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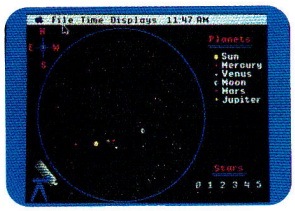

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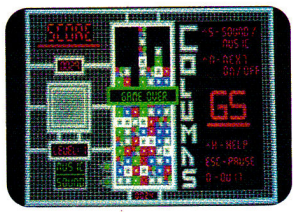

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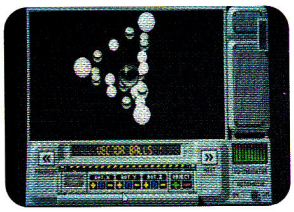

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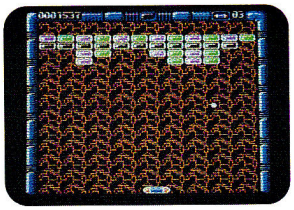

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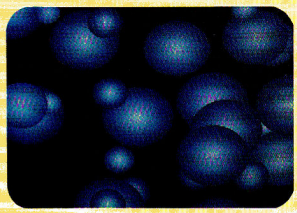

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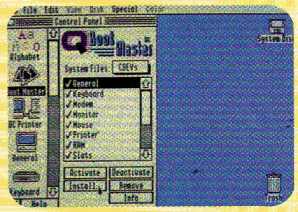

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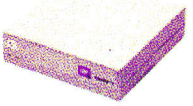

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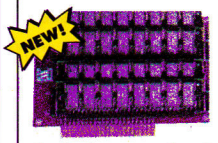

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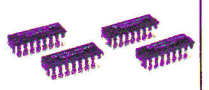

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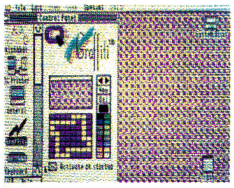

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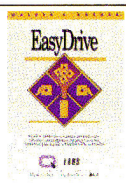

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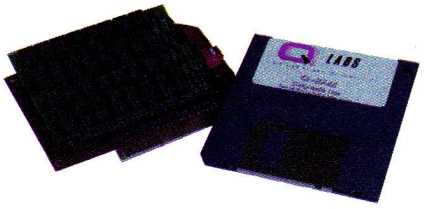

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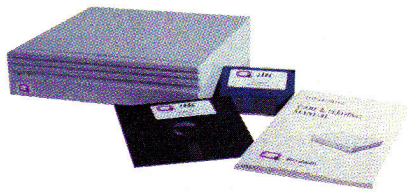

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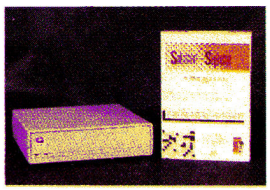

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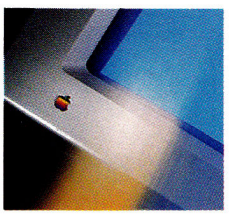

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PARADIGM SHIFT

Technology, experts predict, will create a more dynamic, interactive classroom.

In the movie *Back to School*, Rodney Dangerfield says he likes teachers because "if you do something wrong, they make you do it again." Probably for a different reason from Rodney's, I also have an affection for educators. I've been around them my whole life. My father was a teacher and school principal and was instrumental in convincing me *not* to go into education; my mother was a teacher's aide; my sister-in-law is a teacher. My college work-study job was cleaning the campus elementary school. (You don't know the meaning of the word *grotesque* until you've cleaned bathroom stalls used by 6-year-olds.) After college I did a six-month stint as a substitute teacher, which was worse than cleaning those stalls.

By DAN MUSE * EDITOR IN CHIEF

Finally, and most importantly, I happen to work for a magazine whose readership is made up largely of educators, so I get an opportunity to view education software, talk to teachers, and attend education conferences. Like Rodney, I admire educators. I respect them enough to know I couldn't do their job. Also, like Rodney, many teachers "don't get no respect — no respect at all." Many educators are still underpaid and undertrained, which is ironic when you realize that teachers are the people who are shaping the future.

I was reminded of this when I attended a session called *Electronic Highways 2004: Renaissance II* at the California CUE (Computer-Using Educators) show in Santa Clara last November. The speaker was *inCider/A+* columnist David Thornburg. The session focused on the "paradigm shift" in education — how educators' roles will change by the year 2004 — and it was quite provocative.

We're moving away from the traditional approach to teaching to which most of us are accustomed. When I was a kid, we sat at rows of desks, and the teacher stood at the head of the class and imparted knowledge. We students spoke only when spoken to and asked questions only when necessary and appropriate. I think that system worked okay. I'm no Einstein, but I managed to retain a little knowledge along the way. Besides, what other way was there then?

Today the personal computer and its associated technologies offer many alternatives. The days of the textbook-toting "sage on stage" are numbered. Textbooks are destined for some time capsule; they'll be replaced by CD-ROMs, laser discs, and other technologies that students will continue to use throughout their lifetimes. Students will become lifelong learners because the technology that carries the information will be exciting.

Today's emerging technologies will let students become more responsible for and more active in their own education. Technology, Thornburg and others predict, will create a more dynamic, interactive classroom. In fact, even the concept of classrooms as we know them might be arcane in the 21st century. When teachers can draw upon CD-ROM, laser discs, cable television, satellite communications, and a host of other exciting technologies, how can we expect students to sit still? What's the point of interactive multimedia if a student has to raise his or her hand to get permission to get up and use it?

Teachers' roles will change, too. Educators will become guides or facilitators, helping students explore information. Rather than demanding that students memorize facts about, say, the Revolutionary War, educators will help them understand those facts and apply that knowledge.

It's true that educators will be challenged to develop new ways of taking advantage of technology. But regardless of how sophisticated and interactive the educational medium, teachers will still be the ones who, when necessary, make the student "do it again," as Rodney says. No technology could ever take the place of the dedicated, caring teachers I've known. Let's hope some things never change. ❑

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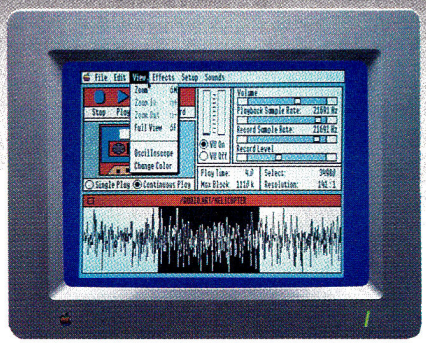

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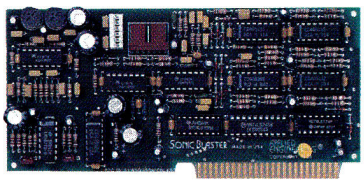

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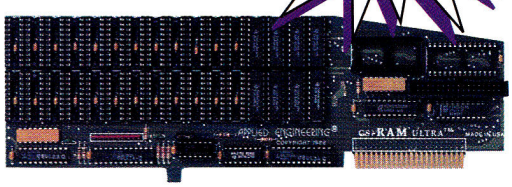

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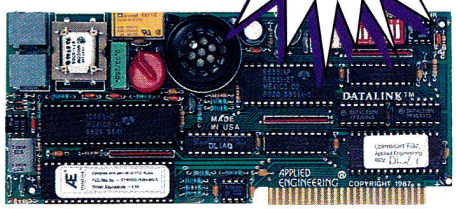

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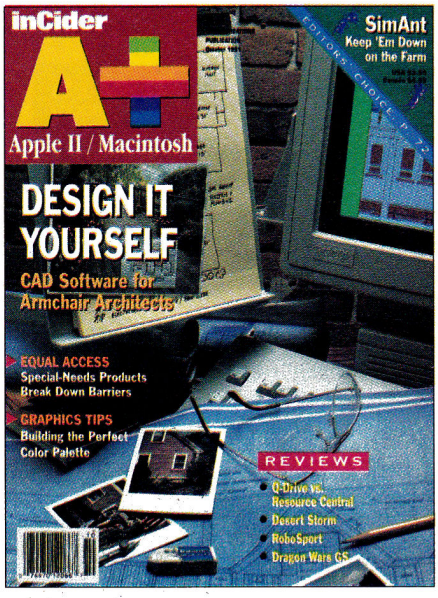
LETTERS



MISSED CONNECTION

IN YOUR RESPONSE TO AARON Jennings' October 1991 Apple Clinic question about transferring files between ProDOS and MS-DOS ("Apple to IBM," p. 20), you forgot to mention the product CrossWorks, from SoftSpoken.

James W. Harper
8920 Gunnison Drive
Dallas, TX 75231

SoftSpoken's CrossWorks is available for $99.95. Contact the company at P.O. Box 18343, Raleigh, NC 27619, (919) 870-5604. — eds.

WHERE ARE THEY NOW?

WHATEVER HAPPENED TO THE TurboRez board for the IIGS? And what happened to the *inCider/A+* People's Choice Awards? Will they ever come back? One last question: What's the address of the Big Red Computer Club?

Will Selden
4402 South Ashlawn Drive
Richmond, VA 23221-2534

TurboRez was never released, and now exists mostly in the intermittent cries of diehard believers — kind of like New York State Governor Mario Cuomo's presidential campaign.

AppleWorks was given the People's Choice Trophy in perpetuity for being so darned popular. You can contact the Big Red Computer Club at 423 Norfolk Avenue, Norfolk, NE 68701-5234, (402) 379-4680. — eds.

NEED A NEW CLOCK?

I PURCHASED AN SMT NO-SLOT Clock, and it came with an installer program that's supposed to put the clock drivers into ProDOS. The program won't work with ProDOS version 1.8 or 1.9, however. Is there another way to install the clock, or is there a newer version of the No-Slot Clock?

Adam McKenna
Trenton, NJ

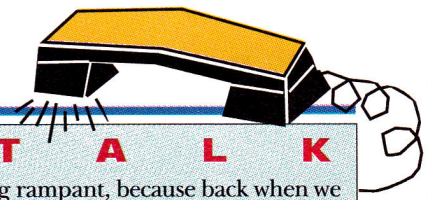
There's a new version of the No-Slot Clock that's compatible with ProDOS versions 1.8 and 1.9. It's available from SMT Inc. for $59.95. Contact the company at 310 Via Vera Cruz, Suite 112, San Marcos, CA 92069, (800) 326-1638. — eds.

MASS CONVERSIONS

I NEED TO CONVERT MY LARGE Apple II database files to my new Macintosh system. Are there any companies that handle this process?

Jan Arowesty
69 Cleveland Avenue
Bay Shore, NY 11706

Try Burke Conversion Service, 841 Shibley Avenue, P.O. Box 515, Park Ridge, IL 60068, (800) 662-6088. — eds.



CROSSTALK

Satisfaction with system software must be running rampant, because back when we asked you about it, most of you were silent. We did get a few calls, such as the one from Sharon Mast of Lawrence, Kansas, who wanted true multitasking for her Apple IIGS. Sorry, Sharon, that's probably not in the cards, but we're hoping that Bill Plantier's wish will come true. Bill is from Tallahassee, Florida, and he wants the IIGS Finder to be able to handle Macintosh and MS-DOS disks with the same aplomb that Apple File Exchange does. Are the IIGS System 6 engineers at Apple listening? Finally, Mary Hardson of Athens, Georgia, called to vent her fury at the Macintosh System 7 Compatibility Checker. According to her, it invalidated three-quarters of her software and offered no upgrade options. She's running the programs anyway, and hasn't discovered any major problems. Good luck, Mary!

Wise guys always tell you to establish the price of a new car before you bring up your trade-in. Wonder if you can do that with computers. If Apple offered you a rebate on a new Macintosh in exchange for your Apple II-series (or early Macintosh) computer, would you take it? How much would it have to be?

EMPIRES RISE AND EMPIRES FALL, BUT CROSSTALK WILL ALWAYS REMAIN. CALL US AT (603) 924-0301 AND GIVE US BOTH BARRELS ON OUR LATEST QUESTION. GO AHEAD — WE CAN TAKE IT. TELL US WHO YOU ARE AND WHERE YOU'RE FROM, AND WE'LL PUBLISH THE BEST RESPONSES RIGHT HERE.

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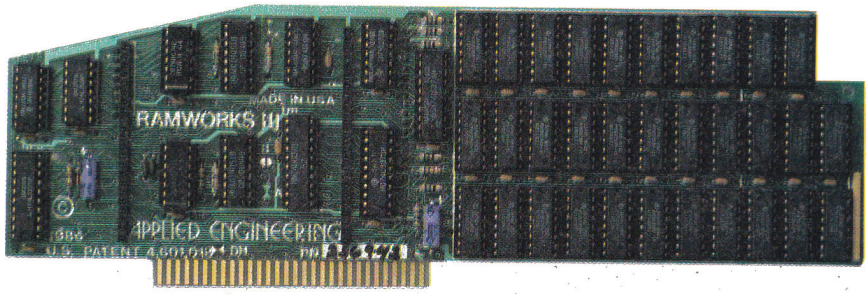

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RamWorks eliminates AppleWorks' internal memory limits, increasing the maximum number of database records available. *Only* RamWorks increases the number of lines permitted in the word processing mode. And *only* RamWorks offers a built-in printer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

The most friendly, most compatible card available. Using RamWorks III couldn't be easier because it's compatible with more off-the-shelf software than any other RAM card. But unlike other cards, RamWorks plugs into the IIe auxiliary slot, providing our super sharp 80-column text (U.S. Patent #4601018) in a completely integrated system.

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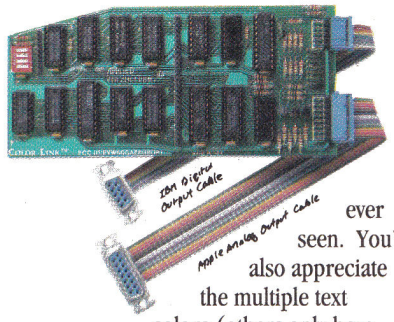
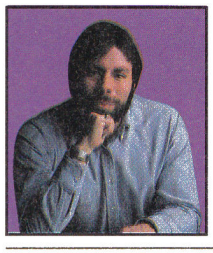


ever seen. You'll also appreciate the multiple text colors (others only have green) that come standard. But the RamWorks RGB option is more than just the ultimate in color output because unlike others, it's fully compatible with all the Apple standards for RGB output control, making it more compatible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



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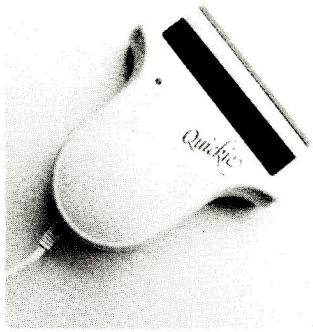

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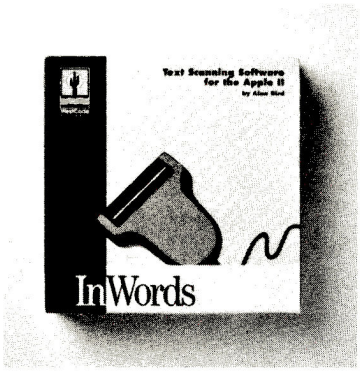

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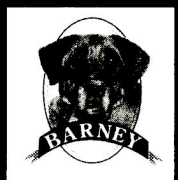

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DRESSED-UP HYPERSTUDIO 3.0

WE FIRST LOOKED AT Roger Wagner Publishing's HyperStudio in 1988, when it was the only Apple IIGS software available that let you combine text, graphics, and sound into integrated hypermedia documents. HyperStudio wasn't the "GS version of HyperCard" — Apple's Macintosh hypermedia toolkit. It was better than that. The bright colors (HyperCard was monochrome) and simplicity (you could create a HyperStudio stack without writing programming code) attracted thousands of buyers.

When Apple brought HyperCard to the GS in 1991, it presented a challenge to HyperStudio. Would buyers continue to choose HyperStudio over HyperCard? A lot of HyperStudio stacks are available, but HyperCard IIGS is official Apple equipment. HyperStudio is easy to use — but HyperCard IIGS has a programming language.

HyperStudio 3.0, the latest incarnation of the software that wants to be nothing less than the savior of the Apple IIGS, shouldn't disappoint anyone. All older HyperStudio stacks still run, and new stacks are still easy to create. But HyperStudio has borrowed two of the best ideas from HyperCard in its self-help program: buttons you can edit after creating them, and a language in which you can write a HyperStudio stack.

In the earlier HyperStudio, you could create a click-on button that would display text or a picture, run a videodisc or CD-ROM, or jump to another screen. But once you created a button, you had to destroy it to change it. It seems like a major flaw now, but in 1988 it was a feature that helped keep HyperStudio simple.

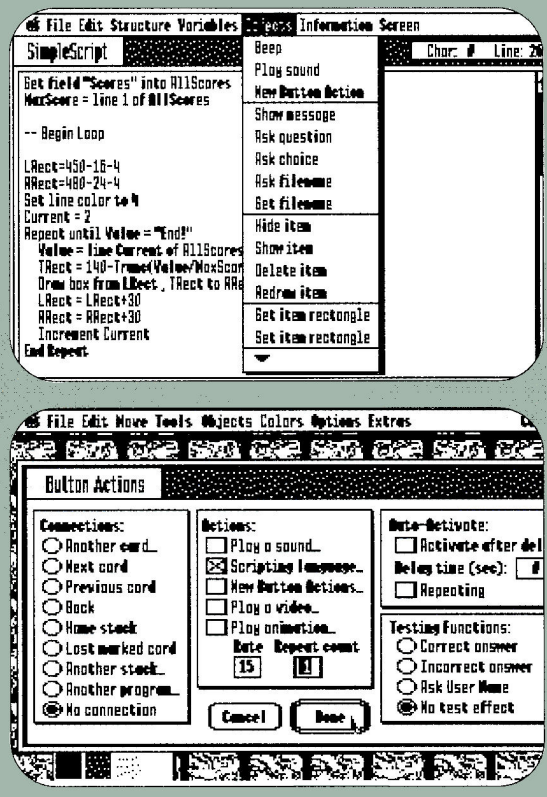
Buttons can now be any size and shape. Irregularly shaped buttons were impossible with HyperStudio 2.1 (or with HyperCard IIGS); even an invisible button had to be shaped more or less like a rectangle. Now a button can have the shape of a lion as easily as the shape of its cage.

The programming language in HyperStudio 3.0 is called SimpleScript. It's designed for those situations in which text-file reading or writing, floating-point math, or drawing the screen is required; you don't need SimpleScript to run stacks. And it isn't the only language available; HyperStudio goes a step further than HyperCard, and lets developers link other languages to it. Mike Westerfield of The Byte Works (Albuquerque, NM) is working on C, Pascal, and assembly language for HyperStudio 3.0.

HyperStudio 3.0 has taken a number of other small cues from HyperCard; it uses pull-off menus, called "windoids." But it exceeds the abilities of HyperCard by using graphics in both 320 mode, for more colors, as well as 640 mode, for greater resolution. This is especially important if you use digitized graphics.

A great many other enhancements should mean that bigger stacks will fit into smaller GS systems. Roger Wagner has said that it's very important to him that stacks be available for 1-megabyte GSes with a single 3.5-inch drive. HyperStudio 3.0 even lets you compress and share sounds, for instance, to fit more into a stack.

HyperStudio 3.0 sells for $179.95. An upgrade from version 2.1 is $50 postpaid ($25 if you bought it after HyperStudio 3.0 was announced on July 15, 1991), from Roger Wagner Publishing, 1050 Pioneer Way, Suite P, El Cajon, CA 92020, (619) 442-0522. **— P.S.**



Top, pull-down SimpleScript menus eliminate typing program code in. Bottom, edit a button at any time.

FIRST • LOOK

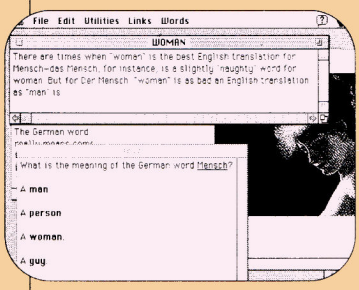
"Apple II" indicates an 8-bit product compatible with IIes, IIcs, IIc Pluses, and IIGses unless noted otherwise.

NEW SOFTWARE

▲

LINK UP

The simplest hypertext imaginable would have to be a plain text file in which you could click on a word and immediately call up text linked



to it. That describes **LinksWare**, a new program for the Macintosh from Tracy Valleau, the author of the GS authoring system Nexus (Editors' Choice, August 1990, p. 100; Reviews, April 1991, p. 76).

Of course you can add graphics files and create hypermedia as well as hypertext, and LinksWare promises CD-ROM and videodisc controllers. But as it is, LinksWare offers educators an opportunity to create programmed learning lessons simply and without fuss, using existing texts.

LinksWare uses Apple XTND technology, which lets you combine files created with different programs, such as Claris' MacWrite, Microsoft Word, and T/Maker's WriteNow, or even on different computers — IIs, GSes, and MS-DOS clones.

Educators who have tried LinksWare praise its "90-second learning curve." All you do is point-and-click on the word you want to link and select the file to which you want to link it. No cards, no stacks, no programming. It's priced at $69.95, from Linksware, 812 19th Street, Pacific Grove, CA 93950, (408) 372-4155.

For more information, circle number 350 on the Reader Service card.

■

DREAM IT

DreamWorld Software has released **DreamGrafix**, the newest Apple IIGS paint program — and the only one that lets you use as many as 3200 colors in a single picture. The color limit for standard GS graphics is 16 per picture.

DreamWorld says that by using the new super-hi-res 3200 mode, you'll be able to display color pictures of photographic quality on your Apple IIGS. But in addition to seeing them on screen, you'll be able to fine-tune and save your images, thanks to powerful tools and editing modes.

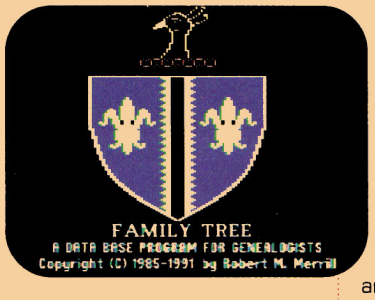
DreamGrafix is written entirely in assembly language for speed, but conforms strictly to Apple programming standards to ensure compatibility with all current Apple IIGS models, as well as future models and operating systems, and all accelerators.

DreamGrafix sells for $99.95, and includes a free color slide-show program called **DreamVoir**. Contact the company at P.O. Box 830, Iowa City, IA 52244-0830, (319) 338-6491. For more information, circle number 351 on the Reader Service card.

◆

ROOTS

Apple II users looking for their ancestors should like **Family Tree**, an inexpensive, easy-to-use program



that imports family data from both AppleWorks database files and the Mormon Church's Personal Ancestry Files.

Family Tree creates pedigree charts as well as descendant charts and family groups. You can save charts as AppleWorks files, each with as many as 700 names. If you need to trace more names, you can link multiple files. Family Tree is priced at $39.95, from Robert M. Merrill, 6180 Via Real #25, Carpinteria, CA 93013-2863, (805) 684-3366.

For more information, circle number 352 on the Reader Service card.

◆

TAX TIME

It starts keeping you up nights every year right after the holidays: your federal income-tax return. Use the power of AppleWorks to save money — this year you can help yourself with the newly expanded 1991 version of **1040Works** ($32.95, $22.95 for owners of the 1990 version) for the Apple II family.

The new 1040Works completes four forms not available in earlier versions, and includes a new menu system that makes navigating

among tax forms easier. It also no longer requires "green bar" paper — you can print forms on plain white stock.

The **1040Works Tax Planner** ($29.95) could make filing your taxes in 1993 and 1994 a breeze. You can estimate your taxes for the next two years, determine how the alternative minimum tax (AMT) will affect you, calculate your withholding and quarterly tax payments, and compare financial strategies to minimize what you pay.

Both 1040Works products require AppleWorks and were written by Phineas Fiske and Dan Verkade, noted AppleWorks experts. They're available from the National AppleWorks Users Group, Box 87453, Canton, MI 48187, (313) 454-1115. For more information, circle number 353 on the Reader Service card.

■

LOCK IT UP

The Apple IIGS Control Panel is a great way to control your computer's speed, screen color, and slot assignments — but what if somebody else is using your computer? Teachers know all too well the problems students "messing with the Control Panel" can cause — but now **LockOut 2.0** returns control to the owner.

This product offers simple password protection that doesn't interfere with the operation of any other desk accessories (NDAs or CDAs). LockOut works on file servers, hard-disk drives, and floppy disks running GS/OS, AppleShare, ProDOS 16, and ProDOS 8, too.

The low $49.95 price tag includes a manual and a site

NEW-PRODUCT FOCUS

license that lets you lock out every Apple IIGS in the building.

For more information, contact SuperStuff, 3382 Sandra Drive, Kalamazoo, MI 49004, or circle number 354 on the Reader Service card.

HOT OFF THE PRESS

Dave Boyle needed a LaserWriter for only one job, to print some Publish It! documents he created.

But when he rented the printer, "they charged me $100 for one day, demanded a $500 deposit, examined my driver's license, then wrote down my license-plate number as I drove off."

If you've ever been treated like a criminal because you don't own a LaserWriter, you'll be glad Dave paid his debt to society by buying a LaserWriter and founding **Apple Hut Publishing**, a print service dedicated to handling Apple II Publish It! files.

The base price is $1 per page, printed on fine heavyweight white paper, suitable for photocopying.

Of course, you can also use papers of different weights and colors, as well as print multiple copies — after all, this is a print service.

Apple Hut prints on the day it receives your order and ships by first-class U.S. mail. A complete catalogue-and-stylebook is priced at $10, a cost that will be deducted from your first order.

For more information, be sure to contact Apple Hut Publishing, 1047 Park Hill Drive, P.O. Box 2704, Escondido, CA 92033, (619) 747-1948, or circle number 355 on the Reader Service card.

WISH BOOK

If you still believe last year's conventional wisdom that "there's no educational software for the Mac," one look at the **Intellimation Library** for the Macintosh should bring you up to date fast.

More than 100 new programs have been added in two free catalogues, one for grades K–12 and one for post-secondary education.

The first volume contains a listing of more than 175 Macintosh programs; the second, about 250. Both offer selected educator discounts.

New programs in the K–12 catalogue include additions to **Educator HomeCard**, the popular HyperCard 2.0 application that helps teachers plan and organize. The new modules are Attendance Keeper, Home-School Communicator, Report Generator, and Substitute Teacher Lesson Planner.

Also new are programs that help you teach kids about **The Vietnam War**, **Shakespeare's Twelfth Night**, and **The Physics of the Atomic Age**, as well as productivity tools such as **Zap-a-Graph** and **Personal Writer**, not to mention the topical **Presidential Election Project** and a new color version of the biology program **MacFrog**.

The post-secondary offerings include a **Mastering Calculus Series** and **The Evolution of Spanish Sounds**.

Both catalogues are available at no cost from Intellimation, 130 Cremona Drive, Santa Barbara, CA 93116, (800) 3-INTELL.

For more information, circle number 356 on the Reader Service card.

SHAREWARE SOLUTIONS * BY JOE KOHN

VIVE LA FRANCE

Last summer four young Frenchmen bound for Cupertino, California, picked up the July 1991 issue of *inCider/A+* at a Paris airport and were intrigued by a "Shareware Solutions" column called "European Connection" (p. 17). It seemed that a group of French programmers, musicians, and graphics artists — the Free Tools Association (FTA) — was writing creative freeware for the Apple IIGS. Reading and rereading that column, Olivier Goguel, Dominique Delay, Pierre Reynaud-Richard, and Dany Bar decided to meet the author of "European Connection" — they were, after all, its subject.

A few days later the FTA made the trek north from Cupertino across the Golden Gate Bridge. When my doorbell rang that afternoon, I was stunned to hear one of the young men introduce the group by saying, "You wrote about us. We're the FTA." I was speechless. I attempted to regain my composure and welcomed them in. We soon disappeared into my computer room, where we talked for a few hours. (Our mutual love of the GS helped transcend the language barrier.) I was treated to a preview of several works-in-progress, a few of which have since been released as freeware.

I learned that the FTA members had also stopped at Apple Computer, where they met with several II engineers and thanked Jim Merritt in person for the ROM 03 computer he'd arranged to have airlifted to them. Goguel, the FTA's chief programmer, uses that machine now, while the rest use ROM 01 GSes. None of the FTA members owns a hard-disk drive or an accelerator card. (Delay admitted that he also owns an Amiga, but pledged that his first love is the GS.)

We talked about **Toolbox**, the French magazine-on-a-disk that has published a number of FTA demonstration music and graphics programs. These demos have never been seen by an American audience, but the group has now decided to release **Animaga** for U.S. freeware distribution. It's a beautiful collection of eight impressive music and graphics animations. My guests also showed me the nearly 800-page book they've written about programming the GS — currently available for sale only in France, although they hope to see it translated into English and published in the United States.

The FTA members were knowledgeable about American public-domain software and shareware for the GS and wanted to see the latest releases. They were impressed particularly by Kenrick Mock's freeware product **Simple Animation Program** (SAP), a remarkable system that lets nonprogrammers create FTA-like animated demos. They marveled at **The Wall**, a Pink Floyd-inspired SAP animation with a thundering rock-'n'-roll soundtrack created by King Lerch. They smiled when I showed them that SAP users can incorporate Sound Smith

songs into animations via **TOOL219**, a GS toolbox routine that just happens to have been written by the FTA.

But the high point of the visit, of course, was getting a sneak preview of the FTA's latest work. **Delta Demo** is the long-awaited followup to Modulae and Nucleus. Like those previous programs, Delta Demo is filled with scrolling text and artistic images of numerous rotating 3D objects — and comes with a fantastic rock-'n'-roll soundtrack. With Delta Demo, it's apparent that the FTA has mastered flicker-free GS animation. Like previous FTA demos, Delta shows off the best graphics and music the GS has to offer. (Please note that the sense of humor in this program is "adult"; it's an R-rated program unsuitable for young GS users.)

The FTA's **NoiseTracker** represents the next generation of GS music software. From its color Control Panel to its NeXT-style recessed buttons and windows, this is the program the GS world has been waiting for. It's fully Sound Smith compatible, so you can use it to listen to your favorite Sound Smith songs, or use your old Sound Smith instrument files to create NoiseTracker music.

But NoiseTracker is no mere Sound Smith clone. It picks up where Sound Smith leaves off; in addition to offering rich music thanks to a 14-track full-stereo sequencer, it lets you create musical compositions you never thought possible on a GS. The FTA has broken Sound Smith's 64K size limitation for instruments, making full orchestral sound possible.

NoiseTracker can also load MOD song files created on the Amiga. Because of that capability, we can expect a huge library of GS NoiseTracker song files to become available shortly. Several of the songs included with NoiseTracker are Amiga MOD files; just use the *Import Amiga* option to listen to them. NoiseTracker also lets you add digitized sound effects to songs; several of the songs included on disk sport wild-sounding voice-overs. In addition, you can alter the volume of fade-ins and fade-outs to create some sophisticated special effects. And what would an FTA program be without animation? If you can find the hidden "Easter egg" command, you can make notes fly around the screen.

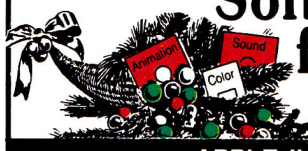
In addition to five great-sounding songs, the FTA has included the **Second Sight Sound Editor**, which lets you load any GS, Mac, or Amiga digitized sound file and create special effects or new instruments. Unlike older FTA programs, you can copy NoiseTracker to a hard drive and launch it from the Finder. It will even return you to the Finder when you exit the program. But because it's a ProDOS 8-based program, it works very efficiently on a GS with a single 3.5-inch disk drive. The self-booting disk runs NoiseTracker in the blink of an eye.

Also on tap from the FTA is **Bouncing Inferno**, a cross between Spin Dizzy and Marble Madness. You use your mouse to direct a marble down multicolored chutes, while trying to pick up important objects to clear each level. Bouncing Inferno has yet to be released, so GS owners have something to look forward to.

Their programming prowess has made the FTA's stature in the GS community legendary; they're among the most acclaimed GS programmers in the world. Their visit was an honor I won't soon forget. ❑

If you'd like to submit your public-domain or shareware programs for review, send disks to Joe Kohn at 166 Alpine Street, San Rafael, CA 94901.

Apple IIGS, Apple IIe, Macintosh



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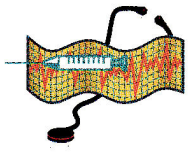

APPLE CLINIC

MEMORY = STORAGE?

When is a chip like a disk?

Let's jog your memory as we talk about RAM.

BY CECIL FRETWELL

LOAD UP THAT RAM DISK

I USE AN APPLE IIGS AND WOULD like to be able to load programs into the RAM disk automatically upon booting. Can you tell me how to do this?

Russell Rundell
San Pedro Sula, Honduras

I'm afraid I haven't seen any software that will do what you ask. But here's some information that may help you.

A RAM (random-access memory) disk is a section of your computer's memory you set aside (using the GS' Control Panel, or special utility software for folks with IIes) and treat as if it were a disk drive. You can load and save applications and documents, and, as long as the power remains on, you have another peripheral. The problem comes when you shut off the power. Your computer's RAM is "volatile," meaning that it needs electricity to stay intact.

With Applied Engineering's ***RAMKeeper*** *device, you can keep your RAM intact. RAMKeeper provides a RAM-based disk that's backed up by ordinary wall sockets — or a battery, if your house power dies. Unfortunately, AE no longer manufactures this product, but you can check mail-order houses to see if someone still has a RAMKeeper or two collecting dust on the back shelf.*

You could also try the Quality Computers utility ***RamUp*** *(20200 East Nine Mile Road, P.O. Box 665, St. Clair Shores, MI 48080, 313-774-7200, $39.95). When you boot your GS via RamUp, it loads all programs you specify (assuming you have enough RAM). As long as you keep your power turned on, you can retrieve programs at RAM, not disk, speeds.*

Roger Wagner Publishing's ***SoftSwitch*** *(1050 Pioneer Way, Suite P, El Cajon, CA 92020, 619-442-0526, $59.95) is similar. SoftSwitch lets you load an application such as AppleWorks, then stash it away in RAM under its control. You can do this for up to nine applications. Once loaded, you can retrieve an application via the Control Panel, use it, then save it back to RAM to retain its current state. When you switch back to an application, it's as if you never left it.*

SENSE OF PROPORTION

CAN THE IMAGEWRITER II PRINT proportionally sized characters without using *P-1* or *P-2* from the printer-options screen? I've tried setting the DIP switches, but it still won't print smaller than 12 characters per inch.

Raymond Hillard
USAF, Great Britain

Yes, it's possible. Yes, it's difficult. But why bother? According to John Link, author of SuperPatch, you can force proportional-1 (not proportional-2) print if you really want to, but there's an easier way to accomplish what you want.

If you want to force proportional-1 print, rely on your ImageWriter hardware. Apple's ImageWriter Technical Reference Manual *(p. 136) states that if both switch 1-6 and switch 1-7 are closed, the printer will default to proportional-1, otherwise known as P-1.*

The problem you're going to encounter is that SW 1-6 and SW 1-7 are almost always overridden by software commands from AppleWorks. As part of its initializing code in every module, AppleWorks sends a 10-character-per-inch and a 6-line-per-inch command before it prints anything. In the word processor, AppleWorks sends the command just after it prints, as well.

To get around this, set the switches for P-1, *then define a* Custom Printer, *because at least in the word processor, a custom printer doesn't trigger the initializing code sequence. When it comes to spreadsheet and database printouts, though, you're up the creek, because both these modules will trigger the 10-cpi/6-lpi code.*

MAKE A RESOLUTION

WHAT IS DOUBLE HI-RES? CAN you use it in BASIC? Can you BSAVE it as you do hi-res graphics images?

Andrew Schwerin
Bedford, MA

Double hi-res is an Apple II graphics mode that makes 16 colors available for use, and displays 140 colored pixels (or 560 monochrome pixels) wide and 192 rows deep. To achieve this mode, Apple engineers wove a bit map out of two pages of memory — one auxiliary and one main. The first several pixels come from main memory, the next set from auxiliary, and so on.

Because this mode uses auxiliary and main memory, saving and restoring a screen of double-hi-res graphics isn't a simple task that BASIC alone can handle. You'll need to buy one of several commercial graphics packages, such as ***Platinum Paint*** *(Beagle Bros, 6215 Ferris Square, Suite 100, San Diego, CA 92121, 619-452-5500, $99.95) or* ***8/16 Paint*** *(Baudville, 5380 52nd St. SE, Grand Rapids, MI 49512, 800-728-0888), that let you load and edit double- or super-hi-res pictures. Also take a look at the programming hint "Get the Picture," which is a do-it-yourself viewer (September 1989, p. 114).*

IN THE SYSTEM

ABOUT A YEAR AND A HALF AGO, I purchased Paintworks Gold for my Apple IIGS. At that time, I was using System Disk 5.0.2. I now use System Disk 5.0.4 on my hard drive, and I can't get Paintworks to print. How do I go about

getting the program patched to print using this latest system version?

Jim Bradshaw
Naugatuck, CT

Paintworks Gold uses a nonstandard printing mechanism, specific to the drivers for which it was originally created. About the only way to continue printing with it under the new operating system is to copy the old IW.Setup *and* ImageWriter *files to the* Drivers *folder, then select them. Mixing old and new system extensions isn't a good idea; either stick with your current system software or find a new graphics program that can import Paintworks Gold images. Thanks to Scott Gentry for his help answering this question.*

MISSING PRINTER

I DON'T HAVE AN IMAGEWRITER II printer, so I deleted it from my AppleWorks 3.0 printer list and added my model as the first one. Now my documents don't print properly. What did I do wrong?

Jason Holtman
Athens, OH

AppleWorks 3.0 doesn't print properly when the ImageWriter is deleted as the default printer. Use your original disk to recopy AppleWorks and install your printer without deleting the ImageWriter. You can also use ***SuperPatch*** *(Quality Computers, 20200 East Nine Mile Road, St. Clair Shores, MI 48080, 313-774-7200, $34.95) or* ***AppleWorks 3.0 Companion Plus*** *(Beagle Bros, 6215 Ferris Square, Suite 100, San Diego, CA 92121, 619-452-5500, $49.95), which both include patches that fix this problem.*

APPLE CLINIC IS A FORUM FOR ANSWERING YOUR QUESTIONS ABOUT APPLE II AND MACINTOSH HARDWARE AND SOFTWARE. ADDRESS YOUR CORRESPONDENCE TO APPLE CLINIC, *inCider/A+*, 80 ELM STREET, PETERBOROUGH, NH 03458. BECAUSE OF THE VOLUME OF LETTERS, MOST WON'T APPEAR IN PRINT, BUT WE'LL TRY TO RESPOND IF YOU ENCLOSE AN SASE.

CORRECTION

In "Double Reverse," August 1991 (p. 20), we said that issuing an ESC r to your ImageWriter II would produce one reverse linefeed, and then the printer would return to normal. Not so — the printer will remain in reverse mode until you send ESC f.

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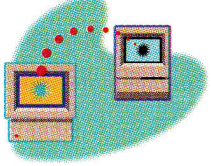

TRICKS OF THE TRADE

There's magic in the air when you, your Mac, and your Apple II team up for file sharing.

By GREGG KEIZER

DO YOU SOMETIMES THINK YOU'D have an easier time getting your computers to work together if you were a magician? Well, you've got a few more tricks up your sleeve than you may realize. With the right maneuvers you can bridge the many chasms that Apple II and Macintosh owners stare into — you can do things like work on the road, divvy up a hard-disk drive, fax AppleWorks documents, or wire up a home-office network. This kind of computer magic will give you the know-how to work in a mixed-up computer world a little more easily.

HIT THE ROAD, JACK!

Take it with you — yes, your computer. If it runs DOS, the operating system of choice for about 50 million PCs, you can take your machine along.

Sure, Apple makes a Macintosh portable, but it's overweight and overpriced. Sure, at press time Apple had just announced two new, lighter Mac portables made in cahoots with Sony, but most of us won't be able to afford those, either.

DOS practitioners have had inexpensive, compact, and lightweight portable computers for years. If you want to toss a 4 to 5 pound notebook in your briefcase or book bag, and not toss a lot of money on the table, you need to look at notebook-style computers from makers with names such as Toshiba, ZEOS, and Everex.

Toshiba's **1000LE**, for instance, is a hard-drive-equipped midget that handles most on-the-road chores, such as writing, gathering e-mail, scheduling, and number crunching. Shop around and you'll find it for around $1450 to $1500 direct.

But if you walk out the door with a DOS notebook under your arm, must you learn DOS, too? Do you need to buy a whole new library of applications? Sort of, and no, in that order.

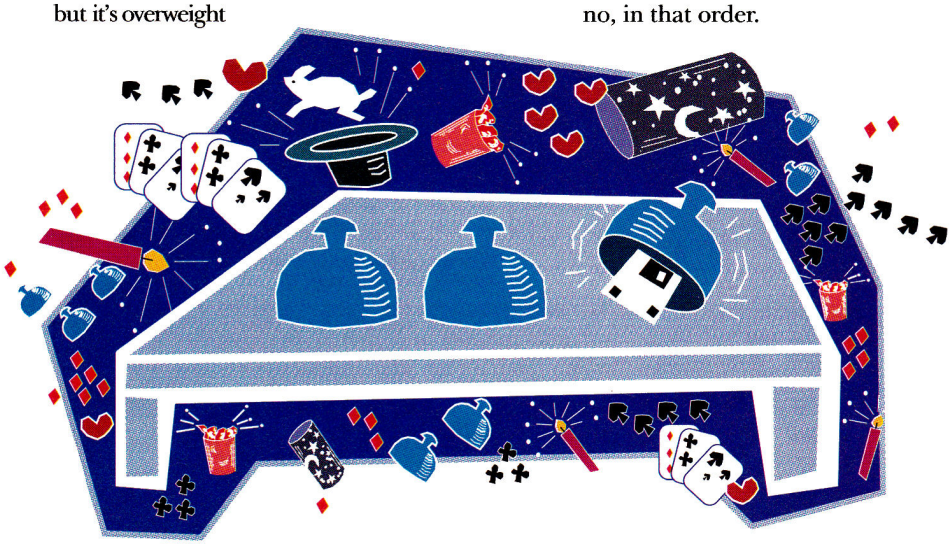

Illustration • Elizabeth Auer

If you're leaving AppleWorks behind, you can put **SuperWorks** on your notebook instead. This AppleWorks look-alike includes the familiar word-processor, spreadsheet, and database modules. (For details, see the November issue's review section, p. 23.) The desktop looks the same, keystrokes are identical (except that the notebook's *alt* key steps in as the open-apple replacement), and AppleWorks files adapt flawlessly. In fact, once you connect the notebook with your Apple II or IIGS via the machine's serial ports (you'll need to search out a cable with the correct ends, or have one built), you can even move existing AppleWorks files to the notebook, then use them in SuperWorks.

But you can't go the other way. You can't turn SuperWorks files back into AppleWorks, a catastrophic flaw if you want to combine your home-based and on-the-road efforts.

That's why another bridge makes more sense. Once you have your notebook, buy a copy of **Microsoft Works** for the PC, then add **Cross-Works**, a file-transfer and translation utility, to your Apple II.

Like SuperWorks, Microsoft Works includes a word processor, spreadsheet, database, and communications program. Unlike SuperWorks, though, Microsoft Works uses a distinctly different-looking interface. But it's not tough to master. Each module has at least as much power as the corresponding AppleWorks function; just don't expect a feature-for-feature match.

The cornerstone of this bridge is Cross-Works, the only Apple II-to-PC translation/transfer package. It includes a cable to connect the two machines, and software for both systems. With Cross-Works, you can move AppleWorks files from the Apple II intact to the notebook, work with them there, then when you get back home, transfer the resulting Microsoft Works documents back into AppleWorks on the Apple II.

Microsoft Works can pinch-hit as a portable bridge if you're using a Mac, too, though you'll be disappointed if you do

anything more than write on the road. Write with Works on the notebook, then save your work as a text file to a PC-formatted 3.5-inch floppy disk (most notebooks sport a floppy-disk drive as well as a hard disk). When you're back home, stick the disk in the Mac's drive, run *Apple File Exchange*, and turn the document into something the Mac can recognize. From there you can open it with any Mac word processor. You can shift Mac documents to the notebook simply by reversing the procedure.

DIVIDE AND CONQUER

Another trick to get your machines working together is to use a removable-cartridge hard-disk drive — but there seems to be some controversy surrounding this method. Back in September's column ("Share the Wealth," p. 26), I said that the only way to share a hard-disk drive with an Apple II and a Macintosh was to use a removable-cartridge hard-disk drive, such as TMS Peripherals' **ProR45**.

Craig Peterson of Santa Monica said I was wrong, dead wrong. "I was disappointed that you didn't mention the ability to share a single fixed hard drive between the Mac and the Apple II. I know this is possible — I've done it," said Peterson.

He then outlined how he went about sharing a hard-disk drive with Apple and Mac machines. According to Peterson, the process requires partitioning the drive with both Apple II and Mac hard-drive formatting/partitioning software, such as Apple's *Advanced Disk Utility* for the IIGS (part of the GS/OS operating-system software that comes with your computer) and *SC HD Setup* for the Mac (part of its operating software). By divvying up the disk between the IIGS and the Mac, he shared one drive with two computers, and cut costs.

I couldn't get my hard-disk drives to split their personalities, no matter what hoops I jumped them through. All I managed to do was turn several drives into devices that either the IIGS or the Mac couldn't (or wouldn't) recognize.

A phone call to TMS Peripherals' technical support confirmed my experience. A TMS representative said he didn't know anyone who shared a fixed drive. "It's the biggest reason we sell so many removable drives," he claimed.

Splitting a single large hard-disk drive and sharing it with different kinds of computers seems close to a computer user's Holy Grail. If you've managed to duplicate Craig Peterson's magic, how about sharing your sharing strategy with the rest of us? Drop me a line, describe the process and the software you've used, and I'll put my collection of Apple IIs, Macs, and hard-disk drives through the paces.

The point may soon be moot, though. **System 6.0** for the Apple IIGS is slated to include an updated *Advanced Disk Utilities*, which will, among other things, make it possible to place a Mac driver partition on a hard-disk drive, so that you can take one drive from Mac to Apple IIGS, and back. As soon as System 6.0 is available (perhaps even by the time you read this), we'll take a walk through its bridging capabilities.

THE APPLEWORKS FAX

The next trick is for those of you who want to join the big leagues of business. You're out in the low-tech cold if you don't have a fax machine. At least that's how it feels when someone calls and wants something from you right now, this very minute.

Bridging the gap between the text on screen and a client a thousand miles away is possible — without plunking down $400 to $500 for a stand-alone fax machine. You can even keep using AppleWorks.

All you need is a modem and an account with almost any on-line service. America Online, for instance, lets you fax a text document from your Apple for $2 a page. Trouble is, that's almost as expensive as one of those copy shops or mail centers that send faxes on a per-page basis.

Less expensive — assuming you fax more than five pages a month — is **MCI Mail**. Primarily an e-mail service for businesses, MCI Mail also lets you send faxes from your computer. For a flat-rate of $10 per month, you can fax as many as 40 pages — that's only 40 cents a page.

And because MCI Mail doesn't demand special software, you can use the communications program with which you're comfortable. Even the minimalist AppleWorks GS module works fine. And if you're using a Mac as well as an Apple II, you can fax from there, too — with any communications software and any word processor.

Compose your message, then if you're using AppleWorks or AppleWorks GS, save the work as a text file. In AppleWorks, that means printing it to disk as a text file: Hit Open apple-P to print, then pick *A text (ASCII) file on disk*. Because MCI Mail requires a carriage return at the end of each line, select *Returns after each line* from the next list. If you're using AppleWorks GS, simply pull down the *File* menu and choose *Save As*. Click on the *As ASCII text* button. Because AppleWorks GS doesn't put returns at the end of each line, you have to do that manually before you fire up your communications program and send the file as a fax. MCI Mail even connects through an 800 number — there's no additional connect-time charge or long-distance phone tolls to pay.

On-line faxing lets you step up into the big leagues and get even more out of your Apple II or Mac without a big investment.

WIRED UP

Connect an Apple II and a Macintosh, and you can share files at the touch of a key or the click of a mouse. System 7.0 software even lets you set aside part of the

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price undetermined
at press time

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Microsoft Works
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TMS Peripherals
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Mac's hard-disk drive as a storage area for select Apple IIGS programs.

Making those cabling connections, though, may take some time, especially if you're trying to get machines in different rooms talking. You have a Macintosh and an Apple II at home, for example, but they're in different parts of the house. No home is a computer lab, with pull-up floors and false ceilings where you can run cabling easily. You need something less invasive. You can set up a LocalTalk network using Apple's own cable and connectors, but you'll have an easier time of it if you turn instead to Farallon's **PhoneNet** connectors.

PhoneNet links its connectors with phone wire. In fact, in many cases you can connect computers with the wiring already in place; PhoneNet sends its signals across a pair of often-unused wires in the line.

But the safest way is to add a phone line dedicated to computer connection. You don't have to call an expensive technician; you can handle it yourself as long as you manage a screwdriver, needle-nose pliers, and a staple gun (and maybe an electric drill).

Before you shop for supplies, measure the distance between each pair of computers, or computer and printer. Remember, you'll probably run the wire along the wall. Count the number of workstations in the network by adding up computers and printers. That's the number of modular phone-jack boxes you'll need.

Head to Radio Shack. Buy the phone wire in 100-foot rolls if possible — it's much less expensive than the precut lengths (which usually are too short for cabling like this). Toss in the necessary number of phone-jack boxes; the kind you screw to the wall are the easiest to install.

Back home, attach one phone-jack box to the wall, near the floor, at each computer or printer location. Strip the insulating wire from one end of the phone line and connect the four wires to the four terminals inside the box; the yellow, red, black, and green wires fix to the clearly marked terminals.

Run the phone wire to the next box and repeat the process. Sometimes you can tuck the wire under the carpet where it meets the wall; other times you'll want to staple it to the wall, just above the floor and out of the way. If you need to go from one floor to another, take the phone wire to a corner, and with a long drill bit, bore a hole down (or up) to the next floor. When you've got all the wire in place and all the phone-jack boxes attached and connected, plug the modular phone-jack end of each PhoneNet connector into a box, then plug the other end of the connector into a printer, Mac, Apple IIGS, or Apple II Workstation Card installed in an Apple IIe.

Setting up your home office may be hard work (it may take four to six hours), but once you've got the wires in place, you can work some bridging-the-gap sleight of hand. ❑

WRITE TO CONTRIBUTING EDITOR GREGG KEIZER AT 4420 HILYARD STREET, EUGENE, OR 97405. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

MS-DOS APPLEWORKS*

Breakthrough For AppleWorks Users!

*inCider/A+ Magazine August, 1991

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As a special introductory offer to **inCider** readers, SuperWorks will be made available at the special price of $199.00 (plus $5.00 shipping and handling). SuperWorks has a regular retail price of $400.00. Send check or credit card information with order form at right to Remarkable Technologies, 245 Pegasus Avenue, Dept. SW, Northvale, NJ 07647. Phone: 201-784-0900 Fax: 201-767-7463

30 DAY MONEY-BACK GUARANTEE

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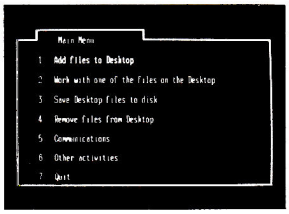

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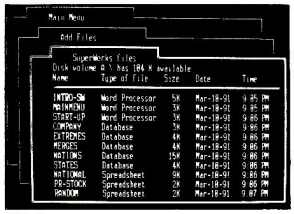

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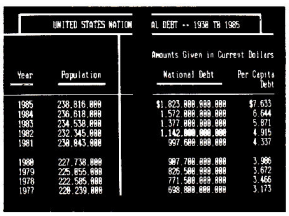

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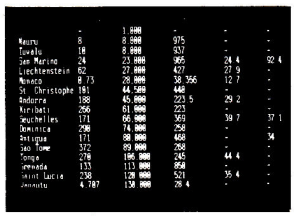

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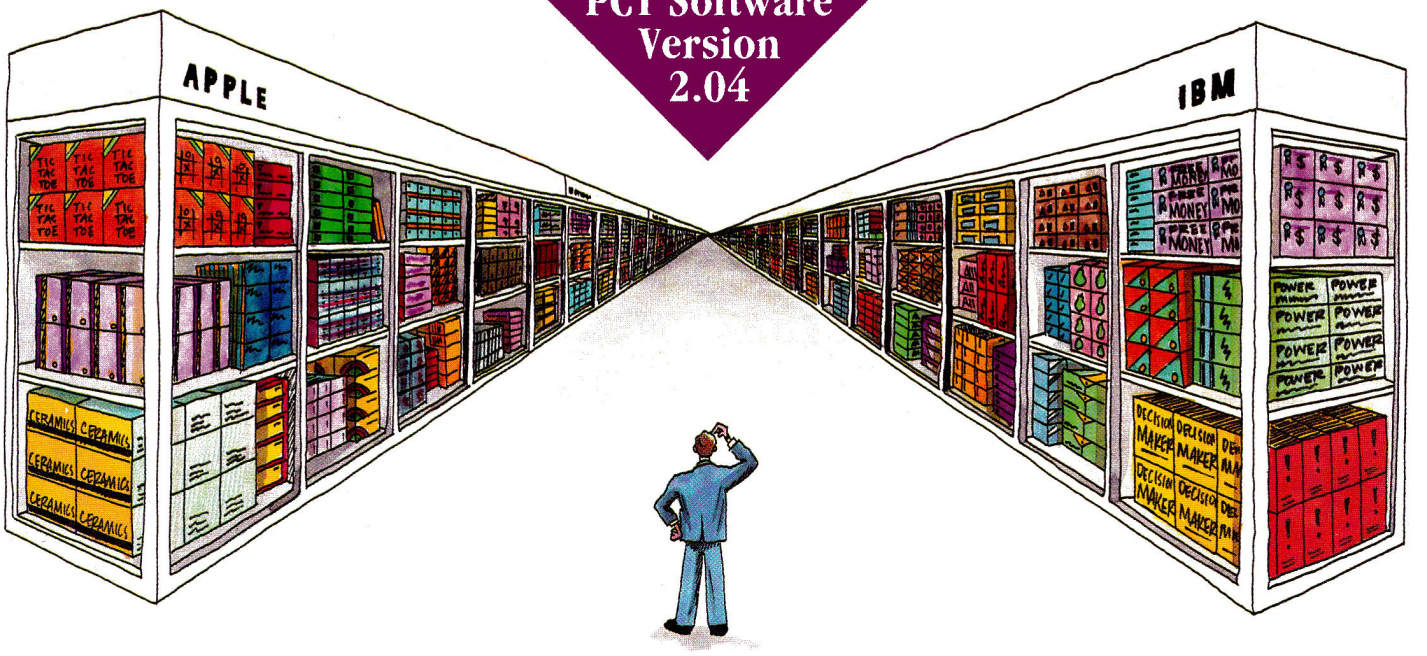

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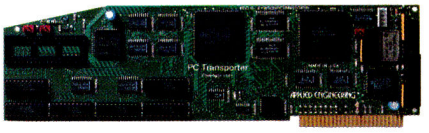

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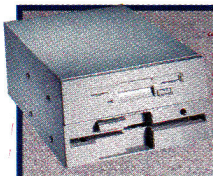

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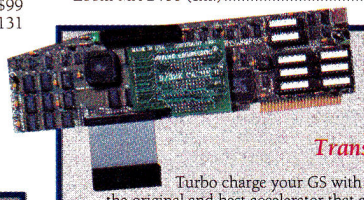

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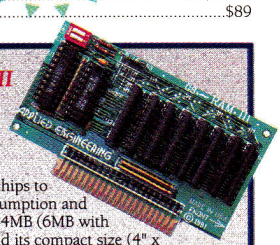

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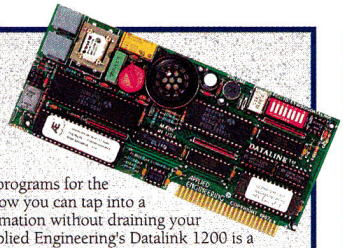

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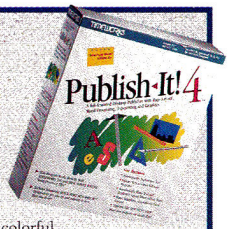

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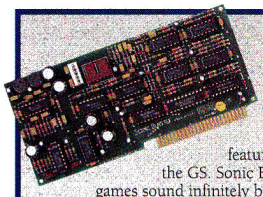

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- Katies Farm, McGee, or Fun Fair $24.95

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- Alge or Math Blaster Plus $29.95

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- Writing and Publishing Cntr $36.95

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- 2088: The Cryllian Mission 1 or 2 ..... $35.95

COMMUNICATIONS

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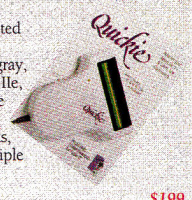
- ReadyLink $59.50

Quickie Scanner by Vitesse



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SUPERCONVERT 3.01

Jason Harper's SHRConvert has been reincarnated — and now offers more features than you could imagine.

If you're serious about your GS and your graphics, you need SuperConvert, a graphics-conversion, -enhancement, and -printing program from Seven Hills Software. This isn't just another Apple II graphics translator. SuperConvert lets your GS show off 320- and 640-mode graphics created originally on a Macintosh, Amiga, Atari ST, IBM PC, or Commodore 64. In short, if it's a picture, you can see it without ever leaving your GS. SuperConvert 3.01 handles in all some three-dozen different graphics-file formats, including nine GS-compatible formats: Paintworks Plus ($C0,0), PackBytes ($C0,1), Apple Preferred ($C0,2), uncompressed screen ($C1), Finder icon, desktop background-image INIT, graphics interchange format (GIF), and tagged-image file format (TIFF). According to Seven Hills Software's Earl Childers, the latest version of SuperConvert, which should be available this month, also supports New Print Shop graphics as well as ThunderScan "raw image" files.

★ ★ ★ ★ ★

Seven Hills Software
2310 Oxford Road
Tallahassee, FL
32304-3930
(904) 575-0566
(904) 575-2015
(fax)
SevenHills
(America Online, AppleLink, GEnie)
72437,3165
(CompuServe)

- graphics-exchange software
- 1-megabyte Apple IIgs
- $39.95

Of course, first you must acquire some graphics files. Check out public-domain libraries, user groups, on-line services, and bulletin-board systems (BBSes) for graphics created on an Apple II, Amiga, Atari ST, or IBM PC. Downloading files from America Online or CompuServe, say, to a ProDOS or GS/OS data disk is one of the more direct methods of obtaining graphics. If you acquire disks that were formatted on another computer, you'll have to transfer the graphics files to a ProDOS disk.

That's not to say that SuperConvert can work miracles. By the company's own admission, the program doesn't support all graphics formats. IBM PC images can be particularly gnatty. But graphics created originally with PC Paintbrush and DeluxePaint, including a full-color illustration featuring Mickey Mouse, looked great whether displayed on the SuperConvert screen or imported into Platinum Paint.

Converting graphics is easier than you'd think. In fact, it's pretty much automatic, thanks in large part to SuperConvert's adherence to Apple's Human Interface standards. The program features pull-down menus, full mouse support, and a *WYSIWYG* (what you see is what you get) display. Scroll through the *Load Formats* window to select the format you want to convert. Then scroll through the *Save Formats* window to choose the GS format you'd like to save. Incompatible files are dimmed (gray) in a data-disk directory, and if the program can't load a given file type, a dialog box pops up to let you know.

Photography • Larry Dunn

Change your mind about the type of save format you want? Pull down the *File* menu and select *Reconvert Last File*. If you've got a bunch of pictures you need to shift around, there's even a batch-conversion option.

After the program has translated your file, SuperConvert provides a full-screen display of the graphic. Clicking on the picture returns you to SuperConvert's work screen, where the artwork appears in a small, scrollable window in the lower right-hand corner. You can preview the full-screen display, a 50-percent reduction, or a 4X magnification of the image, and, if you use Apple's Video Overlay Card and a second monitor, you can view graphics continuously during the loading-and-conversion process.

After you've converted your images, you can use them in desktop publications, artistic endeavors, or crafts projects, or you can send 320-mode graphics to a service bureau that makes color slides. "Appendix A" in the SuperConvert manual provides not only step-by-step details, but also the name of a slide-making service experienced in handling Apple IIGS disks.

SuperConvert treats so-called "true color" images — those with higher resolution or more color than GS graphics — in a special way. It analyzes image statistics, calculates a color palette, generates a translation table, and produces the remapped picture.

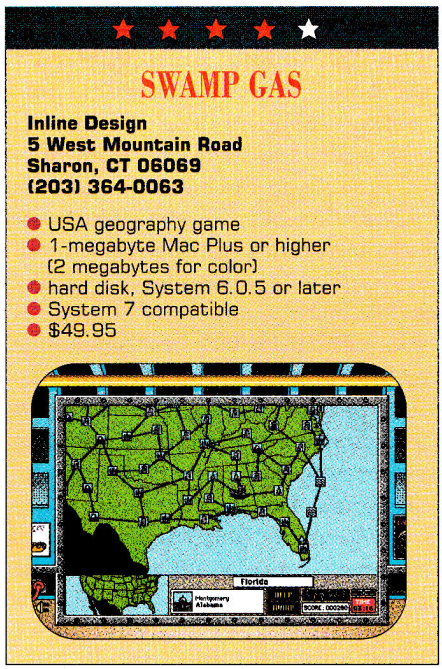
I was particularly impressed by SuperConvert's ability to remap images. I converted a clown's portrait from Atari ST Spectrum 512 format to Apple Preferred. When I imported the image into Platinum Paint, the results were outstanding. But when I brought the same image into AppleWorks GS' graphics module, the colors weren't realistic. No problem: I used SuperConvert to remap the image according to suggested settings provided on the quick-reference card supplied with the program. I resaved the image, imported it into AppleWorks GS, and was astonished by the improvement.

Some of the technical jargon associated with graphics enhancement can be daunting. But SuperConvert's dual HyperCard-style and menu-item on-line help systems, together with the "Reference" chapter in the user's manual, gave me the skinny on a slew of formats. You can think of SuperConvert as just a utility, or as an education in computer graphics.

SuperConvert offers additional GS goodies, including Disk Initializer 1.1, a desk accessory that formats 5.25- and 3.5-inch disks. The *Extras* menu holds even more surprises: An *Available Font List* feature creates automatically a WYSIWYG graphics screen image or printout of the fonts installed in your *System* folder; with the *Font Key Chart* option you can choose any font, size, and style, and make a printout showing alternate characters (such as the copyright symbol) and the keys you need to press to generate them. The hex value is provided for each character, as well. Another SuperConvert "extra" is a *Print Banner* capability that lets you output two lines of text, each in a different font. It's strange that a graphics-oriented program doesn't let you add clip art to banners, though.

Seven Hills Software's commercial reincarnation of Jason Harper's original shareware product SHRConvert offers so many new features they're too numerous to mention. If you enjoy computer graphics, you'll want to add SuperConvert to your library of creativity software.

Cynthia E. Field, Ph.D.
Wakefield, RI



Are those recent sightings of saucer-shaped UFOs real? Is the Air Force correct in concluding that these objects are actually free-ranging weather balloons, aberrant atmospheric conditions, or even noxious emissions of "swamp gas"? With its entertaining, geography-skills builder Swamp Gas, Inline Design (publishers of Tesserae, a popular Macintosh strategy game) proposes another explanation: Space aliens are touring the United States.

Swamp Gas is an educational activity that plays like a game. Amusing 16-color graphics, entertaining sound effects, and cartoon-style digitized voices all combine to pique a youngster's interest.

Challengers become touring aliens and take to the friendly skies in colorful flying saucers. The object is to visit a required number of specified destinations in the United States before time runs out. Kids score points for answering geography questions and leaving extra time remaining on the clock.

One to four players (aliens) can participate at three difficulty levels. *Beginners* and *intermediates* visit states and capitals; *advanced* players also travel to cities and landmarks. When you select the *Close Encounters* option (available only at intermediate and advanced levels), the program asks additional multiple-choice questions at random for bonus points during play.

Normally, aliens navigate the country by moving between adjacent location markers, but the game also allows two "warp" moves for every five locations kids visit, so that they can save time by traveling directly to any state they choose. Whenever kids land on a particular map icon (marker), the location's name appears in a small display window at the bottom of the screen. (The software would benefit from a printed reference map showing all travel destinations. It's especially difficult to distinguish states along the northeast coast because the video map packs them together so tightly.)

The geography missions are entertaining by themselves, but Swamp Gas also includes three fast-paced video games — *Stinky Snakes*, *Nerdoids*, and *Quasar Klutzes*. Engaging characters help make these *Alien Arcade* activities addicting. Young challengers can play only one game per visit, though; to return to the Arcade, they must first complete another Swamp Gas mission.

All Swamp Gas activities (including those at the arcade) are fun, with numerous game-style challenges motivating kids to learn U.S. geography. Yet the division of the program into two distinct phases — fact drill (*Swamp Gas*) versus play (*Alien Arcade*) — may make children question the value of learning geography as an end in itself.

In one sense, Swamp Gas reinforces the artificial separation between learning and fun. The message is clear: "Eat your

supper or you won't get dessert." Each *Alien Arcade* game would be just as enjoyable if activities centered around zapping states, capitals, major cities, or landmarks instead of snakes, nerds, or klutzes.

We shouldn't punish kids for taking time to think (using timers) or for being slow learners (denying them the reward of visiting the *Alien Arcade* until they complete a mission). Educational software meets with greater success when it creates a learning environment that turns work into fun. Swamp Gas would have been a much better educational product if it had integrated geography with *Alien Arcade* activities. It scores high marks as home entertainment, though, because it does provide more than simple arcade amusement.

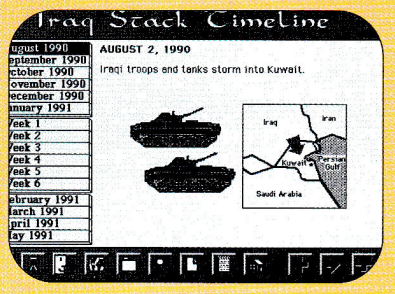
Carol S. Holzberg, Ph.D.
Shutesbury, MA

★ ★ ★ ★ ★

IRAQ STACK

Techware Corporation
P.O. Box 151085
Altamonte Springs, FL 32715-1085
(800) 347-3224

- Middle East crisis educational program
- Apple II and Macintosh versions
- 128K Apple IIe, IIc, IIc Plus, IIGS, Laser series
- 1-megabyte Macintosh, HyperCard, 800K drive
- $59
- lab packs/network versions
  10 computers $79
  25 computers $149
  50 computers $249



Tragic events do strange things to your memory, and what's more tragic than war? Most of us will always remember where we were the night the U.S. attacked Iraq. Unfortunately, more of us will remember asking, "Where's Iraq?" or "Which Hussein?"

Almost as quickly as we finished the war, Techware finished Iraq Stack. Although we needed a quick lesson on that part of the world, the company should have taken more time. It won't win any medals for this one.

In a HyperCard-style interface, Iraq Stack features text and graphics on the Persian Gulf War and the events surrounding it. The package also contains a 3-by-4-foot Hammond wall map that shows political boundaries, place names, major oil fields, pipeline routes, and principal oil-tanker routes. Class activities are included. I reviewed the program on an Apple IIGS using 3.5-inch disks. The software is also available on a set of eight 5.25-inch disks.

MIA: CONTENT

Overall, the poor quality of this program is disturbing — it must have been assembled hastily. It's helpful to jump from topic to topic by clicking the mouse on highlighted words, but this is standard hypermedia fare. The graphics images are all black-and-white — fine for digitized portraits of Bush and Hussein, but a dash of color would have doubled the usefulness of the maps. Text is shallow, grammatically flawed, and at times downright inaccurate. Military equipment is often misnamed: The UH-60 helicopter is called the "Blackhawk," not the "Black Hawk." Anyone with access to a newspaper could have done a more complete job.

I'm particularly disturbed by the stack's loaded phrases. One section is titled *Destruction of the Environment*, although it actually discusses *damage* to *environments*. It also includes the term *terribly polluted*. The results of pollution may indeed be terrible, but the important question is "*How* polluted was the desert around the burning wells?" If children are to learn to solve problems objectively, we must avoid judgmental words such as "terribly" and attempt to quantify the level of damage.

This same approach to the issues surrounding the Gulf War reverberates throughout the package. Iraq's side of the conflict is almost completely ignored, as is the delicate balance of tensions that exists among the nations of the Middle East. Instead the program emphasizes numbers of prisoners, dates of actions, distances, and recitations of names and places.

Other information is misleading, too. For example, the program states that countries "with hostile and dangerous governments are not allowed membership" in the United Nations. Although the U.N. charter does state that membership is open to all peace-loving states, its current membership does include many nations that aren't so peace loving. The stack doesn't mention that membership has a lot to do with the politics of the General Assembly. Iraq Stack provides a relatively biased look at the world in general and the Gulf War in particular.

The program comes across like a shallow newspaper article written by a junior reporter who failed to verify most of the facts. Despite the software's impressive ability to click from one subject to another, information is superficial and lacks detail. Want to know more about the war in the Gulf? Read the newspapers and try a history book or two. You owe it to yourself to check out as much information as possible, from as many sources as possible.

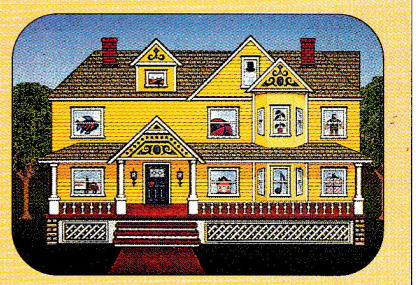
Jerry D. Greer
Bedford, IN

★ ★ ★ ★ ★

READING MAZE

Great Wave Software
5353 Scotts Valley Drive
Scotts Valley, CA 95066
(408) 438-1990

- early-reading software
- 1-megabyte Macintosh Plus, SE, Classic, SE/30, LC, Mac II, IIcx, IIsi, IIci, IIfx, Portable
- supports System 7 features (balloon help, high-level events for network collaboration)
- no copy protection
- $49.95 black-and-white, $69.95 color



With abject apologies to the Bard: "To enjoy oneself or to learn: That is the question." Indeed, that *is* the question we ask daily of our children as they trudge off to the horrors of the three Rs. The ideal system would be one in which children could appreciate the joy of accomplishment that mastery of a subject brings. In the meantime, the challenge is to create games that entertain children while helping them learn. The

difficulty lies in providing quality education while holding kids' attention and giving parents and educators measurable feedback.

INTRODUCING A SOLUTION

Into the fray steps Great Wave Software with its new Reading Maze, a game intended to help children aged 3 to 7 learn to read by associating pictures with letters and words. The object of the game is to collect assigned household items, such as balls, clowns, cups, and dolls.

When a student picks up an item, a book appears on screen. The youngster must then solve a series of problems. Prekindergarteners might match a word to a picture, while second-graders might be required to arrrange sentence segments in the correct order or to identify as true or false a sentence describing a scene.

When the child answers three questions correctly, the program takes him or her back to the maze and continues the game until all assigned items in the house have been located and questions answered. When that happens, the student moves on to the next maze, which is more challenging.

Reading Maze includes 26 increasingly difficult maze types, more than 300 vocabulary words, and up to 70 problem levels in each of eight curricula (prekindergarten through second-grade level II). There's also a curriculum for special education, and space to create your own word and problem sets.

In all grades, the game gets progressively more difficult. Eventually, it presents fairly complex mazes, a number of items to retrieve (by name, not by picture), obstacles such as an elf who moves the student randomly to another location in the maze, and rooms you can't open without a key.

Other aids include a flashlight that lets the student take shortcuts through the maze via secret passageways, and a magnifying glass that offers hints about the location of each item. To use these aids, the student must find them throughout the house and answer problem questions.

Reading Maze lets teachers and parents see how well students are doing at each level through a statistics window that tracks progress and lists proficiency at each level. Each of the previous eight levels is listed, with percentages of correct answers displayed as graphics. Progress at the current level is also listed, along with nouns a student may need to work on.

The program also offers a number of advanced features to let parents and teachers customize the game to each student's level. Not only can parents or teachers select a predefined level for a student, they can also create their own curricula. In addition, parents and teachers can design their own mazes and change problem levels. Using an optional microphone and Farallon's MacRecorder system, parents and teachers can record words or sounds for each of the 214 noun objects the software uses. If you have a Macintosh IIsi or LC, the process is even easier, as those computers have built-in sound capabilities.

Reading Maze is one of the first Macintosh programs to take advantage of System 7, with support for linking and balloon-help features. Linking lets students hook into classmates' computers and solve the maze together. As each student collects an item, both get credit for it. (Each student solves problems on his or her own, though.) Balloon help provides information about the game at many locations on screen in "balloons" similar to those in cartoons. This feature can be turned on or off.

NOT WITHOUT FLAWS

Although Reading Maze is a fine program, it's not flawless. Pictures are too small, and some are difficult to identify. Some remain a mystery even to adults, leaving you wondering how young children could decipher them. In addition, although rooms are colorful, there may be too much detail and too many items for little ones, who may wonder why the wallpaper and art have nothing to do with the game. In addition, the software's balloon help is nice, but seems a bit silly in an elementary reading program.

Overall, however, Reading Maze is an entertaining, attention-grabbing product that just might trick your kids into learning. It's worth a try.

Jordan Gold
Palo Alto, CA

★ ★ ★ ½ ★

TALKING TOOLS

Byte Works, Inc.
4700 Irving Blvd. NW, Suite 207
Albuquerque, NM 87114
(505) 898-8183

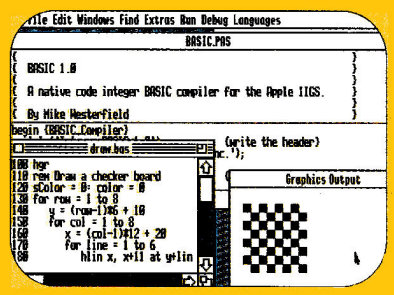
- programming tool for speech synthesis
- 1-megabyte Apple IIgs (1.25 megabytes recommended)
- one 3.5-inch disk drive (two recommended)
- no copy protection
- $60

★ ★ ★ ★ ★

ORCA INTEGER BASIC

Byte Works, Inc.
4700 Irving Blvd. NW, Suite 207
Albuquerque, NM 87114
(505) 898-8183

- Integer BASIC compiler and learning aid
- 1.25-megabyte Apple IIgs
- one 3.5-inch disk drive
- ORCA or APW development environment (ORCA Pascal recommended)
- no copy protection
- $50



With its latest two products, Talking Tools and Orca Integer BASIC, Byte Works looks to the Apple II's future and past. Talking Tools provides GS programmers with a new capability: software-controlled speech synthesis. (Until now, speech synthesis on the Apple II had only been available through add-on hardware.) Integer BASIC lets you revisit classics from the Apple II's past, and it's also an excellent teaching tool for learning about computer-language compilers.

First let's look to the future. There are

Continued on page 62

Is your Macintosh quiet, withdrawn, a little drab, perhaps? With a CDEV here and an INIT there, you can customize your computer to make it not only productive, but also fun to be around.

WAY COOL

By OWEN W. LINZMAYER

Admit it. One of the big reasons you bought a Macintosh was because it's an "insanely great" computer that just so happens to be pretty cool, too. Forget about personal productivity, educational software, desktop publishing, financial management, and all the other boring applications that are widely available for every computer platform. Aside from its celebrated ease of use, the thing that really sets the Mac apart from the competition is that it's a heck of a lot of fun to use, what with its artistic icons, floating windows, animated cursors, vivid color, and enticing sound effects.

Right out of the box, the Mac is a box full o' fun. But what you may not know is that it's very easy to customize the Mac's operation to reflect your unique style and express your individuality. We've combed through the best user-group libraries, on-line databases, and commercial offerings in search of neat little tips and programs that fit one strict requirement: They have absolutely no redeeming value other than the fun they bestow on your Mac.

THE RESOURCEFUL MAC

You'll soon notice that a lot of the programs mentioned here require **ResEdit**. Basically, ResEdit is a utility from Apple Computer that lets you change various aspects of an application's *resource fork*, the area that defines the look and feel of icons, menus, windows, and so on.

ResEdit is free, but it's not part of the standard system software distributed by Apple, and for good reason. Since it's a rather complex utility that can render a program useless at the stroke of a key, you don't *want* to use ResEdit easily. The best way to get ResEdit is bundled with one of two books from Addison-Wesley: ***ResEdit Complete*** or ***ResEdit Reference***.

WARM WELCOME

Did you know that you can replace the standard "Welcome to Macintosh" screen that appears whenever you turn on your computer? All you need is a graphics application — such as MacPaint 2.0 or PixelPaint — that can save images in StartUpScreen format. Name the file *StartUpScreen* and place it in your *System* folder, then restart to see your custom image. This works with color or black-and-white images.

The only problem is that you're likely to become tired of looking at the same image each time you restart. Luckily, there's **Screen INIT** to the rescue. This little application runs each time you restart your Mac, swapping StartUpScreens in and out of a special folder you create in the *System* folder. Screen INIT operation is a little clunky, but then again, author Michael Dolan has placed it in the public domain, so it's free.

Now that's nothing compared to what you can do with the freeware program **Lights, Camera, Action!** This Control Panel device written by Robert S. Wah plays standard PICS animation files during startup, complete with soundtrack if you like. So in addition to watching a parade of INIT (startup document, also called *extension* under System 7) icons marching along the bottom of your screen during startup, you can sit back and view a minimovie.

SPRUCING UP YOUR DESKTOP

If you can watch movies during startup, why settle for boring geometric patterns on the Finder's desktop? Use the

MAC

Illustration ✣ Ned Shaw

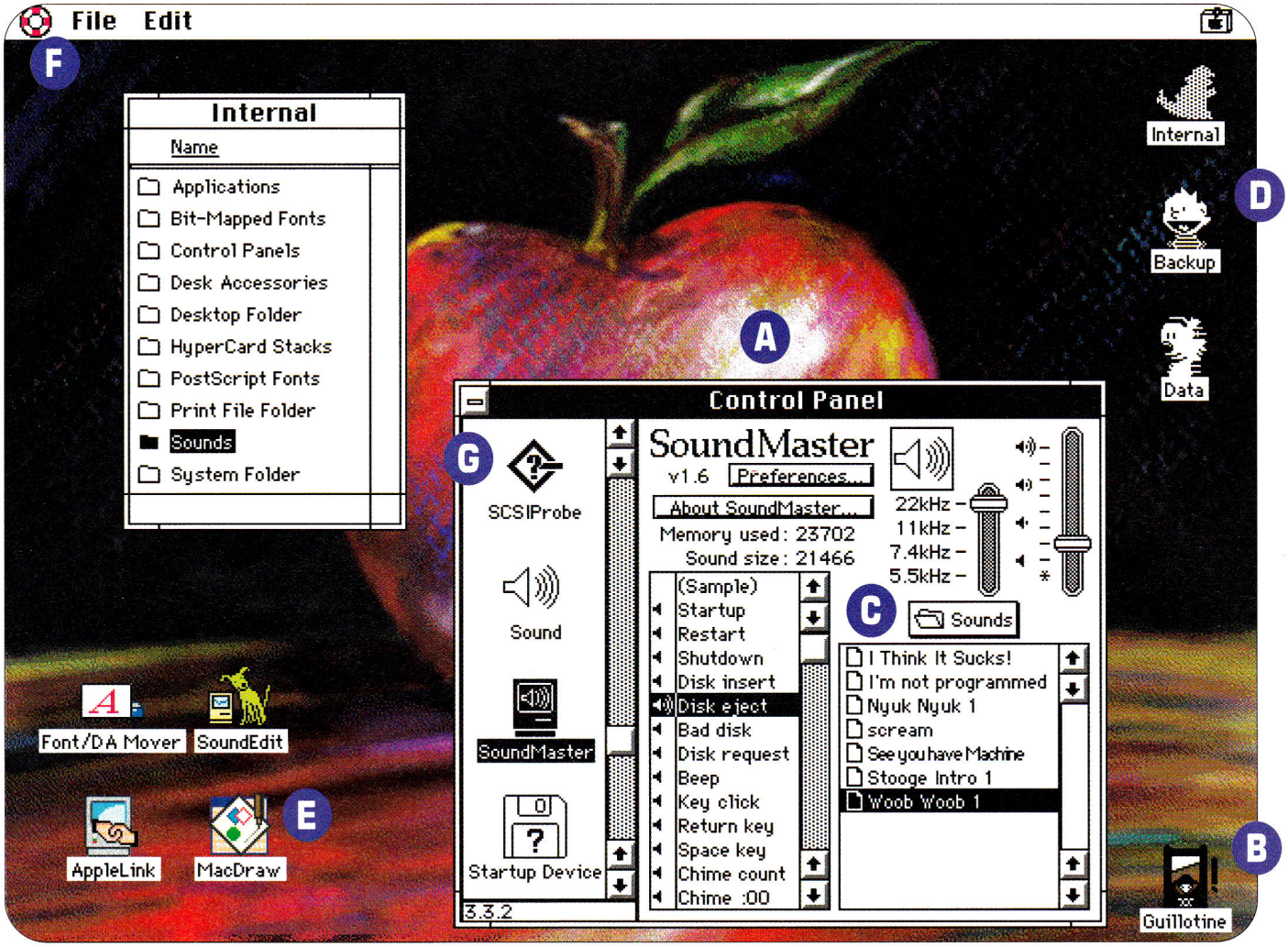


Figure 1. What good is "personal productivity" if you can't have fun doing it? Express yourself: Control-panel devices and startup documents dress up your Mac's desktop and show off your special style.

A. The DeskPicture module in Now Software's Now Utilities puts the PICT image of your choice on the desktop.
B. Working in combination with Apple's ResEdit program, the freeware utility Guillotine replaces your Finder's Trash icon — and even lets out a blood-curdling scream if you have a sound-effects product installed.
C. Wake up — SoundMaster lets you match a range of Finder actions with various sound effects.
D. The freeware INIT Façade comes with a file of replacement icons, including Godzilla, Calvin, and Hobbes. Use ResEdit to assign your own disk-drive names to them.
E. SunDesk comes with dozens of color icons for common applications and various Finder elements.
F. Fruits of Passion replaces the Apple logo with something more befitting your personality.
G. ClickChange lets you modify the appearance of windows and dialog boxes — here, to resemble Microsoft's Windows 3.0 style. Other modules offer customization options for cursors, buttons, colors, and sound effects.

DeskPicture module in **Now Utilities** to replace them with color or black-and-white pictures of your choosing (**Figure 1**). You can create PICT images from scratch with a graphics application, scan them from paper, or take them from clip-art collections.

Other modules in the Now Utilities package are a little more productivity-oriented, and include *Super Boomerang*, *Startup Manager*, *Screen Locker*, and *WYSIWYG Menus*. Since they're actually good for something, we won't cover them here.

TRASH IT

The Grouch is a free startup document you place in your *System* folder. Thereafter, every time you choose *Empty Trash* from the Finder's *Special* menu, Oscar the Grouch of *Sesame Street* fame pops out of the *Trash* icon and sings a little song about his love of garbage. The Grouch was animated by Ken Hornak and written by Eric Shapiro, who recommends that users watch out because "little kids tend to throw away everything they can get their hands on in order to see Oscar pop out of the *Trash*."

While kids love Oscar, adults with a mean streak lose their heads over **Guillotine**, a freeware offering by Michael J. Fisher. Use ResEdit to replace the Finder's *Trash* icon with that of a working guillotine (**Figure 1**). The icon, name, and menu items related to *Trash* are all updated with appropriate guillotine metaphors. A blood-curdling digitized scream is also included for those using utilities — such as *ClickChange*, *Finder Sounds*, or *SoundMaster* — that trigger sound effects upon certain Finder operations.

SOUND EFFECTS

One undocumented feature of System 6.0.4 is the Finder's ability to play sounds corresponding to various events, such as opening windows, deleting files, and ejecting disks. All you need to take advantage of this feature is a shareware program such as **SoundMaster** from Bruce Tomlin (**Figure 1**). Just drop this baby into your

System folder and reboot for a sonic Finder. The program comes with a number of built-in sound effects tied to various Finder actions, and you can import your own.

GET THE PICTURE

Tired of boring hard-disk-drive icons? **Façade** is a startup document that lets System 6 users assign custom Finder icons to disk drives. Written by Greg Marriott, Façade comes with a file containing black-and-white icons of *Calvin*, *Hobbes*, *Godzilla*, *Untitled*, and *Moof* (**Figure 1**). Use Apple's ResEdit to change the names so that they're assigned to your drives. You can also modify existing icons or create your own.

It's much easier to change icons — for both hard drives and files — under System 7. Simply click on the file you want and choose *Get Info* from the *File* menu. In the *Info* dialog box, click on the icon so that a box appears around it. Then paste in a new PICT image from the clipboard and click on the close box in the upper left-hand corner of the *Info* dialog box. For those of us without an artistic bone in our bodies, Douglas C. Peterson of **Anabolic Systems** has assembled a collection of seven color icons you can use *gratis*.

SunDesk is a startup document that displays Finder icons in 8-bit color (up to 256 different hues) under System 6. SunDesk comes with dozens of color icons for common applications (**Figure 1**) and other Finder elements, including the *System* folder and the *Trash*. Using ResEdit, it's easy to add more color icons of your own creation. SunDesk is copyrighted, but it's free. Additional icons are available free through user groups and on-line services, or you can purchase them from **Immedium Design**.

THE APPLE LOGO

Are you the kind of person who doesn't wear clothing emblazoned with company logos because you refuse to be a walking billboard? Then why do you let that silly Apple logo appear in the upper left-hand corner of the Mac's desktop? Get yourself a copy of **Fruits of Passion** and you can replace Apple's logo with a color one of your choosing, including a cherry, a bitten apple, a pear, a lifesaver (**Figure 1**), a floppy disk, and so on. And with a little help from ResEdit, you can add your own creations to Fruits of Passion.

Or ditch the Apple icon for one that *moves*. Jan Bruyndonckx of Belgium has incorporated several animated black-and-white icons into a single INIT called **SuperApple**. Each time you restart, you get a new animation in the upper left-hand corner of your screen. To become a registered owner, just send Jan a postcard of your hometown.

HAVING IT ALL

If there's one commercial package guaranteed to make you the envy of all your friends, colleagues, or schoolmates, it's **ClickChange**, a Control Panel device containing six modules that let you customize every aspect of the Mac's look and feel, including all the standard interface elements — cursors, windows, buttons, colors, and sounds.

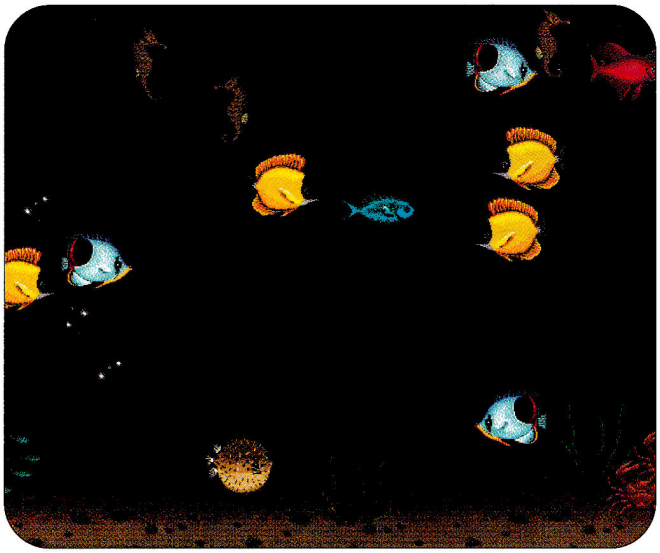


Figure 2. After Dark's Fish module turns your dormant Macintosh into an aquarium.

ClickChange comes with more than 80 animated cursors of all types, including jumping dogs, rotating cubes, and bouncing balls. And with the powerful built-in editor, you can modify existing cursors or design your own.

Like SoundMaster, ClickChange lets you link particular sound effects to Mac events. For instance, the Mac can let out a belch whenever you eject a disk. Dubl-Click Software provides more than 30 fun sounds, and you can get others from on-line services or user-group libraries, or create your own with Farallon's MacRecorder system or the microphones that come with the Mac LC and IIsi.

Other ClickChange modules let you modify windows and dialog boxes to look the way they do on NeXT, IBM, and Sun platforms, for example (**Figure 1**). Or you can customize buttons with a variety of three-dimensional looks. Almost all modules in ClickChange have shareware or public-domain counterparts that do the same things, but Dubl-Click has taken the guesswork out of compatibility.

SCREEN SAVERS

Two of the most popular utilities around are **After Dark** from Berkeley Systems and

EXCLUSIVE COOL DISK OFFER

Most of the shareware and public-domain programs mentioned in this article are widely available in user groups' collections and on-line services' download libraries. Not everyone has access to these distribution channels, though. With the permission of the programs' authors, inCider/A+ has put together an 800K disk containing the following programs and their related files:

- **Anabolic Disk Icons**
- **Façade**
- **Flowfazer Demo**
- **Fruits of Passion**
- **The Grouch**
- **Guillotine**
- **Key Lights**
- **Lights, Camera, Action!**
- **Screen INIT**
- **SoundMaster**
- **SunDesk**
- **SuperApple**

To receive a copy of inCider/A+'s disk, send a check or money order payable to Owen Ink in the amount of $5 (U.S. funds only), to Mondo Cool Mac Disk Offer, 1830 Lawton Street, San Francisco, CA 94122-3328.

Please note that this nominal fee covers materials, shipping, and handling costs only and doesn't release you from your obligation to pay appropriate shareware fees.

— O.L.

PRODUCT INFORMATION

After Dark 2.0
Berkeley Systems
1700 Shattuck Ave.
Berkeley, CA 94709-1762
(800) 877-5535
(415) 540-5535
$49.95 list
$22 mail-order sources

ClickChange 1.04
Dubl-Click Software
9316 Deering Ave.
Chatsworth, CA
91311-5857
(818) 700-9525
$89.95 list
$40 mail-order sources

Disk Icons
Douglas C. Peterson
Anabolic Systems
freeware

Façade 1.0.1
Greg Marriott
Apple Computer, Inc.
20525 Mariani Avenue
MS 46Z
Cupertino, CA
95014-6201
freeware

Flowfazer
Utopia Grokware Inc.
300 Valley St.
Sausalito, CA 94965
(415) 331-0714
$49.95 list
$40 mail-order sources

Fruits of Passion 2.4
Andres Christophe
Chrisoft
2, Rue de Fréland
67100 Strasbourg
France
freeware

The Grouch 2.0b8
Eric Shapiro
Rock Ridge Enterprises
freeware

Guillotine
Michael J. Fisher
freeware

Key Lights 1.0d8
Rick Kaseguma
474 Memorial Drive
Cambridge, MA 02139
freeware

Lights, Camera, Action! 1.0
Robert S. Mah
1530 Spruce St.
Apt. 604
Philadelphia, PA 19102
freeware

Now Utilities 2.03
Now Software
520 S.W. Harrison St.
Suite 435
Portland, OR
97201-5258
(800) 237-3611
(503) 274-2800
$129 list
$75 mail-order sources

Pyro!
Fifth Generation Systems
10049 North Reiger Road
Baton Rouge, LA
70809-4559
(800) 873-4384
(504) 291-7221
$39.95 list
$25 mail-order sources

ResEdit
Apple Computer
20525 Mariani Ave.
Cupertino, CA 95014
(408) 252-2775
freeware

ResEdit Complete,
$29.95 list
ResEdit Reference,
$14.95 list
Addison-Wesley Publishing
Route 128
Reading, MA 01867-3999
(617) 944-3700

Screen INIT
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freeware

SoundMaster
Bruce Tomlin
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51100 Reims
France
freeware

SunDesk Icons
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Immedium Design
2114 Lockhart Drive
Charlotte, NC
28203-6040
various prices

SuperApple
Jan Bruyndonckx
Salvialei, 23
B-2540 Hove
Belgium
freeware

TurboMouse Trackballs
Kensington Microware
2855 Campus Drive
San Mateo, CA 94403
(800) 535-4242
(415) 572-2700
$12.95 list
$10 mail-order sources

Pyro! from Fifth Generation Systems. Both purport to be useful "screen savers" that display various animations in an effort to prevent static images from burning into the phosphors on your monitor.

That explanation might get your purchase order past your manager's desk, but the real reason these "utilities" sell is because they're cool. After a user-specified period of inactivity, the screen saver kicks into action, displaying fireworks, flying toasters, personalized messages, kaleidoscopes, bouncing logos, and so on until you press a key or move the mouse. Of the two packages, After Dark has more modules and gets my recommendation (**Figure 2**).

Of interest to the psychedelic crowd is **Flowfazer** from Utopia Grokware, rock-musician Todd Rundgren's software company. Somewhat similar to After Dark's *Satori* module, Flowfazer looks like a beautifully undulating lava lamp on acid. Unfortunately, it's a little pricey for a one-trick pony.

PUZZLE IT OUT

One of the most frivolous pieces of System 7 software is the **Puzzle** desk accessory, in which you try to arrange the 15 sliding tiles to form the rainbow-striped Apple logo. Since it has little value aside from acquainting novices with the concept of point-and-click, most users simply toss this desk accessory in the *Trash*. Too bad, because you can replace the Apple logo with any picture you want (even 24-bit color images). Copy a PICT image to the clipboard (select a portion of the image and press Command-C), then choose *Puzzle* from the *Apple* menu, paste the image into place (Command-V), and the picture on the clipboard is automatically scaled to fit inside the *Puzzle* (**Figure 3**). To revert back to the Apple logo, choose *Clear* from the *Edit* menu.

FLASH IT

Written by Rick Kaseguma, **Key Lights** is a public-domain Control Panel device that makes the *Num Lock*, *Caps Lock*, and *Scroll Lock* light-emitting diodes (LEDs) on an Apple Extended Keyboard flash in a back-and-forth sequence. You can set the speed and direction and turn off the sequencing without restarting. This program has absolutely no utility aside from turning your keyboard into Kitt from *Knight Rider*.

Figure 3. Apple's Puzzle desk accessory can contain a picture of anything you want under System 7.

TURBO TRACKBALLS

Kensington Microware offers replacement balls for its **TurboMouse** trackball in solid black, purple sparkle, blue pearlescent, or red pearlescent. You can even substitute a standard billiard ball, though Kensington discourages this practice because the additional weight places undue stress on the trackball's internal components.

YOU CAN'T BE TOO COOL

As you can see, it's fun and easy to customize your computer to reflect your personality — or maybe you'd rather reveal your secret persona. With the assortment of public-domain and shareware products described above, you can show off your unique brand of cool. When it comes to your Macintosh, don't listen to the advice of Huey Lewis — it's definitely *not* hip to be square. ❑

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TransWarp GS w/32k cache	$294.95
TransWarp GS upgrade	$86.95
GS Ram III w/1 Meg	$159.95
GS Ram III w/2 Meg	$214.95
GS Ram Plus w/1 Meg	$199.95
GS Ram Plus w/2 Meg	$249.95
TransWarp IIe (4 mhz)	$94.95
RamWorks III w/256K	$139.95

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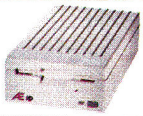
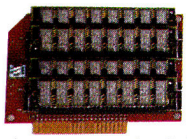
1 Meg x 1 Drams (8 - 100ns)	$54.95
1 Meg x 8 SIMMs (80 ns)	$54.95

AE 3.5" Daisy-Chain Drive



800K **$189**
1.6 Meg **$245**
IIe UDC Card **$40**

New! IIgs Super RAM



Add up to 4 meg to your Apple IIgs. 100% compatible. 5 year warranty.

IIgs Super RAM w/1 Meg	$99.95
IIgs Super RAM w/2 Meg	$139.95
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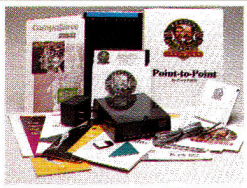

Package includes Zoom MX 2400 baud external modem, Beagle Brothers Point-to-Point Communications software, Compuserve and Genie starter Kits and more. Compatible with Apple IIe, IIc, IIgs, and Laser 128 series **$134.95**

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GSX1800-9mhz, 16k cache	$229.95

Productivity Software

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AppleWorks GS 1.1	$199.95
HyperStudio 2.1 (IIgs)	$83.95
ProTERM	$79.95
Copy II Plus 9.1	$24.95
Prosel 16 w/Manual (IIgs)	$69.95
Cross-Works	$69.95
Vitesse Salvation Series(IIgs)	$99.95

Vitesse Quickie Scanner

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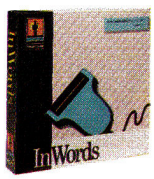
Quickie & InWords Package **$269**

InWords OCR Software



InWords OCR software allows you to scan text and use it with AppleWorks and other applications. **$79.95**

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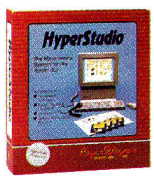

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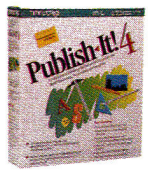
Tetris (IIe and IIgs)	$24.95
GeoQuiz (IIgs only)	$29.95
GeoPuzzle (IIe or IIgs)	ea $24.95

Publish It!4



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WAY COOL

GS

Who wants to look at the same old screen every day or go through the same operations time after time? Catch the wave — *customize.* Install some low-cost icons and utilities and wake up your Apple IIGS.

Variety is the spice of life, they tell us — and nobody needs it more than the person who sits in front of a computer screen a good part of the day. Even a small change — a livelier interface, for instance — can make a difference in how productive you feel. What can you do to get things rolling? If you're an Apple IIGS owner, you're in luck. One of the prime benefits of the GS' graphics look and feel is that you can customize it to fit your style of operation — anything from the Finder's operation to program selection. And thanks to a wide variety of shareware and public-domain utilities, designing your desktop doesn't even have to cost much.

Installation is easy, too, and pretty intuitive. With most customization programs, all you need to do is drag a file or two to the appropriate directory or subdirectory on your GS System Disk, the startup disk. To add custom icons, for instance, just copy them to the *Icons* folder. Drag Control Panel devices to the *CDEV* folder, permanent initialization files (INITs) to the *System.Setup* folder, and desk accessories (DAs) to the *Desk.Accs* folder.

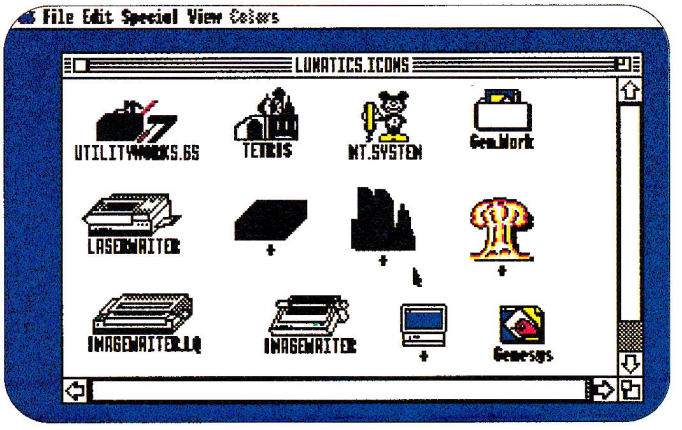
Sound complicated? It isn't really, thanks to the GS' point-and-click interface. A couple of quick definitions should help you wade through the alphabet soup as you customize your system. *INITs* load automatically whenever you reboot; *CDEVs* also mesh directly with your system software, but include user-adjustable parameters you can access via the Control Panel under the *Apple* menu; *DAs* are miniprograms you can access within other programs. Once you copy a selection of DAs to the *Desk.Accs* folder and reboot your computer, they'll always be there, ready to use, whether you're working with the Finder or AppleWorks GS' page-layout module. Desk accessories come in two varieties: classic (CDAs) and new (NDAs). You call up CDAs within another program by pressing the open-apple, control, and escape keys in combination. CDAs are accessible from virtually any program that runs on the GS, even ProDOS 8 applications. You call up NDAs via the Apple pull-down menu displayed in most (but not all) GS/OS applications. You can't access NDAs from a ProDOS 8 program.

Some of the enhancements we'll look at here are functional — they'll boost your "personal productivity" — but some are just plain fun. Either way, keep these basic requirements in mind before you choose your selection of add-ons:

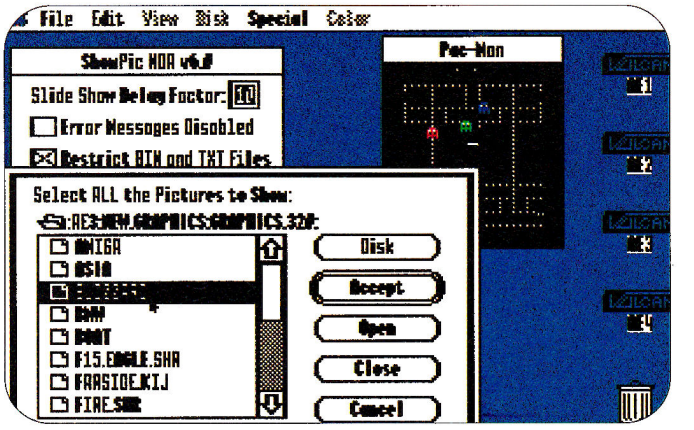
- Most customization programs require that you copy files to your GS System Disk, the one you use when you first turn on your computer. The size of the GS System Disk, though, has been growing steadily with each new revision of the operating system. Booting your machine from a 3.5-inch floppy means that there's very little free disk space available, and therefore only a few custom options are possible. If you use a hard-disk drive, however, you should have more than enough free disk space to store all the options you want to choose from.
- Many customization programs also require expanded RAM (random-access memory). The more memory your computer has, the better these options will work for you. In other words, if you have a standard 1-megabyte system, you'll be able to add only a few files; if you have 1.5 megabytes or more, you shouldn't have any problem changing most aspects of your desktop environment.
- At press time, GS/OS 5.0.4 was still the current version of the GS System Disk. Apple is expected to release System 6.0 soon, though, and that may make some customization programs obsolete; others may simply not work at all.

By JOE KOHN * CONTRIBUTING EDITOR

Illustration * Ned Shaw



A sampling of icons from Bruce "Lunatic" Mendez. Note animated pop-up folder (Gem.Work) and NYC "before and after" trash.



ShowPic displays a wide variety of super-hi-res graphics and can present them in slide-show fashion. Note Pac-Man NDA in background.

Let's hope utility programmers release new versions of their programs when System 6 arrives.

LOAD UP

If you want to get a kick out of your computer from the moment you turn it on, try Guy T. Rice's freeware utilities **StartPic** and **Start Sound**. These nifty little INITs display a full-screen graphic during the boot-up process, and play prerecorded digitized sounds while GS/OS is loading, respectively. More than a few GSes proclaim the words spoken by the most famous computer of all time — the HAL 9000 from the movie *2010* — each time they're turned on: "I'm completely operational and all my circuits are working perfectly." StartPic lets you display any uncompressed super-hi-res GS graphic during that same load process. If you have enough disk space to store multiple images and digitized sounds, these startup utilities can display and play a different one each time you reboot.

Another special-effect sound utility is **SoundOff!**, a $10 shareware INIT/CDEV combination by Daniel M. Zimmerman and Jay Fennelly. It lets you play any digitized sound at boot time, and change the GS system beep to any digitized sound of your choosing. Because your system generally beeps at you in times of trouble, such as a computer crash, that beep is a source of high anxiety. With SoundOff!, you can change it to a laugh, or to any other digitized sound file that will make you smile instead of curse.

PICTURE THIS

The Finder's icons — those small representations you click on to launch programs — are especially fertile ground for creative types. Hundreds of predrawn custom icons of all varieties, shapes, and colors are available in the public domain. Some are artistic, some comical — based on popular cartoon characters or sci-fi heroes. One popular trash-can alternative displays a toilet bowl that opens and closes as you drag files into it.

Some of the best icons are the creations of Bruce "**Lunatic**" Mendez. With inspired wackiness, he's produced a set of trash-can icons that look like the skyline of New York City. When you drag files into the trash, the icon quickly changes to the skyline of New York after a 50-megaton bomb has been dropped on it. He's also created some enjoyable folder icons; when you click on a Lunatic folder, it appears to pop open.

If you've got an artistic bent, you can create your own icons from scratch with an icon editor. The most popular ones are two $15 shareware programs: Paul Elseth's **Icon Ed** and Dave Lyon's **DIcED**. Both contain graphics tools that let you custom-design icons, modify them, colorize them, and specify their file attributes — the pathname information that instructs the Finder on where to find the program you want to run. Click on a paint icon, for instance, to run your favorite graphics program automatically, or click on an AppleWorks word-processor icon to run that program.

You may also want to take a look at **Instant Icon**, a freeware utility from Mike Nuzzi of Triad Venture. Instant Icon lets you clip a portion of any super-hi-res GS graphics screen and save it as a Finder icon. If you own a Vitesse or LightningScan hand-held scanner, you can even use photographs of yourself or your friends as icons — the ultimate in GS/OS customization. Instant Icon also lets you enter that important file-attribute pathname information.

If you like your icons just the way they are, but would still like to control file attributes, consider **Icon Applicator**, a $10 shareware utility by John R. Majka. This program lets you enter file-attribute pathname information from the familiar *Open File* dialog box. You don't have to know a thing about the "techie" details of how or why icons work — only where your applications are stored. You'll never again have to see that cryptic GS/OS error message, "an application cannot be found for this document."

HELPING HANDS

What do you do if you want to look at a super-hi-res image? Run a paint program and load the graphic, right? Wouldn't it be easier to view all your pictures one right after another in quick slide-show fashion? Here's one desk accessory that's indispensable if you work with graphics. **ShowPic**, a freeware NDA written originally by Bruce Mendez, with later versions enhanced by Dave Leffler, can display at the click of a mouse all standard types of super-hi-res graphics, as well as some less-common varieties, such as 3200-color images. ShowPic can even convert graphics from one format to another, such as Print Shop GS to super hi-res, or 320 mode to 640.

Finder View 2, written by Brian Clark of Jupiter Systems, is a $10 shareware utility that lets you view GS graphics of virtually any type one at a time directly from the Finder desktop by clicking on each graphic's icon. Like ShowPic, Finder View displays all standard types of GS graphics. Upon payment of your shareware fee, Jupiter Systems will send you a slicker version that displays multiple graphics in slide-show fashion.

If you want something really out of the ordinary, try **AutoMenus INIT**, a $5 shareware gem written by Jay Krell. With AutoMenus installed, pull-down menus actually pull themselves down. Just move

your mouse cursor over the various selections in the menu bar, and you won't have to press and hold down the mouse button to scroll through them.

QUITTIN' TIME

When it comes time to exit a program, any of a number of utilities let you quickly quit from one application directly into another, without returning to the Finder.

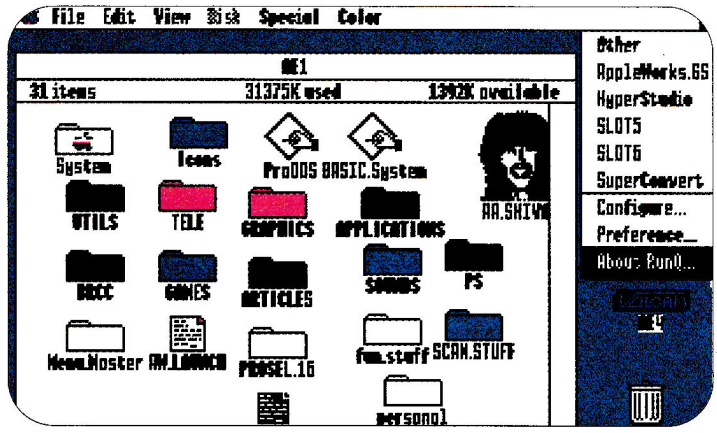
RunQ, for example, a $20 shareware INIT by Marcel Egloff, places a new menu-bar item at the top of your screen. Click on the *RunQ* menu icon, and you can enter a list of your favorite GS/OS programs, and switch easily back and forth among them. **Quit-To**, a $10 shareware CDA by Karl Bunker, allows similarly quick movement among ProDOS programs.

THE LIGHTER SIDE

Some "utilities" are just pure fun. If you like playing computer games, for example, imagine what it would be like to take a quick break in the midst of creating a database. Bill Tudor's $10 shareware program **Solitaire NDA** is a fabulous implementation of Klondike solitaire. Jim Surine's freeware NDA version of **Pac-Man** provides an outrageous amount of desktop fun, as the next generation of little buggers chase *you* around. France's Free Tools Association (FTA) has released an addicting freeware Tetris-style freeware game called **Fun Columns**. It's a CDA and can always be called up within AppleWorks for a quick round of fast action. And if you're tempting fate at work or in school, make sure you install Joe Jaworski's **Panic NDA**, too — when invoked, it'll quickly display what appears to be a sophisticated financial spreadsheet.

Some DAs offer special effects. **Eyes NDA** (author unknown) places a pair of eyes on your GS desktop, and wherever you move your mouse, the eyes follow. **Ack NDA**, a freeware goody by Jake Hoelter, places a graphic of Bill the Cat in a small window on your desktop. Tempt Bill by clicking on him with your mouse, and watch what he does.

Roby Sherman's freeware **Havoc NDA** creates some weird-but-dazzling illusions. **Meltdown 1**, by Jason Harper, and **Meltdown 2**, by Guy T. Rice, are freeware NDAs that make whatever's displayed on the GS screen "melt" like an ice-cream cone. **Grass NDA**, written by Jeff Erickson, causes vegetation to grow up from the bottom of the GS screen. These DAs actually serve a useful purpose, though, too. They're called *screen blankers*, and they prevent *phosphor burn*, a condition that can occur when you leave your monitor on a long time with no keyboard input. These neat NDAs can help prevent some pretty costly repair bills.



RunQ lets you switch among applications without returning to the Finder. Note scanned photo (top right) saved with Instant Icon.

The most widely acclaimed GS screen blanker is a $10 shareware CDEV named **Twilight**. Written by Jim Maricondo and Jonah Stich, Twilight is activated automatically after a user-defined period of inactivity, and displays some creative animated designs: a screen "melter," a floating Earth, and a bouncing Apple logo, among others.

If you're frustrated with Apple's treatment of the II line, you'll want to install the most infamous of the Twilight files: the Sculley blanker. It's an animated picture of John Sculley being shot, complete with realistic sound effects. Also supplied with Twilight is a "draw your own" module that lets you create blanker files yourself.

Poking fun at John Sculley seems to be a favorite activity of some Apple II programmers, as evidenced by the **Death to Sculley NDA** (author unknown). This freeware program displays an animated Sculley swinging at the end of a long rope.

INIT programmers frustrated with Apple have also been able to temper their feelings through humor. Karl Bunker says that "if the Apple II is dead, as many have been telling us, then we should all start using a mouse cursor that's appropriate to a dead computer." To that end, Bunker has created **Skull Cursor**, an INIT that changes the little arrow into somebody's cranium.

MANAGEMENT STYLE

As you can see, GS programmers are an inventive lot. As noted above, though, you may not have enough RAM to actually install and use every one of these options at the same time. Because DAs and INITs are loaded into memory during the GS/OS boot process, they may interfere with the normal operation of your system, preventing other programs from getting all the memory they need to run.

One way to monitor your DAs and INITs (without installing them manually as you need them) is to get ahold of a copy of **INIT Master**, a $10 shareware INIT file from Bill Tudor. Once you've installed it, hold down the option key and reboot. Partway through the load process, up pops a large window that lists every DA and INIT installed. At the click of a mouse, you can choose only those you're planning to use that session. The rest will just sit there, not conflicting with anything else.

Computing may make your life easier, but who says it has to bore your socks off in the process? Whether you're after fun or enhanced productivity, shareware and public-domain utilities are an easy way to give your GS a boost. And at these low, low prices, when you get tired of one, you can just try something else on for size. ❑

SOURCES

Most of the programs described here are available from Apple II user groups (call 800-538-9696 x500 to locate the one nearest you),on-line services such as **America Online** (800-227-6364), **CompuServe** (800-848-8199), and **GEnie** (800-638-9636), and various mail-order vendors such as the **Big Red Computer Club** (402-379-4680) and the **Public Domain Exchange** (408-496-0624).

As a service to inCider/A+ readers, we've put together a 3.5-inch 800K disk containing many of the programs discussed, plus a few surprises. Send a check or money order payable to Joe Kohn, in the amount of $5 (U.S. funds only), to 166 Alpine Street, San Rafael, CA 94901. The fee covers materials and shipping only; you're still under obligation to pay appropriate shareware fees to authors of the programs you use. **— J.K.**

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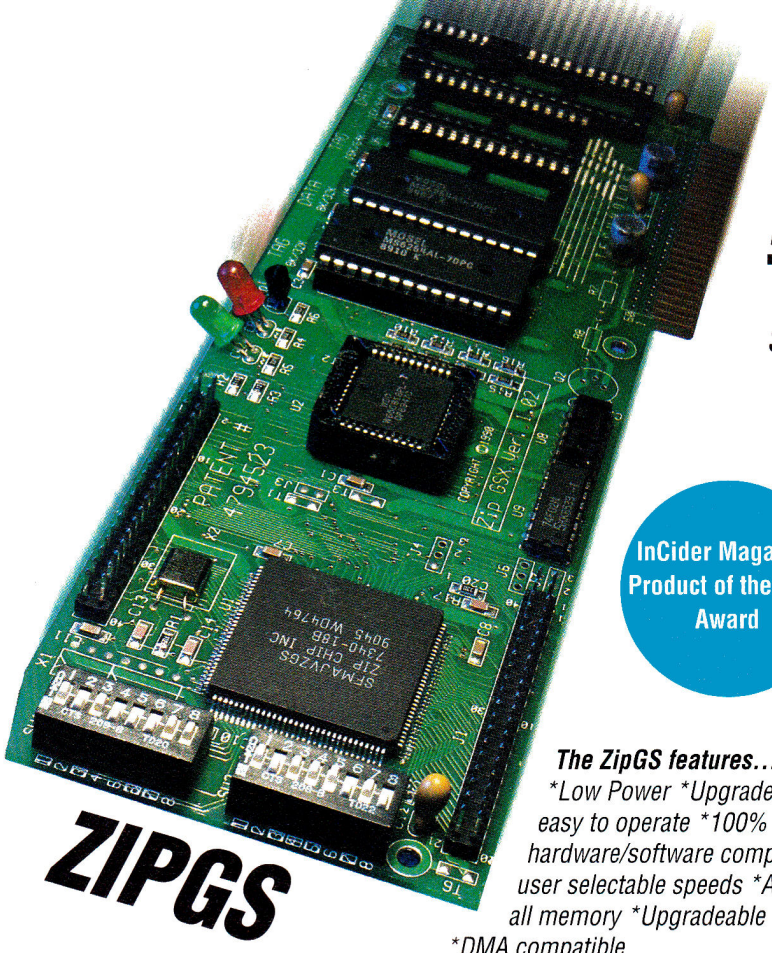

ZIPGS

If you use...
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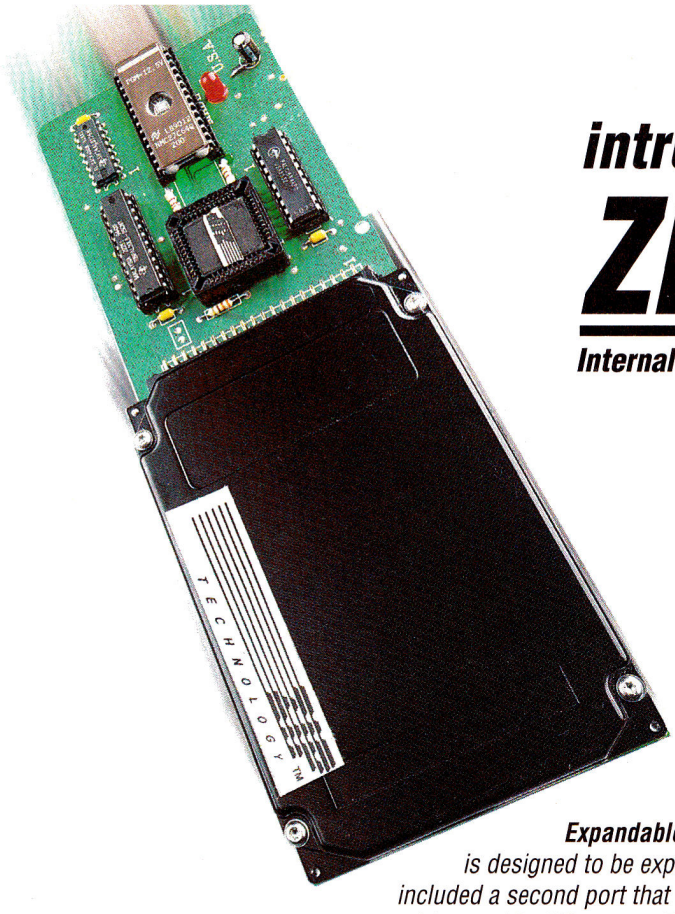

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Illustration • Don Baker

TIVITY FLOW

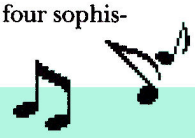
By JOE KOHN CONTRIBUTING EDITOR

The art of Apple II programming has come a long way in the last ten years — bigger and more complex languages, bigger and more complex applications. Yet as computer languages have become sophisticated and flexible enough to communicate with us in standard English, it's also true that programming is no longer solely the domain of engineers, experts, and hobbyists. In classrooms, museums, family rooms, and offices across the country, teachers and students, parents and children, adults and teens, and other enthusiastic users are creating interactive multimedia software for their Apple IIs — with no computer-programming experience.

What these modern-day software producers *do* have is an active imagination and information or a story they'd like to share with others. What allows these nonprogrammers to produce sophisticated software is *hypermedia* — authoring systems that let you create interactive, self-paced, nonlinear computer programs containing a combination of text, graphics, animation, sound, music, speech, and video.

Most of us believe that information is best organized in a linear manner, the way books and magazines are; concepts and conclusions are based on ideas that have already been delineated, and chapter 2 always follows chapter 1. The human brain, however, doesn't always think in a linear fashion. Accommodating those individual differences, truly creative software allows for any number of people to process the same information in a variety of ways; hypermedia authoring systems grant Apple II users the ability to design just such uniquely creative software themselves.

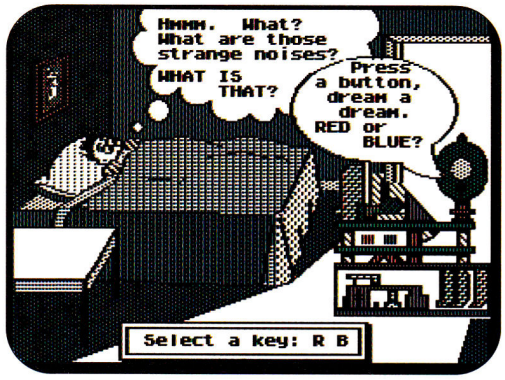
Apple Computer's HyperCard, available for both the Mac and the IIGS, and Roger Wagner's HyperStudio for the IIGS are the most widely known hypermedia authoring systems. Because these products receive so much publicity, many Apple IIe and IIc users are surprised to learn that there are four sophisticated hypermedia products that let them make their own computer programs. Techware's **Tutor-Tech**, TI&IE's **StoryWorks**, and Scholastic's **HyperScreen** and **Super Story Tree** have much in common, yet each has its own unique strengths. They all employ the same basic concepts and contain many of the same hypermedia building blocks found in HyperCard and HyperStudio, and they all share the same basic terminology. They all give you the power to create computerized interactive fiction, "twist-a-plot" stories, multiple-choice quizzes, self-paced lessons, adventure games, and audiovisual databases. Hypermedia authoring systems provide the tools; all you need to supply is information and some basic instructions on how the computer should display that information. Whether you want to create software to describe the latest current events, say, or simply to explain your hobby to others, hypermedia makes it easy, fast, and fun.



Pull out all the stops — text, graphics, sound, video. Apple II authoring systems give you all the tools you need to design interactive multimedia presentations.

Because all four products have been reviewed previously in *inCider/A+* (see the "Further Reading" box), let's quickly go over some terminology and take a second look at what these products have in common, as well as explore the major differences among them.

Then to help you decide which program is right for



Left, HyperScreen includes video and speech control. Right, Super Story Tree for grades 3 to 6.

you, we'll also talk about the organizations that publish them, examine some add-on products, and check out resources.

STACKING THE DECK

A program created with one of these hypermedia authoring systems is commonly referred to as a *stack*. A stack is composed of many individual computer screens, called *cards* or *pages*. You can link cards to other cards, or to other stacks. The most common way to link cards is the *button* — a special on-screen graphic. By activating one of these buttons, usually with a mouse click or a key press, you tell the program to move on in one of many directions. A card may contain multiple buttons, each leading to a different screen. Screens can contain text, sound effects, or graphics, or any combination of those media.

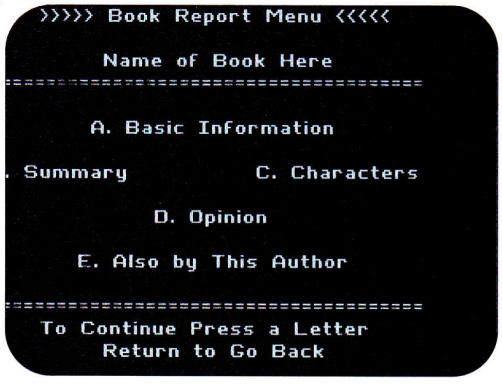
Three of the programs — Tutor-Tech, HyperScreen, and Super Story Tree — appear at first glance to be more alike than different. All sport a graphics-based Mac-style interface with pull-down menus. According to Scholastic, Super Story Tree is geared toward students in grades 3 through 6, and HyperScreen toward grades 7 through 12. Tutor-Tech, however, is used in both K–12 and college classrooms. Nearly 300 software developers, many of whom are teachers turned entrepreneurs, have created commercially available Tutor-Tech stacks.

Tutor-Tech, HyperScreen, and Super Story Tree also come with a feature that lets you design stacks for *self-booting* disks — stacks that can be booted and used by people who don't own the hypermedia program that created it.

A TEXTUAL APPROACH

StoryWorks, written by Robert C. Moore, takes a radically different approach to hypermedia. Published by the Teachers' Idea and Information Exchange, it's the only hypermedia program that works on all Apple IIs, including the 64K Apple II Plus; the others require a 128K IIe, IIc, or IIGS.

StoryWorks stacks are actually created with AppleWorks Classic's word-processing module, making it the only hypermedia program that requires another program. All stack design and development is conducted with AppleWorks. Because AppleWorks requires a IIe or later model, if you own an Apple II Plus, you'll need to purchase **PlusWorks** from Norwich Data Services (P.O. Box 356, East Norwich, NY 11732-0356, 800-221-3826, $19.95 plus $3 shipping, $49.95 plus $3 shipping for **PlusWorks XM** with memory expansion), a program that modifies AppleWorks to run on the earlier machine.



StoryWorks stacks are created with AppleWorks' word processor, but can contain sound effects.

TI&IE was formed by a group of educators in 1986, for the purpose of organizing an exchange of educationally oriented material and information. It originally distributed a monthly AppleWorks disk, available by subscription. In addition, TI&IE has added exceptional StoryWorks stacks to its collection, available to TI&IE subscribers at a deep discount. One disk contains *StackShells* — predesigned stacks you use, fill-in-the-blank style, to get your creative juices flowing.

StoryWorks is supplied on a single noncopy-protected 5.25-inch disk and comes with a well-written 32-page manual. The program disk contains a number of sample files; you can use them as master templates to create your own StoryWorks stacks. Just copy a template file (they include all relevant display commands) to another disk and start writing. It's a good idea to examine sample stacks first by loading them into AppleWorks, just to get a good idea of the structure of StoryWorks' stacks.

Stacks can contain sound effects; the program provides 26. You can also use graphics, but you're limited to ASCII images you create from the keyboard with AppleWorks. Stack designers are a pretty inventive bunch, overall — despite the apparent limitation, many StoryWorks stacks include maps, seating charts, timelines of history, and flowcharts. If you're creating StoryWorks stacks on a computer capable of displaying mousetext — the enhanced IIe, IIc, or IIGS — you can use those special characters for graphics, borders, and special visual effects.

StoryWorks stacks are divided into segments. Each can be displayed on the standard 80-column text screen, or a special 30-column screen showing large white characters on a black background. Each segment typed in AppleWorks must include display commands instructing StoryWorks on the way you want your information to appear, yet none of those commands is visible to the person using your stacks. Use AppleWorks' easy cut-and-paste functions to incorporate commands from master templates into your stacks.

StoryWorks may seem less full-featured than graphics-oriented programs, yet many educators prefer it because of its emphasis on text-based material. Phil Shapiro, a noted Apple II educator and president of Balloons Software, a company that produces educational programs and low-cost StoryWorks stack disks, says, "StoryWorks' lack of graphics is its great strength, since stack designers are forced to concentrate on content rather than context." The dozens of excellent StoryWorks stacks you'll find, created by both adults and children, verify Shapiro's point.

As it is, StoryWorks is an affordable way to bring hypermedia into the classroom. Once your students master it, you'll find a whole new outlet for aspiring writers. If you're a teacher, you'll love creating quizzes with StoryWorks and its built-in ability to "keep score." Teachers around the country give StoryWorks high marks. You will, too, if you choose it as your hypermedia system.

SCHOLASTIC TURNS A DOUBLE PLAY

Super Story Tree and HyperScreen, both written by George Brackett and published by Scholastic Software, let youngsters create interactive stories containing full-screen color graphics, music, sound effects, and special visual effects.

Super Story Tree is supplied in either 5.25- or 3.5-inch noncopy-protected disk format and comes with a 150-page manual describing all program commands. It's filled with pictures and charts, hints, and tips, and also has a special section offering practical advice for teachers on using the program in the classroom. A variety of graphics backgrounds and clip art, along with a library of sounds, music, borders, and fonts, is included.

Since seeing is believing, a well-designed tutorial stack is a must. As a motivator for elementary-school children, the tutorial tells a story, and then shows budding stack designers exactly how it was created. In addition, a good on-line help feature explains every command in every pull-down menu.

Super Story Tree can use any of Scholastic's **Booster Pack** graphics and sound libraries, giving young designers more clip art and special-effects resources than they'll be able to use in a single story stack. A number of painting and graphics tools are included with the program, as well, so youngsters can also create their own artwork from scratch. Special-education teachers will be happy to learn that Super Story Tree can be set up to work with single-switch devices.

You can create or browse through a story with mouse, joystick, or keyboard. Special navigation buttons called *links* offer three possible actions: advancing your story one screen; presenting a choice of branches, thus letting the reader direct the outcome; and moving to one screen some of the time, and another screen the rest of the time, thus introducing the element of chance into your story, and unleashing your creativity.

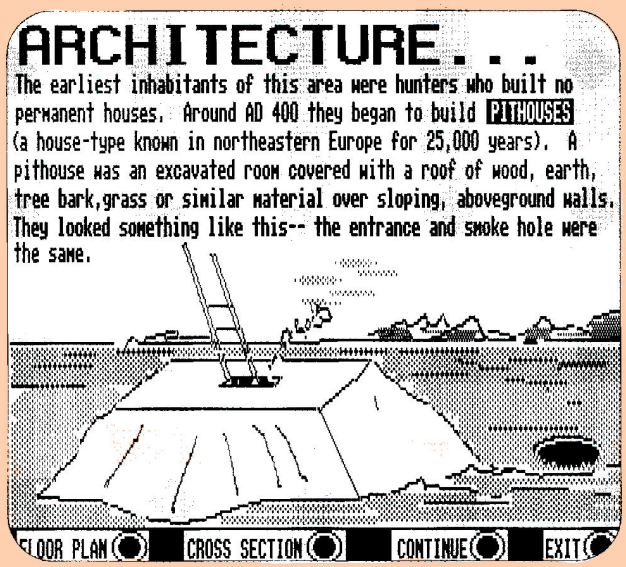
Although Super Story Tree is aimed at grades 3 through 6, younger children will love looking through stories written by their older siblings. Although not as full-featured as HyperScreen, there's no reason older kids won't enjoy using it to create custom stories. With its branching commands, for example, youngsters can create visual databases. Super Story Tree is a fun way to introduce young children to hypermedia. After they master the program and can use it to create graphics-oriented "twist-a-plot" stories and interactive fiction, they'll be eager to move up to Scholastic's other hypermedia product, HyperScreen.

HyperScreen is a full-blown hypermedia authoring system, similar in concept to HyperCard. In a way, it starts where Super Story Tree leaves off and lets you create much more sophisticated stacks. For starters, it can control a Pioneer LD-V4200 laser-disc player, so stacks can contain video sequences. It also works with the Apple II Video Overlay Card, so you can place navigational browsing buttons on top of a video image. HyperScreen also works

12TH-CENTURY ARTIFACTS, 20TH-CENTURY TECHNOLOGY

Rising out of the desert in the Four Corners area of the American Southwest, the abandoned cities of the Anasazi, or "Ancient Ones," present one of mankind's most intriguing archaeological mysteries. The cliff dwellings they left behind, nestled into the red rocks of Utah, Colorado, Arizona, and New Mexico, are the only vestiges of this prehistoric people who disappeared without a trace sometime before 1200 A.D.

Today, the Anasazi Heritage Center, a museum in Dolores, Colorado, operated by the U.S. Department of the Interior's Bureau of Land Management, is a repository of ancient objects found in the area. Here visitors can learn about the Anasazi via a pair of Tutor-Tech hypermedia stacks — **Anasazi Life**, by Michael Williams, and **The Last Pictograph**, by Victoria Atkins — that run continuously on the IIe and IIc computers in the Center's hands-on Discovery Room.



Tutor-Tech stacks at the Anasazi Heritage Center offer visitors a self-guided tour of the dwellings, environment, and art of this ancient people.

The stacks offer self-paced guided tours of slices of Anasazi life and art; visitors learn how the Anasazi constructed their multistoried apartment houses, and can see a cross-section of the living quarters. Running the stacks requires no special instructions. According to Tom Vaughan, an interpreter at the Center, the younger the visitor, the less coaxing needed to sit down in front of one of the Apple IIs.

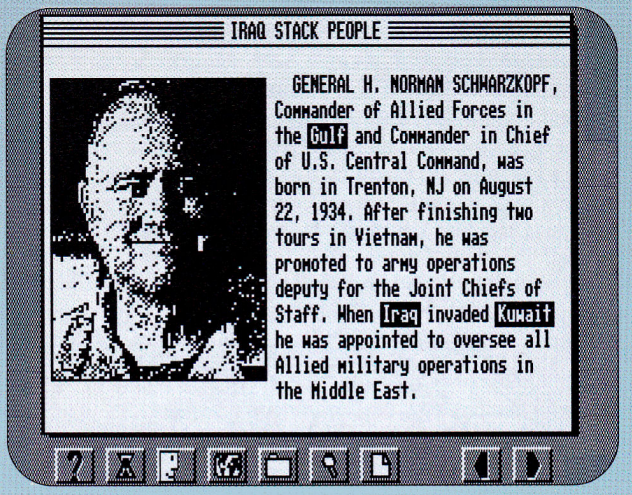
If you can't arrange a visit to the museum, these two Tutor-Tech stacks are in the public domain, and can be ordered from the Southwest Natural and Cultural Heritage Center (make checks payable to SNCHA), the nonprofit bookstore located at the museum. The cost is $5 per stack, plus $2 for shipping and handling: $7 for one program, or $12 for both. Send check or money order to BLM Anasazi Heritage Center, ATT: SNCHA, 27501 Highway 184, Dolores, CO 81323. (The Center's phone number is 303-882-4811.) You'll receive an unforgettable lesson on the importance of preserving our historical and cultural resources. **— J.K.**

IRAQ STACK

Less than five weeks after the Gulf War ended, the first comprehensive computer program about the crisis was released. Developed by Techware Corporation using its hypermedia authoring system Tutor-Tech, **Iraq Stack** is a complete course designed to help adults and children cope with relevant issues and information. Before the advent of hypermedia, it would have taken many months to compile into book form all the information contained in this application. [But does this time frame pose additional problems? For another viewpoint, see this month's Reviews section, p. 28. — eds.]

Iraq Stack includes six major modules: Middle East Time Line, People, Places, Databank, Issues, and Activities. Think of each module as a complete database — yet, unlike traditional bodies of information, all Iraq Stack databases are interconnected.

When you view the Time Line database, for example, you'll see maps of the area, digitized pictures of people associated with the war, and pertinent news accounts and other



Clicking on inverse-video names calls up additional information.

information. Important place names and names of significant people appear in inverse video (white on black). You can retrieve more-detailed information by choosing any of those highlighted names with joystick, mouse, or keyboard, or by clicking anywhere on maps of the region.

Exploring all sides of the conflict, the Issues section is especially pertinent to the classroom. Major topics are listed alphabetically, starting with Aid to the Middle East and concluding with Women's Roles in the War. Other controversial issues include the antiwar movement, hostages, arms control, and veteran's benefits. The Databank is an extensive database of Middle East facts and figures, beginning with the formation of the Arab League in 1945, and including information on many of the types of weapons deployed, complete with scanned photos. The Activities module offers a map-explorer section, a game that requires matching names of leaders with appropriate nations. A crossword puzzle and a series of thought-provoking essay questions are also included.

Iraq Stack works on any Apple IIe, IIc, IIGS, or Laser with 128K. It's a stand-alone package that doesn't require the Tutor-Tech program. It ships on four double-sided 5.25-inch disks or two 3.5-inch disks, and includes a poster-sized full-color copy of Hammond's Crisis Map of the Middle East. Iraq Stack is priced at $59; multicopy lab packs are available for schools. **— J.K.**

with an Echo or Cricket speech synthesizer, so that you can hear information as well as see it.

In addition to using graphics and clip art from Scholastic's Booster Packs, HyperScreen also lets you import any standard hi-res graphic, including ThunderScan or Quickie images. The program's numerous screen-transition effects are more sophisticated than Super Story Tree's, and you can also create simple animation sequences. A text editor is included, and you can import ASCII text created with another word processor.

HyperScreen employs nine different types of button actions. Buttons can, of course, link screens to other screens or stacks, but you can also use pop-up text buttons, which display text in a small window overlaid on the graphics screen. A "sound f/x" button plays music or sound effects, and the multifunction button can play music and then display a pop-up text box. If you have a synthesizer connected to your system, one special button invokes speech to read text aloud. A score button accumulates and reports on a browser's choices, making it possible to create a hypermedia multiple-choice test. One other special button type allows for text entry, so that you can create a hypermedia fill-in-the-blank test.

PIONEERING HYPERMEDIA

Tutor-Tech was the first Apple II hypermedia authoring system, predating even HyperCard for the Mac by about a year. It's been updated and revised several times, adding new capabilities to an already full-featured program. Tutor-Tech operates in a double-hi-res graphics-based environment, and, therefore, requires a 128K IIe, IIc, IIGS, or Laser128 or 128EX. Note that owing to the way the GS' RGB monitor displays double-hi-res graphics images, you must enter the Control Panel and toggle the display to monochrome. Tutor-Tech operates just fine with a single 5.25-inch disk drive. You can use a variety of input devices, including keyboard, mouse, joystick, touch screen, KoalaPad, and Muppet Keyboard.

Tutor-Tech is supplied on three noncopy-protected 5.25-inch disks. One disk contains the *Teacher* module, which lets you create hypermedia stacks; one contains the *Student* module, for browsing; and the third is a *Samples* disk with several ready-to-run hypermedia stacks and lessons. The *Gradebook* module, available as an add-on product, lets you automatically score, record, and report the results of an interactive hypermedia lesson, quiz, or test. Because Techware envisions that most stacks are created and viewed in an educational setting, a liberal license allows owners of Tutor-Tech to legally make 50 copies of the *Student* module, letting all users in a computer lab browse stacks at the same time. An affordable site license for the *Teacher* module is also available. Above all, Tutor-Tech is completely networkable, and will run on AppleShare, Corvus, and DigiCard systems, among others.

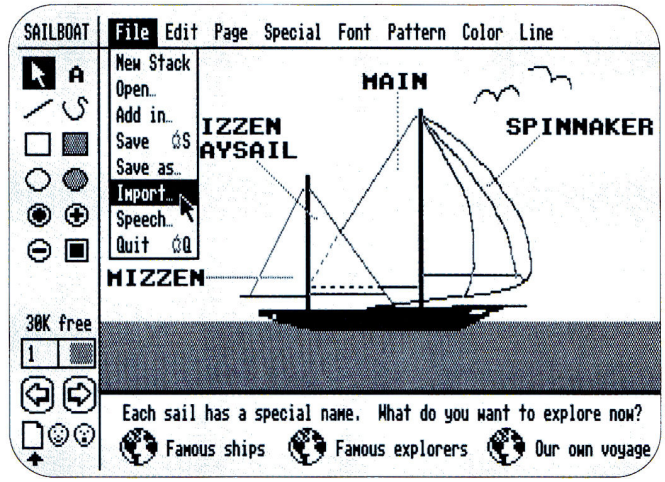
When you run the *Teacher* module, a Mac-style screen appears, with a menu bar across the top and a graphics toolbox, with 12 object-oriented writing and drawing tools, displayed vertically on the left. You build a stack by using those tools to place objects, such as text, graphics, or animation, anywhere on screen, thus creating your page. Tutor-Tech also lets you import graphics created with other programs, including The Print Shop, The Newsroom, MousePaint, and Dazzle Draw. Your stacks can also contain digitized graphics produced with a ThunderScan or Quickie scanner or a ComputerEyes video unit.

Tutor-Tech employs four kinds of buttons: one for correct answers, one for incorrect answers, one for a typed-in response, and an arrow to proceed to the next page or another stack. This variety allows for yes/no answers, multiple-choice responses, or fill-in-the-blank. You can hide buttons under a graphic so that the browser clicks on an object rather than on the button itself. Correct-answer buttons can lead to another page, to a motivational page displaying a graphic or message offering positive reinforcement, or to another stack. Incorrect-answer buttons can lead to a remedial page, a help page, or a hint page.

Buttons can also lead to external devices. Tutor-Tech is a true multimedia product — that is, it can retrieve information stored on floppy disk, videodisc, and certain models of industrial and broadcast videocassette recorders. (Note that to connect a videodisc player or VCR to an Apple II, you must have a corresponding interface card. BCD Company's model #450 works with several Panasonic and Sony industrial VCRs. A Super Serial Card and appropriate cables are required for videodisc usage.) Tutor-Tech is fully compatible with the Video Overlay Board, letting you place buttons on top of video images, and also works with the Echo speech synthesizer. With the optional **Tutor-Talk Tape Cassette Controller** (available from Ommega Corp., 15476 NW 75th Court, Miami Lakes, FL 33016, 305-558-0097, $195), you can use an audio-cassette tape recorder to incorporate real speech into stacks.

Although Tutor-Tech's ideal for classroom use, it's in no way limited to schools. Hypermedia displays are starting to appear in diverse settings such as museums, educational conferences, and computer trade shows. (See the accompanying sidebar, "12th-Century Artifacts, 20th-Century Technology.") Any interaction between human and computer is fertile ground for hypermedia. A number of videodiscs have been created for use with hypermedia software, and, as noted above, you can incorporate information retrieved from those sources into Tutor-Tech stacks. Because of the Apple II's ability to manage large amounts of information and to respond to browser input, using a videodisc with Tutor-Tech will add a whole new dimension to audiovisual databases containing real-world images. Educationally oriented videodiscs are currently available in the areas of life science, earth science, physical science, art history, and current events. (See the accompanying "Iraq Stack" sidebar.)

Techware is active in providing ongoing support. For example, it publishes a free quarterly newsletter, ***The Stack Exchange***,



Tutor-Tech's Mac-style screen features a menu bar and graphics toolbox.

offering tutorials, hints and tips, and a question-and-answer column, as well as a list of the latest add-on resources available for Tutor-Tech; it's a must-have publication for stack designers. Techware also conducts a monthly contest, encouraging stack designers to submit their work. The best of those entries are offered, at an affordable price, through *The Stack Exchange* as public-domain or shareware software. In addition, a number of commercial stacks are available through the newsletter. Techware also makes available a free demo disk of the *Teacher* module.

NOT JUST HYPE

All the Apple II hypermedia programs mentioned here help you create your own high-quality interactive software. All four packages deliver hypermedia to your Apple II desktop, although each does it in a different manner. Picking the right one will depend on your target audience, whether you want a hypertext construction set or a graphics-based hypermedia program, and whether you'll want to use hypermedia to control laser-disc players and VCRs. Regardless of which program you choose, the important thing is to take the plunge and let your creativity flow through hypermedia. ❑

CONTRIBUTING EDITOR JOE KOHN IS A COMPUTER CONSULTANT SPECIALIZING IN APPLE SYSTEMS. WRITE TO HIM AT 166 ALPINE STREET, SAN RAFAEL, CA 94901. ENCLOSE AN SASE IF YOU'D LIKE A PERSONAL REPLY.

FURTHER READING

"Curing the 8-Bit Blues" September 1989, p. 48

"StoryWorks" Reviews, April 1990, p. 32

"HyperScreen: On the Button" Editors' Choice, May 1990, p. 96
Reviews, September 1990, p. 38

"Super Story Tree" Reviews, October 1990, p. 75

"Exploring Hypermedia" November 1990, p. 36

"CD-ROM Comes of Age" May 1991, p. 44

"A Star Is Reborn" September 1991, p. 58

"Integration for a New Generation" November 1991, p. 24

"Sound and Image: The World on a Disc" November 1991, p. 30

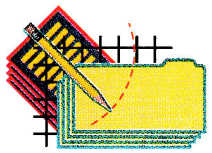
"Iraq Stack" Reviews, January 1992, p. 28

PRODUCT INFORMATION

HyperScreen, $99.95
Super Story Tree, $79.95
Booster Packs, $29.95 each
Scholastic Software
730 Broadway
New York, NY 10003
(212) 505-3000

StoryWorks
Teachers' Idea
and Information Exchange
P.O. Box 6229
Lincoln, NE 68506
(402) 483-6987
$49.95

Tutor-Tech Hypermedia Toolkit, $195
Gradebook, $95
The Stack Exchange, free to registered users
Demo Disk, free
Techware Corporation
P.O. Box 151085
Altamonte Springs, FL
32715-1085
(407) 695-9000
(800) 34-REACH



EASY DOES IT

Make 1992 the year of the dollar in your household.

By RUTH K. WITKIN

HAPPY 1992! START THE NEW YEAR right with a budget that helps you manage your money smarter and faster. If you frittered away your money in 1991, now's the time to develop a sensible spending and savings plan.

Figure 1 shows a truly easy-to-create budget spreadsheet. And I mean *easy*. You'll find no fancy formulas or formats — only a listing of incomes, deductions, and expenses (projected and actual). The instructions for creating this budget are step-by-step all the way. There are no set-up summaries to wrestle with. So, if you've ever felt even a wee bit intimidated by the AppleWorks spreadsheet, this is your chance to tackle it with full confidence.

A SPREADSHEET FROM SCRATCH

Load the AppleWorks program and create a new spreadsheet file named **EASY-BUDGET**. The spreadsheet *Review/Add/Change* screen appears with the cursor in cell A1.

First, enter a double line across row 2 in columns A through F: Place the cursor on A2 and type quotation marks ("). Hold down the equal-sign key until the sign reaches the right edge of F2, and hit Return. Leave the cursor on A2 and copy the row to the clipboard: Press Open apple-C (OA-C) to start the *Copy* command, type **T** (for *To clipboard*), press Return to confirm *Rows*, and hit Return again.

You need the same line in rows 42 and 48, so copy from the clipboard: Place the cursor on A42, press OA-C, and type **F** (for *From clipboard*). Now place the cursor on A48, press OA-C, and type **F** again.

Next, enter a single line across row 4 in columns A through F: Press OA-2, then Up Arrow twice to reach A4. Type quotation marks, hold down the minus-sign key until the sign reaches the right edge of F4, and hit Return. Enter the same type of line in A14 and B14: Place the cursor on A14 and type quotation marks. Hold down the minus-sign key until the sign reaches the right edge of B14, and hit Return.

Now enter the short line that separates the list of income amounts from its total: Place the cursor on B9 and type quotation marks. Press the spacebar twice to indent the line, then press the minus-sign key seven times, and hit Return. Leave the cursor on B9 and copy the line to the clipboard: Press OA-C, type **T** (for *To clipboard*), type **B** (for *Block*), and hit the return key again.

Now use the clipboard to copy the line to the other cells that need it: Place the cursor on B32, press OA-C, and type **F**. Now place the cursor on E39, press OA-C, and type **F**. And finally, place the cursor on F39, press OA-C, and type **F**.

CHANGING THE COLUMN WIDTH

Each column is nine characters wide. To give the labels in column A more room, widen the column to 19 characters: Place the cursor on A1 and press OA-L. Type **C** (for *Columns*) and press Return. Type **C** (for *Column width*), press OA-Right Arrow ten times, and hit Return again. In the same way, change these column widths: Increase column B by one character (to ten characters); reduce (use OA-Left Arrow) column C by six characters (to three characters); and increase column D by 13 characters (to 22 characters). Now increase columns E and F by one character (to ten characters): Place the cursor on E1 and press OA-L. Type **C**, hit Right Arrow to highlight columns E and F, and press Return. Type **C** again, press OA-Right Arrow once, and hit Return again.

ENTERING LABELS AND NUMBERS

Figure 2 shows the sample labels and numbers in the budget spreadsheet. Two special instructions apply here:

- The totals labels in A10, A33, and D40 are indented with two spaces to set them off from the rest of the labels. Before typing each of these labels, type quotation marks and press the spacebar twice.
- Before typing the labels in cell A43 (****PROJECTED:**) and in cell D43 (****ACTUAL:**), type quotation marks to tell AppleWorks the asterisks are text, not mathematical operators.

Referring to **Figure 2**, type the labels and numbers. Don't bother to press Return after each entry. Simply moving the cursor to the next cell that needs an entry serves the same purpose. When you're finished, press Return.

All the numbers are dollar amounts, so make dollars with no decimal places the standard value: Press OA-V and hit Return to confirm *Value* format. Then type **D** (for *Dollars*) and hit Return again to confirm no decimal places.

Now use the *Layout* command to right-align labels: Place the cursor on B3 and press OA-L. Press Return to confirm *Entry*, type **L** to choose *Label* format, and type **R** to choose *Right justify*. Next, place the cursor on B13 and press OA-L. Press Return and type LR.

And finally, place the cursor on E3 and press OA-L. This time, type **B** (for *Block*), move the cursor to F3 (so that both E3 and F3 are highlighted), and hit Return.

Type **LR**. Now press OA-S (*Save*) to store all your work on disk.

ENTERING THE FORMULAS

Now enter the formulas that perform your calculations. Their locations are the highlighted areas in **Figure 1**. First, read how the formula works, then place the cursor on the cell receiving the formula. Enter cell coordinates in the formula by moving the cursor to the cell location and pressing Return; type everything else.

When each formula is complete, compare the characters on your screen with those shown here. If everything agrees, press the return key. If something's amiss, press the escape key and start again.

FORMULA 1: TOTAL INCOME

Formula 1 sums the income items (B8 through B5) and enters the result in B10. As with the other SUM formulas, it includes the lines above (B4) and below (B9) the items.

Cell location: B10

Formula: @SUM(B9.B4)

Protect Formula 1 from accidental change: Leave the cursor on B10; press OA-L to bring up the *Layout* screen. Hit Return to confirm *Entry* and type **PN** (*Protection Nothing*).

FORMULA 2: TOTAL DEDUCTIONS

Formula 2 sums the payroll deductions (B31 through B15) and enters the result in B33.

Cell location: B33

Formula: @SUM(B32.B14)

Protect Formula 2 as you did Formula 1: Leave your cursor on B33, press OA-L, and press Return. Type **PN**.

FORMULA 3: TOTAL BUDGETED/SPENT

Formula 3 sums the projected amounts in column E (E38 through E5) to produce the total projected amount, including savings, in cell E40.

Cell location: E40

Formula: @SUM(E39.E4)

Now protect Formula 3: Leave your cursor on E40, press OA-L, and press the return key. Type **PN**. Now copy Formula 3 and its protection to F40: Press OA-C and hit Return twice to confirm *Within worksheet* and the *Source*. Press Right Arrow to highlight E40 and F40, and hit Return again. In the entry line at the bottom of the screen, AppleWorks highlights E39. All three references in this formula (E39, E4, and E10) are *relative*, so press OA-R.

FORMULA 4: DISPOSABLE INCOME

Formula 4 subtracts total deductions (B33) from gross income (B10) to produce the disposable income in B44.

Cell location: B44

Formula: +B10–B33

You'll protect Formula 4 after you enter the rest of the formulas.

FORMULA 5: TOTAL BUDGETED

Formula 5 subtracts the savings amount (E10) from the total budgeted (E40) and enters the result in B45.

Cell location: B45

Formula: +E40–E10

FORMULA 6: TOTAL SAVED

Formula 6 adds the payroll-savings amounts in B25 and B26, and the personal-savings amount in E10 to produce the total saved in B46.

Cell location: B46

Formula: @SUM(B25.B26,E10)

FORMULA 7: UNDER OR OVER INCOME

Formula 7 subtracts the total amount budgeted and saved (B45 and B46) from disposable income (B44) to show you, in B47, how much your spending projections and savings are under or over your income.

Cell location: B47

Formula: +B44–(B45+B46)

```
==============A==============B======C===========D===============E=========F======
   1|                    EASY BUDGET: JANUARY 1992
   2|=============================================================================
   3|GROSS INCOME            AMOUNT   EXPENSES                 PROJECTED    ACTUAL
   4|-----------------------------------------------------------------------------
   5|Self                    $4,000   Rent or Mortgage          $1,275     $1,275
   6|Spouse                  $3,750   Taxes & Insurance           $118       $118
   7|Other                       $0   Utilities                    $78        $70
   8|Other                       $0   Phone                        $56        $94
   9|                        -------  Grocery Shopping            $535       $480
  10|  TOTAL INCOME          $7,750 1 Savings                    $425       $525
  11|                                 Clothing                   $225       $275
  12|                                 Grooming                    $65        $97
  13|PAYROLL DEDUCTIONS       AMOUNT  Transportation             $166       $166
  14|------------------------------   Car Insurance                $0         $0
  15|Federal Withholding     $1,156   Car Repairs                 $50       $187
  16|State Withholding         $462   Car Loan Payment           $465       $465
  17|City Withholding           $34   College Loan Payment       $230       $230
  18|FICA (Soc Security)       $592   Other Loans & Debts         $80        $80
  19|Retirement (401K)          $40   Doctor (Unreimbursed)        $0         $0
  20|Medical Insurance          $28   Dentist (Unreimb)           $60        $85
  21|Dental Insurance            $0   Medication (Unreimb)         $0         $0
  22|Life Insurance              $0   Education                    $0         $0
  23|Advances                    $0   Professional                $25        $25
  24|Union Dues                  $0   Recreation                  $85       $125
  25|Payroll Savings           $100   Sports                      $25        $25
  26|Savings Bonds               $0   Hobbies                      $0         $0
  27|Stock                       $0   Books & Magazines           $25        $25
  28|Charity                     $0   Meals Out                   $95       $165
  29|Uniforms                    $0   Vacation                   $125       $125
  30|Other                       $0   Baby Sitter                  $0         $0
  31|Other                       $0   Maintenance & Repairs        $0       $415
  32|                        -------  Cable/Pay TV                $52        $52
  33|  TOTAL DEDUCTIONS      $2,412 2 Gifts & Contribs            $60        $60
  34|                                 Legal & Financial Svc        $0         $0
  35|                                 Child Support                $0         $0
  36|                                 Alimony                      $0         $0
  37|                                 Other                        $0         $0
  38|                                 Other                        $0         $0
  39|                                                         -------    -------
  40|                                   TOTAL BUDGETED/SPENT  $4,320 3  $5,164
  41|
  42|=============================================================================
  43|**PROJECTED:                     **ACTUAL:
  44|DISPOSABLE INCOME       $5,338 4 DISPOSABLE INCOME          $5,338
  45|TOTAL BUDGETED          $3,895 5 TOTAL SPENT                $4,639
  46|TOTAL SAVED               $525 6 TOTAL SAVED                  $625
  47|UNDER(OVER) INCOME       $918 7 UNDER(OVER) INCOME            $74
  48|=============================================================================
```

Figure 1. Easy budget spreadsheet to help you start the new year right.

Now copy the labels and formulas in A44 through B47 to D44 through E47: Place the cursor on A44 and press OA-C. Hit Return to confirm *Within worksheet*. Press Down Arrow three times and Right Arrow once, then hit Return again. Press Right Arrow three times to move the cursor to D44, and hit Return again. Make all cell references *absolute* by pressing OA-Return.

It's been a while since you stored this spreadsheet on disk, so press OA-S and relax while AppleWorks does its thing.

EDITING LABELS AND FORMULAS

Certain elements in the labels and formulas you just copied need to be changed, as shown in **Figure 1**. Retyping can be time-wasting, so here's how to edit labels and formulas.

First, edit a label: Place the cursor on D45 and press OA-U to put the label on the entry line. Move the cursor to the *B*, press OA-Y to delete *BUDGETED*, type **SPENT**, and hit Return.

Now edit the copy of Formula 5: Place the cursor on E45 and press OA-U. Press Right Arrow to move to the *E* in *E40*, press OA-E to switch to the overtype cursor, type **F** (to change the cell location to *F40*), move to the next *E* and type **F** (to change that location to *F10*), and hit Return.

Next, edit the copy of Formula 6: Place the cursor on E46 and press OA-U. Move to the *E* in the last cell location, type **F** (to change the cell location to *F10*), and hit Return.

	A	B	C	D	E	F
1			EASY BUDGET: JANUARY 1992			
2						
3	GROSS INCOME	AMOUNT	EXPENSES		PROJECTED	ACTUAL
4						
5	Self	4000	Rent or Mortgage		1175	1175
6	Spouse	3750	Taxes & Insurance		118	118
7	Other	0	Utilities		72	70
8	Other	0	Phone		56	89
9		--------	Grocery Shopping		500	479
10	TOTAL INCOME		Savings		350	350
11			Clothing		225	275
12			Grooming		65	97
13	PAYROLL DEDUCTIONS	AMOUNT	Transportation		166	166
14			Car Insurance		0	0
15	Federal Withholding	1156	Car Repairs		50	187
16	State Withholding	462	Car Loan Payment		465	465
17	City Withholding	34	College Loan Payment		230	230
18	FICA (Soc Security)	592	Other Loans & Debts		80	80
19	Retirement (401K)	40	Doctor (Unreimbursed)		0	0
20	Medical Insurance	28	Dentist (Unreimb)		60	85
21	Dental Insurance	0	Medication (Unreimb)		0	0
22	Life Insurance	0	Education		0	0
23	Advances	0	Professional		25	25
24	Union Dues	0	Recreation		85	125
25	Payroll Savings	100	Sports		25	25
26	Savings Bonds	0	Hobbies		0	0
27	Stock	0	Books & Magazines		25	25
28	Charity	0	Meals Out		95	165
29	Uniforms	0	Vacation		50	50
30	Other	0	Baby Sitter		0	0
31	Other	0	Maintenance & Repairs		0	415
32		-------	Cable/Pay TV		52	52
33	TOTAL DEDUCTIONS		Gifts & Contribs		60	60
34			Legal & Financial Svc		0	0
35			Child Support		0	0
36			Alimony		0	0
37			Other		0	0
38			Other		0	0
39					-------	-------
40			TOTAL BUDGETED/SPENT			
41						
42						
43	**PROJECTED:		**ACTUAL:			
44	DISPOSABLE INCOME					
45	TOTAL BUDGETED					
46	TOTAL SAVED					
47	UNDER(OVER) INCOME					
48						

Figure 2. Labels and practice numbers in easy budget spreadsheet.

And finally, edit the copy of Formula 7: Place the cursor on E47 and press OA-U. Overtype each *B* in the formula with **E** to make the formula *+E44–(E45+E46)*, and hit Return.

Now protect the labels and formulas in rows 43 through 47: Place the cursor on A43 and press OA-L. Type **B** (for *Block*) and move the cursor up to E47. Press Return and type **PN**.

Press OA-K to make sure everything is recalculated properly. Your spreadsheet should now look like the one in **Figure 1**.

PRINTING YOUR SPREADSHEET

The budget is 74 characters wide and prints ten characters to the inch. To position it well on the printed page, change the margin settings: 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*) and press Return. Type **.3** and hit Return again. Finally, type **TM** (for *Top Margin*) and press Return. Type **.6** and hit Return again.

All other print settings remain at AppleWorks standards. Press OA-S to store this final version on disk, which also returns the spreadsheet to the screen.

Now turn on your printer and print your spreadsheet: Leave the cursor where it is and press OA-P to bring up the *Print* screen. Hit Return to confirm *All*. Press Return to select the printer (or type a printer number, then press Return), type the date (or, if you have a computer clock, type @ — the "at" sign — to have AppleWorks enter the date for you), and hit Return twice, the second time for one copy. The printer works away, and there's the spreadsheet.

NEXT MONTH'S BUDGET

Now pretend you're ready to work on your February budget. You'll use the January budget as a template, so save it under a new filename: Press OA-N and then OA-Y to delete the current filename. Type **BUDFEB** and press Return. Now press OA-S to store the new spreadsheet on disk.

To ready the spreadsheet for February, place the cursor on D1 and type **FEBRUARY 1992**. Now blank out the numbers

in column F to make room for new entries: Place the cursor on F5 and press OA-B. Type **B** (for *Block*), press OA-7, then Down Arrow three times to highlight the cells to F38, and hit Return. Now overtype any of the remaining numbers that need to be changed, making sure to store the spreadsheet at regular intervals. During or at the end of the month, enter what you spent to see how well you're sticking to your budget.

OPENING A SECOND WINDOW

You can see how projections would affect your personal bottom line by keeping the results in B44 through B47 in view. All you need do is open a second window: Position the spreadsheet so that row 47 is the last row on the screen. Now place the cursor on B42 and press OA-W to bring up the *Windows* screen. Type **T** (for *Top and bottom*). Press Down Arrow five times so that rows 43 through 47 are visible.

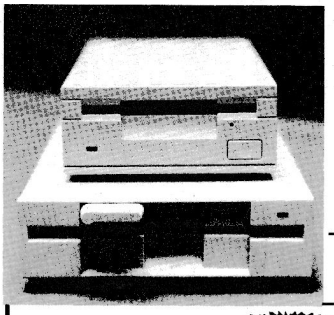
To see how well this works, press OA-J to jump the cursor into the top window, then change some projections to reflect a happy event: You paid off the car loan in January and now want to apply some of that amount to education (a course called *BASIC 101*) and to savings. Place the cursor on E16 and type **0**. Move the cursor to E22 and type **250**. Move the cursor to E10, type **565**, and hit Return. Instantly, AppleWorks changes the amounts in the *Projected* area to reflect the new numbers.

You can store a second window with a spreadsheet. The printed spreadsheet, however, won't show even a hint of another window. Now close the second window: Leave your cursor where it is, press OA-W, and press Return to confirm *One*. Press OA-S to store the February budget on disk with the changes.

COMING UP

Yup, it's that time again — income-tax time. And, once again, you'll create the spreadsheet that gives you an advance look at your income-tax exposure. This is one of AppleWorks in Action's most popular columns. Don't miss it. ❑

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



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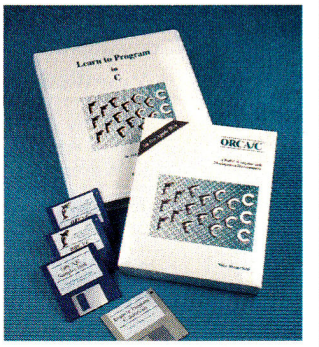

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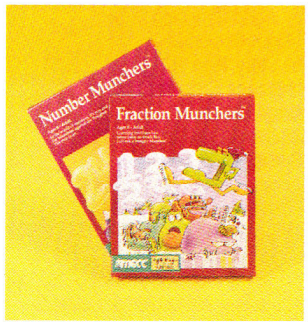

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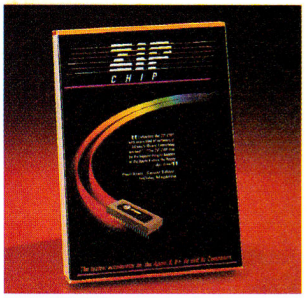

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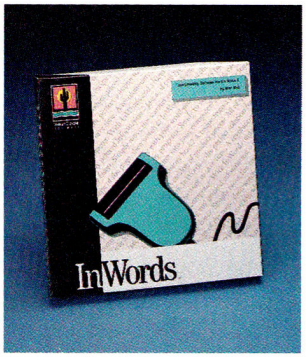

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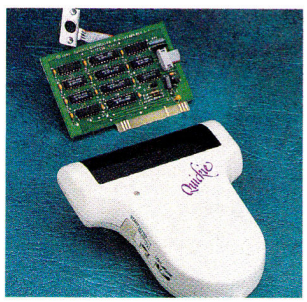

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HOT STUFF

"Magic powders" can turn your mundane printouts into stunning artwork.

By CYNTHIA E. FIELD, Ph.D.

YOU'LL PROBABLY THINK WE HAD a heavy hand with the holiday eggnog when you learn that this month's desktop-publishing project requires a toaster oven. We do admit to feeling a little giddy about this unique and creative printing technique, because it fits any Apple II — and any Apple II user.

We're talking about *thermography*, a term that literally means writing with heat. (That's where the toaster oven comes in.) No doubt you've seen thermographed greeting cards, letterhead stationery, business cards, and other documents that sport raised printing. With as little as $15 and a handful of everyday household supplies, you can set up a home or school thermography shop. That's all you need to add beautiful finishing touches to anything you design on your Apple II.

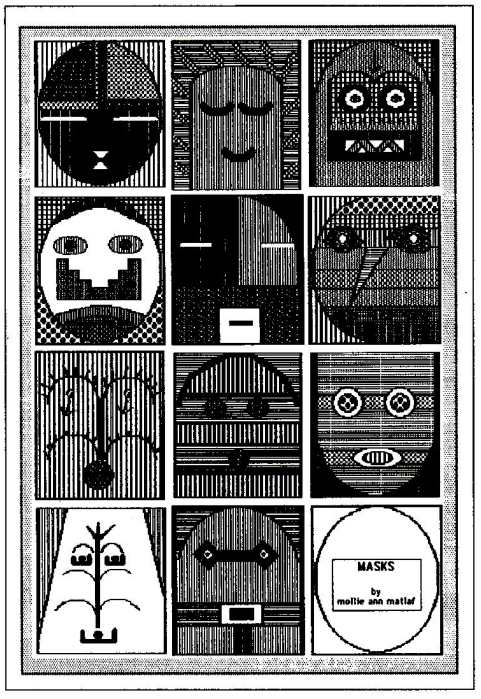

Figure. Thermography sample by Mollie Ann Matlaf. Matlaf creates her designs with various graphics and desktop-publishing programs for the Apple IIe and IIGs.

As you know, we don't have a monopoly on good ideas here in the Press Room. Credit for this project belongs to retired teacher Mollie Ann Matlaf of Oxnard, California. Matlaf also provided the professional-looking sample shown in the accompanying **Figure**.

The step-by-step "Kitchen Thermography" sidebar provides detailed instructions for the raised-printing projects you'll want to do at home, school, or the office. But before you fire up your Apple II, let's consider some fine points.

TAKE A POWDER

In the thermography process, you sprinkle a specially formulated polyamide-resin powder over a fresh computer printout, and the powder adheres to the wet ink. Then you heat the printout, and the plastic powder melts, binding to the ink permanently. The powder tends to rise higher where the ink is dense, but probably not as high as in commercial thermography — the professionals start with a thicker layer of ink.

A dot-matrix printer is best for home thermography projects because its ink is wet, or "tacky," enough to retain the powder. Thermograph printouts from an ink-jet printer don't work well; the ink dries too quickly. You can't thermograph laser printouts such as photocopies either, because the toner is dry. Use a fresh printer ribbon for best results, and, of course, make sure the ink doesn't dry before "powdering" it.

OUR COMPLIMENTS

Faust Thermographic Supply provided us with complimentary samples of its finely milled **NuFlo** thermography powders to test for this column. The company sells an assortment of the powders in quantities as small as 1 pound. Even that amount lasts a long time, because after sprinkling the powder onto your printout, you pour any that doesn't stick back into the container to use again.

A Faust spokesperson told us that you can store the powders indefinitely in their metal cans or in glass jars. The company discourages using plastic storage containers, because plastic resin rubbing against plastic can generate static charges that prevent the powder from sticking to ink.

The company representative also suggested using heat from a bare light bulb, an upturned flatiron, or an electric hotplate, instead of a toaster oven. In fact, an alternative heat source may be better for thermographing documents that are bigger than a toaster oven. Even with an elfin oven, though, you can do the job. Just thermograph one end of a letter-size document, let the paper cool, then thermograph the other end. You don't have to fit the whole document into the oven at once.

You may be surprised to discover that it's not the heated air in the oven that melts the powder — it's the heated paper. Therefore, when you choose your paper you should consider variables such as its thickness and reflectivity. Smooth or shiny stock that reflects heat

doesn't warm up as quickly. Finding the correct temperature setting on your toaster oven is critical; too high and you'll char the paper.

Generate a handful of experimental printouts to determine the right time/temperature combination for your oven. An inexpensive stopwatch or an ordinary wristwatch with a second hand should do the trick. If your oven isn't illuminated, use a penlight to watch the powder melt and its color develop.

ASSORTED PLEASURES

If you can afford it, try an assortment of Faust's NuFlo powders. Use the powders on desktop documents printed with a black ribbon on various types of paper. Nearly all satin-pearl colors produce good results. Brass, copper, and russet powders are among our favorites.

Especially impressive are documents that you thermograph with clear gloss powder, because as the powder melts, it smooths out dot-matrix "jaggies." You can create a thermographed letterhead that someone would swear was typeset. In a similar vein, Matlaf recommends thermographing desktop-published print masters with gloss powder for camera-ready results.

Most thermography powders are initially buff- or cream-colored. Only upon melting does a powder turn its designated color — blue, green, orange, or whatever. Needless to say, you'll want to label storage containers clearly.

TAKE CARE

Faust assures us that the company's NuFlo powders are safe and nontoxic. Nevertheless, you should exercise cau-

THER-MAC-GRAPHY SOFTWARE

Getting "a rise" out of Macintosh documents is just as much fun as thermographing Apple II creations. Just ask retired school audiovisual expert and Mac SE/30 (and Apple IIGS) enthusiast William H. Olson.

Years ago Olson printed wedding announcements for a friend and his fiancée on an old letterpress — the kind for which you set the type by hand. They sprinkled embossing (thermography) powder on the wet ink, and then toasted the announcements over an electric hotplate.

It seems Olson still sets type by hand — except nowadays that means using his hands to tap keys on the Mac keyboard, select text with the mouse, and pull down menus titled Font, Size, and Style. Olson creates much of his modern handiwork with Broderbund Software's **TypeStyler**, a graphics program that provides some three-dozen special text effects, including bending, rotating, and twisting. The accompanying **Figure** shows a thermographed document Olson recently "baked."

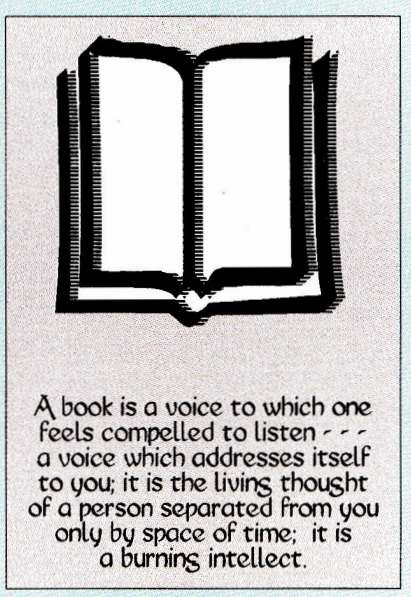

Figure. Thermography sample created by William Olson using TypeStyler with a Mac SE/30.

While we don't claim to be the graphics experts William Olson is, we've experimented with original **MacPaint** designs, including a hypothetical advertisement for an Italian restaurant. Faust's blue-satin pearl powder made the finished piece look great. We were equally pleased with thermographed creations sporting canned clip art from Softdisk Publishing's **DTP Publisher** and The Learning Company's graphics-based writing program, **The Writing Center**.

The list of Macintosh software you can use to design pieces destined for thermography is endless. Among the titles that spring to mind are **Amazing Paint**, **Color MacCheese**, **Easy Color Paint**, **Kid Pix**, **MacDraw II**, **Publish It! Easy**, and even **FileMaker Pro**. **— C.F.**

KITCHEN THERMOGRAPHY

Follow these ten easy steps to enhance your computer printouts:

1. Launch your favorite creativity program, and design the document you want to thermograph. Some of Mollie Matlaf's favorite programs include **AppleWorks 3.0** with **Time-Out SuperFonts**, **Bannermania**, **Davka's Hebrew Graphics**, **8/16 Paint**, **Publish It! 4**, and **The Print Shop**. She also designs original graphics and scans them into her Apple II with a **Quickie** hand-held scanner.

2. Save your design on a data disk and print the document in the best-quality mode your program offers. Avoid overhandling the printout. Thermography powder will stick to oil residue from your fingers.

3. Take the printout a safe distance from your dust-sensitive computer equipment. The kitchen's a good place. (After all, the toaster oven is probably there.) Just be sure to clean up well afterward.

4. Sprinkle thermography powder liberally onto the area of the printout you want to enhance.

5. Shake off excess powder into its storage container. The powder should adhere noticeably to the ink. If there are bare spots, powder them again. Sometimes it helps to let the powder sit for a while. If it still fails to adhere, the ink has probably lost its "tack," and you should try a fresh printout or install a new ribbon in your printer.

6. Inspect the powdered document closely. If you see stray particles, brush them off with a pastry or artist's brush. Errant particles will melt and give your document an undesirably speckled appearance.

7. Heat the toaster oven to a relatively high temperature and leave the door open. (Matlaf sets her oven temperature to just below broil.)

8. Place the powdered document in the oven and leave the door open.

9. "Cook" the document for ten to 20 seconds. (Matlaf usually leaves hers in for 15 seconds.) The time it takes to melt thermography powder depends on oven temperature and paper characteristics.

10. Remove the thermographed document and let it cool. If you want to thermograph additional sections of your document, repeat steps 4 through 10. **— C.F.**

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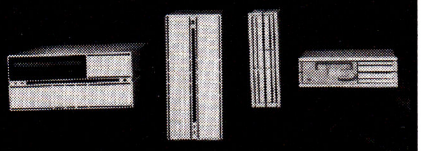

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tion whenever working with particulate matter that you could inhale. In short, when you do home thermography you probably don't need a dust mask, but you do need common sense.

Because thermography requires that you use a hot toaster oven — or other heating device — you must supervise children who want to get in on the fun. You should protect your computer equipment, too: Never use thermography powder near your Apple, printer, or other dust-sensitive device.

GET COOKIN'

The creative possibilities you can enjoy with home thermography are endless, but here are just a few suggestions you might try:

- Use gloss powder on multicolor printouts from your ImageWriter II.
- Try various powders on color printouts made with a red, green, blue, or other single-color ribbon.
- Mix small amounts of selected powders in a metal or glass container (be sure it's clearly labeled) and see what you get.
- You can also create multicolor documents from a black-ink printout by adding one thermography powder to a selected part of the printout and heating it. Then add a second powder to another section, heat that, and so on.

Suffice it to say, anything you can type, draw, paint, or otherwise design on the Apple II in your family room, home office, or classroom can be thermographed in the kitchen — or faculty lounge. Come to think of it, maybe every new Apple II should come with a free toaster oven. ❑

CONTRIBUTING EDITOR CYNTHIA E. FIELD IS A FREE-LANCE JOURNALIST SPECIALIZING IN COMPUTER-RELATED TOPICS. WRITE TO HER AT 60 BORDER DRIVE, WAKEFIELD, RI 02879. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

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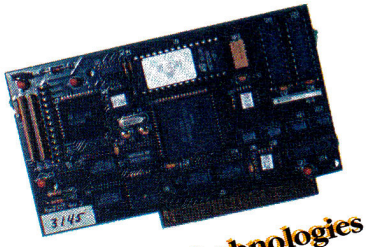

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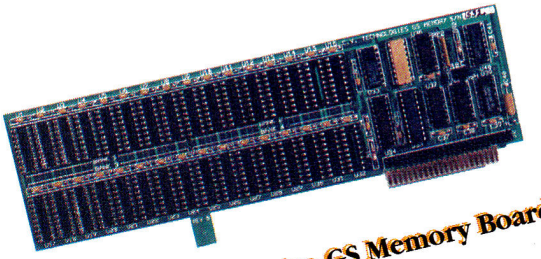

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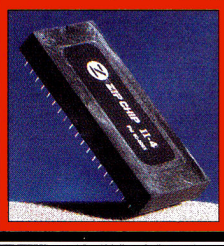

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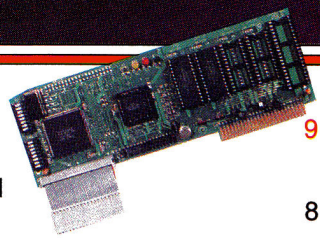

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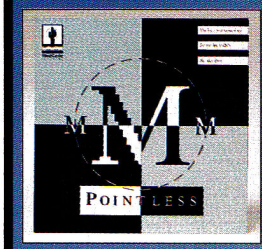

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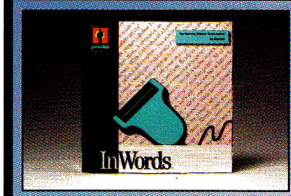

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Continued from page 29

two strategies for including speech in an Apple IIGS program. You can record words or phrases digitally, then play them back through the GS. (Every GS can handle playback, but you need extra hardware for digital recording. The quality of digitized speech is okay, but it uses lots of memory and disk space.) Or you can use a speech synthesizer such as Talking Tools, which assembles speech from phonemes, the basic units of English speech. (This technique uses much less memory and disk space.)

Talking Tools lets you add speech capabilities to any program in the same familiar tool-set format that characterizes most GS programming. A programmer who uses ORCA/M or APW assembly, ORCA C, or ORCA Pascal can use Talking Tools.

The Talking Tools package has three basic parts. First, there are four new tool sets to add to your GS system disk, which provide male and female voices, a reliable phonetic translator, and an interface to the GS system. Second, a desktop application called *Speak* lets you play with Talking Tools' capabilities. Third, a sample text-screen application called *SpeakIt* shows you how to use Talking Tools in your programs. The manual uses ORCA Pascal to illustrate this sample program; both assembly and C versions of the program are available on disk.

Talking Tools lets the programmer use speech directly from English text or through a special set of phonetic symbols. For both text and phonetics, the programmer can control the pitch, tone, volume, and speed of the spoken material. The best way to learn to control Talking Tools is by playing with the *Speak* desktop application. *Speak* will "say" straight English text and phonetics, provide the phonetic translation of English text, and let you build a dictionary of exceptions to override Talking Tools' best guess of a word's pronunciation. The manual for Talking Tools walks you through *SpeakIt*, a program that illustrates the use of the major features of the tool sets.

Talking Tools does a good job providing speech capabilities in a GS program, but you'll never forget that you're listening to a computer. The male and female voices sound flat, and it's hard to distinguish between Talking Tools' pronunciation of words such as "water" and "otter." Exercising more control over the phonetics and other parameters provided by the tool set does improve speech quality, though. Using an external, amplified speaker as opposed to the GS' internal speaker also helps.

Talking Tools works well with beginning readers. More-discriminating adult ears may have trouble adapting to the rather crude output, though. Developers writing ESL (English as a second language) applications might want to weigh their options carefully before investing money, time, and energy in Talking Tools.

Whatever application you develop, distributing the first three tool sets to other users requires a license from Talking Tools' creators, First Byte. Such licensing is understandable, but will discourage the widespread use of the tools' capabilities.

Byte Works should make Talking Tools' functions available to HyperCard GS programmers. While you can create your own Talking Tools XCMNDs and XFCNS (extended commands and functions) to use with HyperCard, ByteWorks should have offered them as another alternative to the assembly, Pascal, and C interfaces provided.

A BRIDGE TO THE PAST

In the dusty recesses of our computer club's public-domain library lie stacks of untouched Integer BASIC programs. Most club members have never heard of Integer BASIC, the first high-level language available in the days of the Apple II. ORCA Integer BASIC can, with some possible modifications, recompile these old programs to run on the GS. As we'll see, though, the means is more important then the end.

A *compiler* converts statements from a high-level computer language to the machine language your computer understands. The high-level language statements exist as one disk file; the machine-language program is created as a second disk file. The original Integer BASIC, however, was an *interpreted* language: Conversion to machine language took place on the fly whenever you ran the program. This style slowed execution speed, but eliminated the potentially confusing compilation step and gave the beginning programmer more of a feel of "talking" directly to the Apple.

In the ORCA Integer BASIC package you get a language compiler, the source code for the compiler, a program that converts old Integer BASIC programs, and a set of test Integer BASIC programs. To use ORCA Integer BASIC you must have one of the other ORCA development environments; ORCA Pascal and ORCA/M are the most useful. Note that unlike real Integer BASIC, the ORCA version supports the GS' 320-mode graphics. If you choose to use ORCA's desktop development environment, *PRIZM*, low-resolution graphics and 40-column text won't work; you'll have to convert any PEEKs, POKEs, and CALLs you find in old Integer BASIC programs.

It may seem strange, but I spend many a winter night poring over the source code provided with Integer BASIC. (I use AppleWorks and TimeOut TextTools' table-of-contents and index-generation capabilities to print it.) I ran a couple of Integer programs through the converter, just to make sure they worked, but found myself more interested in tearing apart the compiler. ORCA Integer BASIC is a fun tool for studying the inner workings of a compiler's design. Using the sample disks included, you can follow the way the compiler handles programming situations. Once you understand what the compiler is doing, you can dream up modifications and customized jobs.

The highlight of this package is the manual. It includes an excellent discussion of computer-language grammars and the four important components of most language compilers (scanner, parser, semantic analyzer, and code generator), as well as an appendix describing how to port over old Integer BASIC programs. The main body of the text is a detailed account of the compiler's inner workings and how you can customize them. The documentation's delightful tone comes from Mike Westerfield, author of ORCA Integer BASIC and a VIP in the GS programming community. His voice is passionate and somewhat opinionated, but he's a teacher you remember and from whom you learn a great deal.

Most people don't have the time or the inclination to take a university-level course in compiler design, but ORCA Integer BASIC provides an easy and interesting introduction to compiler fundamentals. If you're an amateur programmer, you'll find ORCA Integer BASIC fun and rewarding. ❑

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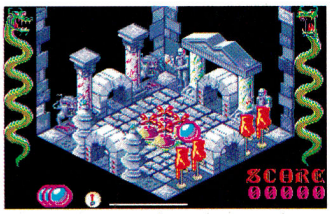

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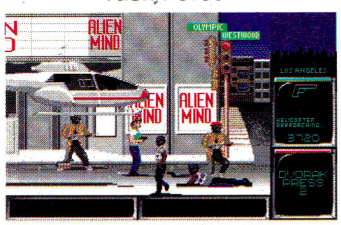

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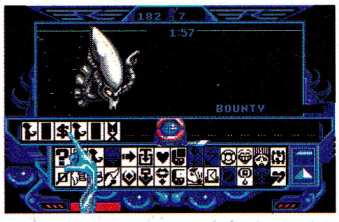

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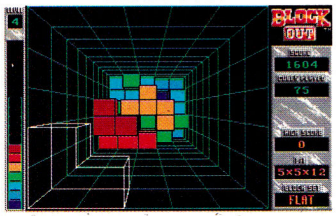

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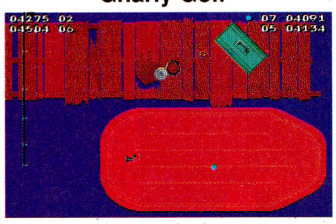

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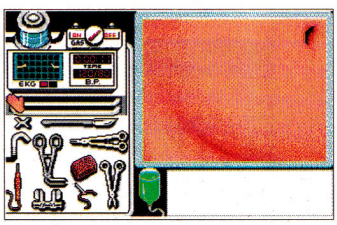

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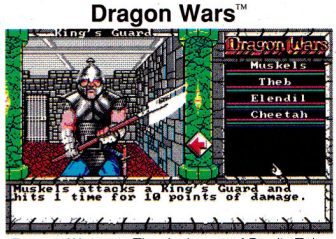

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Continued from page 80

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	R	S	T	U
V	W	X	Y	Z

Figure 3. Starting arrangement of letters in word game.

time (and in which time zone) will the two trains meet?

Using Math Connections, students can represent each train by an equation and then explore the problem in various ways, developing and testing strategies. They can even use the equation's output to move pictures of the trains across the screen. By playing with the general form of problems such as this, students are better prepared to solve math problems in "real life" later on.

In my opinion, programs that provide context-free drill should be banned. There are enough real math problems around to provide all the practice any child could need. Unless we insist that the software industry give us better products, however, we won't get them.

I saw a program recently in which players increased the speed of on-screen race cars by doing context-free computations quickly. Now it seems to me that if your goal is to have students perform computations, and you think race cars are a good gimmick, there are tons of relevant ways to connect the two. For example, fuel is heavy and slows down a car, so you want to carry just enough to finish the race; you can calculate the necessary amount from the fuel efficiency of the car and the length of the race. At a more advanced level, you can also account for decreased efficiency with increased speed, multiple refueling stops, and other factors. It would be just as easy to write a program involving these concepts as the one involving mere calculation.

If you want to give kids a challenging math (and English) problem — one for which they might write their own computer program — entice them with this puzzle: *Arrange the letters A through Z (without Q) in a 5-by-5 grid.* (See **Figure 3**.) Then build words by moving left, right, up, down, and diagonally through the grid, one letter at a time. Find the words *STUN*, *STUNT*, and *STUNTS*, for example. You can use letters over again, but not in sequence; in other words, double letters aren't allowed.

The first challenge is to find as many words as possible in this grid. (Stop at 50 only if you must.) Notice that you don't use some letters at all, because the vowels aren't conveniently placed. So the next challenge is to rearrange the 25 letters to yield the largest number of words. What strategies would you use to place the letters? How would you test your arrangement? How would you know if it were optimal? I'm working on a public-domain Apple II program to facilitate solutions to this problem; look for it here in a future Learning Curve column.

Problems like this are neat because they involve a lot of math, they can be approached by children of all ages, and they're engrossing. If such problems were challenging our kids every day, our nation's math worries would be over. ❑

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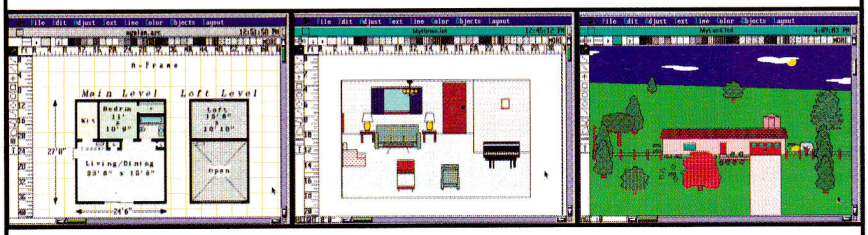

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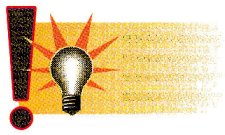

HINTS

COUNT ON US

A definition here, a shortcut there — our information swap can help you stay one step ahead of frustration.

Edited by THE STAFF OF INCIDER/A+

ENHANCED DB FILE CREATOR

Who said that if you're writing macros you aren't programming? This month we'll introduce a *counter*, a device no programmer can live without. Counters save numerous keystrokes and bytes of space. It's a numeric variable that's defined, then incremented or decremented progressively until it reaches a certain value and completes the process. Using a counter, you can repeat a function a desired number of times, without having to type it in over and over again. Also, if the number of times you repeat a function changes, you can alter your counter variable easily via user input to reflect any situation.

Here's an enhancement of the database file-creator macro in "Fast File Creation" (October 1991, p. 64). The accompanying **Figure** automates some of the category features you did by hand. I chose "c" as the variable to hold the count. The DB macro demonstrates both progressions — the first decrements from the desired number to zero; the second increments from 1 to the desired number. Either design works. (I used both merely for illustration purposes.)

Although you may not use all 30 categories provided for in this macro, including them requires little extra memory — single dots use a small amount of screen space. You can move them via the *Layout* command to the far right or the bottom of the single-record-layout screen. Then, if you ever create a new category, you can simply change the dot to a name, and you won't lose your report formats.

Note that AppleWorks 2.x users must delete the <*display #off*> and <*display #on*> commands, and must suffer the flashing screens — or, upgrade to 3.0!

```
start
#:<all><                    { Create New DB File From Anywhere}
display #off:               { freeze screen display to hide activity}
oa-Q esc:                   { get straight to the Main Menu}
rtn>4<rtn rtn>LIST<:        {create a new DB file from scratch}
display #on rtn:            { restore screen activity}
oa-Y:                       { prepare to enter category names}
c = 30:                     { set counter for 30 categories}
begin>.<rtn:                { begin "create categories" loop}
                            { enter dot to create each category}
c = c - 1:                  { decrement counter for next cat name}
if c > 0 rpt else:          { continue loop until 30 cats are done}
c = 1:                      { reset counter for "return loop"}
begin up:                   { begin "cursor return" loop}
c = c + 1:                  { increment counter for next position}
if c < 30 rpt elseoff:      { continue loop until in first position}
insert oa-E:                { force overstrike cursor on}
msg ' Enter Category Names as you wish. Press <ESC> when finished.':
                            { display message prompt for user}
                            { ESC key established as the "done" key}
begin:                      { begin "name that category" loop}
k = key:                    { capture keypress in variable "k"}
if k = 27:                  { if ESC key ("done") is pressed...}
msg "" : esc:               { erase msg prompt and end name routine}
else print chr$ k : rpt>!   { otherwise, enter text key pressed}
```

Figure. Enhancement for database file-creator macro.

— Will Nelkin
1675 Grand Avenue
San Rafael, CA 94901

THE UNKNOWN PARAMETER

ProDOS manuals babble on and on about using slot (S), drive (D), and even volume (V) parameters with CAT, but nowhere will you find mention of *T* or *file type*. By adding this parameter to a CAT or CATALOG command, you can specify the files you want to list.

For instance, CAT ,T$FC lists all files of type BAS on a volume. If you've got a hard drive with tons of files, what better way to see your Applesoft BASIC programs at a glance? You can specify any file type as long as you know the proper hexadecimal code. Check the accompanying **Table** for codes for the most common types.

Because you can use this parameter in either immediate or deferred execution, it makes a great tool for home-brew file-selection routines. Also, if you use a file type that doesn't exist on a volume, ProDOS will return the number of blocks free and used — a quick way to tell how full your disk is. For more detailed information, pick up a copy of the *ProDOS 8 Technical Reference Manual* (Addison-Wesley's Trade Computer Books Division, Jacob Way, Reading, MA 01867, 617-944-3700, $29.95). ❑

File Type	Hexadecimal
BIN	$06
TXT	$04
DIR	$0F
AppleWorks database file	$19
AppleWorks word-processor file	$1A
AppleWorks spreadsheet file	$1B
INT	$FA
BAS	$FC
SYS	$FF

Table. Proper codes for file types.

— Stephen Cerruti/
Cameron Crotty
c/o inCider/A+
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Circle 61 on Reader Service Card.

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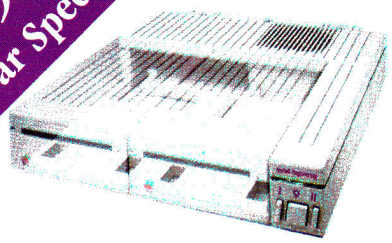

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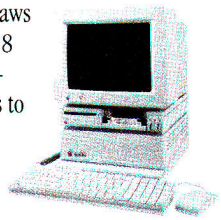

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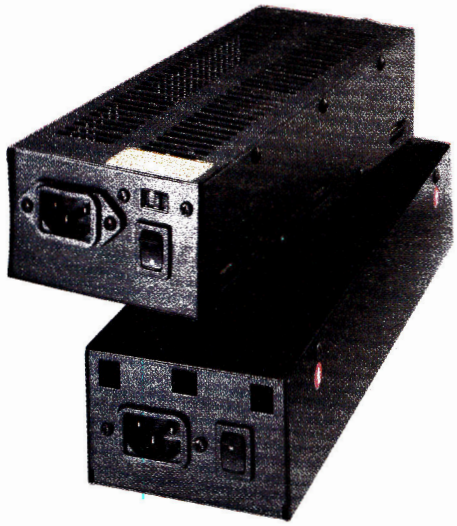

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Macintosh	☐ 2	☐ 5
IBM/MS-DOS	☐ 3	☐ 6

Which model?

Apple IIgs	☐ a	☐ i
Apple IIe/c/c Plus	☐ b	☐ j
Mac SE/Mac Plus	☐ c	☐ k
Mac Classic	☐ d	☐ l
Mac LC	☐ e	☐ m
Mac SE/30	☐ f	☐ n
Mac II series	☐ g	☐ o
Other computer	☐ h	☐ p

II Are you an educator? Yes ☐ q

1	26	51	76	101	126	151	176	201	226	251	276	301	326	351
2	27	52	77	102	127	152	177	202	227	252	277	302	327	352
3	28	53	78	103	128	153	178	203	228	253	278	303	328	353
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Mac SE/Mac Plus	☐ c	☐ k
Mac Classic	☐ d	☐ l
Mac LC	☐ e	☐ m
Mac SE/30	☐ f	☐ n
Mac II series	☐ g	☐ o
Other computer	☐ h	☐ p

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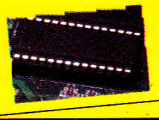

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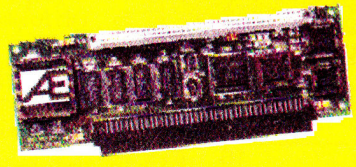

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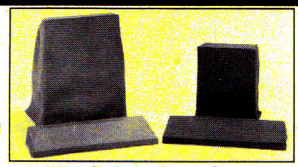

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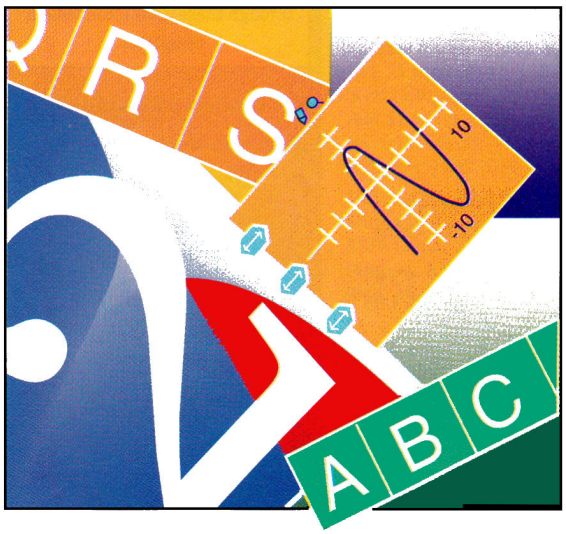
GRAPHIC DISPLAY

Real-world math problems can provide all the practice any child could need.

A few months ago, I overheard a group of diners in a restaurant trying to figure out how much each person owed on the bill. One of them passed the check to a friend and said, "You figure it out — I was never much good at math." With this comment, the conversation turned to various tales of discomfort with arithmetic — almost as if it were a badge of honor. I'm amazed that we live in a society that tolerates math illiteracy. Imagine the response if one of the group admitted that he or she couldn't read.



By DAVID D. THORNBURG, Ph.D.

If the general population is uncomfortable with mathematics, the problem isn't a lack of time spent on it in school. Rather, it's the use of that time. Much math instruction in the elementary grades is devoted to memorizing isolated facts and algorithms, such as the one for long division. Working on "real" math projects and developing personal math intuition is sacrificed in favor of preparing for standardized tests, which emphasize context-free computational skills.

Tragically, many computer-based math programs (including those designed for home use) concentrate on developing these skills through repetitive drill. Parents spend hundreds of dollars on software designed to turn their children into slow replicas of the $5 calculators you can buy at your local drugstore.

It's refreshing, then, to encounter software designed to engender a deeper understanding of math. One such product, Wings for Learning's **Math Connections: Algebra I** (P.O. Box 660002, 1600 Green Hills Road, Scotts Valley, CA 95067-0002, 408-438-5502, 800-321-7511, $129), turns the computer into a laboratory for exploring polynomial functions. This program (available currently only for the Mac) lets students examine polynomials from both the computational and the representational side.

With Math Connections, you create boxes on screen to hold algebraic functions and graphs. When you draw a line to connect a function box to a graph box, the program then plots the function. (See **Figure 1**.) Any changes in the function are reflected in the graph, and any changes in the graph are reflected in the function. (See **Figure 2**.) This reciprocity helps the student develop intuition about the behavior of polynomials. You can use a function not only to draw a graph, but also to create a table of numbers and to move a graphics object on the display screen. The program is really a construction kit for exploring mathematical ideas.

For example, consider a classic brain teaser: *A train leaves Los Angeles for New York City at 2 p.m. Pacific Standard Time and travels east at a steady 60 miles per hour. Another train leaves New York for L.A. at 5 p.m. Eastern Standard Time, traveling west at 50 miles per hour. The total track length from coast to coast is 3000 miles. At what*

Continued on page 64

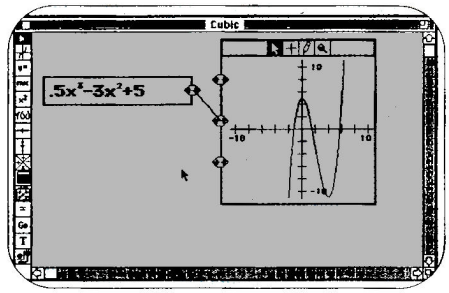


Figure 1. Math Connections screen showing a formula and its graph.

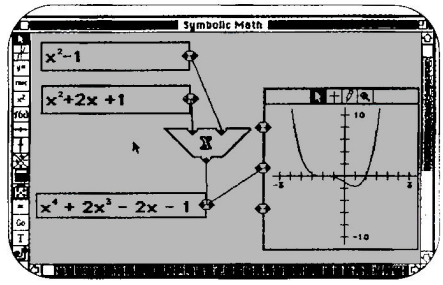


Figure 2. Math Connections screen showing symbolic multiplication and a graph of the resulting function.

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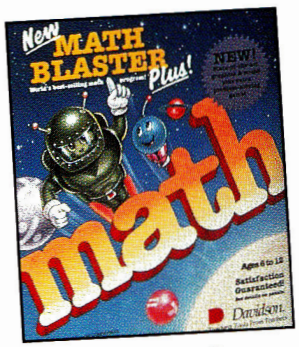

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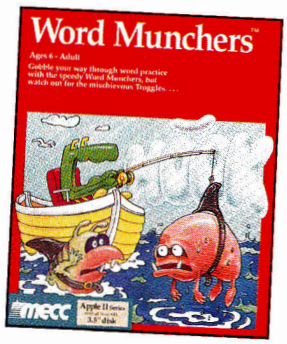

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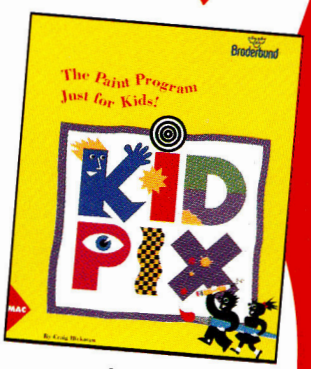

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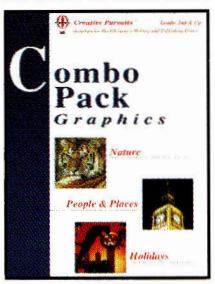

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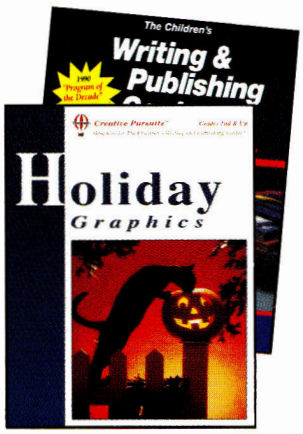

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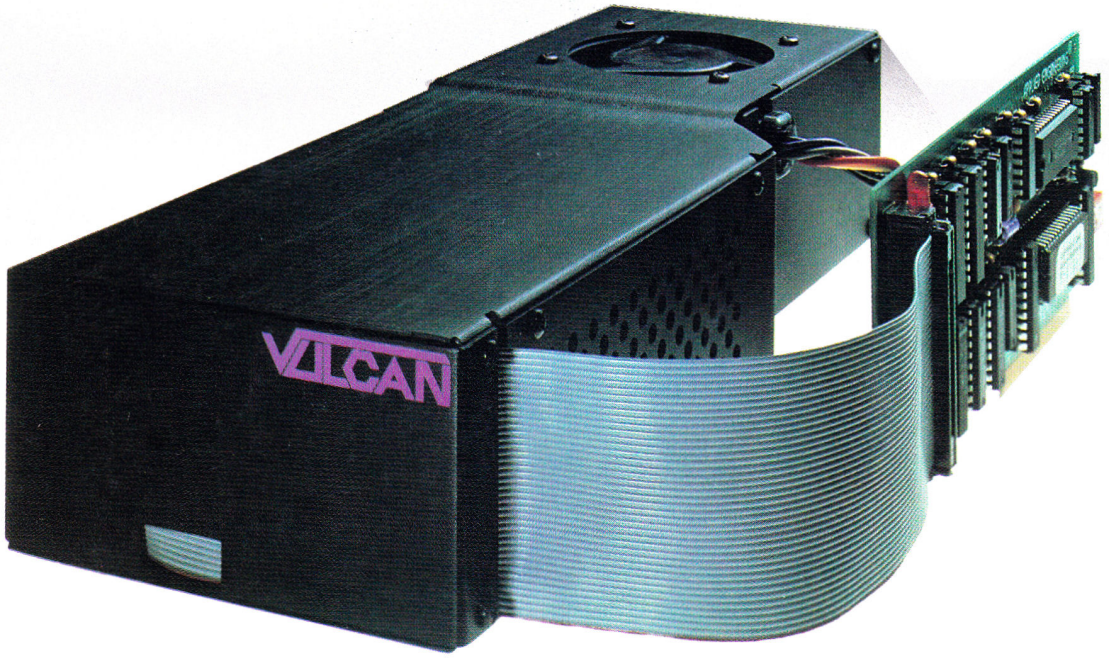

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