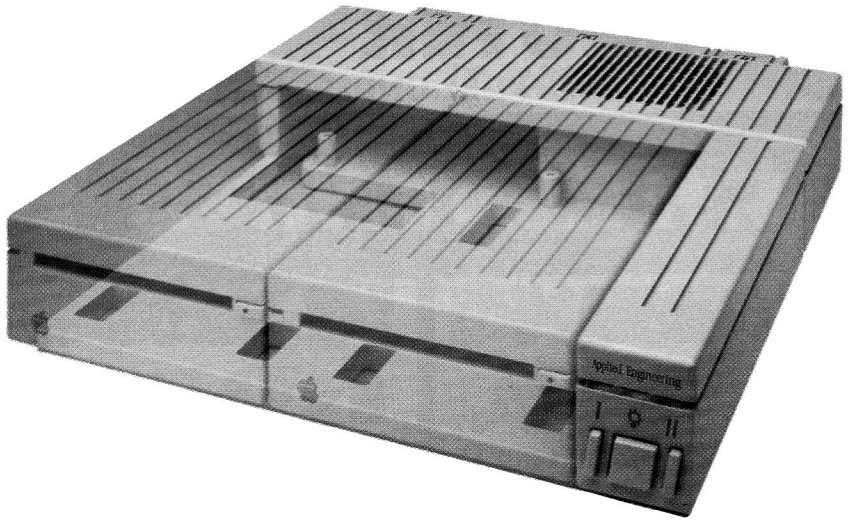
As in the past, first-place winners will receive, in addition to a new computer, an invitation to join the ACC staff for the annual V.I.P. trip and awards ceremony. ACC hasn't finalized plans for next year's event, so the location is under wraps.

EVERYONE'S A WINNER

The ACC program is a great way for teachers to get started with computers or for experts to try something new.

If you're interested in joining, the Apple Computer Clubs organization is offering a back-to-school special on the membership fee. Until October 15, ACC memberships are available for $14.95. For more information write or call Apple Computer Clubs, Apple Computer Inc., 20525 Mariani Avenue, MS:36AA, Cupertino, CA 95014, (800) 538-9696, extension 225.□

JENNIFER BRAWER WAS THE EDUCTION EDITOR OF *A+* MAGAZINE AND IS CURRENTLY A FREE-LANCE WRITER AND CONSULTANT IN EDUCATIONAL TECHNOLOGY. WRITE TO HER AT 789 PARMA WAY, LOS ALTOS, CA 94022. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.



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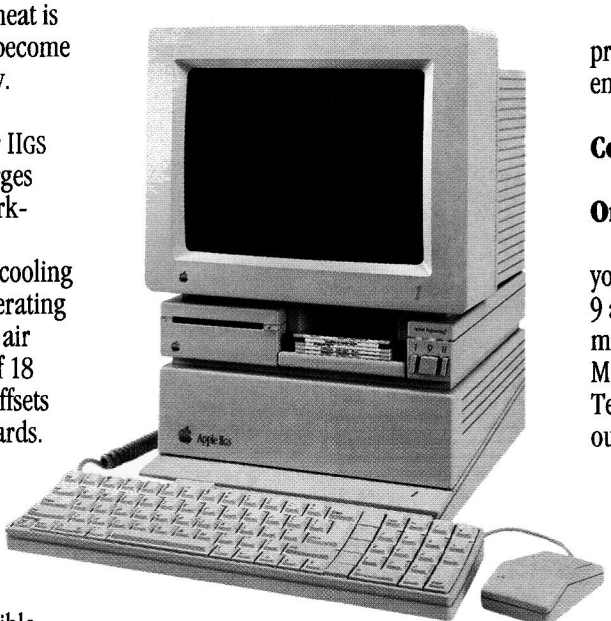

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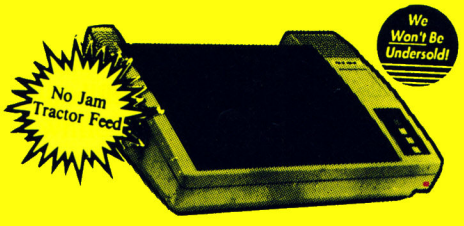

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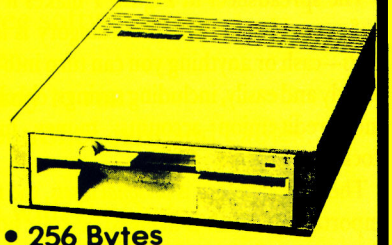

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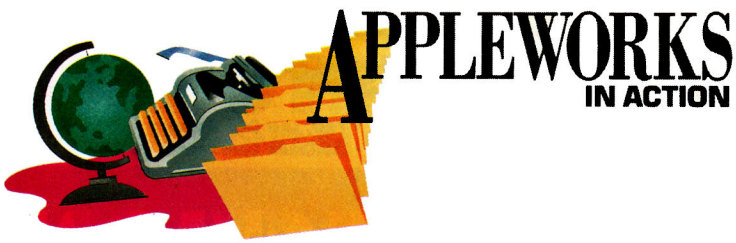

PERSONAL WORTH

Feel like a million? An AppleWorks spreadsheet lets you determine your personal net worth and find out whether you need to tighten those purse strings.

By RUTH K. WITKIN

GRADE YOURSELF AS A MONEY MANager. Are you getting straight As, flunking the course, or settled somewhere in between?

One of the best ways to find out is with a personal net-worth statement that shows what you own (assets), what you owe (liabilities), and how much is left (net worth) after you deduct what you owe from what you own.

WHAT'S IT WORTH?

The spreadsheet in **Figure 1** makes it easy to figure this out. The first category is *liquid assets*—cash or anything you can turn into cash quickly and easily, including savings, checking, and credit-union accounts; money funds; stocks; and bonds.

The next category is *personal assets*, the most important of which is likely to be your house. To get a realistic picture of what it's worth, scan newspaper for-sale ads for similar houses and locations, check with your local land-records office, or ask a real-estate broker to assess its market value.

Be conservative when valuing household furnishings (furniture, appliances, treasured mementos, and so on). If you choose not to make a room-by-room inventory, estimate what's inside your home as 5 percent of the value of the home itself.

To get the current market value of your car, consult an automobile price guide at your local library or a bank that makes auto loans, or ask your good buddy at a car dealership to give you the average retail market value listed in the *NADA Official Used Car Guide* or *Kelly Blue Book*. The value you assign to clothing, furs, jewelry, computers, and collectibles (stamps, coins, art, and so on) should be what you think you could get if you had to sell them tomorrow.

Nonliquid assets include such investments as business interests, IRA and Keogh retirement funds, and profit-sharing plans. Unless you're sure you can get your money back today if you asked for it, personal loans belong here instead of in liquid assets.

Your liabilities come next. *Short-term obligations*—those due for payment within one year—include such things as mortgages, rent, loans, insurance, and credit charges, projected for the next 12 months. *Long-term obligations* are those due for payment in more than one year.

THE TALLY

After you enter your assets and liabilities, AppleWorks takes over. A group of formulas adds the amounts in each category, subtracts total liabilities from total assets, and, like magic, produces your total net worth.

Net worth indicates how you're faring as a money manager. If you end up with a negative number, you're deeply in debt; how seriously depends on where you are at this stage. A negative net worth may be acceptable, for instance, if you're a student or a recent graduate just starting out. But if you've been out in the world for a while, repaying some debts should take top priority. If your net worth is positive, but not by much, you're doing somewhat better. Again, pay off some loans and look for ways to increase your assets.

If your net worth is significantly in the black, pat yourself on the back, but take a critical look at asset mix. If a relatively large proportion of your assets is tied up in cars, clothing, and household furnishings, which tend to decline in value as soon as you buy them, consider income-producing assets, such as real estate, which stand a good chance of increasing in value over time.

A SPREADSHEET FROM SCRATCH

Now load the AppleWorks program and create a new spreadsheet file named **PNETWORTH**. You should see the spreadsheet Review/Add/Change screen with the cursor in A1. Use the following summary to start the spreadsheet:

Long lines. Enter a double line across row 3 in columns A through E: Place the cursor on A3 and type quotation marks. Hold down the equal-sign key until the sign reaches the right edge of E3, and hit Return.

Next, enter a single line across row 5 in columns A through E: Place the cursor on A5, type quotation marks, hold down the minus-sign key until the sign reaches the right edge of E5, and hit Return. Enter the double line in D35 to E35 and another one in D40 to E40 in the same way.

Column width. Each column is now nine characters wide. Use the Layout command (OA-L), *Columns*, and *Column width* to change the following column widths: Increase column A to 26 characters and column B to 10 ►

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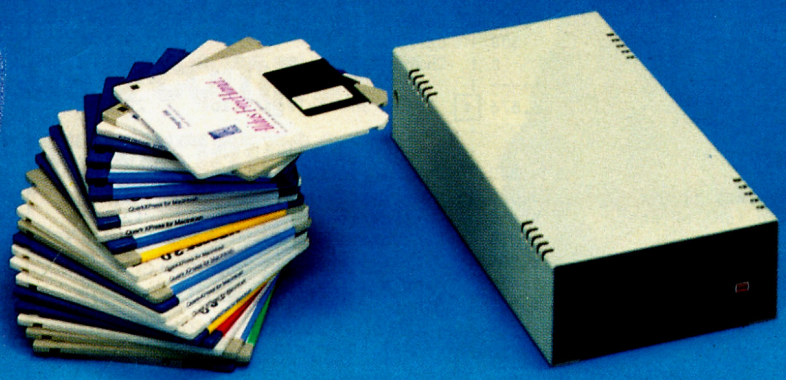

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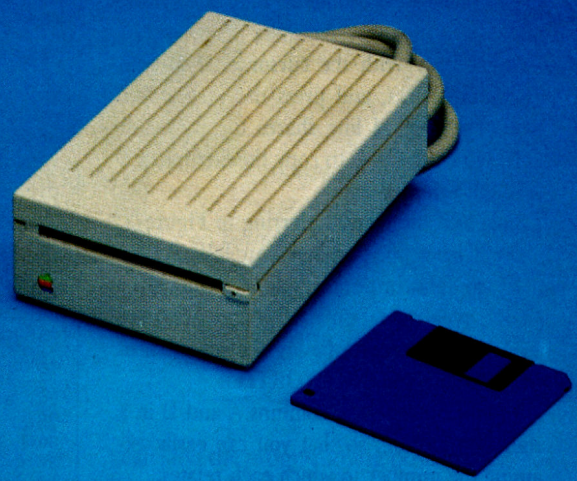

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characters. Reduce column C to 2 characters (to provide a narrow column for the vertical line). Increase column D to 26 characters and column E to 10 characters.

Short lines. Enter the short line in B16: Place the cursor on B16 and type quotation marks. Press the spacebar, type 8 minus signs, and move the cursor to B29. Enter the same line there, then do it again in B39, E16, E27, and E38.

Vertical line. With the cursor on C4, type quotation marks, and press the vertical-line key. (The vertical line shares the backslash key.) Now use OA-C to copy the line into C5 through C40.

Labels and numbers. Referring to **Figure 2**, enter all labels and numbers. (AppleWorks will enter commas in numbers after you format.) In B1, type quotation marks, and press the spacebar once before typing the spreadsheet title, **PERSONAL NETWORTH**.

Indent the labels in columns A and D in a stair-step fashion, so that you can easily examine the number to which each relates.

Indent a label under a general heading (such as *Cash on hand* in A7 under general heading *Liquid Assets* in A6) by typing quotation marks and pressing the spacebar once.

To indent an AppleWorks label that identifies a total (such as *Total Liquid Assets* in A17), type quotation marks and press the spacebar twice.

Instead of pressing Return after typing a label or number, move the cursor to the next cell that needs an entry and AppleWorks will enter what you just typed in its cell. After typing the last entry, hit Return.

Formats. Use the Value command (OA-V) to set a standard *Value format* of *Commas* with zero decimal places. Now press OA-S to store all your work on disk.

Figure 1. Personal net worth.

```
==========A=================B=====C==========D================E=====
 1|                          PERSONAL NET WORTH
 2|                        as of September 1989
 3|=============================================================
 4|ASSETS - What I Own               | LIABILITIES - What I Owe
 5|----------------------------------|-----------------------------
 6|Liquid Assets:                    | Short-Term Liabilities:
 7| Cash on hand              650    |  Mortgage or rent          7,340
 8| Savings accounts        1,834    |  Other mortgage            1,660
 9| Checking accounts         776    |  Fuel and utilities        2,880
10| Money market funds     14,440    |  Medical and dental          775
11| Credit union accounts   1,076    |  Income tax (not withheld) 1,150
12| Cash value-life insurance 9,800  |  Insurance premiums        3,456
13| Stocks, bonds           7,600    |  College loans             2,160
14| Personal loans to others  500    |  Car loans                 3,500
15| Other                       0    |  Charge accounts           1,234
16|                        --------  |                           --------
17|  Total Liquid Assets   36,676 [1]|  Total Short-Term Liabs    24,155
18|                                  |
19|Personal Assets:                  | Long-Term Liabilities:
20| Residence             133,000    |  Home mortgage loan       67,500
21| Vacation property      23,000    |  Home improvements         8,560
22| Household furnishings  14,750    |  College loans            12,000
23| Cars                   11,750    |  Car loans                 9,600
24| Clothing, furs, jewelry 3,200    |  Vacation property loan    5,670
25| Computer equipment      1,450    |  Margin accounts               0
26| Collectibles            1,800    |  Other                         0
27| Gold, silver              750    |                           --------
28| Other                       0    |  Total Long-Term Liabs    103,330 [3]
29|                        --------  |
30|  Total Personal Assets 189,700   |
31|                                  |
32|Nonliquid Assets:                 |
33| Business interests     23,000    |
34| Certificates of Deposit 5,000    |
35| IRAs, Keoghs           18,680    | ================================
36| Profit sharing          1,700    | TOTAL ASSETS              276,006 [4]
37| Personal loans to others 1,250   | TOTAL LIABILITIES         127,485 [5]
38| Other                       0    |                           --------
39|                        --------  | NET WORTH                 148,521 [6]
40|  Total Nonliquid Assets 49,630 [2]================================
```

ENTERING FORMULAS

Next, enter the formulas that perform your calculations. First read how the formula works. Then place the cursor on the cell receiving the formula. Move the cursor to the cell locations shown in the formula, and type everything else.

When the formula is complete, compare each character on your screen with the way it appears here. If everything agrees, press Return. If something's amiss, press Escape and start again.

Each SUM formula (B17, B30, B40, E17, and E28) includes the empty cell above the list of items and the line below the list. This way, if you insert rows later for other items, AppleWorks will adjust the formula to add the new entries.

FORMULA 1: TOTAL LIQUID ASSETS

Formula 1 adds nine items in the liquid-assets category and enters the total in B17.

Cell location: B17

Formula: @SUM(B16.B6)

Formulas take time to plan and enter, so it's always a good idea to protect them from accidental change: Leave the cursor on B17 and press OA-L to bring up the Layout screen. Press Return and type **PN** (for *Protection Nothing*).

The personal-assets category also has nine items you add. Instead of creating a new formula, copy Formula 1 (which also copies its protection): Leave the cursor on B17, press OA-C, and hit Return twice. Move the cursor to B30 and hit Return again. Both cell references are relative, so type **R** twice.

The current-liabilities category also contains nine items, so copy Formula 1 again: With the cursor on B17, press OA-C, and hit Return twice. Move the cursor to E17 and hit Return again. Type **R** twice.

FORMULA 2: TOTAL NONLIQUID ASSETS

Formula 2 adds six items in the nonliquid-assets category and enters the total in B40.

Cell location: B40

Formula: @SUM(B39.B32)

Protect Formula 2 and each of the other formulas as you create them.

FORMULA 3: LONG-TERM LIABILITIES

Formula 3 adds seven items in the long-term-liabilities category and enters the total in E28.

Cell location: E28

Formula: @SUM(E27.E19)

FORMULA 4: TOTAL ASSETS

Formula 4 adds total liquid assets (B17), total personal assets (B30), and total nonliquid assets (B40) to produce your total assets in E36.

Figure 2. Labels, lines, and practice entries.

```
                          PERSONAL NET WORTH
                         as of September 1989
=============================================================================
ASSETS - What I Own                    | LIABILITIES - What I Owe
---------------------------------------|-----------------------------------
Liquid Assets:                         | Short-Term Liabilities:
 Cash on hand                      650 |  Mortgage or rent              7340
 Savings accounts                 1834 |  Other mortgage                1660
 Checking accounts                 776 |  Fuel and utilities            2880
 Money market funds              14440 |  Medical and dental             775
 Credit union accounts           10761 |  Income tax (not withheld)     1150
 Cash value-life insurance        9800 |  Insurance premiums            3456
 Stocks, bonds                    7600 |  College loans                 2160
 Personal loans to others          500 |  Car loans                     3500
 Other                               0 |  Charge accounts               1234
                                 ------ |                               ------
  Total Liquid Assets                   |   Total Short-Term Liabs
                                        |
Personal Assets:                        | Long-Term Liabilities:
 Residence                      133000 |  Home mortgage loan           67500
 Vacation property               23000 |  Home improvements             8560
 Household furnishings           14750 |  College loans                12000
 Cars                            11750 |  Car loans                     9600
 Clothing, furs, jewelry          3200 |  Vacation property loan        5670
 Computer equipment               1450 |  Margin accounts                  0
 Collectibles                     1800 |  Other                            0
 Gold, silver                      750 |                               ------
 Other                               0 |   Total Long-Term Liabs
                                 ------ |
  Total Personal Assets                 |
                                        |
Nonliquid Assets:                       |
 Business interests             23000  |
 Certificates of Deposit         5000  |
 IRAs, Keoghs                   18680  | ================================
 Profit sharing                  1700  | TOTAL ASSETS
 Personal loans to others        1250  | TOTAL LIABILITIES
 Other                              0  |                               ------
                                 ------ | NET WORTH
  Total Nonliquid Assets                | ================================
```

Figure 3. Formula printout.

```
                          PERSONAL      NET WORTH
                         as of Sept     ember 1989
=============================================================================
ASSETS - What I Own                    | LIABILITIES - What I Owe
---------------------------------------|-----------------------------------
Liquid Assets:                         | Short-Term Liabilities:
 Cash on hand                  650     |  Mortgage or rent          7340
 Savings accounts              1834    |  Other mortgage            1660
 Checking accounts             776     |  Fuel and utilities        2880
 Money market funds            14440   |  Medical and dental        775
 Credit union accounts         1076    |  Income tax (not withheld) 1150
 Cash value-life insurance     9800    |  Insurance premiums        3456
 Stocks, bonds                 7600    |  College loans             2160
 Personal loans to others      500     |  Car loans                 3500
 Other                         0       |  Charge accounts           1234
                               --------|                            --------
  Total Liquid Assets          @SUM(B16...B6)|  Total Short-Term Liabs  @SUM(E16...E6)
                                       |
Personal Assets:                       | Long-Term Liabilities:
 Residence                     133000  |  Home mortgage loan        67500
 Vacation property             23000   |  Home improvements         8560
 Household furnishings         14750   |  College loans             12000
 Cars                          11750   |  Car loans                 9600
 Clothing, furs, jewelry       3200    |  Vacation property loan    5670
 Computer equipment            1450    |  Margin accounts           0
 Collectibles                  1800    |  Other                     0
 Gold, silver                  750     |                            --------
 Other                         0       |   Total Long-Term Liabs    @SUM(E27...E19)
                               --------|
  Total Personal Assets        @SUM(B29...B19)|
                                       |
Nonliquid Assets:                      |
 Business interests            23000   |
 Certificates of Deposit       5000    |
 IRAs, Keoghs                  18680   | ================================
 Profit sharing                1700    | TOTAL ASSETS               +B17+B30+B40
 Personal loans to others      1250    | TOTAL LIABILITIES          +E17+E28
 Other                         0       |                            --------
                               --------| NET WORTH                  +E36-E37
  Total Nonliquid Assets       @SUM(B39...B32)| ================================
```

Cell location: E36
Formula: +B17+B30+B40

FORMULA 5: TOTAL LIABILITIES

Formula 5 adds total current liabilities (E17) and total long-term liabilities (E28) to produce your total liabilities in E37.

Cell location: E37
Formula: +E17+E28

FORMULA 6: NET WORTH

Formula 6 subtracts total liabilities (E37) from total assets (E36) to produce your net worth in E39.

Cell location: E39
Formula: +E36−E37

And here's your (fictional) net worth of $148,521. Press OA-S to store the spreadsheet on disk.

PRINTING YOUR SPREADSHEET

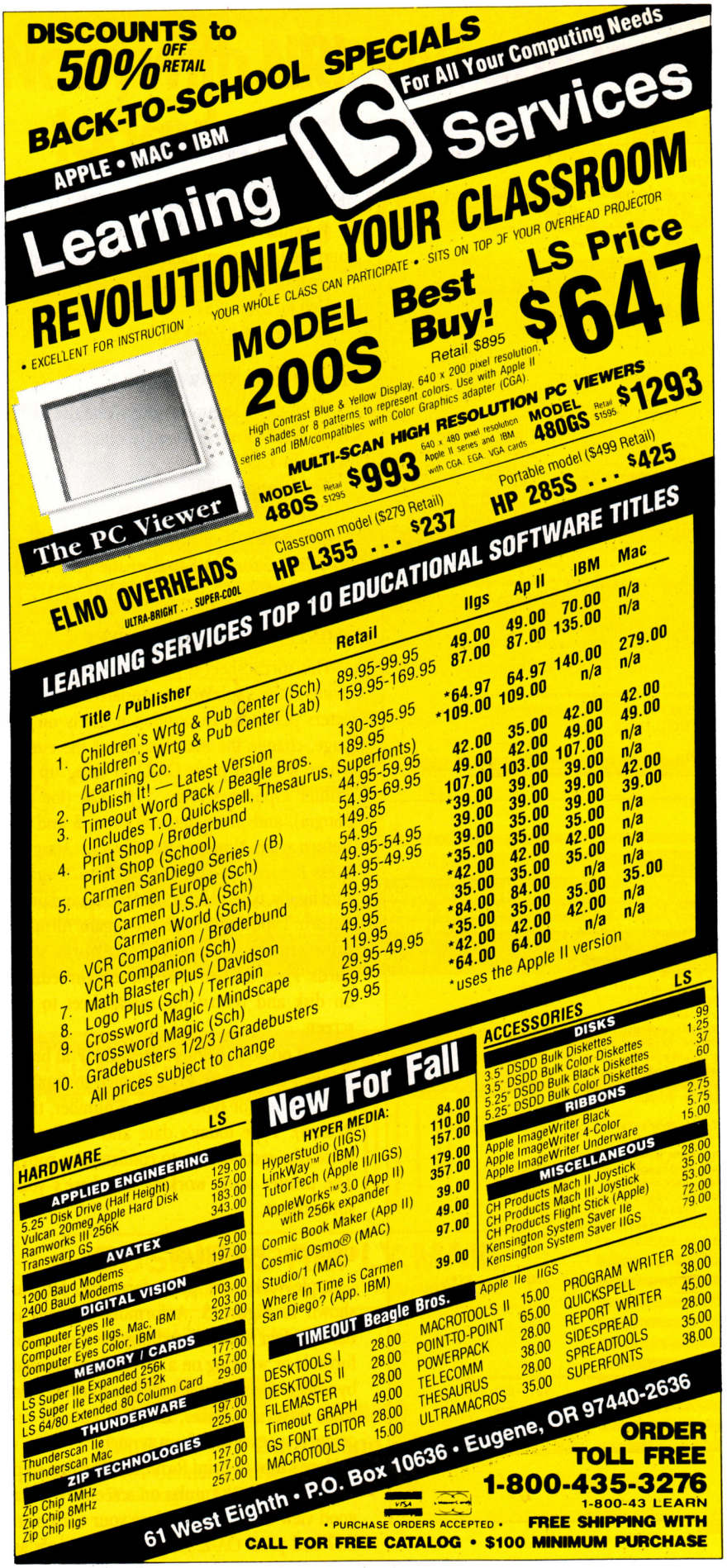
This spreadsheet is 74 characters wide and prints at the AppleWorks standard of ten characters per inch. To position it nicely on the page, change the margins: Leave the cursor where it is and press OA-O to bring up the Printer Options screen. Type **LM** (for *Left Margin*), and press Return. Type **.3** and hit Return again. Now type **RM** (for *Right Margin*), press Return, type **.3**, and hit Return again. And finally, type **TM** (for *Top Margin*) and press Return. Type **.5** and hit Return again. All other print settings remain at AppleWorks standards. Press OA-S to store the margin settings on disk and return the spreadsheet to the screen.

Turn on your printer. Press OA-P to bring up the Print screen. Press Return to confirm your printer (or type a printer number, then Return). Type today's date and hit Return twice (the second time to confirm one copy). The printer starts working and here's your spreadsheet.

PRINTING FORMULAS

AppleWorks can print formulas, too, as shown in **Figure 3**. A formula printout is handy when you're searching for a problem formula or working on a spreadsheet created by someone else. But it serves its purpose best when adversity strikes, and you have to recreate a spreadsheet from scratch.

Here's how to print formulas. The first step is to display the formulas on screen. To get a good view of the action, place your cursor on B17 and press OA-Z. As you can see, only as ►



much of the formula is visible as the cell width allows.

This is easily remedied by increasing the column width: Leave your cursor on B17 and press OA-L (for *Layout*). Type **C** (for *Columns*) and press Return. Type **C** (for *Column width*), press OA-Right Arrow five times, and hit Return. In the same way, increase the width of column E by five characters. Move the cursor around the spreadsheet, and you can see that all formulas are now fully displayed.

Next, check the effect of these increases on print width: Leave the cursor where it is, press OA-P, and hit Return. The Print screen shows that this spreadsheet is now 84 characters wide and, at the current 10-pitch setting, can print only 74 characters per line—an overflow of ten characters. The simple solution is to select a smaller character size: Press Escape to return to the spreadsheet. Now press OA-O, type **CI** (for *Chars per Inch*), and press Return. Type **12** and hit Return again.

AppleWorks now recalculates the number of characters that can print across a line and displays *Chars per line (est) 88*—more than enough for the current 84-character width. Press Escape to return to the spreadsheet.

Be sure your printer is on, because you're about to print the formulas: Press OA-P and press Return four times (to confirm *All*, your printer, the date, and one copy).

To avoid replacing the original version of this spreadsheet on disk, rename this formula version **PNETFORMS** (short for *PERSONAL NETWORTH FORMULAS*): Press OA-N (for *Name*). Press the right-arrow key three times, then press OA-E to switch to the overtype cursor. Type **FORMS** and hit Return again. Now press OA-S to save the spreadsheet. When you load *PNETFORMS* the next time, the formula results, not the formulas, will appear. Just press OA-Z to display the formulas.

NEXT MONTH

With Thanksgiving and the holiday season just around the corner, next month's column features a food-shopping database that can help you get ready for festive occasions.□

RUTH K. WITKIN IS THE AUTHOR OF THE POPULAR TEMPLATE/HANDBOOK SERIES *SUCCESS WITH APPLEWORKS* (*INCIDER*, IDG COMMUNICATIONS/PETERBOROUGH). WRITE TO HER AT 5 PATRICIA STREET, PLAINVIEW, NY 11803. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A REPLY.

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WORD'S OUT

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By CYNTHIA E. FIELD, Ph.D.

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This month we'll design a template for a four-page newsletter. (See **Figure 1** for the finished product.) **Table 1** contains the specifications for size and placement of objects used in this template.

Whatever the impetus for their existence, the best newsletters give equal weight to the medium *and* the message. With Publish It! 2 and custom artwork, you can't miss getting your point across!

THE FRONT PAGE

Start up Publish It! 2 and switch to *Size to Fit* mode (Open apple-4 or Special menu). Referring to **Figure 2**, click on the text tool and rubber-band (press and drag) a $2\frac{1}{4}$-by-6-inch column on Page 1. Begin about a half inch in from the left margin and 3 inches down from the top margin. Use the screen rulers as guides.

Thanks to the program's *Show Specifications* (Open apple-M or Objects menu), you needn't fret about precision. After placing an object, click on it with the pointer tool to put "handles" in its four corners. Use *Show Specifications* and the Apple keyboard to type in dimensions. With the text-area tool, rubber-band columns 2 and 3 and set specifications. ►

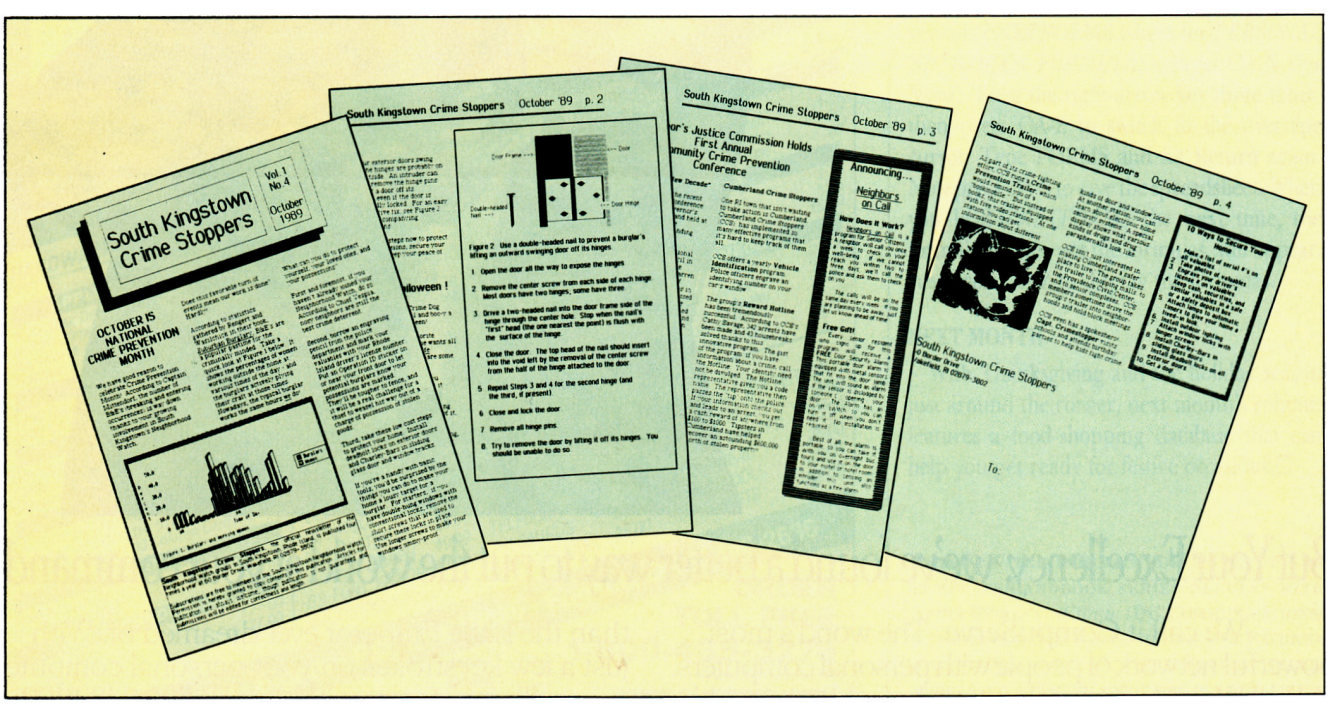

Figure 1. Finished newsletter.

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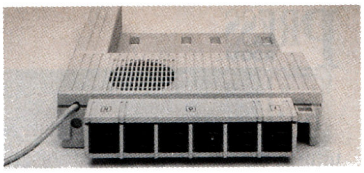

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DataLink Modem - includes over $200 in online services
1200/300 bps (II+,IIe,GS) **$139**
2400/1200/300 bps (II+,IIe,GS) **$189**

NEW! EasyLink - Great new Communications software from AE. Requires IIGS, IIc or 128k Enhanced IIe. **$75**

Z-80+ - Runs all Apple CP/M software (II+,IIe,GS) ... **$119**

ViewMaster 80 - 80 column card for II+ **$124**

Pocket Rocket - 16K RAM Card
Upgrade your II+ to 64K and run ProDOS **$85**

More Quality Hardware

Sony Ultra Hi-Res 13" RGB Monitor/TV - Without a doubt, this is the best R.G.B. monitor available for the IIGS or IIe, bar none! **$569**
Sony digital cable ($29 sep.) **$22**
Sony analog cable ($29 sep.) **$22**

Digitizers
Computer Eyes GS (color) **$205**
Computer Eyes (B/W for II+,IIe,GS) **$108**
ThunderScan **$175**

Joysticks / Mouse
CH Products Flightstick **$42**
CH Products MACH IV Plus **$69**
CH Products MACH III Joystick **$39**
Turbo Mouse (ADB) **$124**

Fans / System Savers
SPECIAL! Conserver by AE. fan for the IIGS **$89**
Kensington System Saver IIe & II+ **$69**
Kensington System Saver IIGS **$74**

Beagle Bros Software

TimeOut AppleWorks Enhancements
Requires AppleWorks 2.0 or later & 128k of memory.

NEW! ReportWriter **$59**
NEW! TeleComm **$49**
UltraMacros or SpreadTools **$40**
MacroTools I or II **$19**
DeskTools I or II **$35**
PowerPack **$35**
QuickSpell **$49**
SuperFonts **$49**
Thesaurus **$35**
SideSpread **$35**
Graph **$69**
FileMaster **$39**

NEW! ProgramWriter **$35**

NEW! Point-to-Point - communications software. Requires IIGS, IIc or 128k Enhanced IIe **$79**

SPECIAL! Super MacroWorks (AW 2.0-2.1) **$20**

Software

AppleWorks GS (1.25 meg) **$229**
AppleWorks Classic (128k ram) **$199**
NEW! Copy II+ (64k Ram) **$29**
NEW! DB Master Professional (128k IIe,IIc, GS) ... **$192**
Deluxe Paint II (768k min) **$59**
Managing Your Money 4.0 (128k IIe, IIc, GS) **$98**
SPECIAL! PinPoint Spell Checker (128k) **$25**
NEW! Print Shop (64k ram) **$35**
NEW! Print Shop GS (512k ram) **$45**
Publish It! 2 - DTP (128k IIe,IIc,GS) **$89**
Quicken - Easy home accounting (128k IIe,IIc,GS) **$36**
SideWays (64k ram) **$38**
VIP Professional - Lotus 123 for the Apple II
IIGS (512k min) **$69**
IIe and IIc (256k min) **$69**
Where in the World is Carmen Sandiego? **$29**
WordPerfect GS (512k ram) **$104**
WordPerfect IIe & IIc (128k) **$104**
Blank Disks
5.25" DS DD disks with sleeve (10) **$8**
3.5" DS DD disks (10) **$15**

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1. Toll free 800 number for orders.
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Or try this alternative method: Select column 1, copy it (Open apple-C or Edit menu), and drag the copy (Open apple-V or Edit menu) into position with the mouse. Paste again to create column 3. Select column 3 and lengthen it by dragging its lower-right handle straight down about $1\frac{1}{2}$ inches. Use *Show Specifications* to fine-tune it if necessary.

Under columns 1 and 2 rubber-band another text area, which will function as a masthead for listing the publisher, frequency of distribution, price, and copyright notice. Make this a bordered text area by clicking on the *Frame Border* button in the *Show Specifications* dialog.

Use **Table 1** to help you duplicate the dimensions of the three rectangles and the two text areas comprising the multilevel title area. With the rectangle tool create a shape; then, while it's still selected, choose its pattern. For the grey rectangle choose a shaded pattern from the *Set Fill Pattern* dialog (Objects menu). For the black rectangle change the fill pattern to black. For the white rectangle use the white fill pattern.

Select the text tool and rubber-band two text areas in the title area. Use *Show Specifications* to frame these text areas and to fine-tune their placement.

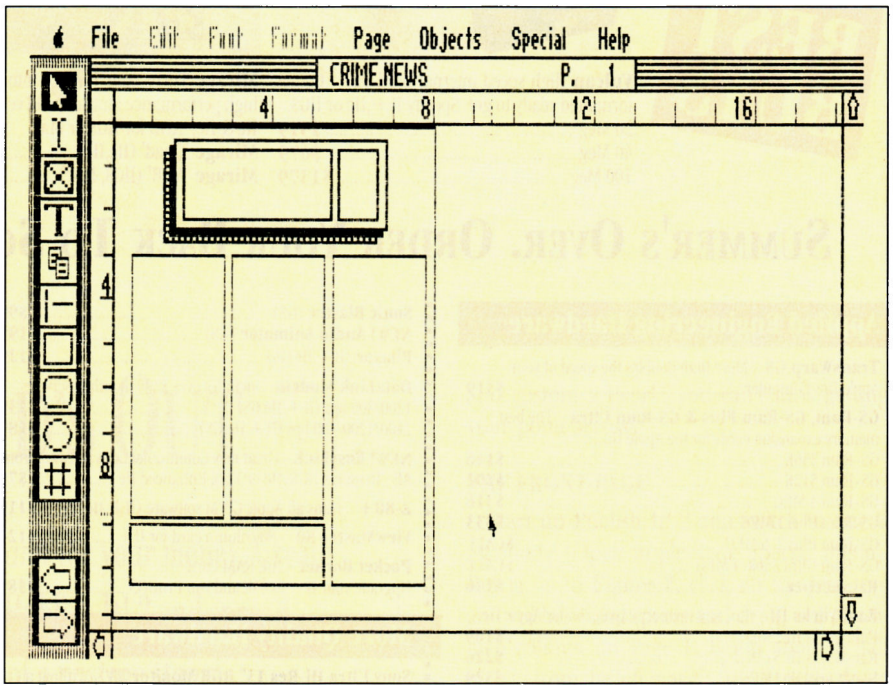


Figure 2. Page 1 template screen dump.

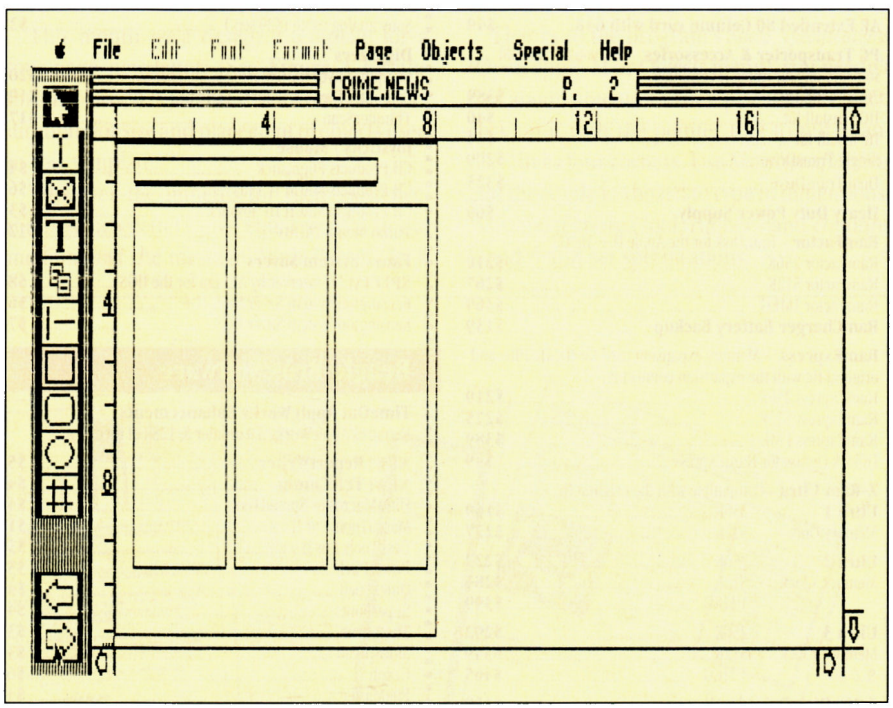


Figure 3. Page 2 template screen dump.

WE INTERRUPT THIS PROGRAM

Become fluent in switching from one viewing mode to another. *Size to Fit* mode is best for laying out a page, but *Show Half Size* mode (Open apple-3) is tops for working on medium-sized objects, headlines, and subheadings. Use *Show Full Size* mode (Open apple-1) for typing text or viewing graphics. Though perhaps least frequently used, *Show Double Size* mode (Open apple-2) is indispensable for selecting, editing, and positioning thin rules that are otherwise difficult to manipulate.

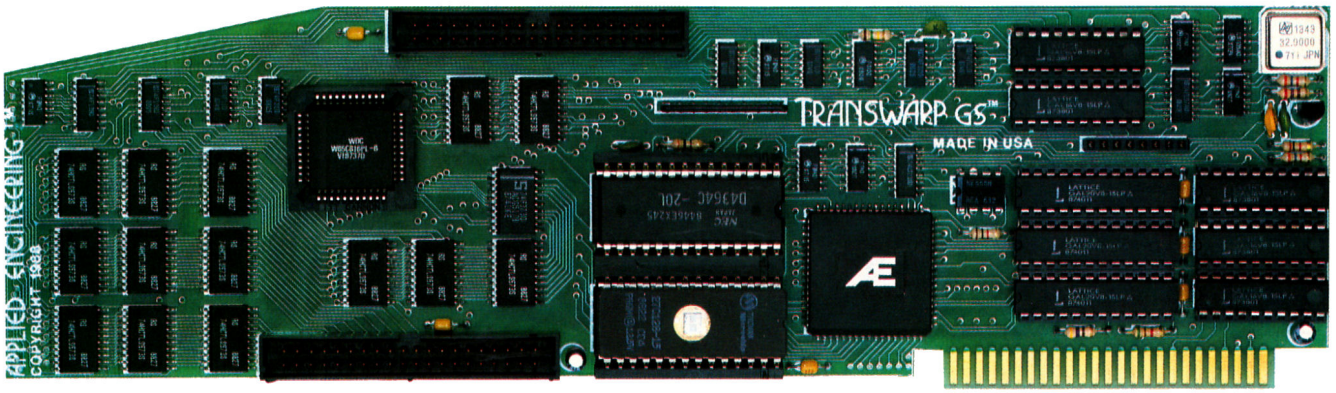
Here's one reminder: Like politicians who counsel you to "vote early and often," desktop publishers know they should save their progress with the same diligence. Use *Save As* (Open apple-A or File menu), select the drive containing your data disk, type the name of your template-in-progress, and press Return. Save your template under the same name or a slightly different name each time you complete a major step.

MOVING RIGHT ALONG

Click on the right-arrow icon in the bottom left-hand corner of the screen and add another page to your newsletter. On page 2, create three identical columns according to the specifications shown in **Table 1**.

Because this template is for a multipage newsletter, it's a good idea to include a header at the top of each page; it should contain the publication's name, date, and page number. Rubber-band the header-text area. Place the I-beam within this area, select a font such as *Desplaines 18* (Open apple-W or Font menu), and type the information.

Separate the header from the body text of the newsletter with a rule. Use the straight-line tool, and select the rule's thickness from the *Set Line Weight* dialog under the Objects menu. Page 2 should look like **Figure 3**. ►



Fan mail GS

"TransWarp GS has performed flawlessly ... I've become addicted to computing at warp speed ... once you get a taste, you'll wonder how you ever got anything accomplished with your IIGS lumbering along at an unaccelerated pace ... it's an improvement you're going to appreciate every time you place your fingers on the keyboard."

— Owen Linzmayer, Technical Editor, A+

"I'm stunned ... bordering on speechless. I used to dread waiting and waiting to run GS/OS. I don't anymore. TransWarp GS breathes new life into my computer. Thanks AE, you guys are in a class by yourselves."

— Joe Kohn, The Source

"Once I started using the original TransWarp in my old IIe, I found I couldn't do without it, TransWarp GS promises to be equally indispensable."

— Lafe Low, Review Editor, Incider

"This is the card you want. Sell whatever secondary peripherals you must in order to get a TransWarp GS plugged in."

— Joe Abernathy, Houston, TX

"Together with my RamKeeper, you have given me a color Mac at one-third the price. Thanks."

— Richard Artz, Ft. Collins, CO

"I have conducted some recent tests which indicate that the "little" IIGS (with TransWarp GS) outperforms the MacSE. Your engineering department should take a bow."

— George Dombrowski, Jr., Chicago, IL

"TransWarp GS will be the best $400 you ever spent."

— Dan Muse, Editor in Chief, Incider

"WOW WOW WOW! I am completely blown away with how fast it goes. Unbelievable."

— Dean Esmay, A2-Central

"TransWarp GS is by far the best money I've spent on my GS since purchasing my DataLink. Hats off to everyone at AE for another great product!"

— Greg Dacosta, GEnie

TransWarp GS is rapidly changing the way people use the Apple IIGS. Join the thousands of TransWarp GS owners who've discovered computing at Warp Speed. For more than nine years, Applied Engineering has led the way with proven, reliable products for the Apple II line. We plan to keep it that way. Thanks for the vote of confidence, folks.

TransWarp GS Accelerator **$399**

Order today!

To order or for more information on TransWarp GS, see your dealer or call (214) 241-6060 today, 9 am to 11 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add $10 outside U.S.A.

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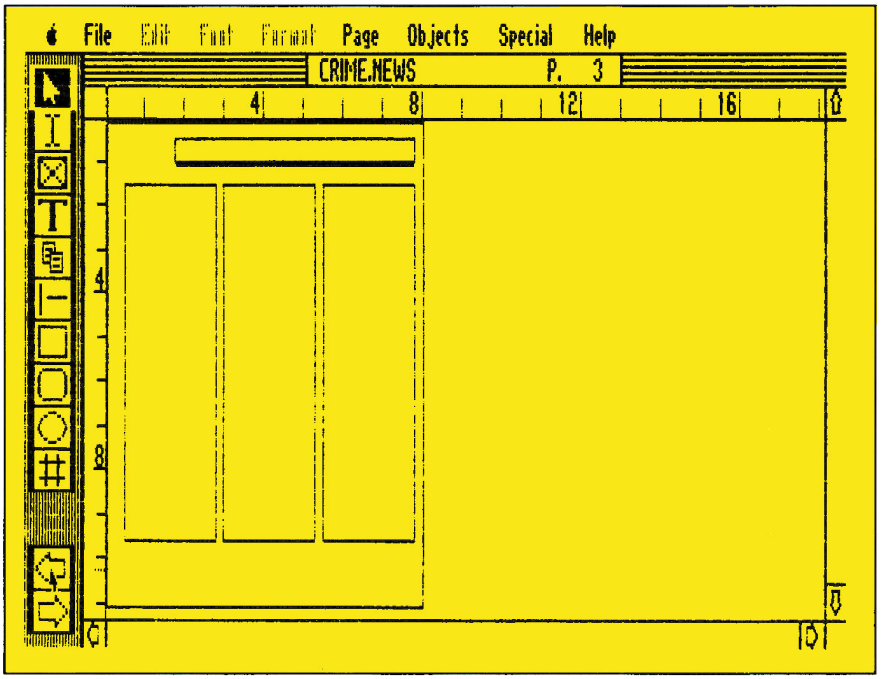


Figure 4. Page 3 template screen dump.

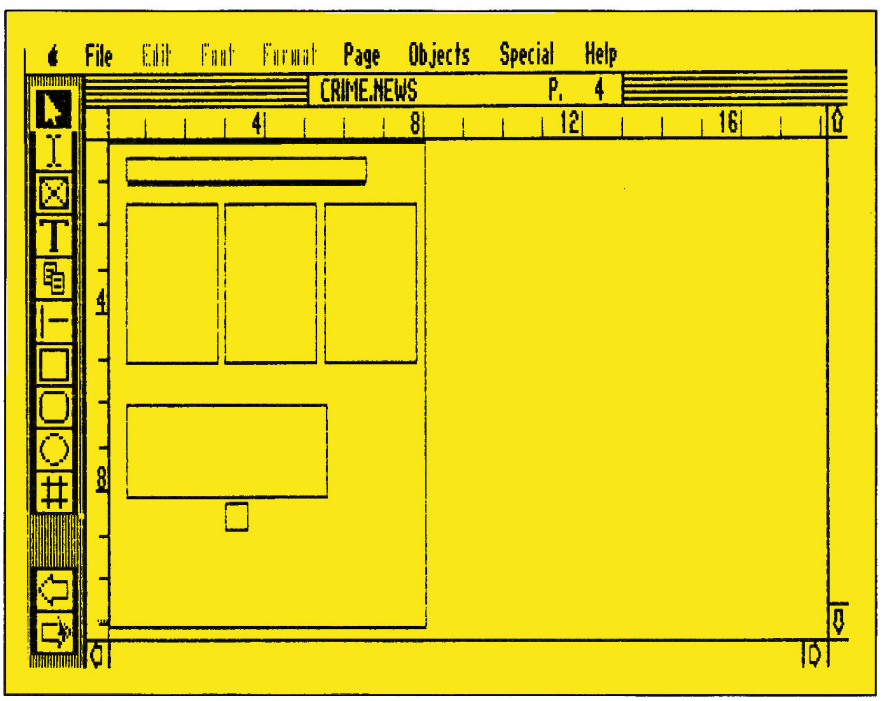


Figure 5. Page 4 template screen dump.

Click on the right-arrow icon and add page 3, which has the same five objects as page 2. Objects are identical except that the header-text area and the rule are shifted to the right-hand side of the page as shown in **Figure 4**. This placement makes any two facing pages appear more symmetrical.

Use the program's copy and paste functions to duplicate objects from page 2 on page 3. Then, to copy the header's text, place the I-beam at the beginning of the header text on page 2. Press Open apple-E (or Edit menu) to select this text. Press Open apple-C (or Edit menu) to copy it, then switch to page 3. Place the I-beam in the header-text area on that page. Press Open apple-V (Edit menu). The text should flow right into place.

THE BACK PAGE

Click on the right-arrow icon to add page 4. This page, which looks different from all others (see **Figure 5**), contains three identical short columns as well as a header-text area and a rule.

The lower half of page 4 is special. When you fold your finished newsletter in half, the bottom of the page displays your organization's return address and provides a place to attach a mailing label with the recipient's name and address.

To facilitate consistent placement of name labels, rubber-band a small text area. Place the I-beam within it, select the *Desplaines 18* font, and type the word *To*.

DESIGN CONSIDERATIONS

Click on the left-arrow icon three times to work your way back to page 1. Think about the message you're trying to convey and the typeface that can do the job.

For our crime-prevention newsletter Desplaines and Deerfield typefaces meet requirements both for appearance and for readability. A typeface such as Ravinia seems much too flowery for a crime-related piece, but it could be right at home in a newsletter written for miniatures (doll houses and their furnishings) enthusiasts or garden clubbers. The Wilmette typeface isn't "heavy-handed" enough for a let's-get-tough-on-crime newsletter, but it could work effectively in a publication for boaters or restaurateurs.

But far be it from me to take the *personal* out of personal computing! Experiment and choose the typeface that looks best to *you*. If you feel "iffy" about a particular font, show a sample printout to your spouse, a fellow teacher, or a business colleague.

EXTRA! EXTRA!

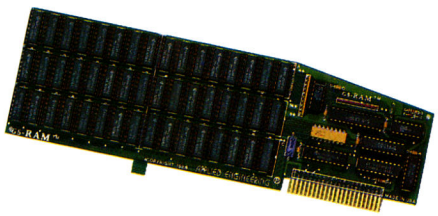
Place the I-beam in the title area's larger text space. Select the *36-point Desplaines* font and type the newsletter's title. Use our title or your own.

This text area can accommodate about 15 characters on each of its two lines. If you choose a different typeface and size, you may be able to fit more or fewer characters. In that case, you may want to resize all five objects comprising the title area. ►

Three good reasons to buy a memory card from Applied Engineering.

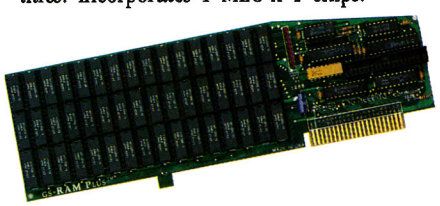
Applied Engineering makes three different memory cards for the IIGS because every IIGS owner is different. Each card was designed to suit specific needs:

1. **GS-RAM.™** Start with as little as 256K of memory and grow in affordable 256K increments to 1.5 MEG (an amount that once sounded large, but is now considered a moderate amount of memory expansion.) Incorporates 256K x 1 chips.



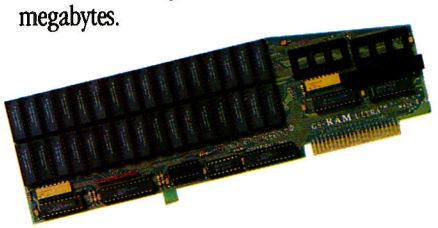
GS-RAM w/256K	**$179**
1 MEG	**$389**
1.5 MEG	**$529**

2. **GS-RAM Plus.™** Expands from 1 to 6 MEG in 1 MEG increments. Originally designed for power-users requiring a great deal of internal memory, this card has recently found favor with many moderate users. MEG-sized jumps in memory have now become practical for many users because of the enormous memory requirements of today's software titles. Incorporates 1 MEG x 1 chips.



GS-RAM Plus w/1 MEG	**$419**
2 MEG	**$669**
3-6 MEG	**CALL**

3. **GS-RAM Ultra.™** AE's newest memory card incorporates a new chip - the 256K x 4, which has four times the density of 256K x 1 chips. GS-RAM Ultra offers incremental expansion like the GS-RAM and ultimate size like the GS-RAM Plus. It's expandable from 256K to 4 MEG in 256K increments, so you can start small and still grow to a massive 4 megabytes.



GS-RAM Ultra 256K	**$229**
512K	**$289**
768K-4 MEG	**CALL**

We've also added ROM sockets to the GS-RAM Ultra. ROM sockets allow hardware-based applications to be loaded permanently into EPROMs...an increasingly important feature when application become available from Applied Engineering and others.

Consider your needs.

Need a moderate amount of memory? **GS-RAM** lets you start small and takes you up to 1.5 MEG. Need lots of memory right away? **GS-RAM Plus** is your best bet. Want to start small and leave open the possibility of a huge internal memory? **GS-RAM Ultra** is your card. And our **GS Expander™** piggyback card adds up to 2 MEG to any of the three cards. Call AE for prices.

Trade in your Apple card.

We even offer a trade-in credit for your Apple IIGS memory card, so you can switch to an AE card with more features and greater capacity. Still have questions? Call us, we'll be happy to discuss your particular applications.

DMA compatibility.

All three of our GS memory cards are fully DMA compatible (and they're the ONLY large-format cards that are), so they not only run all GS software, they also support *current and future* DMA peripherals.

Installation couldn't be easier, the cards just plug in. And all three cards feature Applied Engineering's meticulous craftsmanship, along with our 5-year warranty, our 15-day money-back guarantee* and our American-made pride.

Still more:

Each of our GS memory cards comes with many other exclusive features, *disk caching* that tremendously speeds up many programs, including AppleWorks, by virtually eliminating disk access. Our *diagnostic utility* feature graphically detects the presence of bad or improperly installed chips and tests for CAS before RAS chips. And our *AppleWorks enhancement* package dramatically increases AppleWorks' word processor lines (from 7,250 to 22,500), database records (from 6,350 to 22,500), clipboard capacity (from 255 lines to 2,042) and more.

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Page	Objects	Left Start	Top Start	Width	Height	Frame Border?
1	Grey Rectangle	1.250	0.600	5.330	2.075	—
"	Black Rectangle	1.375	0.475	5.330	2.075	—
"	White Rectangle	1.500	0.350	5.330	2.075	—
"	Left-Title Text	1.813	0.647	3.593	1.500	y
"	Right-Title Text	5.650	0.644	0.886	1.500	y
"	Column 1 Text	0.500	3.000	2.250	5.750	n
"	Column 2 Text	3.000	3.000	2.250	5.750	n
"	Column 3 Text	5.500	3.000	2.250	7.250	n
"	Masthead Text	0.500	9.000	4.750	1.250	y
2	Header Text	0.500	0.500	6.000	0.400	n
"	Header Rule	0.500	1.500	6.000	—	—
"	Column 1 Text	0.500	1.500	2.250	8.000	n
"	Column 2 Text	3.000	1.500	2.250	8.000	n
"	Column 3 Text	5.500	1.500	2.250	8.000	n
3	Header Text	1.750	0.500	6.000	0.400	n
"	Header Rule	1.750	1.000	6.000	—	—
"	Column 1 Text	0.500	1.500	2.250	8.000	n
"	Column 2 Text	3.000	1.500	2.250	8.000	n
"	Column 3 Text	5.500	1.500	2.250	8.000	n
4	Header Text	0.500	0.500	6.000	0.400	n
"	Header Rule	0.500	1.000	6.000	—	—
"	Column 1 Text	0.500	1.500	2.250	3.500	n
"	Column 2 Text	3.000	1.500	2.250	3.500	n
"	Column 3 Text	5.500	1.500	2.250	3.500	n
"	Return-Address Text	0.500	6.000	5.000	2.000	n
"	"To" Text	3.000	8.250	0.500	0.500	n

Table 1. Object specifications (inches).

Drag the I-beam to highlight the title. Make the text boldface (Open apple-B or Font menu).

Select *Justification* from the Format menu and click on *Center*. Turn off *Use Page Standard* by clicking on it.

Select *18-point Desplaines* for the volume, number, and date information contained in the smaller text area at the top of the page. Center the information.

For consistency's sake I used the Desplaines typeface in various sizes and styles for headlines as well as for the masthead text on page 1, last month's Figure 2 ("Do-It-Yourself," September 1989, p. 76) on page 2, and the sidebars on pages 3 and 4.

I used the *12-point Deerfield* font for body text. In *serif* typefaces such as Deerfield, individual characters have "tails" or embellishments that—according to some experts—make them more readable.

Sans-serif typefaces like Desplaines have characters that end abruptly. While more "contemporary" in appearance, these typefaces may be more difficult to read in large doses.

IT FIGURES

Select the graphics-area tool, and rubberband a graphics area above the masthead and spanning two columns' width. Refer to **Table 2** for object specifications for special effects like the one used in our crime-stopping newsletter. Click on the graphics area with the pointer tool, pull down the File menu, and click on *Import Picture*. Place the disk containing the clip art you want to use in the selected drive.

Remember the column chart we created with **Graph It!** in last month's Press Room? If you completed that project, select the chart from your data disk's directory. Otherwise, select any piece of clip art that suits your newsletter's theme. Shrink or enlarge the graphic if necessary by tugging systematically on one or more handles.

DAZZLING DIAGRAMS

Turn to page 2. Remember the second illustration we created in last month's column? We used **Dazzle Draw** to design a picture of a door hinge and a double-headed nail. Import your Dazzle Drawing into Publish It! 2 (use the File menu option *Import Picture*) and complete the diagram with Publish It! 2 shape tools and text labels. Use shaded rectangles to simulate the door frame and door. Rubberband small text areas to create labels for the diagram's parts.

Why not include instructions for the anti-►

Teach them now.

Now is the time for them to learn. A good working relationship with a good word processor can make the difference in college, business, or almost any occupation your students choose.

Right now more people use WordPerfect than any other word processor. And every year brings more fans. Chances are good that today's school children will use WordPerfect at some point in their future, so why not give them a head start?

WordPerfect is popular on Apple machines for a lot of reasons. For some people, it's the clean strength of the program itself. For others, toll-free customer support and continual updates are the key. An interface that makes sense and intelligent file management add to the score.

No matter what the reason, the fact is that at some point in their lives, everyone will wish he or she knew WordPerfect. The timing is right, right now, to teach them what they'll need. Because the more you can give them while they're young, the better prepared they'll be as adults. And that's sooner than you think.

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Page	Object	Left Start	Top Start	Width	Height
1	Graph It! Chart	0.537	6.077	4.666	2.666
2	Dazzle Draw Graphic	4.036	2.445	2.416	1.180
"	Door Frame: Upper Rectangle	4.850	1.529	0.833	1.000
"	Door Frame: Lower Rectangle	4.850	2.491	0.166	1.148
"	Door: Upper Rectangle	5.738	1.566	0.758	0.962
"	Door: Right Rectangle	6.397	2.418	0.091	1.295
"	Frame-Label Text	3.820	1.880	0.981	0.155
"	Nail-Label Text	3.247	3.047	0.877	0.337
"	Door-Label Text	6.526	1.863	0.575	0.155
"	Hinge-Label Text	6.284	3.141	0.945	0.169
"	Figure 2: Border Rectangle	2.962	1.262	4.740	8.222
"	Figure 2: Text	3.169	3.911	4.252	5.173
3	Sidebar: Round Rectangle	5.444	1.479	2.333	8.222
"	Sidebar Text	5.752	1.716	1.716	7.747
4	Digitized Graphic	0.518	3.091	2.313	2.055
"	Sidebar Rectangle	5.387	1.352	2.444	3.777
"	Sidebar Text	5.484	1.491	2.250	3.500

Table 2. Special-effects specifications (inches).

theft project right along with the diagram? To do so, select columns 2 and 3 on page 2 and delete them (Open apple-X or Edit menu). Rubber-band a text area beneath the diagram. Into this text area type the instructions for preventing a burglar from lifting a door off its hinges. To separate **Figure 2** from the body of the newsletter, select the rectangle tool and the white fill pattern. Rubber-band a rectangle around the completed figure. To prevent the rectangle from covering up the figure, choose *Move to Back* (Objects menu).

SIDEBAR MAGIC

On page 3 narrow and shorten column 3. Place the I-beam in it and type the sidebar's contents.

Center headings and fully justify the text. (Click on *Justification* in the Format menu; turn off *Use Page Standard*.)

Rubber-band a round rectangle around the text area. Use the round-rectangle tool and the "brick wall" fill pattern. Select *Move to Back* (Objects menu) to place the brick wall behind the text.

Create the sidebar on page 4 in similar fashion. Use a different fill pattern for the border rectangle and keep the text left justified.

Had this newsletter been authentic and not hypothetical, we'd have secured permission to use a likeness of McGruff the Crime Dog (TM). Instead, I substituted a picture of Sitka "Throw a Cookie and Take What You Want" Field. We made a black-and-white copy of the original color photo on a Canon PC-14 desktop copier and digitized it with **ThunderScan**.

MESSAGE MEETS MEDIUM

Flip back to page 1. Place the I-beam in column 1 and begin typing body text. When you fill a column, move the I-beam to the next column and continue. Here's an easier method: First link columns using Publish It! 2's linking tool; linking lets text flow from one column to the next automatically. Import text from an ASCII or **AppleWorks Classic** word-processing file (File menu).

Those who eschew using Publish It! 2 as a word processor lavish praise on AppleWorks' capability to keep pace with their turbo typing and to work with various spelling checkers. If you're a newsletter editor who depends on other writers to supply material, it's a lot easier if they submit AppleWorks files on disk.

Depending on your circumstances (whether or not you own AppleWorks, for one thing), typing text within Publish It! 2 has its good points. First, screen columns and sidebars are narrow enough to prevent the program from redrawing the screen continually and slowing you down. Second, you can exercise better control over the length of an article or a sidebar, because you can see as you go along just how much space you've got left.

THE BLUE PENCIL

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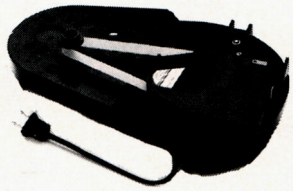

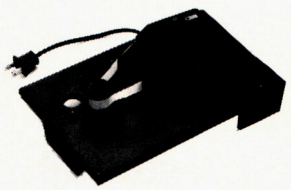

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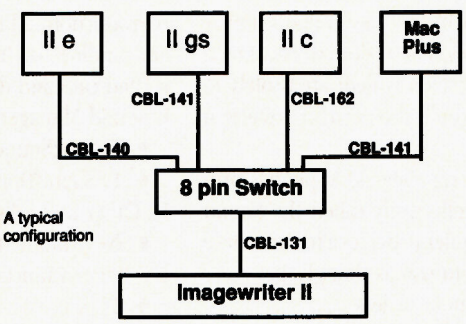

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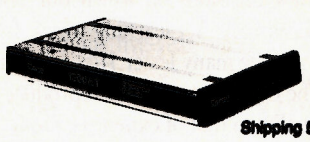

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SOUND IT OUT

Hear what you've been missing! With one simple statement, GS BASIC programmers can play any digitized-sound file.

By JOE ABERNATHY

YOUR MISSIVES SAY, "LET THERE BE GRAPHICS AND sound," so tune your dial and let's round out your GS' "natural" talents. In addition to the powerful QuickDraw graphics primitives discussed in August ("Tools to Draw On," p. 78), you can add to your BASIC library an efficient and easy-to-use sound-playback capability, handy in education, special-needs, and entertainment programming.

Sound reproduction is within ready grasp of all IIGS programmers. Best of all, you don't even need to understand the technical details to use these sound-software tools. Using Micol Advanced BASIC, TML BASIC, or AC/BASIC, simply type in the accompanying **Program listings** and start listening.

If you're interested in the theory, however, sound presents one of the few occasions on which our normally friendly BASIC compilers begin to balk. Yet learning to use BASIC to program sound can help you master many lesser IIGS programming tasks.

The GS can record and reproduce multichannel sound that's similar in quality to that of expensive music synthesizers. It does so by using a special outboard logic chip, the Ensoniq, which is dedicated solely to sound tasks. For true multichannel sound, you'll also need an expansion stereo card and external speakers.

To help you access the Ensoniq's sound capabilities, Apple has provided a built-in set of software utilities, collectively called the Sound Manager tool set. In turn, your BASIC compiler provides a tool interface to make the Toolbox sound calls available to you as though they were a standard part of the BASIC language—more or less.

ORGANIZATION PAYS

The GS can produce concert-quality sound, but achieving this magnificent effect requires an advanced music degree. So rather than fully master the GS' musical talents, we'll focus herein on a simple goal—digitized-sound playback. This procedure meets the needs of most programmers, as well as those who want to establish a foundation for further learning. In examining this technique, we also can practice the more general skill of how to coax any program from conception to completion.

As I've emphasized repeatedly in this column, the first step in writing any program is planning. Decide what your program must do, what it should do, and what it would be nice to do. Then strike a balance weighing your goals, abilities, and time. The following simple outline describes such a plan for sound playback:

I. Select a file to play.
  A. Use *Open File* dialog in desktop environment.
  B. Request user input if in text environment.
II. Load sound file into memory.
  A. Reserve memory for sound.
  B. Load file into reserved memory.
III. Prepare for playback.
  A. Create table of sound parameters.
  B. Fill it with information about this sound.
IV. Play the sound.
  A. Start sound tools.
  B. Begin playback.
  C. Play until done.
  D. Release memory.
  E. Shut down sound tools.

The IIGS Toolbox Sound Manager contains two utilities for sound reproduction: _FFStartSound and _FFSoundDoneStatus. So our second outline lists the specific sound tool calls you'll need along with related calls and data structures:

I. Sound Manager tool calls
  •_FFStartSound to start sound playback
  •_FFSoundDoneStatus to monitor playback progress
II. Other tool calls
  •_NewHandle to get the sound into memory
III. Related functions and DOS calls
  •OPEN file
  •GET to read file
  •LOF to determine file size
  •CLOSE file
IV. Data structures
  •RECORD sound-parameter block
  •NUMERIC VAR playback speed
  •MEMORY HANDLE for sound

►

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

•RECORD file information

The next step is to implement your outline. Begin with the four data structures (part IV) that normally go at the top of a BASIC program. The exact form they'll take depends on your compiler.

What are data structures? IIGS Toolbox calls often require that you feed them a lot of information so that they can react properly to your particular program. They often return quite a lot of information, as well. Data structures represent a way of organizing this information into a logical grouping with which you can work easily.

The Sound Manager is no exception. Ensoniq needs to know how to reproduce your wave form. The sound-parameter table provides that information, including such data as playback speed and volume. By manipulating the sound-parameter block, you can make a soundtrack loop continuously in the background or play a succession of wave forms, for instance.

According to the *IIGS Toolbox Reference Manual*, the sound-parameter block must keep track of the following items, among others:

waveStart: address of wave form to play
waveSize: waveform size in pages
freqOffset: playback rate
docBuffer: DOC-buffer start address
bufferSize: DOC-buffer size
nextWavePtr: pointer to next wave's parameter block
volSetting: DOC-volume setting

BASIC has no way to represent a hodgepodge of information such as that shown above. Standard BASIC arrays consist exclusively of mathematical or string variables. But the sound-parameter block, indeed most data structures, combine integers with memory pointers and more.

All three IIGS BASICs have a special way of feeding data structures to the tool call. Micol lets you do a pseudo POKE, while TML and AC/BASIC support a modified array that imitates a structure data type. The accompanying **Program listings** included with this column show the actual implementations for each language.

Pascal and C are rich with data structures, making the IIGS BASIC compilers pale in comparison. This one fact makes tool programming, including sound, much more difficult in BASIC than it needs to be. The compiler's publishers maintain this is because BASIC programmers don't like powerful data structures resembling those of higher languages; I've yet to meet a programmer who's of that opinion. Perhaps you should write a letter to the language publishers if you share these concerns.

Once you've taken care of data structures, you can just look over your outline to see the most straightforward way of putting together the actual source code. You'll likely want procedures to set up the environment and to let someone select a sound file to play, actually play the file, and do a clean shutdown of the environment.

In a program that implements the desktop, you'd probably get the most use out of a *play sound* option presented in a pull-down menu. Our **Program listings** implement this technique in TML and AC/BASIC.

For text-based programs or background-sound reproduction, a subroutine such as that shown in the Micol Advanced BASIC code, **Listing 1**, is more appropriate. The subtle differences lie only in how the sound-production routines fit into your application's general structure.

After adding a sound-player utility to your software library, you may wonder how you'll obtain the sounds you'll want to play. For sound effects, which perhaps comprise the bulk of sound playback, you can ►

Listing 1. Micol Advanced Play.Sound source code.

```
PROGRAM PrintLib

{     ------------------------------------     }
{ Show CDA                    Studio }
{ By Joe Abernathy              BASIC }
{ (C)1989, inCider Magazine      ====== }
{ Version 1.2, July 11, 1989          }
{ All Rights Reserved.              }
{ Compiler: Micol Advanced BASIC      }
{     ------------------------------------     }

{ Sound Data structures: }

DIM FFBuffer% (20)
FFBank% = 0
H_Bank% = 0
H_Adress% = 0
FFAD% = 0
No_MEM! = FALSE

{ channel-generator-type word: }
ffSynthMode = 0001     { Free-form Synthesizer Mode }
noteSynthMode = 0002  { Note Synthesizer Mode }
{ END OF SOUND DATA STRUCTURES }

Done! = FALSE          { init quit flag }

{     ------------------------------------------     }
{ PROC DoSound
    This routine is based on a program
 (C)1988 by Ron Lewin of Micol Systems.
 Used with permission, and our thanks.
              ------------------              }

PROC DoSound [Size, SndFile$, Speed%, Vol%]
 IF FILE (SndFile$) THEN BEGIN
    TOOLBOX (2, 28: 0000, 0000; No_Bytes%, No_Banks%)
    No_Bytes = No_Bytes%
    IF No_Bytes < 0 THEN No_Bytes = No_Bytes + 65536  { Twos complement }
    Total_Bytes = No_Banks% * 65536 + No_Bytes
    IF Total_Bytes < Size THEN Size = Total_Bytes
    LSB_BlockAdr = ADDR(LSB_Blocksize%)
    MSB_BlockAdr = ADDR(MSB_Blocksize%)
    LSB_Size1 = (Size MOD 65536) MOD 256
    Pages = (Size MOD 65536) / 256
   Banks = INT(Size / 65536)
  POKE LSB_BlockAdr, LSB_Size1
  POKE LSB_BlockAdr+1, Pages
  POKE MSB_BlockAdr, Banks
  ID% = PEEK (238)          { Get User ID for using the Memory Manager }
   AtribAd = ADDR(Attrib%)    { Set attributes for the requested block of }
  POKE AtribAd,128           {  memory. }
   TOOLBOX(2,9: 0000, 0000, MSB_Blocksize%, LSB_Blocksize%, ID%, ...
                        ...  Attrib%, 0000, 0000; H_Adress%, H_Bank%)
 IF PEEK (202) = 0 THEN BEGIN
    Tmp_Addr = H_Adress%  { get result returned by tool call above }
    IF Tmp_Addr < 0 THEN Tmp_Addr = Tmp_Addr + 65536
    L_Adress = (H_Bank% * 65536) + Tmp_Addr
   R_LSB = ADDR (Adress%)
   R_MSB = ADDR (Bank%)
   POKE R_LSB, PEEK (L_Adress)
   POKE R_LSB + 1, PEEK (L_Adress + 1)
   POKE R_MSB, PEEK(L_Adress + 2)
    Tmp_Addr = Adress%
    IF Tmp_Addr < 0 THEN Tmp_Addr = Tmp_Addr + 65536 { Twos complement }
    Full_Add = (Bank% * 65536) + Tmp_Addr
   BLOAD SndFile$, Full_add, Size { Load sound file into memory }
  FFAD% = ADDR (FFBUFFER%()
  FFBank% = PEEK (202)
  FFloc = ADDR (FFBUFFER%()
   FOR Buffer_Size = 0 TO 7 UNTIL 2.0 ^ (8 + Buffer_size) > Size
     NEXT Buffer_size
    Buffer_size = Buffer_size - 1

   { Consult the accompanying article for a discussion of
     this wave parameter table: }

  POKE FFLOC, PEEK (L_Adress)
   POKE FFLOC + 1,PEEK (L_Adress + 1)
  POKE FFLOC + 2, Bank%
   POKE FFLOC + 3, 00
  POKE FFLOC + 4, Pages
  POKE FFLOC + 5, Banks
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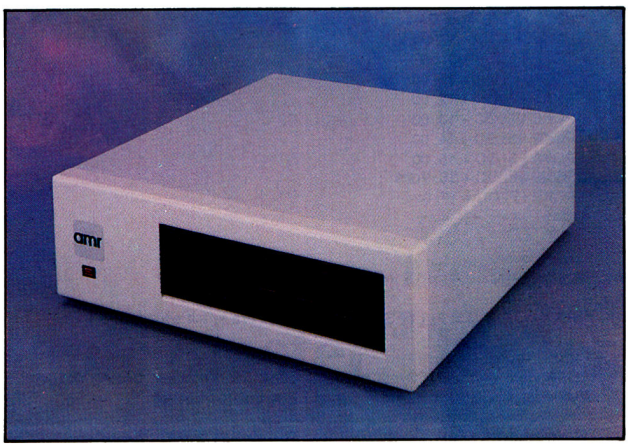

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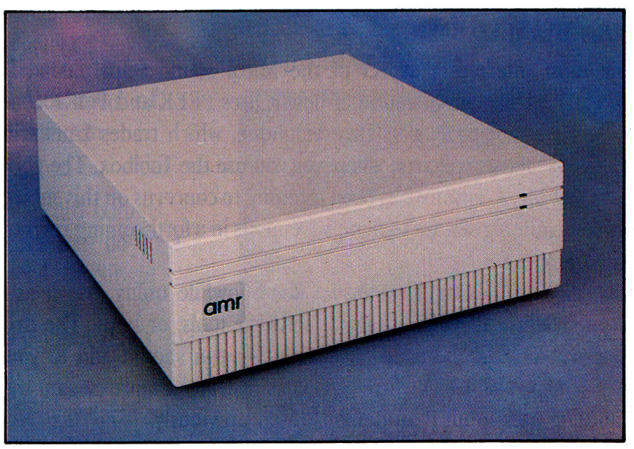

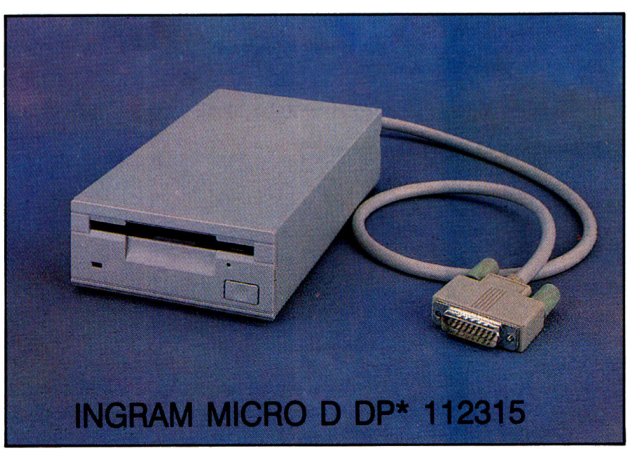

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buy cassette tapes at any good record store, then record the sounds you need using hardware such as Sonic Blaster or FutureSound. You can also program wave forms directly—if you're feeling brave.

Also, note that you can use the central procedure producing the actual sound in a variety of fashions. If you're writing a game, for instance, the player probably won't select a sound file; he or she just needs to hear the drip of water in a dungeon or the sound of engines on the raceway. You can easily edit these sound utilities for such uses.

Before discussing language-specific features of sound, kudos are in order for several people whose help made this column much more effective. They include Applied Engineering's Phil Montoya, who wrote the software for Sonic Blaster and offered to share his insights; Absoft's Lee Rimar, Jeff Knaggs, and D.K. Keppner, who provided both source code and exceptional product support; Micol Systems' Ron Lewin, who provided insightful source code, along with a sympathetic ear; and TML Systems' newly hired Apple product manager, Vince Cooper, who let me use source code to which TML owns the copyright, and also provided ready product support.

MICOL ADVANCED BASIC

The most interesting aspect of the Micol sound implementation (**Listing 1**) is the demonstration of how it uses PEEK and POKE commands to support tool calls. This technique, which trades familiarity for difficulty of use, will arise whenever you use the Toolbox. The good news is that Micol Systems has been listening to concerns on this subject and will include significant tool improvements in a forthcoming revision to the compiler.

You can add **Listing 1** to the *inCider* ShowFile utility, use it as a permanent entry in your library of software tools, or both. The procedure DoSound is the actual work routine you should add to your library. The procedure DoPlaySound demonstrates a more elegant way of handling user input than demonstrated previously.

Micol BASIC lacks two features important to sound playback: a way of determining a file's length and a way of reading GS/OS directory information concerning the file to be played, especially playback speed, which by default is stored in the auxiliary file-type field.

A compiler revision, which should be available as you read this, will let you open GS/OS DIRectory files and read them a line at a time, so that you can access the auxiliary file-type information. If you're anxious to work more with sound programming, implementing this capability would be your first project.

AC/BASIC

This version of the sound player (**Listing 2**) suffers from an inability to play long wave forms. This situation arises because AC/BASIC doesn't deal well with the advanced data structures required for this type of sound handling. (In fact, that's the purpose of AC/BASIC—to shield you from such things as memory pointers.)

Theoretically, however, you could study the sound-parameter table in the manual along with this month's examples from the other languages to devise a way around this. I haven't explored it well enough to provide expert advice, but the solution is likely to require an external assembly-language subroutine. Unless your sound-playback feature must support long digitized sounds, I doubt whether the reward justifies the effort involved in this procedure.

On the other hand, a worthy enhancement would be the ability to ►

Continued

```
    POKE FFLOC + 6, Speed%
    POKE FFLOC + 7, 00
    POKE FFLOC + 8, 00
    POKE FFLOC + 9, 00
    POKE FFLOC + 10, 07
    POKE FFLOC + 11, 00
    POKE FFLOC + 12, 00
    POKE FFLOC + 13, 00
    POKE FFLOC + 14, 00
    POKE FFLOC + 15, 00
    POKE FFLOC + 16, Vol%
    POKE FFLOC + 17, 0
  ENDIF

{ FFStopSound:
  PUSH genMask; bit 0-15 indicates generator(s) to stop }

   TOOLBOX (8, 15: 2) { FFStopSound: Used here to init sound tools }

{ FFStartSound:
  PUSH word genNumFFSynth (channel, generator, and type. Usually $0101)
  PUSH long pBlockPtr (ptr to ff param block created above)

  chan-gen-type word:
  15-12, DOC channel num; 11-8, gen number $0-$E;
  7-4 must equal 0; 3-0, $1 for free-form synthesizer, $2 = note synthesizer
  $0101 = DOC channel 0, generator #1, reserved val 0, ff synthesizer 1
  ... and ... $0101 (base 16) = 257 (base 10), which we use below.

  pBlockPtr:
  Note that Micol syntax requires two PUSHed parameters, FFBank% and
  FFAD%, to fulfill the one formal Toolbox pointer requirement. This is
  caused by Micol's Applesoft-like implementation of tool calls using
  word-length pseudo- PEEKs and POKEs. }

   TOOLBOX (8, 14: 257, FFBank%, FFAD%) { FFStartSound }
  REPEAT

{ FFSoundDoneStatus:
  PUSH wordspace, genNumber;
  PULL genDoneFlag; Boolean var, is TRUE if done playing }

    TOOLBOX (8, 20: 00, 01; Finished%) { FFSoundDoneStatus }
   UNTIL Finished% < 0 OR Continue!
  ENDIF

  TOOLBOX (2,16: H_Bank%, H_Adress%)   { release memory }

ENDPROC { DoSound }


' This procedure gets user input to feed to underlying
' sound file player, DoSound:

{    ------------------------------------    }
{ PROC DoPlaySound                }
{ Control loop for sound wave player.   }
 PROC DoPlaySound
   HOME
   GOSUB DrawLines
   x$ = "< Press <RETURN> for Main Menu >"
    x% = (80-LEN(x$))/2
   VTAB (24)
   HTAB (x%)
   PRINT x$;
   HTAB (1)
   vtab (6)
   PRINT "__ Play A Sound File __"
   VTAB (8)
   INPUT "Enter Pathname -> ";sndname$
  sndname$ = UPPER$ (sndname$)
  IF sndname$ = "" THEN Terror! = TRUE
   Input "Enter Playback Speed -> ";playrate%
   IF playrate% < 10 OR playrate% > 1200 THEN Terror! = TRUE
   INPUT "Enter File Size In Bytes -> ";length
  IF length = 0 THEN Terror! = TRUE
   myvolume% = 255 { default -- loudest available }
  IF NOT Terror! THEN BEGIN
     MUSIC (1,50,1) { Start sound tools }
    QUIET (1)      { and silence them. }
     GOSUB DoSound [length, sndname$, playrate%, myvolume%]
   ENDIF
 ENDPROC { DoPlaySound }
```

Continued

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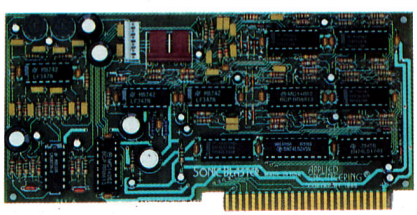

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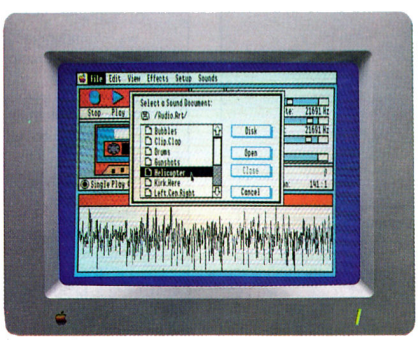
The Buttons

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

The Sound Graph

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



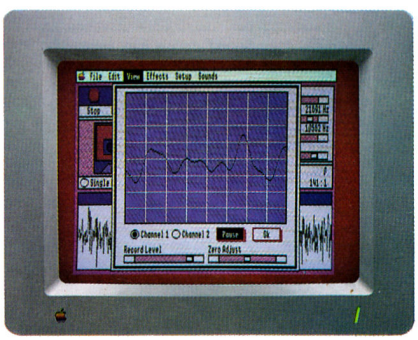
Seventeen sound effects to get you started. Add your own collection of sounds.

The Bars

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

The Blocks

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



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Continued

```
{    ------------------------------------    }
{ Sub this for MainScreen procedure:    }

PROC MainScreen
 HOME
 GOSUB DrawLines
 HTAB (28)
 VTAB (6)
 PRINT "T -> Type a File"
 HTAB (28)
 PRINT "P -> Print a File"
 HTAB (28)
 PRINT "H -> Print File With Header"
 HTAB (28)
 PRINT "C -> Show Catalog"
 HTAB (28)
 PRINT "S -> Set GS/OS Prefix"
 HTAB (28)
 PRINT "I -> Environment Detail"
 HTAB (28)
 PRINT "D -> Play Digitized Sound"
 HTAB (28)
 PRINT "V -> View SHR Picture"
 HTAB (28)
 PRINT "Q -> Quit"
ENDPROC { MainScreen }

{    ------------------------------------    }
{ Main loop                    }

PROC Main

' integrate Play Sound option into
' menu event interpreter:

 GOSUB MainScreen
 HTAB (1)
 VTAB (1)
 GET a$
 a$ = UPPER$ (a$)
 IF a$ = "Q" THEN BEGIN  { Quit }
  Done! = TRUE
 ELSE IF a$ = "D" THEN BEGIN  { Play Sound }
   Terror! = FALSE
  REPEAT
    GOSUB DoPlaySound
     UNTIL Terror!
   Terror! = FALSE
 ELSE IF a$ = "V" THEN BEGIN { SHOW PICTURE }
   Terror! = FALSE
  REPEAT
    GOSUB ShowPic
     UNTIL Terror!
   Terror! = FALSE
 ELSE IF a$ = "S" THEN BEGIN { Set Prefix }

{ ....                    }

  ENDIF
ENDPROC { Main }

{    ------------------------------------    }
{ End of v1.3 revisions to ShowSrc CDA    }
```

Listing 2. AC/BASIC Play.Sound source code.

```
'    ------------------------------------------------------------------
' File: inCider.Shell              Version 1.2 Revisions -- July 5, 1989
' By Joe Abernathy                  (Requires full inCider.Shell)
' (C)1989, inCider IIGS BASICs      ==================================
' All Rights Reserved.
' Compiler: AC/BASIC for the Apple IIGS.
' Compile with "no default menus" and "no default window" options selected.
'    ------------------------------------------------------------------
' (C)1989, inCider. Portions of this program include material copyrighted
' (C)1988, Absoft Corp. All other copyrights acknowledged. Special thanks
' to Lee Rimar, Jeff Knaggs and D.K. Keppner at Absoft.
'    ------------------------------------------------------------------
' Version 1.2 adds ability to play digitized sound files. Also adds new
'   pack, unpack procedures to replace those in the AC/BASIC manual.
```

Continued

Continued

```
  ' Version 1.2 additions to data structures:
  DEFINT a-z
  DIM ipack(31),i(43)                    ' Packed, unpacked instrument arrays

  '    ------------------------------------------------------------------
  ' Revised to add option for sound playback.

  menuproc:                              ' Interpret menu events
    menunum = MENU(0)                      ' Read which menu
    itemnum = MENU(1)                      ' Read which item
    IF menunum = 1 THEN                    ' .. FILE menu
      IF itemnum = 1 THEN                  ' New
       GOSUB 10
      ELSEIF itemnum = 2 THEN              ' Edit
       GOSUB 20
      ELSEIF itemnum = 3 THEN              ' Delete
       GOSUB 30
      ELSEIF itemnum = 4 THEN              ' Print
       GOSUB 40
      ELSEIF itemnum = 5 THEN              ' Type File
       GOSUB 50
      ELSEIF itemnum = 6 THEN              ' Quit
       GOSUB 60
      END IF
    ELSEIF menunum = 2 THEN                ' GOODIES menu
      IF itemnum = 1 THEN                  ' Show picture
       GOSUB 70
      ELSEIF itemnum = 2 THEN              ' Play a sound file
       GOSUB 80
      END IF
    END IF
    RETURN
  ' This routine added:
  '    ------------------------------------------------------------------
  ' Play back a digitized wave form.

  80:
   WINDOW 2
    f$ = "null"
   WHILE f$ <> ""
    f$ = FILES$(1)                       ' Open file dialog
    IF f$ <> "" THEN
      WAVE 0 GET,ipack                     ' Get the instrument array
      UNPACK ipack(),i()                   ' Unpack instrument bytes into integers
      i(33)=1 : i(39)=1                    ' Set starting DOC address (page 1)
      i(35)=2 : i(41)=2                    ' Set DOC mode to one-shot
      PACK i(),ipack()                     ' Pack instrument integers into bytes
      OPEN "R",1,f$,1                      ' Open the disk waveform file
      length! = LOF(1)                     ' Get length of waveform in the file
      IF length! > 32767 THEN length! = 32767   ' max allowable size

        DIM waveform(((length!/256)+1)*256/2)    ' Get space for waveform array
                                           ' The long calculation ensures that the array
                                           ' size is a multiple of 256 since the minimum
                                           ' DOC page size is 256 bytes.

      BLOAD #1,waveform,length!            ' Load the disk waveform into the array
     CLOSE #1
      waveform(length!/2)=0                ' Force end to waveform
        WAVE 0,waveform,INT(length!/256)+1,1,ipack   ' Set the instrument array,
                                           ' put waveform into DOC.
      mypitch% = 0
      WHILE mypitch% = 0
        INPUT "Enter playback speed: ", mypitch%
      WEND
      dur=70                               ' Set playback duration
       SOUND 0,dur,dur,mypitch%,255        ' Play the digitized sound on voice 0
     PRINT
      PRINT "Click mouse to continue..."
     WHILE MOUSE(0) <> 0                   ' Clear event queue of
       WEND                                '  ghost mouse clicks
     WHILE MOUSE(0) = 0                    ' Await real mouse click
     WEND
     WAVE 0                                ' Turn off voice 0
     ERASE waveform                        ' Free memory
    END IF
    WEND                                   ' Loop till cancel clicked in dialog
  WINDOW CLOSE 2
   MENU
  RETURN
  '    ------------------------------------------------------------------
  ' Menu option added for sound playback.

  SUB DoMenu                               ' Create menu bar
    FOR p = 1 to 6                         ' Eliminate screen flicker
      FOR e = 0 to 12 STEP 4               '  by whiting-out the menu bar
        PALETTE p,e+0,1,1,1                '  before building it.
```

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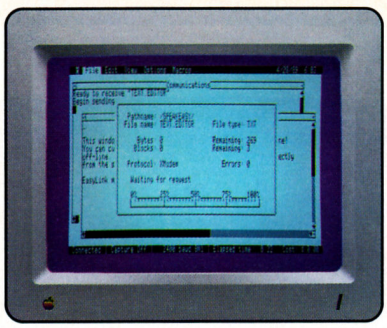

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```
Continued
    NEXT
  NEXT
  MENU 1,0,1," File"                ' Build FILE menu
  MENU 1,1,1,"New"                    '  and its entries ...
   MENU 1,2,1,"Edit"
   MENU 1,3,1,"Delete"
   MENU 1,4,1,"Print"
   MENU 1,5,1,"Type"
   MENU 1,6,1,"Quit"
  MENU 2,0,1," Goodies"               ' Goodies menu header
  MENU 2,1,1,"View Picture"             ' View SHR picture
  MENU 2,2,1,"Play Sound"               ' Play a sound file
  FOR p = 1 to 6                    ' Restore original palette ..
    FOR e = 0 to 12 STEP 4
      PALETTE p,e+0,0,0,0
    NEXT
  NEXT
END SUB

' This routine added:

'     ------------------------------------------------------------------------
' Unpack a byte-oriented waveform into integers.
' Use this UNPACK subprogram rather than the one in the manual.

SUB unpack(in%(1), out%(1))
  FOR count%=0 TO 21
     out%(2*count%+1)=in%(count%) AND &HFF00
  NEXT
  SWAP BYTES,out%
  FOR count%=0 TO 21
     out%(2*count%)= in%(count%) AND &H00FF
  NEXT count%
END SUB
' This routine added:
'     ------------------------------------------------------------------------
' Pack an integer-oriented waveform into bytes.
' Use this PACK subprogram rather than the one in the manual.

SUB pack(in%(1), out%(1))
  FOR count%=0 TO 21
     out%(count%)=in%(2*count%+1)
  NEXT
  SWAP BYTES,out%
  FOR count%=0 TO 21
     out%(count%)=in%(2*count%) OR out%(count%)
  NEXT
END SUB

'     ------------------------------------------------------------------------
' The End. (inCider.Shell v1.2 revisions)
```

Listing 3. TML BASIC Play.Sound source code.

```
'     ------------------------------------------------------------------------
' File: IDG.TML.SHELL                 Version 1.3 Revisions --  7/10/89
' By Joe Abernathy                  (Requires full IDG.TML.SHELL)
' (C)1989, inCider.                   ================================
' All Rights Reserved.
' Compile with TML BASIC V1.10 for the Apple IIGS
'     ------------------------------------------------------------------------

' Change data structures to match this (stdfile array moved to DESKTOOLS,
' sound wave form array added):

    DIM WindowTitle1!(10)          ' Stores title for a window
    DIM anEventRecord!(19)         ' TaskRecord data structure
    DIM aLocInfoRec!(15)           ' LocInfo record for QuickDraw
    DIM ParamBlkSoundRec!(13)      ' sound wave parms (FFparms wave table)


' Add the Sound Manager to the list of LIBRARY commands:

    LIBRARY "Sound"              ' Sound Manager

' Add a play sound option to the list of MENUDEF commands:

    ' MENUDEF 14,DoQuit           ' Quit the application
    ' MENUDEF 15,DoFont           ' Choose Font dialog
     MENUDEF 16,DoSound          ' ADD THIS LINE

' Application-specific menu items start with 17 (corresponding to
' 267 in SetUpMenus below).                                    Continued
```

```
Continued
'     ------------------------------------------------------------------------
' Add goodies menu to menu startup procedure:

DEF PROC SetUpMenus
  PROC GoodiesMenu                ' ADD THIS LINE
  PROC StdFontMenu
  PROC StdEditMenu
  PROC StdFileMenu(1)
  PROC StdAppleMenu
  PROC DrawMenus
END PROC
'     ------------------------------------------------------------------------
' Move the old open file procedure from here into the file IDG.DESKTOOLS.
' This makes it available to other procedures, such as DoSound below.
  DoOpen:
    PROC DoOpenFile               ' PROC is now in DESKTOOLS.

  ' If a valid file is selected the var "proceed%" will be set to
  '    a positive value. "auxfiletype%", "filename$", and "fullpathname$"
  '    also are set.

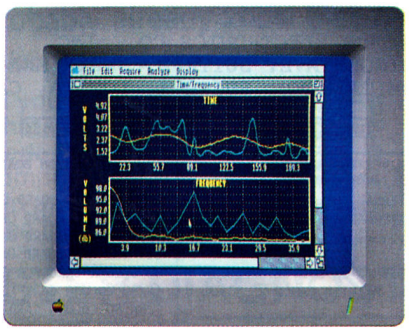
  RETURN 0
'     ------------------------------------------------------------------------
' PROC DoSound -- Play a disk-based sound wave form.

  DoSound:
    PROC DoOpenFile               ' Standard Open File dialog.
    IF proceed% <> 0 THEN
      PlaySpeed@ = 0
      OPEN FileName$, AS #10
      PlaySpeed@ = AUXID@
      Size@ = EOFMARK(10)
      CLOSE
      IF Speed@ <> 0 THEN PlaySpeed@ = Speed@
      IF PlaySpeed@ = 0 THEN PlaySpeed@ = 200
        PlaySpeed% = ((32 * PlaySpeed@) / 1645)
      CALL MaxBlock
      blockSize@ = R.STACK@(1)
      IF Size@ > blockSize@ THEN Size@ = blockSize@
      DIM DYNAMIC mysound!(Size@)
      OPEN FileName$, AS #10, Size@
       GET #10; mysound!(0)
      CLOSE
       Pages% = (Size@ MOD 65536) / 256
       waveStart@ = VARPTR(mysound!(0))
       SET (ParamBlkSoundRec!(0)) = waveStart@
       SET (ParamBlkSoundRec!(2)) = 0
       SET (ParamBlkSoundRec!(3)) = Pages%
       SET (ParamBlkSoundRec!(5)) = Playspeed%
       SET (ParamBlkSoundRec!(7)) = 0
       SET (ParamBlkSoundRec!(9)) = 0
       SET (ParamBlkSoundRec!(10)) = 0
       SET (ParamBlkSoundRec!(12)) = 0
       SET (ParamBlkSoundRec!(13)) = 0
       SndBlkPtr@ = VARPTR(ParamBlkSoundRec!(0))
       _FFStartSound (257, SndBlkPtr@)
' IMPORTANT: See accompanying text to make following
' code functional:
'   DO
'      CALL FFSoundDoneStatus%(0)      ' Lets sound finish playing
'      Finished% = R.STACK%(1)
'    UNTIL Finished% <> 0
    ERASE mysound!
  END IF
RETURN 0
'     ------------------------------------------------------------------------
' END of v1.3 revisions to IDG.TML.SHELL
```

Listing 4. TML BASIC desk tools.

```
'     ------------------------------------------------------------------------
' File: IDG.DESKTOOLS                Version 1.3 Revisions -- 7/10/89
' (C)1988, TML Systems Inc.          (Requires full IDG.DESKTOOLS)
' All Rights Reserved.               ================================
' Modified with permission.
' Compiler: TML BASIC V1.10 for the Apple IIGS
'     ------------------------------------------------------------------------
' Version 1.3 starts up the Sound Manager tools, setting aside memory
' for them; adds a goodies menu with a "Play Sound" option; and adds
' a library procedure for the standard "Open File" dialog box.
' Add these data structures:
```

Continued



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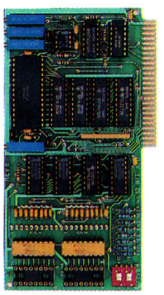

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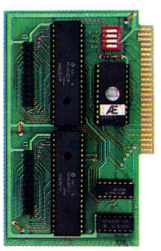

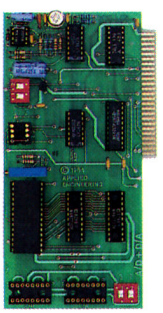

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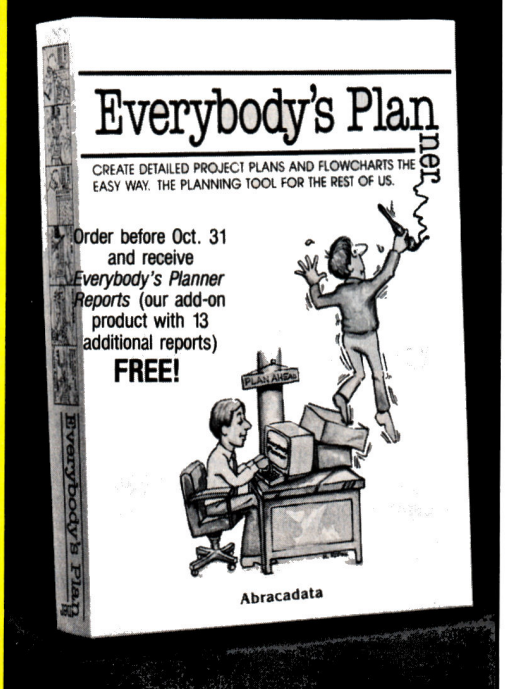

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Continued

```
  DIM GoodMenuStr$(200)              ' Goodies menu def string.
  DIM aReplyRecord!(149)             ' Reply record for SFGetFile
'     ------------------------------------------------------------------
' This procedure is used to load and start up the Toolbox tool sets.
' The Mode% parameter indicates which graphics mode to use. The value
' should be either 320 or 640. The PrintTools% parameter indicates
' whether the tool sets necessary for using the Print Manager should
' be loaded or not.

 DEF PROC StartUpTools(ScreenMode%,LoadPrintTools%)

' ... Add a line to StartUpTools to start the sound manager,
'     fitting in with the existing code like this:

'  LIBRARY LOAD "Scrap"
'  LIBRARY LOAD "Desk"
   LIBRARY LOAD "Sound"      ' Add this line.

' Change memory manager startup:

    ' Start the memory manager
    AppMemoryID% = EXFN_MMStartUp

    ' Allocate 7 pages of memory in bank 0 for tool set globals
    ' (4 pages already allocated by TML.) (1 page = 256K bytes)
     ToolZeroPageH@ = EXFN_NewHandle(7*256,AppMemoryID%,-16379,0)
   ToolZeroPageP@ = VAR(ToolZeroPageH@,3)
   ToolZeroPage% = EXFN_LoWord(ToolZeroPageP@)

    ' Start the printing tools if requested
   ' IF LoadPrintTools% THEN
    '   _QDAuxStartUp
    '   _ListStartUp
    '    _FMStartUp(AppMemoryID%,ToolZeroPage%+1024)
    '    _PMStartUp(AppMemoryID%,ToolZeroPage%+1280)
    _SoundStartUp(ToolZeroPage%+1536)  ' ADD THIS LINE

   '...
 END PROC StartUpTools
'     ------------------------------------------------------------------
' Tool shut down routine.

 DEF PROC ShutDownTools
   'GRAF OFF
    _SoundShutDown     ' ADD THIS LINE
   ' IF svLoadPrintTools% THEN

    ' ...

 END PROC ShutDownTools

' Add this procedure before the PROC StdFontMenu:
'     ------------------------------------------------------------------

 DEF PROC GoodiesMenu            ' Create goodies menu
  LOCAL MenuStr$
   MenuStr$ =#### ">> Goodies \N5\0"
   MenuStr$ = MenuStr$ + "==Play Sound\N266\0"
  SET(GoodMenuStr!(0)) = ^MenuStr$
  _InsertMenu(EXFN_NewMenu(VARPTR(GoodMenuStr!(1))),0)
 END PROC GoodiesMenu

' Add this procedure at the end of the file:
'     ------------------------------------------------------------------
' Display the standard "get file" dialog box.
' This call will display all files. To display only files of a particular
' type, use a TypeList with the appropriate file types specified.
' After making the call, we get the selected filename from aReplyRecord.

 DEF PROC DoOpenFile
    _SFGetFile(100,50,"Open which file:",0,0,VARPTR(aReplyRecord!(0)))
   proceed% = VAR(aReplyRecord!(0),2)
   IF proceed% THEN             ' If NOT proceed, CANCEL was clicked.
     filetype% = VAR(aReplyRecord!(2),2)
     auxfiletype% = VAR(aReplyRecord!(4),2)
     FileName$ = VAR(aReplyRecord!(6),7,15)
     FullPathName$ = VAR(aReplyRecord!(32),7,127)
  END IF
 END PROC DoOpenFile
'     ------------------------------------------------------------------
 END LIBRARY
```

read a sound file's auxiliary file type to let the program determine a sound's playback speed. To do this, open the DIRectory file containing the sound file as a random-access file. Input each line as a string, and search for lines beginning with a 0 (zero) byte, which indicates that a filename follows. Bytes 0–15 of this string will contain the name of the file; byte 16 will contain the file type; and bytes 30–31 will contain the auxiliary file type as an unsigned integer. (Don't sweat it if none of this makes sense to you. It's intended for fairly sophisticated programmers.)

TML BASIC

Listings 3 and **4** show how to add a Goodies menu with sound-playback option to your TML desktop program shell. However, I discovered a bug in TML that hampers the code's effectiveness. In the procedure DoSound in **Listing 3**, you can see that the loop calling _FFSoundDoneStatus to monitor the progress of playback is disabled. This is because _FFSoundDoneStatus is either misspelled or missing from TML's libraries. (Because of this bug, I couldn't test the TML sound code fully, but all major features work as they should.)

As this column was going to press, TML Systems couldn't find the solution to this library problem. You should be able to call TML today, though, and get the spelling of the call the libraries use. Then you can substitute that spelling in **Listing 3** and remove the REMark characters in the DO/WHILE loop.

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There are several other points of interest in the source code. In **Listing 4**, I added startup and shutdown procedures for the Sound Manager, including the allocation of direct page space using the Memory Manager. I've rewritten the *Open File* dialog and moved it from the IDG.TML.SHELL file to IDG.DESKTOOLS so that you can call it from any procedure. (The Play Sound option demonstrates this.) Also, I added the Goodies menu, showing how you can construct and use custom pull-down menus.

FURTHER EXPLORATION

Stereo-sound playback is one attractive feature you can add easily to your sound tools. You just need to specify the channel and generator number on which a sound should be played.

To conform to Apple standards software must use channel 0 (zero) for the right-hand stereo signal and channel 1 for the left. See *Apple Developer Technical Notes 19* and *37* for more information (Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014, 408-996-1010).□

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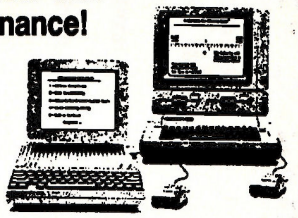

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IN THE CARDS

HyperStudio's landmark multimedia interface offers unprecedented integration—and graphics is the key to its operation.

By ROBERTA SCHWARTZ and MICHAEL CALLERY

GRAPHICS, IN MOST APPLE II PROgrams, has always been a bridesmaid, never a bride. Although it's been available from the II's beginning, graphics capability hasn't assumed an essential role in software performance.

With the arrival of **HyperStudio** (see "Hypertext for Your GS," Editors' Choice, August 1989, p. 108, and "Does HyperStudio Stack Up?" September 1989, p. 44), however, there's a new belle of the ball.

Here graphics is an integral feature, conveying much of the information and providing the primary mechanism you use to navigate through HyperStudio. We're going to take a look at how this program, which offers unprecedented integration, lets you create and use these graphics.

First, let's agree on some of the terminology. A HyperStudio data file, or *stack* (**Figure 1**), consists of individual screen-sized units called *cards*. You can place a variety of objects, including text, buttons, graphics, sounds, and video, onto each card. These objects lie on top of the card *background*, which, unless changed, is a plain, white graphics screen.

In HyperStudio, you navigate through the cards and stacks by clicking on *buttons*—rectangular areas of the screen sensitive to mouse clicks. Buttons, either transparent or custom designed, are the standard way to control HyperStudio. They let you jump to another card, make a sound, uncover information, and so on.

THE PAINT MODULE

To enable you to create original super-hi-res 640-mode graphics on your cards, HyperStudio features a MacPaint/Paintworks Plus-like module. Standard tools include a marquee and a lasso for selection, a pencil, a brush (with a choice of 24 different shapes), and an eraser. You'll also find a line tool (with a choice of line widths), a spray can, a fill tool, a text tool, and a magnifying glass. This module also features the usual selection of geometric objects: rectangles, rounded rectangles, ovals, irregularly curved objects, and irregular polygons. Using the current line-size setting for borders, you can draw these as either empty or filled geometrics.

The color palette includes 16 colors and 16 dithered patterns you can't change. Because HyperStudio works in super-hi-res 640 mode, there are really only four pure colors. The extra 12 are created by dithering. (Each is a checkerboard pattern of two pure colors.) The 16 patterns, which appear as solid colors, are the result of dithering those 12 hues.

HyperStudio hides dithering; if you go into fatbits mode and count the number of pixels across the screen, you'll come up with 320, not 640. Each fatbit pixel is really two pixels very close together. This approach to 640 mode, also used in Paintworks Gold and 816/Paint, makes fatbit editing simpler. (Compare this method with that used in DeluxePaint II, in which you must cut and paste the dithered colors from the spare page to gain the "extra" colors for 640 mode.)

Because HyperStudio uses dithering to achieve the appearance of 16 colors, 640-mode color graphics screens look no more detailed than those in 320 mode, despite higher resolution. Note, too, that small text will look best in black or white, because these are the only truly "pure" colors in the standard 640-mode dithered palette.

WHAT'S MISSING

HyperStudio, unlike most paint programs, doesn't offer you a palette of predefined ►

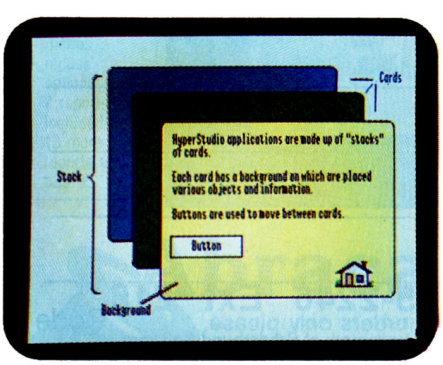

Figure 1. HyperStudio stack.

Figure 2. "Rolodex" background.

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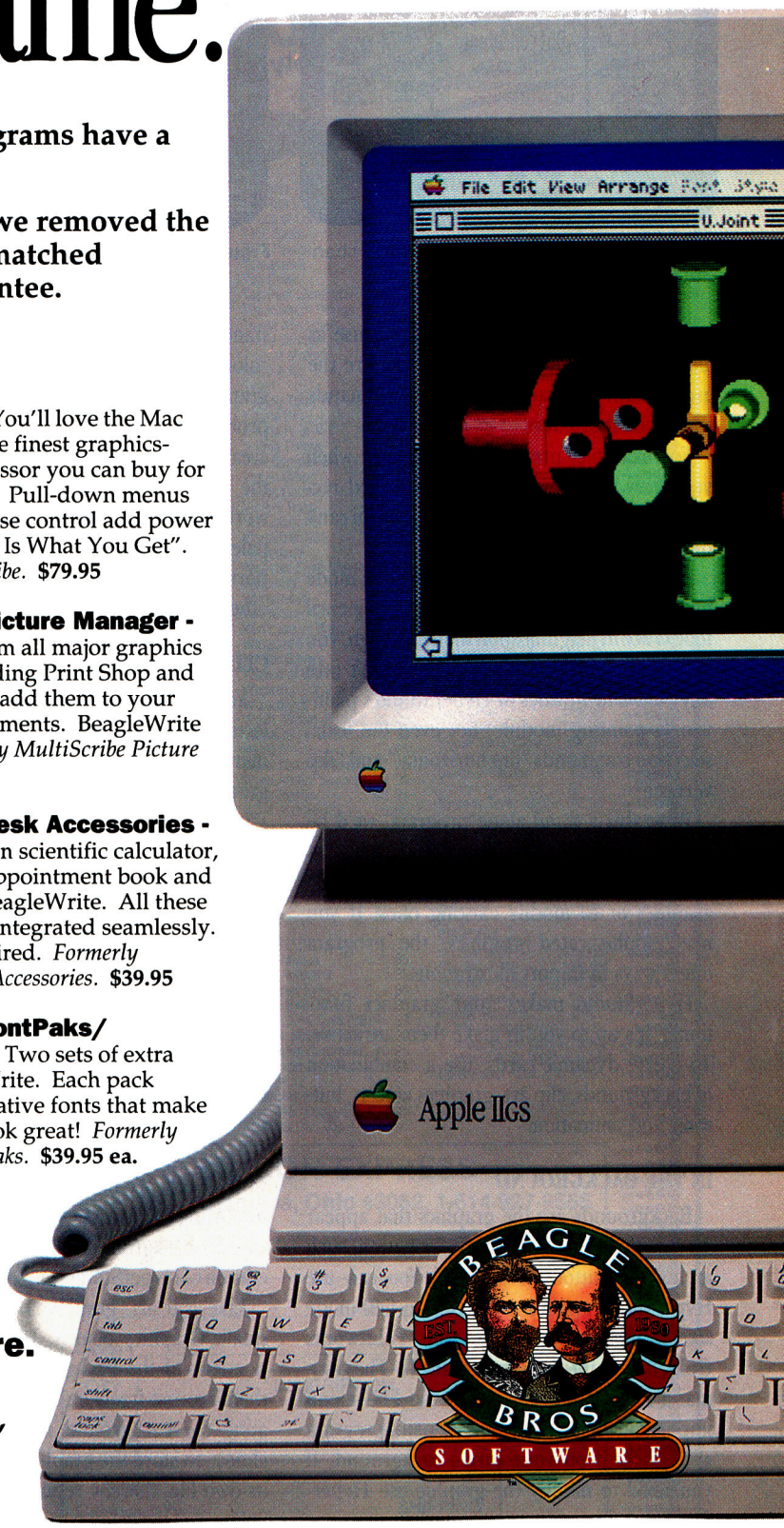

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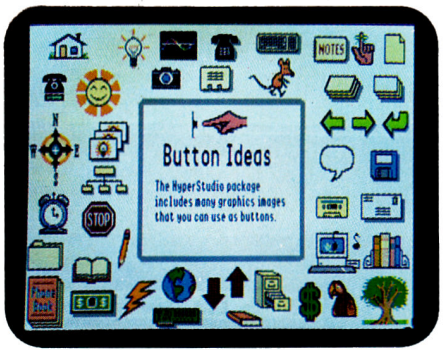

Figure 3a. HyperStudio offers more than 250 clip-art images.

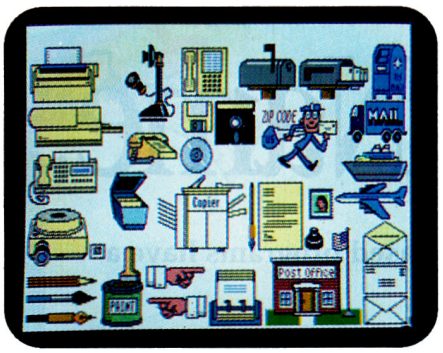

Figure 3b. More clip art.

Figure 4. Transparent button over custom-made button.

patterns (stripes, dots, and so on) to use as fills or as line patterns. Missing, too, are the usual paint-program keyboard commands and other shortcuts.

For example, pressing the shift key when you draw a rectangle, oval, or rounded rectangle doesn't constrain the object, so you can't draw a perfect shape.

Also, you can't get into magnification mode by open-apple clicking when using the pencil tool. Once in magnification mode, though, you can use only the pencil tool. You won't find any bells and whistles in HyperStudio's plain-vanilla painting module, not even the usual selection commands "flip horizontal" and "flip vertical."

Were this a stand-alone program, we'd be hard-pressed to recommend it. But it's intended only to give you tools to create simple graphics or to modify existing ones. If you need sophisticated graphics, the program offers ways to import illustrations.

HyperStudio makes your graphics functional; it's up to you to make them attractive. To create dynamic cards, use a combination of backgrounds, clip art, graphics objects, buttons, and animation.

IN THE BACKGROUND

Backgrounds are the graphics that appear on the card behind specific information, such as text or buttons (**Figure 2**). You can use HyperStudio's painting tools or any 640-mode screen image you create with **Paintworks Gold, 816/Paint,** or **DeluxePaint II**. The command *Load Background* from the File menu imports an image from another paint program and places it on your card's background. If you need to modify the graphic use HyperStudio's paint tools.

You can load a 320-mode picture, but HyperStudio will convert it to the program's standard 640-mode palette. Unless you like colorful surprises, you'll want to create all your graphics in 640 mode. Note that we found a problem loading even 640-mode backgrounds created in Paintworks Gold. Instead of loading the palette, HyperStudio converts the Paintworks Gold image to the standard 640-mode palette. We had no problem with images imported from 816/Paint, **Graphic Studio**, or other paint programs.

CLIP ART AND GRAPHICS

You can import pieces of a graphic by selecting *Add Clip Art*, which is also in the File menu. When you choose this option, the program prompts you to to open a graphic. HyperStudio offers more than 250 clip-art images. (See **Figure 3**.) Once open, the picture appears in its own window with scroll bars. You can scroll around the image and use either a lasso or the marquee tool to select a piece of the picture. Pressing the OK icon returns you to your card with the clipped image selected.

Be aware that if the clip-art image has a custom palette, HyperStudio will transform the entire card's palette to match your clip art's—except with art brought in from Paintworks Gold. We had the same color problems importing Paintworks Gold clip art as we had with its backgrounds. We're hoping a future edition of HyperStudio will solve this problem.

Like clip art, graphics objects are usually small. Graphics objects, however, are independent of the background; you can move them around freely on screen without obliterating the background image. You can also choose to store the graphic, unlike clip art, in its own file, thereby reducing your stack.

You can change the graphic without having to change the HyperStudio stack, too. Thus, if you had a card with digitized pictures of your employees, you could add Jake's picture to the card or update his picture to show his new beard by revising the graphic. Because HyperStudio knows the graphic by name, the program loads the new image automatically without your renaming it.

This feature is also useful on a network, where you can store graphics in a central file server, saving disk space on your machine by eliminating the need for multiple copies of graphics. An added bonus is that once you've positioned your object, HyperStudio lets you select a border to place around it.

BUTTONS

Buttons may be visible or transparent. Using transparent buttons, you can make something happen by clicking on a portion of your graphic. If you don't like the buttons HyperStudio offers, use some of the supplied clip art, or design your own button and place a transparent one on top of it. (See **Figure 4**.)

As you use buttons to get around in your stacks, you can trigger interesting graphics effects; HyperStudio offers 12 transitions, wipes, and dissolves when you link one card to another. Be creative! Use these features to produce such exciting effects as book pages turning, objects dissolving, and so on.

ANIMATION AND VIDEO

HyperStudio can do more than import a static image; it can also import a Paintworks-type animation. Unlike background pictures and clip art, animation is linked to buttons.

When you choose to tie a button to animation, HyperStudio prompts you for the name of an animation file. After loading the file, you can size the animation window and position it anywhere on screen. When you're browsing through the stack, simply click on the appropriate button to see the animation. ►

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If you choose *Add a Card Video*, you can attach a video image or sequence from a videodisc player to a specific card. You'll get a rectangle you can drag and resize. If you have the **Apple II Video Overlay Card**, this rectangle represents the area where you'll display the video image on screen.

After you click outside the rectangle, a dialog box appears; its function is similar to that of a videodisc player's remote-control unit. Using these controls, you specify the particular frame or video sequence you want to display whenever that card appears. Currently, you can't attach video images to a button, but if you have a Pioneer 1200 videodisc player (or compatible) you can attach a video to a card.

At this writing, HyperStudio is incomplete, but the graphics features are mostly in place. Although lacking a scripting—or programming—language (HyperTalk is the scripting language for HyperCard on the Macintosh), HyperStudio has the potential to unleash your creativity—even if you've never thought about "doing graphics." If you're working with HyperStudio, you *are* "doing graphics."

UPDATES AND UPGRADES

This is a big one! Broderbund has announced **The New Print Shop** for the Apple IIc, IIc Plus, IIe, and GS. This major product upgrade fixes one of our biggest gripes about The Print Shop. Now you no longer have to redo every option to change only one. Instead, you can "backtrack" without repeating all your steps. Bravo!

Graphics support is also much stronger. For example, each graphic is available in two sizes with multiple colors, a single New Print Shop page can hold up to 26 graphics, and placement is much more flexible. Brand-new features include an integrated calendar maker (formerly part of The Print Shop Companion) and poster (up to 9 feet tall by 6½ feet wide) capabilities.

Although we haven't seen the product, we're confident of Broderbund's track record and are sure you'll want to check it out. The upgrade is only $20; if you purchased The Print Shop after May 25, 1989, the upgrade is free. For additional information, call The New Print Shop Hotline at (800) 999-3256.□

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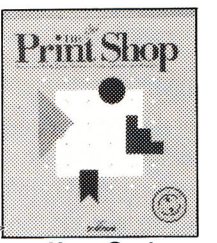

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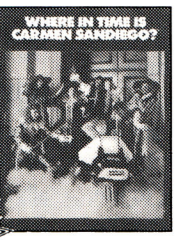

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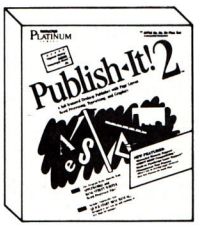

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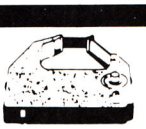

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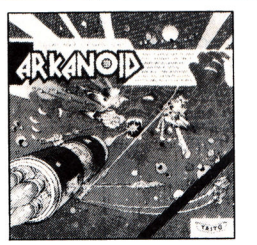

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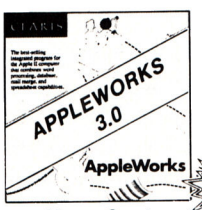

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Continued from p. 41

move through the document.

If you decide you don't like what you see, erase any text or graphics element by selecting *Erase* from the Tool menu. Here you'll find six eraser sizes. Press the spacebar to scroll through the list, then decide on the distance of movement by selecting a number from 1 to 9. Press Return to begin erasing.

Working with graphics reveals another one of the program's strengths. After loading the clip-art file and selecting a particular category for viewing, press the spacebar to see the images.

When you find a picture you'd like to use, position it anywhere on screen and press Return to stamp it. You can place multiple copies of an image in the document by moving it to a new position with the arrow keys or mouse and pressing Return.

The program lets you stamp 50 copies of the same image on screen before asking you to save the design. After saving, you can re-enter clip-art mode, select the same category, and again choose the image for stamping. Until you press Escape to return to the clip-art menu, you'll be able to delete any image stamped on screen simply by striking the delete key.

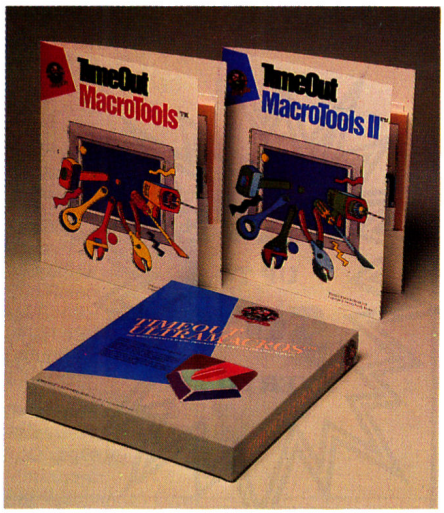
Certificates and More! doesn't require you to quit the program to format a data file; it includes a format option accessible from the File menu. Other options include *Save As*, to copy your document to the data disk, and *Delete Files*, to remove documents permanently from a data disk.

MORE FOR YOUR MONEY

Initially, I was skeptical about reviewing yet another new low-end desktop publisher. After all, there are already several good certificate programs available, so why glut the market? But after spending some time with the software and producing an assortment of high-impact designs, my apprehension disappeared. Certificates and More! offers good value for the money. It packs enough features to make it a serious contender for the best certificate-producing utility around. Now if Mindscape would only release some additional Certificates clip art!

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

TIMEOUT MACROTOOLS MACROTOOLS II



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Macro enhancements for AppleWorks; 128K Apple IIe, IIc, IIGS; UltraMacros 2.3; $25 each

Rating: ❖ ❖ ❖

Way back in the early days of the Apple II, the most common way to create new applications was to use Applesoft BASIC—and Beagle Bros forged a strong reputation selling high-quality utility programs for BASIC programmers.

Times have changed; there's no longer one standard language for Apple programmers. There is a standard application, however—AppleWorks—and Beagle Bros has again done more than any other company to bring greater flexibility and power to this immensely popular program. Beagle Bros' UltraMacros macro-creation package includes many features common to programming languages, in that you can add your own extensions and subroutines to AppleWorks. Now the TimeOut MacroTools duo has taken the work out of AppleWorks, with a mixed bag of prepackaged macros serving a wide variety of functions.

MIXED MACROS

You'll no doubt find something of value in each package, probably enough to justify the cost of both MacroTools and MacroTools II. Each set may also contain a number of things you'll never use, but they might serve as programming examples for macros you'll write later yourself.

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Let's look at five of the more intriguing new applications on the first disk—routines that help you manage your data and your other macros.

FileStatus is a utility you can use anytime within AppleWorks to examine and change certain characteristics of your files. Add it to your AppleWorks program disk, then press Open apple-Escape and select *FileStatus*; you'll get a list showing the number assigned to your current file in AppleWorks' desktop index, the file size in memory, the file type, and whether it's *New*, *Saved*, *Unchanged*, or *Changed*.

Of course you could find out all this information—with a few more keypresses—in AppleWorks' Remove Files from Desktop list, but this TimeOut application goes further by letting you change your file's status. You can take a new file, for example, and mark it *Saved* or *Unchanged*.

Task Launcher loads a precompiled set of macros. You can also switch the macros you're using currently without restarting AppleWorks. When you're done, an Exit macro returns you to your standard macro set.

Three other new MacroTools are of interest primarily to UltraMacros programmers. Menumaker puts custom AppleWorks-style menus into your own macros. Debug gives you information about your active macros and macro variables to help you find errors as you write and test them. (The more complex your macros are, the more you'll need this one.) Finally, UM Tokens gives you a pop-up list of all UltraMacros tokens and what they do.

TOOLS OF THE TRADE

The MacroTools disk contains more than 50 other macros of various types. Let's take a look at six more you'll probably want to add to your standard macro file.

Two make it easier to add new files to the AppleWorks desktop: automating the process of moving through your disk file lists to select new files; and adding a standard text file to the word processor without typing the ProDOS pathname.

Two more new macros work with the AppleWorks spreadsheet. One searches columns or rows for a particular value or label; the other converts numeric values automatically to labels (particularly helpful if you're a teacher and must convert percentages to letter grades).

Two others provide decimal tabs in the word processor and print a word-processor file without marking it *Changed* (which makes it easier to remove the file after printing).

Some of the macros are for programmers only: printing sequential items from a list, moving to preset points on screen, and testing memory bits, for example. Most of the macros, however, help you do ordinary things in AppleWorks, such as linking files so that they print or load together, saving files automatically every five or ten minutes for safety, removing files from the desktop, resetting the date without leaving AppleWorks, and doing chemistry calculations.

MACROTOOLS II

The second Beagle MacroTools collection includes—among many others—four new applications intended primarily for UltraMacros programmers. File Lister lets you include a list of files in a macro and select files from that list. Ultra Lock lets you mark a compiled macro file so that nobody (not even you) can "decompile" and read the macros. UM Reference lists the UltraMacros commands you can use in your own macros.

The most significant new application on MacroTools II, however, is Ultra Publisher. ►

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AT A GLANCE

Continued from p. 38

Design Your Own Home: Interiors (September 1989, p. 30, by James Trunzo), Abracadata, P.O. Box 2440, Eugene, OR 97402, (503) 342-3030; 1-megabyte Apple IIGS, ImageWriter or LaserWriter printer; $89
Rating: ❖ ❖ ❖

Interiors, part of Abracadata's Design Your Own Home series, is now available in a GS-specific format that boasts improved speed, color-printing options, and even better ease of use than its IIe/IIc predecessor. In a nutshell, Interiors lets you create custom room designs or modify any of the two dozen predrawn rooms provided on disk.

Abracadata has created an effective program in Interiors. Novices who simply want an idea of what can fit where

Continued

This one takes a standard word-processor file and formats it into two or three columns per page, on multiple pages if necessary. Just put your file on the desktop, activate Ultra Publisher by choosing Macro Options from the UltraMacros menu, and watch as the program moves your word-processor file into two- or three-column format. Print it as is, or press Solid apple-P to move it to the clipboard and then to a new word-processor file.

One set of macros on the MacroTools II disk gives you a new way to write mail-merge documents in the word processor—without your database information in the clipboard and without using Open apple-O to add the merge categories. The macros then convert your document to a printable mail-merge file. (Whether you regard this as an improvement or not probably depends on what kinds of documents you write.)

MacroTools II offers more than 50 new macros. If you're a programmer, you'll get macros that let you use multiple sets of variables, add assembly-language routines to other macros, disable certain keys, get filenames, print messages on screen, and deactivate UltraMacros, as well as many other functions.

Macros for nonprogrammers include ones that address envelopes, print the date and time to the screen, reset the date, send control codes to your printer, type text directly to your printer, copy the current screen image to a word-processor file, and count the number of records selected by Open apple-R in the database.

THE "MACRO" VIEW

It's difficult to do justice to such a large and varied collection of applications and macros in a brief review. I've tested almost all of them, and except for one that's supposed to eject 3½-inch disks, all of them so far have worked. A few may need some changes to work just the way you want or expect them to.

The programs are easy to use if you're already familiar with UltraMacros; the macros are in word-processor files that include some information about each and how to use it. Simply copy a new macro to your own macro word-processor file, change the macro name

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if you want, and compile the file. You'll probably try many you won't end up using at all, but that's part of the fun. They're as easy to remove as they are to add.

MacroTools and MacroTools II work only with UltraMacros version 2.3, but if you have an earlier edition there's a TimeOut application on each disk that will update your UltraMacros system. Each MacroTools disk also contains the updated default-macros file that comes with version 2.3 and a file containing a number of macros that were included originally with the SuperMacros program.

Overall, if you use UltraMacros often and enjoy adding new functions to AppleWorks, you'll probably find either MacroTools disk useful and interesting. One of the big advantages of these Beagle Bros disks is that they're completely accessible—you can transfer, change, and test all the macros and applications and use the ideas in your own macros and programs. If you program your own macros, Beagle Bros can teach you a lot.□

Robert Tighe
Albuquerque, NM

At a Glance

Continued

can use Interiors with little effort. Serious designers can employ the most powerful of Interiors' features with only a little more work. By porting this segment of the Design Your Own Home series over to the GS, Abracadata has made a good program even better.

All the Right Type (September 1989, p. 94, by Carol Holzberg), Didatech Software, 3812 William St., Burnaby, B.C., Canada V5C 3H9, (604) 299-4435; 64K Apple IIe, IIc, IIGS; $49.95
Rating: ❖ ❖ ❖

All the Right Type is an interactive program designed to help youngsters learn to type. It uses a four-step approach: introducing new keys; emphasizing accuracy and speed; building typing skills with words, sentences, and paragraphs; and test performance. When students finish the lessons, skill builders, and tests, they can use the program's Mini Word Processor to reinforce their new keyboard skills.

Youngsters can repeat each lesson or test as necessary to improve speed and accuracy.

Immediate, specific feedback keeps both teachers and typists informed. The manual contains detailed instructions, lesson plans, and black-line masters suitable for reproduction.

While All the Right Type has no serious flaws, it lacks certain features offered by other keyboard applications. For instance, there are no skill-building typing games.

All things considered, All the Right Type can best be described as an electronic textbook—heavy on content, but low on pizzazz.□

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CITIZENS OF THE WORLD

Around the globe, kids are logging on to exchange stories, pictures, data, and points of view—and the happy result is a new sense of international identity.

By SETH J. ITZKAN

"EVERY TV TOLD OF HIS DEATH. EVERY announcer wore a formal black suit. We would have liked to watch another [show], but we could not. For two days every TV told only of his death. . . ." So laments a middle-school teacher from Fukuoka, Japan, who reveals a previously unseen side to Emperor Hirohito's passing.

Another Japanese educator is even more to the point: "Many people fed up with Emperor-oriented programs rushed to the video store to rent tapes."

These commentaries, unavailable from any news service, were sent directly to American students through the use of computer telecommunications. By simply logging onto a network and reading their "electronic mail," the students got a down-to-earth and even humorous angle on an otherwise solemn affair. As important as Hirohito's life story is, it's equally valuable to discover that many Japanese, like Americans, would rather watch videos than a state funeral.

The teachers and students who take part in international electronic dialogues like this are the pioneers of an emerging "global classroom." Fostered by the proliferation of computer networks, educators around the world are going on line and letting their students teach one another about their respective countries and cultures—personal information they could never get from a textbook or news wire. This is education at its best: a radical shift in the way youngsters learn about the world, the construction of a community of globally oriented leaders for tomorrow.

For many, the global classroom has brought excitement and relevance back to learning. "The students were ecstatic," says Anne Pemberton, a Virginia teacher whose classroom conducted an e-mail dialogue with a school in Papua New Guinea. The children were especially engrossed, she continues, when they read about an "alligator hunter who grew up in a head-hunter tribe." (Eat your heart out, Dundee!)

NATIONAL GEOGRAPHIC

One of the most impressive classroom projects, and one of particular interest for Apple IIGS owners, is the **National Geographic Kids Network**. This comprehensive science program lets students share their locally collected data on acid rain with other schools across the nation and around the globe. Special software automates the telecommunications process and sends the data to a central computer. Once tabulated, information on acid-rain levels is downloaded to each site and presented as vivid color maps on the GS. Location and data from each site are included on the maps, giving students a sense of participation and accomplishment. Since its inception, more than 500 classes have participated in the Kids Network, with sites in the United States, Canada, Japan, Hong Kong, and the U.S.S.R.

Students at each site on the Kids Network get to know one another through a segment called "Hello!" This introductory piece accustoms students to the software and gives them practice in sharing data through the network. The Hello! unit creates a sense of on-line community that persists for the duration of the six-week project.

LONG DISTANCE

Another educational telecommunications project of equal magnitude and merit is AT&T's **Long Distance Learning Network** (LDLN). This program, still in trial phase, supports a variety of curriculum topics and is available for grades 3–12. Through a computerized "matching service," schools are grouped together according to curriculum interest, grade level, and geographic diversity.

Like those participating in the Kids Network, classes are grouped into teams or "Learning Circles." In desiring each unit to be a cultural melting pot, an LDLN newsletter states, "The ideal Learning Circle would be made up of members from the East, West, South, and Central United States with a few foreign classes." At present, LDLN includes classes from 20 states in the U.S. and six countries: Australia, Canada, France, Japan, the Netherlands, and West Germany.

LDLN offers a segment similar to Kids' Hello! unit. Students are encouraged to send photos, class registers, town maps, or other items of personal and regional interest. These "welcome packs" break the ice and help create a tone of camaraderie before starting the on-line curricular exercises.

Topics on LDLN are extensive and well suited to an international environment. Current choices include The Computer ►

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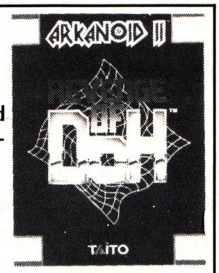

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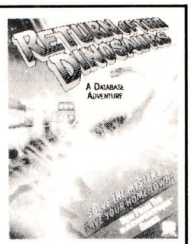

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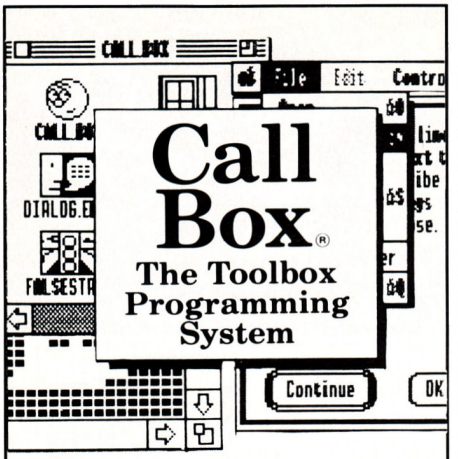

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Chronicles, Mind Works, Global Issues, Places and Perspectives, Society's Problems, and Energy Works. Each curricular module is supported by teacher materials and on-line assistance.

Two particularly involving subjects on LDLN are Global Issues and Mind Works. Global Issues includes segments on nuclear energy and weapons, national conflict and cooperation, protection of national and global resources, pollution problems, and effects of changing weather patterns. Mind Works supports creative writing and group publication of a journal. The unit's "round-robin stories"—pieces begun by one class and continued by others—are especially lively productions, with each group of students contributing its own unique perspective.

In addition to formal curricula, foreign-language study often happens on its own, explains Valerie Sarris, project manager for LDLN. With at least one foreign school per Learning Circle, impromptu bilingual discourses are common. LDLN staff members are now looking into the possibility of a languages unit for the future.

LDLN's telecommunications functions are fully automated. Students and teachers create letters, articles, and other data off line, then, with just a few keystrokes, upload them to a central computer, which distributes them to the appropriate e-mail folder or mailbox. LDLN software is available for most computers, including the Apple II series, the Macintosh, AT&T machines, and IBMs and their compatibles.

UNITED NATIONS

If your class has a special interest in international issues or is considering a segment on the United Nations, investigate **GEMNET**. Global Education Motivators is a nongovernment organization registered with the United Nations, and chartered to increase awareness about the UN and its programs.

GEM's network lets schools communicate through electronic mail and offers access to an extensive array of international databases and news services. UN information on topics ranging from human rights to acid rain is readily available, as are news wires from American, European, and Third World nations. Wayne Jacoby, the director of Global Education Motivators, explains that these news clippings show students how different parts of the world react to a particular news topic. Currently, more than 250 classes participate in GEMNET with representation in the United States, the United Kingdom, and Norway.

GEMNET is more open-ended than either the Kids Network or LDLN in that no specific curriculum is associated with it, and schools aren't matched for electronic exchange. GEMNET does provide assistance, however, with a comprehensive "foreign schools database" of information on member classes, plus periodic

CompuServe Acquires The Source

As this issue of *inCider* went to press, we learned that CompuServe of Columbus, Ohio, has acquired Source Telecomputing Corporation of McLean, Virginia, operators of The Source on-line information service.

Source membership (53,000 users) will be consolidated with that of the CompuServe Information Service, which has 500,000 subscribers currently. According to Maurice Cox, executive vice president of CompuServe Inc.'s Information Services Division, a CompuServe user-identification number and password, eligible for a $20 usage credit, will be mailed to each Source subscriber.

For more information, enter GO OLT-335 at any CompuServe ! prompt. In addition, a customized welcome menu posted on CompuServe will help Source members become accustomed to the network's navigation commands, databases, and on-line support services.□

mailings of UN publications that teachers can integrate into their curricula.

GRASS ROOTS

Although formal programs such as those discussed above are helping build the global classroom, the decade-old (a lifetime in this business) system of networking through bulletin boards and "echoed" or "distributed" conferencing is still the main method of electronic communication between schools.

One grass-roots bulletin board that deserves special attention is **FrEdMail**, the Free Educational Electronic Mail Network. Unlike many other services, it's devoted to education and simplified to let nontechnical teachers function as system operators. FrEdMail runs on Apple IIes and GSes, but can be accessed from any machine.

At the heart of FrEdMail are "echo-posted" conferences and bulletin boards, which automatically distribute, or *echo*, comments on any particular subject to all other participating sites.

DIAL UP

Among the larger commercial on-line information services, let's not forget **CompuServe**, **GEnie**, and **Delphi**. Each boasts thousands of subscribers with access to other users around the world; each network also hosts educational user groups, conferences, and databases.

One school in Boston, Snowden International High, recently made good use of the Delphi network. Via a Delphi correspondent in Japan, students in Snowden's Japanese-language class were able to send messages in Japanese. Students in Japan were thrilled to see Americans address them in their own language and responded eagerly—in English.

If the study of *perestroika* is on your list of curriculum objectives, the Bridges '89 segment on **The Source** is an excellent resource. In an unprecedented move, and as a direct result of *glasnost*, The Source offers e-mail communication with Soviet citizens—including media experts and scientists ready to discuss cultural questions and issues such as emigration and human rights. The architects of the program are Harry Stevens, inventor of The Source's Participate conferencing system, and Sergei Alexandrov, a pioneer in Soviet telecommunications and an employee of the Novosti Press Agency.

Our world is becoming a "global village," and education is seeing the emergence of the global classroom. Children raised in this environment acquire a sense of international identity their parents may never know. Because they work cooperatively with peers overseas on issues of world concern, they become "global ambassadors," stewards of the next millennium. As Anne Pemberton of Nottoway High School states, "I can think of no greater 'threat to world war' than the binding together of all the world's children by computer networking."□

SETH ITZKAN IS A TELECOMMUNICATIONS CONSULTANT AND FREE-LANCE JOURNALIST. HE IS CURRENTLY WRITING A BOOK ON THE USE OF TELECOMMUNICATIONS IN EDUCATION, TO BE TITLED *EMERGENCE OF THE GLOBAL CLASSROOM*. ADDRESS YOUR CORRESPONDENCE TO 308 COMMONWEALTH AVENUE, BOSTON, MA 02115.

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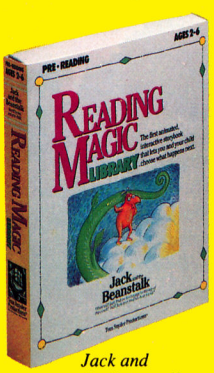

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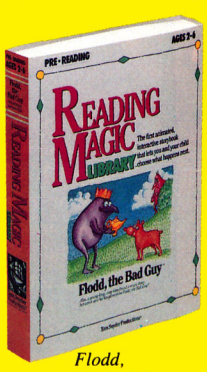

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LEARNING CURVE

FISHING FOR QUESTIONS

By DAVID D. THORNBURG, Ph.D.

Computer programs that facilitate the creation of "microworlds" can provide weeks of challenging activities and spark a lifelong interest in math.

PICASSO ONCE SAID, "COMPUTERS ARE USEless; they provide answers, not questions." From an educational standpoint I think he was selling technology short. A well-designed computer system can function as a lab for conceptual experiments—unlimited opportunities for students to ask, and answer, their own questions.

Last month we explored just such an environment when we described the chaotic function we called the Gingerbread Man ("An Ordered World," September 1989, p. 110). Computer programs that facilitate the creation of "microworlds" provide weeks of challenging activities for motivated students. And although the Gingerbread Man is fairly simple, there are even simpler worlds whose properties are equally fascinating.

To see one of these worlds, imagine a checkerboard surface with a few pieces scattered about the squares. This original arrangement is our starting position. Each square has eight neighboring squares—four sides and four corners. (See **Figure 1**.)

To find the next position, apply the following rule: Each square on the new layout gets a checker if in the previous generation it had an odd number of neighboring squares with checkers. Note that you must apply the rule to all cells simultaneously. (This rule defines "Fredkin's Game," designed by Ed Fredkin.)

The graphics shown in **Figure 2** illustrate the evolution of a pattern resulting from one checker in the middle of the board. As you can imagine, other starting positions can lead to other patterns. Activities like this are called *zero-player games*, a name coined by John Conway, creator of a similar game called Life. (See "Life Goes On," GS BASICs, October 1988, p. 78.)

Another term for these types of games is *cellular automata*, so called because such a game centers around the states of individual cells and, once rules and starting position are determined, all future evolution occurs automatically.

Mathematical activities of this type would get pretty boring if you had to play them on real checkerboards—each generation might take several minutes to appear. Fortunately games like this are easy to program on personal computers.

The finest tool yet for experimenting with cellular automata on Apple IIs is **Phantom Fishtank**, a product from Logo Computer Systems International (1000 Roche Boulevard, Vaudreuil, Quebec, Canada J7V 6B3, 800-321-LOGO, $29.95). Designed by Brian Silverman, a brilliant exponent of the Logo movement, Phantom Fishtank is a version of that language in which its high-resolution turtle graphics has been replaced by a low-resolution 40-by-40 checkerboard for various zero-player games. Although a knowledge of Logo isn't required to follow the activities provided with the software, Logo enthusiasts will find the inclusion of the language a powerful improvement over programs (such as the many public-domain Life games) that use only a single rule set.

As with most other open-ended tools, you can explore Phantom Fishtank many ways. Some students enjoy going through the manual and trying each activity, then experimenting a bit before going on to the next. Others look at the manual only long enough to understand how the software works, then jump immediately into creating their own sets of rules. Because your Apple computes successive generations in machine language, display screens turn into riots of animated patterns that grow, collapse, stabilize, or evolve haphazardly for hours.

If you wanted to play Conway's Life game, you'd boot up Phantom Fishtank, then enter the following line:

```
loadrules "life
```

This replaces Phantom Fishtank's rule set with Life's. Conway's game has three rules:

1) A dead cell with three live neighbors comes alive.
2) A live cell with fewer than two neighbors dies.
3) A live cell with more than three neighbors dies.

Although Life's more complex than Fredkin's Game, its rules are still simple.

Next, create a starting position on screen. Using Phantom Fishtank's CELL and LINE commands, you can create live cells from the keyboard. For►

Illustration • Marty Braun

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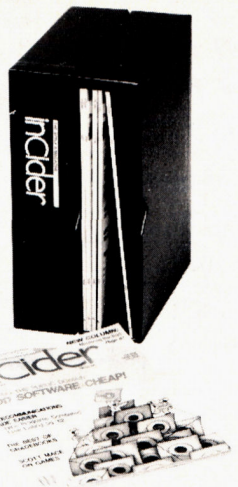

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0	0	0	0	15	0	0	0	0	0
15	0	0	15	15	0	0	0	0	0

Table. Implementing Conway's rules.

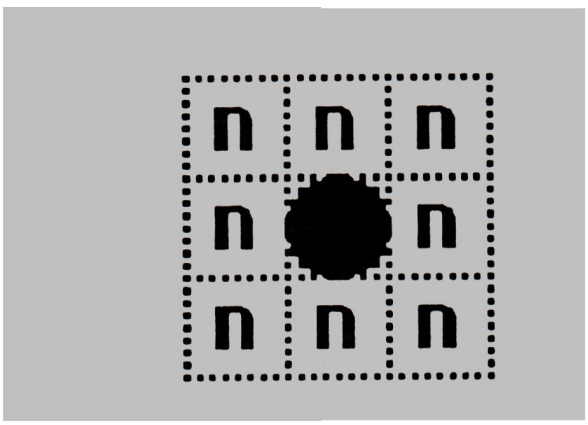


Figure 1. Eight neighbor positions per cell.

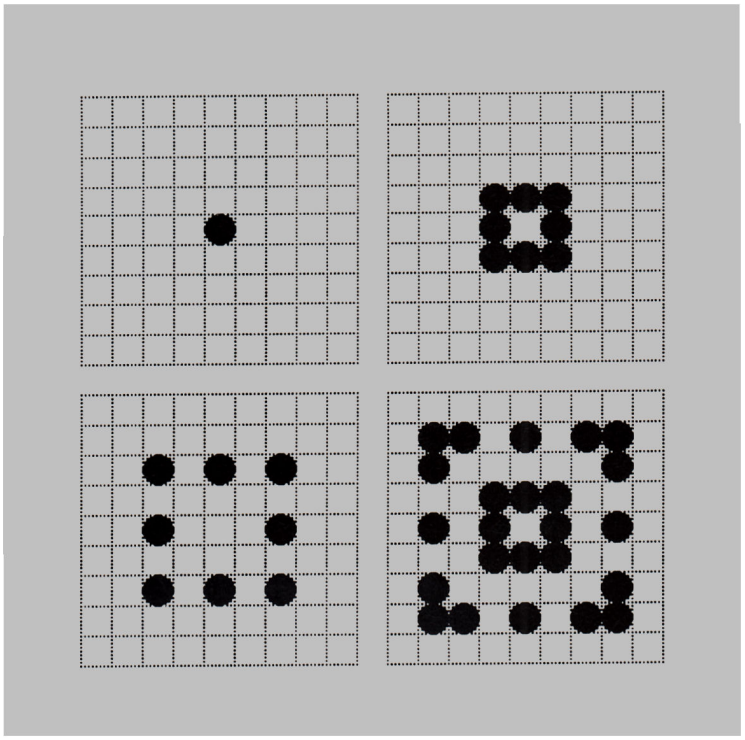


Figure 2. First four generations of Fredkin's rules applied to isolated live cell.

example, the following command draws a line five units long near the center of your screen:

line 15 20 20 20

The GO command applies the rules to the screen successively until you press any key.

For any set of rules you can create you must ask a number of questions. Can you predict the patterns resulting from any given starting pattern? For example, will a line six units long create patterns similar to those generated by the five-unit line? What kinds of patterns create stable structures that don't change from generation to generation? Which patterns create oscillators that bounce between several states before starting over again? Do certain starting positions lead to constantly changing patterns, or do all arrangements reach steady state if you wait long enough?

These questions and many more have been asked by thousands of students and mathematicians since the 1960s, when cellular automata were created. Every answer seems to generate more questions.

If Phantom Fishtank did nothing more than provide an environment for experimenting with some interesting rule sets, it would still be valuable. But just as you have the freedom to create arbitrary starting positions, you can also modify rule sets or create them from scratch.

How? With a *rule table*. Each row in the table corresponds to one of the 16 lo-res colors; each column corresponds to a number of "live" neighbors (0–8). Cells with colors 0–7 are "dead"; those from 8 to 15 are "live."

The accompanying **Table** shows the only lines you need to implement Conway's rules. A 15 (live white cell) in column 3, for instance, indicates that when the background state (0) has three live neighbors it becomes live, or reaches state 15—that's rule 1. Rules 2 and 3 deal with live cells and are handled in line 15: Only cells with two or three live neighbors stay alive; all others die.

The ease with which you can create and save rule sets and starting positions affords tremendous opportunities for exploration. For example, you can examine the same starting position with different rule sets to see how game rules affect the outcome.

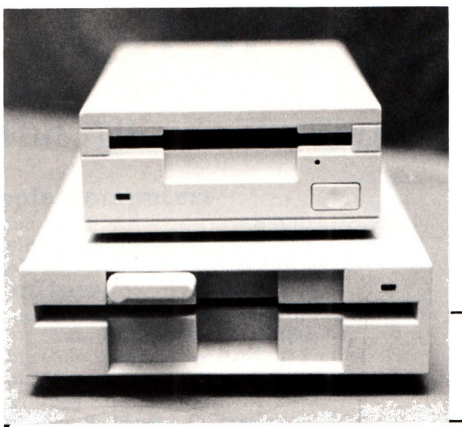
As with many activities centered around computational microworlds, some educators who are also computer users question the value of such experiments. After all, unless you're studying specifically the theory of zero-player games, why would you want to explore this domain?

The answer hinges on your philosophy of education. If you agree with Plutarch that "the mind is a fire to be kindled, not a vessel to be filled," then activities like Phantom Fishtank are valuable additions to your software library. Tools like this can lead to in-depth math projects and may even spark a lifelong interest in math.

On the other hand, if your model of effective education is built around imparting concrete facts and rules that match the topics covered on standardized tests, you probably won't try tools like Phantom Fishtank and the Gingerbread Man.

If you're in the latter category, keep this in mind: Our world is constantly changing, and the rate of change is increasing. A strictly fact-based curriculum may prepare children for tests, but it does nothing to prepare them for the only life game that really counts—their own.□

DAVID THORNBURG IS INVOLVED IN THE CREATIVE USES OF COMPUTERS IN EDUCATION. HIS DAY-LONG WORKSHOP FOR TEACHERS, "EDUCATION FOR THE WHOLE MIND," EXPLORES TOOLS LIKE THOSE DESCRIBED IN THIS COLUMN IN THE CONTEXT OF GARDNER'S THEORY OF MULTIPLE INTELLIGENCES. WRITE TO DR. THORNBURG AT INNOVISION, P.O. BOX 1317, LOS ALTOS, CA 94023.



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TYPE IT UP

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

FONT CONVERSION

by Terrence H. Davis

PUBLISH IT! AND PUBLISH IT! 2 (TIMEWORKS, Deerfield, IL) let you create attractive cards and newsletters, but they also limit your font selection: You can use only the fonts included with the programs or those obtainable from the publisher. Dozens of Apple IIGS fonts are available from a variety of public-domain sources, including the National AppleWorks User's Group (NAUG); programs such as TimeOut SuperFonts (Beagle Bros, San Diego, CA) use them directly. Wouldn't it be handy if you could use them with your version of Publish It! as well?

Publish It! fonts are stored on disk as file type $F7. Interestingly, the file type is the only real barrier to using GS fonts with Publish It!. **Listing 1** is a fairly simple program that converts an Apple IIGS font (file type $C8) to a Publish It!-compatible font file type.

Type in the program and SAVE it as Font.Convert. To make things a bit easier, insert the disk with your GS fonts and use the PREFIX command to prepare a pathname. For example, type PREFIX /System.Disk /System/Fonts to access them on a backup of your GS system disk. Then RUN Font.Convert. When prompted, enter the pathname of the GS font. Convert all the fonts you want to use, then boot and run the Install Font utility from Publish It!'s new Apple menu to load those converted fonts.

There's only one difficulty with converted GS fonts: When you use Publish It! to print them they'll appear slightly smaller than they do with other programs. Consequently, you may have to alter the letter spacing for more attractive printed results.

Write to Terrence H. Davis at 134 Northwestern Parkway, Louisville, KY 40212.

Listing 1. Font Converter.

```
10  REM  FONT.CONVERT  [2419]
20  REM  BY TERRENCE H. DAVIS  [3944]
30  REM  COPYRIGHT 1989, INCIDER  [4765]
60  FOR I = 768 TO 782  [1505]
70  READ J  [402]
80  POKE I,J  [811]
90  NEXT I  [451]
100  DATA  32,0,191,196,12,3,144,3,141,30,3,96,10,31,
    3  [9894]
110  REM  ====================  [4780]
120  REM  INPUT FILENAME  [3091]
130  REM  ====================  [788]
140  TEXT : HOME  [376]
150  PRINT "PLEASE ENTER PATHNAME OF THE FONT"  [2227]
160  PRINT "WHOSE TYPE WILL BE CONVERTED TO $F7."  [2978]
170  VTAB 10: PRINT "NOTE- TYPE THE FONT'S FULL PATHN
    AME:"  [7540]
180  PRINT "      /VOLUME/DIRECTORY/FILE"  [1791]
190  PRINT "OR    SET PREFIX BEFORE RUNNING PROGRAM" [2807]
200  PRINT "      AND ENTER DIRECTORY/FILE."  [2560]
210  PRINT : PRINT "PRESS RETURN ALONE"  [4376]
220  PRINT "OR    SPECIFY /VOLUME/DIRECTORY": PRINT "
       FOR A CATALOG."  [6966]
230  VTAB 21: PRINT "ENTER 'Q' TO QUIT."  [4839]
240  VTAB 4: INPUT FILE$: IF FILE$ = "Q" THEN  HOME :
    END  [3569]
250 L =  LEN (FILE$):X = 0  [2363]
```

Continued

Continued

```
260  IF L = 0 THEN  HOME : PRINT  CHR$ (4);"CAT": GET
    A$: GOTO 140  [2520]
270  REM  STORE LENGTH AND NAME OF FILE IN PATHNAME B
    UFFER  [9362]
280  POKE 799,L  [1095]
290  FOR I = 800 TO (799 + L)  [1868]
300 X = X + 1  [637]
310  POKE I, ASC ( MID$ (FILE$,X,1))  [3142]
320  NEXT I  [398]
330  REM  ====================  [5219]
340  REM  READ FILE PARAMETERS  [4408]
350  REM  ====================  [5227]
360  POKE 798,0: POKE 771,196: POKE 780,10  [4066]
370  CALL 768: REM  GET FILE INFO  [2136]
380  GOSUB 400: GOTO 520  [1627]
390  REM  ====================  [859]
400  REM  CHECK FOR ERRORS  [1306]
410  REM  ====================  [867]
420 EC =  PEEK (798): VTAB 21  [1922]
430  IF EC = 39 THEN  PRINT "I/O ERROR": POP : GOTO 4
    80  [4416]
440  IF EC = 43 THEN  PRINT "DISK IS WRITE PROTECTED"
    : POP : GOTO 480  [6680]
450  IF EC = 64 OR EC = 69 OR EC = 70 THEN  PRINT "IN
    VALID PATHNAME OF VOL/FILE NOT FOUND": POP : GOTO
    480  [11856]
460  IF EC <  > 0 THEN  PRINT "GETTING ERRORS TRYING
```

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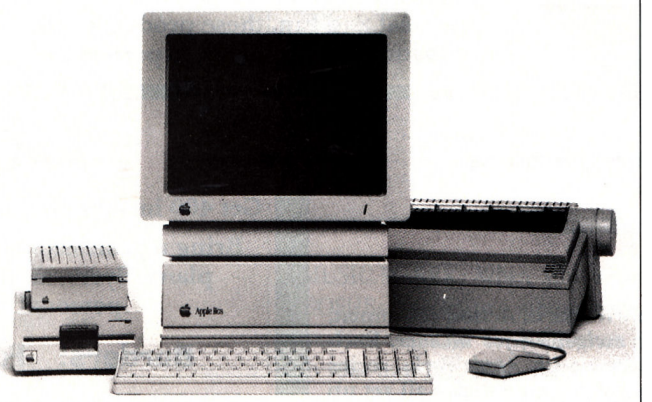

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```
    TO READ/WRITE": PRINT "PRODOS MLI ERROR CODE =  "
    ;EC;"  (DECIMAL)": POP : GOTO 480  [13028]
470  RETURN  [317]
480  VTAB 23: PRINT "PRESS <RETURN> TO CONTINUE";: GET
    K$: PRINT  [6877]
490  IF K$ <  > CHR$ (13) THEN 480  [1908]
500  GOTO 140  [648]
510  REM  ======================  [2600]
520  REM  TEST FOR GS FONT FILE TYPE  [5227]
530  REM  ======================  [4038]
540  HOME : IF  PEEK (784) = 200 THEN FT = 247: GOTO
    600  [3237]
550  IF  PEEK (784) = 247 THEN  VTAB 10: PRINT FILE$:
    PRINT "ALREADY IS TYPE $F7": GOTO 480  [7663]
560  IF  PEEK (784) <  > 15 THEN 580: REM  CATALOG?  [2767]
570  PRINT  CHR$ (4);"CAT ";FILE$: GET A$: GOTO 140  [2471]
580  VTAB 10: PRINT FILE$: PRINT "ISN'T A GS FONT!  T
    RY AGAIN.": GOTO 480  [7694]
590  REM  ================  [4570]
600  REM  SAVE NEW FILE TYPE  [3727]
610  REM  ================  [4590]
620  POKE 771,195: REM  SET FUNCTION CODE TO 'SET FIL
    E INFO'  [4346]
630  POKE 784,FT: REM  CHANGE FILE TYPE  [2818]
640  POKE 780,7: REM  CHANGE NUMBER OF PARMS TO 7  [5802]
650  CALL 768: REM  SET FILE INFO  [3112]
660  GOSUB 400  [258]
670  HOME : PRINT "YOUR FONT HAS BEEN CHANGED!": GOTO
    480  [5922]
```

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Listing 2. Music Maker.

```
10  REM  MUSIC.MAKER  [2357]
20  REM  BY JAKE SZAT  [2498]
30  REM  COPYRIGHT 1989, INCIDER  [4765]
40  GOSUB 1000: REM  INIT SOUND  [1696]
50  POKE 768, INT ( RND (1) * 256): REM  PITCH  [3308]
60  POKE 769, INT ( RND (1) * 10) + 1: REM  DURATION  [2854]
70  CALL 771  [978]
80  IF  PEEK (49152) < 128 THEN 50: REM  PRESS KEY TO
    STOP  [4956]
90  GET A$: END  [858]
1000  REM  INIT SOUND ROUTINE  [1389]
1001  FOR I = 771 TO 798: READ N: POKE I,N: NEXT : RETURN
    [2809]
1010  DATA  169,0,141,2,3,172,1,3  [2323]
1020  DATA  174,0,3,173,48,192,206,2  [2672]
1030  DATA  3,208,3,136,240,5,202,240  [4164]
1040  DATA  239,208,243,96  [2358]
```

Lines 50–70 in MUSIC.MAKER demonstrate how to play notes by CALLing the machine-language music program: Simply POKE 768, the pitch value of your musical note (0–255). The pitch will deepen with higher numbers. Then POKE 769, how long you want your note to play (*duration*, 0–255). Finally, CALL 771 to play that selected note for the prescribed duration.

For a sample of what MUSIC.MAKER can do, try the demo—it sets the pitch and duration randomly to create "sci-fi" sound.□

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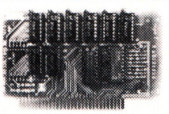

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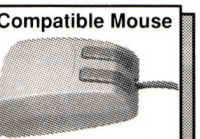

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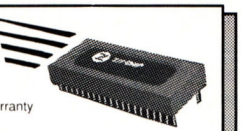

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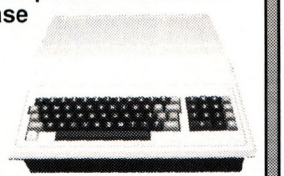

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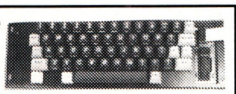

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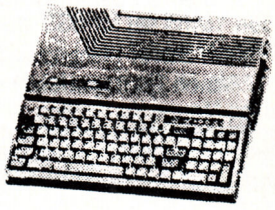

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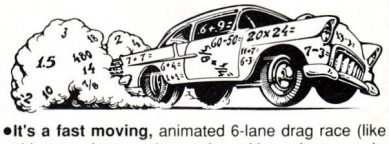

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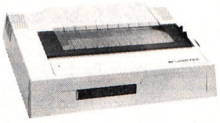

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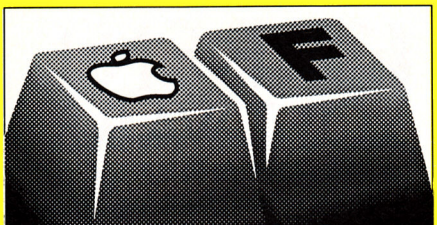

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EDITORS' CHOICE

SALVAGING SUNKEN FILES

YOU'VE JUST FINISHED ADDING NEW records to your 85K AppleWorks database of shipwrecks. You go back to check it out, and the program tells you, "Getting errors trying to read Wrecks." Now you realize you never made a backup copy on another disk. Is all your work lost? Have you wasted all those hours typing in entries? Not necessarily—if you have **RepairWorks** from Quality Computers.

RepairWorks recovers and restores damaged word-processor and database files, so corrupt data or bad blocks that have prevented AppleWorks from reading your files—and you from working on them—are no longer fatal.

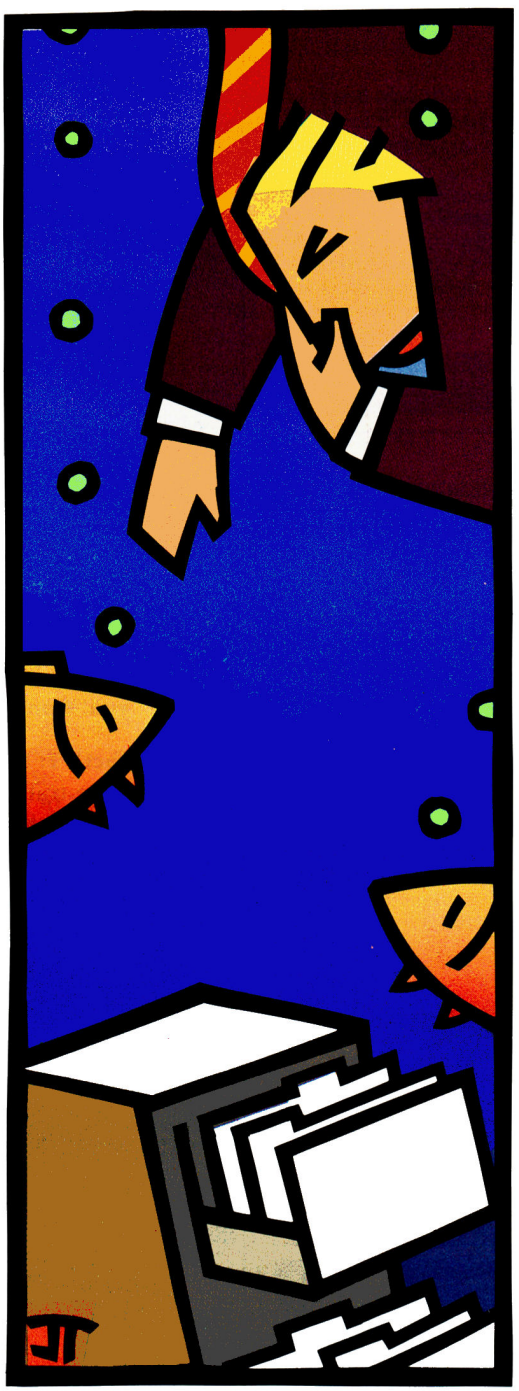
Because you're already familiar with AppleWorks, you'll be able to put RepairWorks through its paces just fine. It's menu driven and simple to use.

First, from the RepairWorks main menu, you can repair a file, catalog a particular disk or ProDOS path, configure your printer, or exit the program.

The program offers two options for repairing your trashed word-processor files: You can either create a new AppleWorks file from the old one, or create a text (ASCII) file from the damaged source and convert it later to an AppleWorks file. Always try the first alternative; it's easier and faster. If you're still unsuccessful, then try creating a text file from the ruins of your work. This second method may work better if your file has suffered serious damage.

Once you've repaired your file, you can rename it or accept the default name RepairWorks assigns to it—your original filename with *.RW* added to the end.

The procedure is similar for fixing demolished database files, except database files are repaired as ASCII text, which you'll later have to convert back to AppleWorks. In resurrecting database files, RepairWorks can save only the data, not any supplementary information such as record layout, report formats, or selection criteria. So, while you may need to specify new report formats, you won't have to reenter all your data. RepairWorks will add *.TXT* as the default title filename after resuscitation, or you can rename the file.



You may also print a damage-control report after repairing a database file, with such information as filename and type, number of blocks used, and block number of the Key pointer—the block in your file that tells ProDOS where your file is stored.

"If you spill something on your data disk, nothing but a backup will save you," notes Senior Editor Paul Statt, speaking from experience. "But RepairWorks is nice insurance otherwise."

"I wish RepairWorks had been around a few years ago when I was writing my very first feature for *inCider*," says Review Editor Lafe Low. "I still remember how angry I was when AppleWorks couldn't read the file I was working on after I'd finished about two-thirds of it. I ended up being a week past my deadline, and I still haven't caught up."

So don't start looking for a bridge to jump off of the next time you can't read one of your precious AppleWorks files. Run it through RepairWorks, and you'll save yourself a lot of time, effort, and frustration. Add RepairWorks to your AppleWorks repertoire for $39.95, from Quality Computers, 15102 Charlevoix, Grosse Point, MI 48230, (313) 331-1115.□

EDITORS' CHOICE SINGLES OUT ONE PRODUCT EACH MONTH THAT THE *INCIDER* EDITORS FEEL IS A SIGNIFICANT ADDITION TO THE APPLE II FAMILY. PRODUCTS EVALUATED MAY NOT BE AVAILABLE YET FOR RETAIL DISTRIBUTION.

Illustration • Julia Talcott

System Saver IIGS, $99.95

"If it didn't say Kensington on the front, you might think it came from Cupertino."

Editors' Choice
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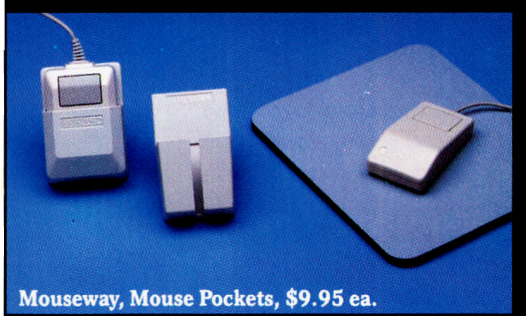

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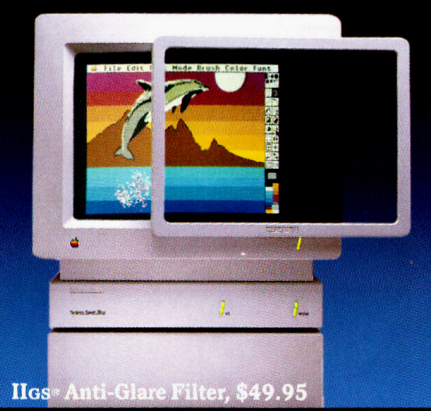

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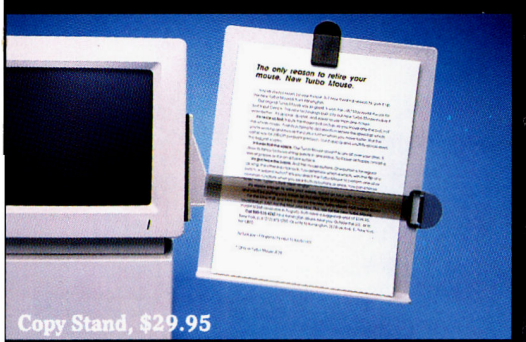

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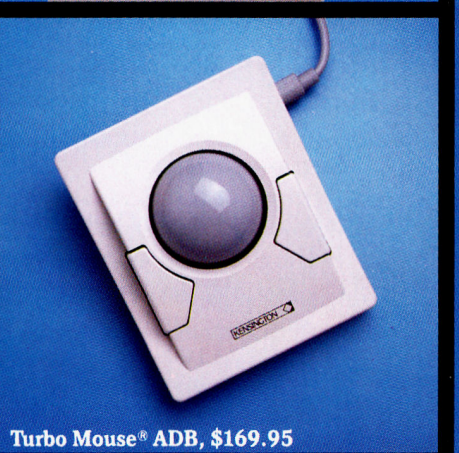

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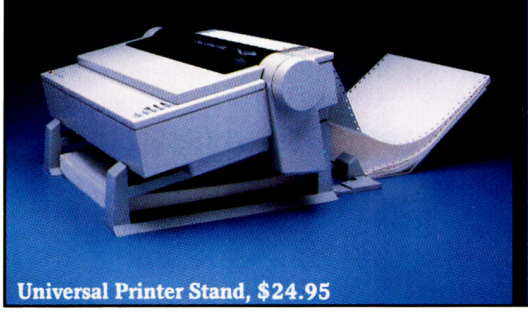

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That's why inCider magazine named System Saver IIGS Editors' Choice for March '88.

They were impressed at how well its styling blends in with the IIGS. They appreciated the convenience of its front-mounted switches. And they loved the way it offers surge suppression, extra outlets and a cooling fan, all for $99.95. In summary, they thought it went "a long way toward making the computer easy to use."

Of course, we were delighted with their reaction. After all, making the Apple II easier to use is something we've been working on for the last seven years. In fact, we've figured out so many ways to do it, we can't fit them all on one page.

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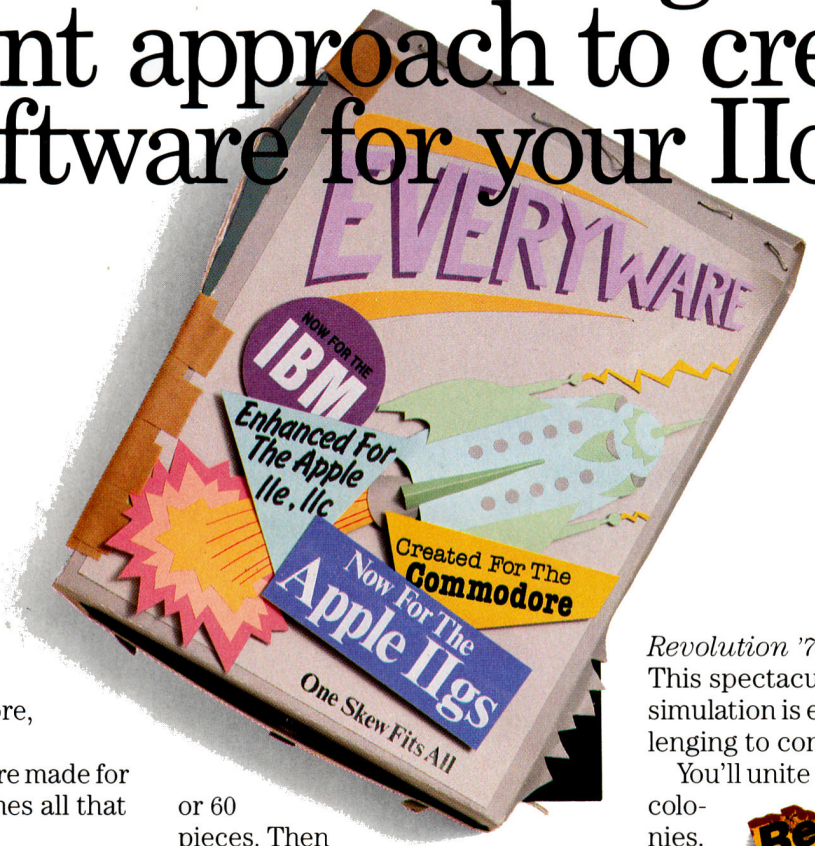

Most IIgs software is created for everyone else first–for IBM, Commodore, Apple IIe.

Then minor changes are made for the IIgs. In fact, sometimes all that changes is the sticker.

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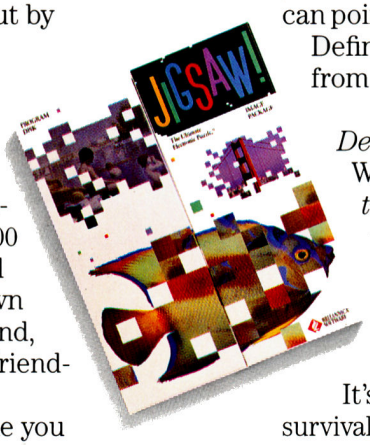

JIGSAW!
Awarded "Editor's Choice" in the December '88 edition of inCider. *JIGSAW!* was called "deceptively simple, yet maddenly complex."

This wonderfully addicting electronic puzzle uses all 4,000 of your IIgs colors in its 24 images. Each image can be scrambled into 8, 15, 40 or 60 pieces. Then you see how fast you can point and click it back together.

Definitely captivating for anyone from 4 to 104.

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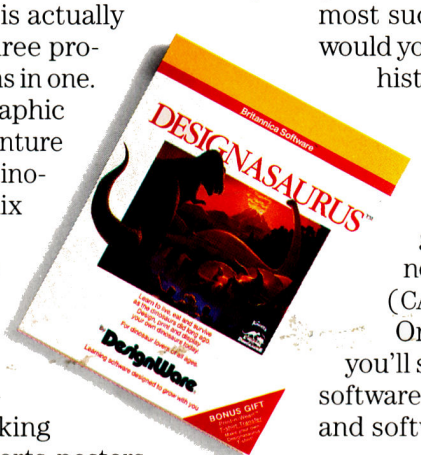

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