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Apple II / Macintosh

AN IDG COMMUNICATIONS PUBLICATION
March 1990

WE BE Jammin'!
Editors' Choice: page 108

TAX SOFTWARE

6 Ways to Avoid April Madness

Exploring HyperStudio 2.0

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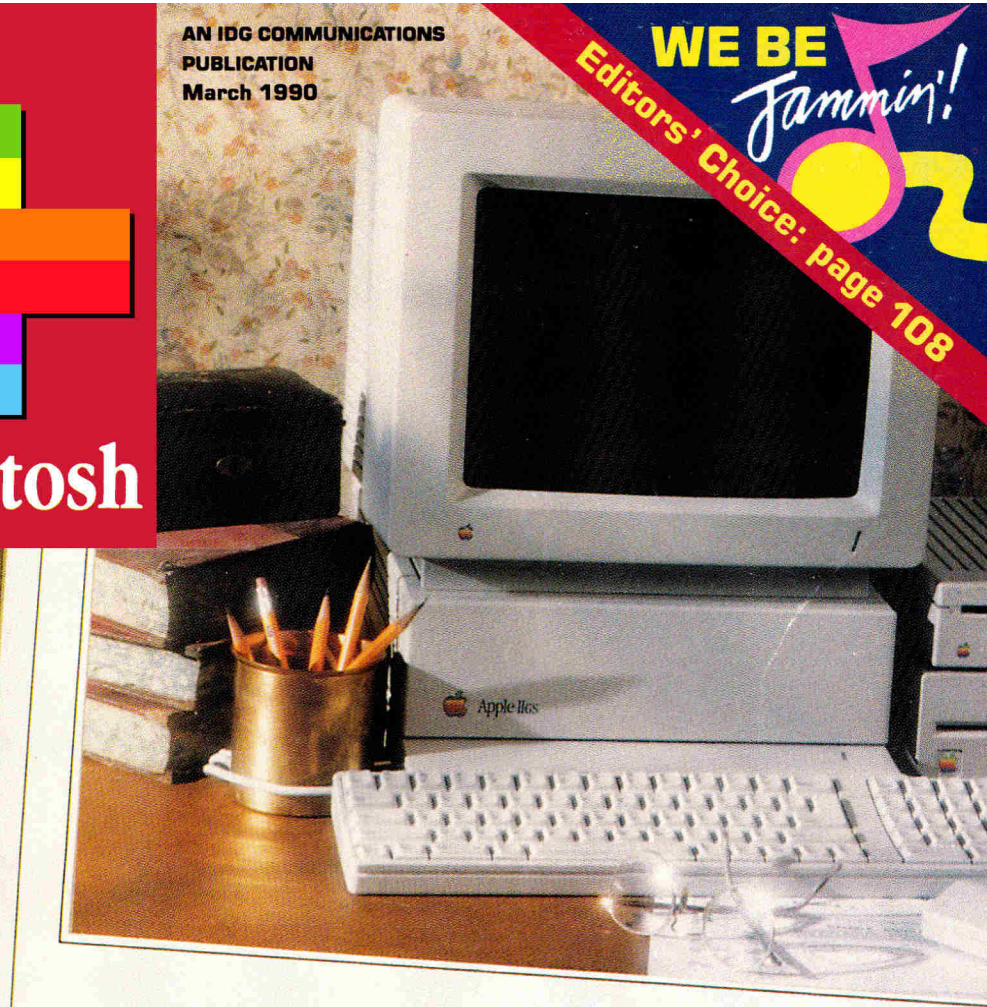

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1990 APRIL

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8	9 ~~VACATION~~	10	11	12 ~~VACATION~~
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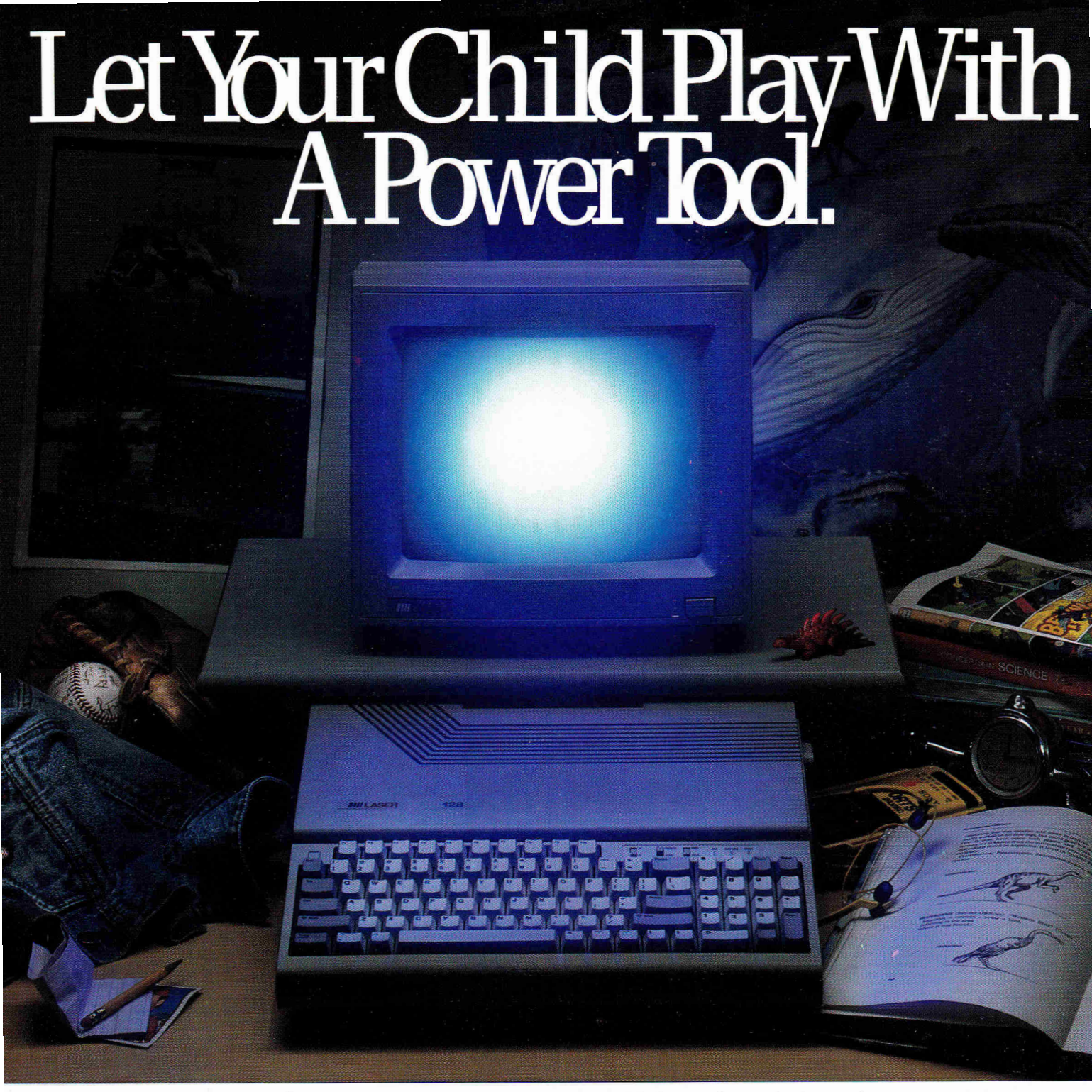

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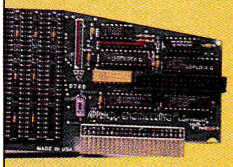

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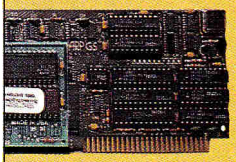

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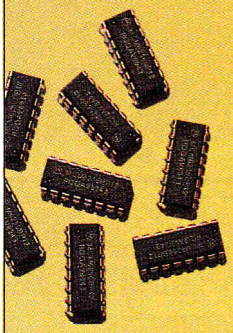

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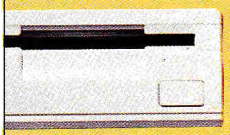

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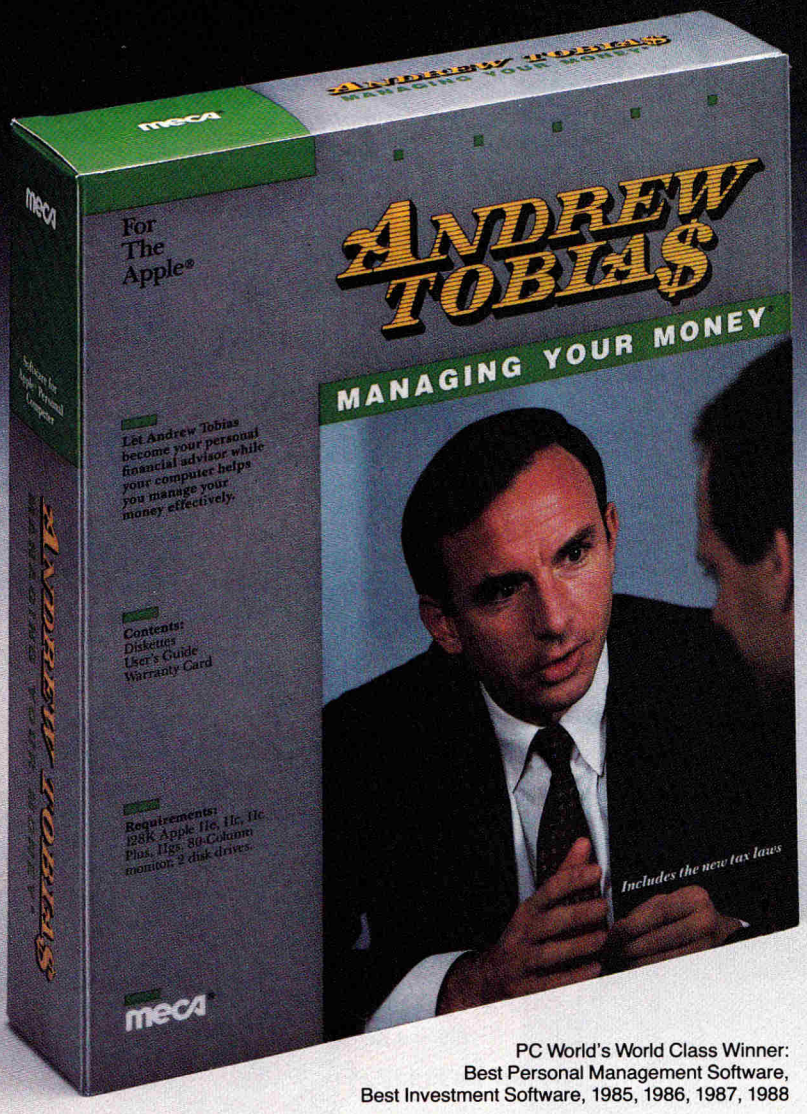

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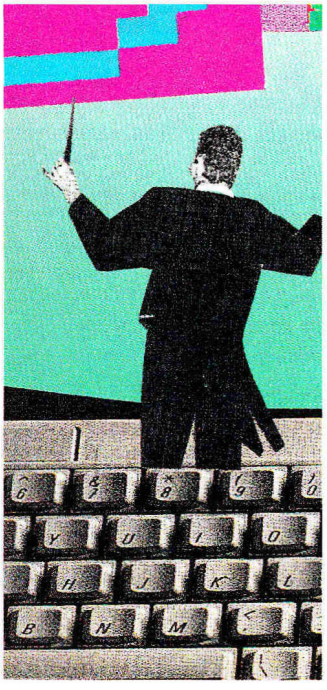
Few dates strike fear into the hearts of Americans the way April 15 does. With a tax-preparation program and your Apple II, though, you can calmly stare the IRS in the face when the dreaded day comes.

56 Exploring HyperStudio
Roger Wagner's HyperStudio represents a new breed of Apple II software, but how do you use it? If you're intrigued—but a little confused—by talk of *hypermedia*, *stacks*, *cards*, and *buttons*, you're not alone. West Coast Editor Jeff Cable takes you through the making of a stack and shows you just how easy it is to build your own "program" with HyperStudio's new version 2.0.



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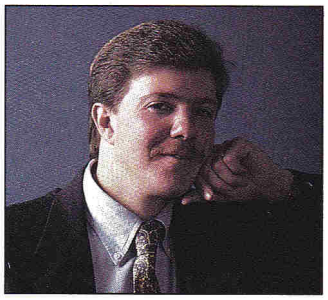

INCIDER'S VIEW

IT'S REALLY CHRISTMAS

By DAN MUSE * EDITOR IN CHIEF

It's hard to keep track of time when you're preparing holiday-shopping guides in the summer.

PUBLISHING IS A FUNNY BUSINESS. In addition to weird hours, angry readers, and a nasty dependency on profitability, it's easy to forget what month it is.

It's difficult to keep a proper perspective on time when you're preparing holiday-shopping guides in the summer. For example, this column is slated for the March issue, which will actually appear in early February—but I'm writing it the day after Christmas. I had planned to write about the merits of tax-preparation software (see "April 15—No Problem," p. 50), but with visions of sugarplums lingering—and pounds of Christmas goodies still slowing me down—I just can't muster the enthusiasm.

Not that I don't think tax software is important. To the contrary, it's so significant it's this month's cover story. I want to use one of the programs we compare in this issue to prepare my 1989 return, too—but right now I'm too preoccupied with installing that electric garage-door opener I received yesterday to discuss finance. And talking about the financial burden of taxes after a Christmas spending binge is a little like talking about going camping after watching *Friday the 13th*.

Like everyone else, I'm emotionally and physically drained (not to mention financially depleted) after Christmas and I'd rather be discussing the Orange Bowl—but with my deadline fast approaching (to be honest, my real deadline was two weeks ago and if I don't finish this column today page 8 will be blank) I'm going to stick to the spirit of the season and let you in on my New Year's resolutions. Unfortunately, by the time you read this you and I will probably have already broken our 1990 resolutions, but here goes anyway:

1. I'm going to meet my deadlines for this column. Maybe next year I can write about New Year's resolutions in the January issue. (My rationalization for being late is that by writing the column as the magazine goes out the door, I have two more weeks to analyze the Apple II market for that issue.)
2. I will make myself use types of software I don't like. I may even try a fantasy role-playing game. Who knows? Maybe I'll try to balance my checkbook. I've stereotyped myself—at least among the staff—as willing to write only about sports software, desktop publishing, and drawing/painting programs. This year I promise to expand my horizons.
3. I'll stop complaining about how difficult and inherently evil telecommunications is. Thousands of you do it and seem to like it, so it can't be that bad, right?

Now I'm not saying I never take advantage of on-line communications myself. I use AppleLink to contact Apple, I download articles from on-line services—when the writer insists on it. But I've been surrounded by telecommunications for eight years, and I still think it has a long way to go before it's accessible to average computer users. In 1990, though, I'll keep my telecommunications philosophy to myself.

4. I'll keep my office clean. This one won't be easy. I receive hundreds of letters a month, reams of press releases, and dozens of article ideas and submissions. And I'm messy by nature anyway. I resolve to organize myself into a lean, mean editing machine.
5. I'll remember that many computer users don't care about the latest and greatest hardware and software on the market.

Over the holiday, I talked to a friend of the family who's owned an Apple IIe for some time. He's not worried about 65816, 80366, or 68030 microprocessors. He can still buy the software he needs to do what he wants to do. His company uses Mac IIs, color scanners, and laser printers, but he's happy with his computer.

There you have it: five resolutions made a few days before the new year, five resolutions that will more than likely go down the drain before this issue even hits the newsstand.

But now if I say something derogatory about fantasy games or telecommunications, if I forget that most of you are happy with your current computers, or if I don't respond to your letter because my office is in a shambles, you have my 1990 resolutions on the record. So if I break one, feel free to let me have it.□

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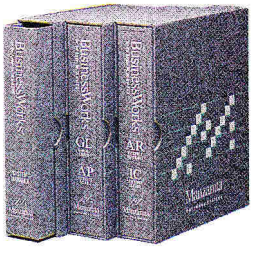

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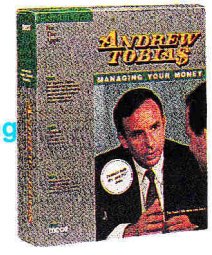

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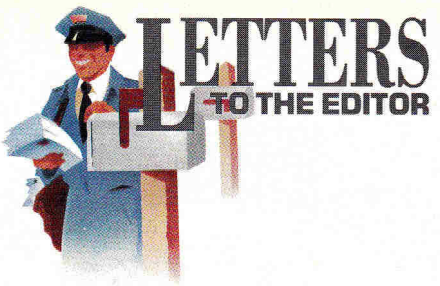

Office Procedure

AS THE DEVELOPER OF OFFICEWorks, I was very disappointed with your November 1989 review (p. 102). I created these electronic forms for the small office and the business classroom. They're designed as an alternative to moving from your computer to your typewriter to prepare routine business forms, such as purchase orders, invoices, bank reconciliations, and account statements.

The accompanying manual gives detailed instructions for using the forms, including the procedure for customizing forms for a specific business and for making minor changes in two formulas (sales tax on the invoice and FICA tax on the payroll register).

OfficeWorks doesn't pretend to be a business' answer to accounting software (which costs considerably more than $50). It's simply a compilation of the most-often-used office forms converted from paper to disk to help you get more out of AppleWorks. At only $2 a form, you'll be pleased with this bargain, even if you're proficient enough in AppleWorks to develop your own electronic office forms.

M.S. Varnon
1017 Valencia Avenue
San Marcos, CA 92069

Running Wild

I'D LIKE TO WARN IIGS USERS ABOUT a GS-specific virus called Load Runner.

Last October I loaded AppleWorks into my 3½-inch disk drive and turned on my Apple, and all hell seemed to break loose. The computer sounded an alarm, the screen flashed bright red, and the words *System Failure* appeared. The screen then became green and showed the message (translated from French) "008 copies, distributed by Artists Associates, Load Runner, first non-destructive virus on the IIGS, by Super Hacker and Shyrkan, from Monster Cracking Services, 1988, Lyons."

I couldn't load any of my infected disks; I just got a "check drive" message. Finally I figured out that the virus came on software I had purchased from the Public Domain Exchange (PDE) and was spread when I warm-booted my computer. PDE's technical-support representative was extremely helpful. He acknowledged responsibility, and by that afternoon he informed me of the nature of the virus and how to get rid of it.

The virus doesn't attack data or application files. It attaches to the format of the disk and changes the first three bytes. Fortunately, your files are safe and you can recopy them to a clean, freshly formatted disk. Be sure to copy your files individually; a disk copy won't work.

So, no harm done except that the "system failure" nearly brought on heart failure. By the way, PDE now has a vaccine disk that can detect and eliminate the virus.

Bart Grossman
714 Evelyn Avenue
Albany, CA 94706

Wise Owl

MY GS HAS BEEN ACTING UP lately, so I took to heart your advice on a new battery ("Death and the IIGS," Apple Clinic, October 1989, p. 24). I called Nite Owl Productions and ordered two batteries for good measure. A kind woman took my order, and when I started fumbling around for my credit card she said, "Thanks for your order. It'll be there in about 4–5 days." I was dumbfounded!

It seems Nite Owl sends its batteries along with a self-addressed envelope for mailing payment back to the company. At last—a company that actually *trusts* its customers! Hats off to Nite Owl!

Scott Ferguson
Route 1 Box 83K
Kearney, MO 64060

System Upgrade

GS/OS SYSTEM 5.0 SOUNDS LIKE the answer to my prayers, but doesn't Apple have an upgrade offer for owners of System 4.0? I checked with our local Apple dealer and he doesn't have it yet, nor does he know about it! Do I have to pay for System 5.0, or can Apple be generous and offer an alternative upgrade deal?

Hong Sung Hoon
P.O. Box 240
Saipan, Mariana Islands
MP 96950

System Disk 5.0 with manuals sells for $49.95. Your Apple dealer, however, should *copy it onto your disks for free.* —*eds.*

Multiple Opinions

WE'RE PLEASED WITH JAMES Trunzo's review of Multiple Choices (November 1989, p. 41), but would like to respond to a few of his comments. First, the program allows exchanges among *all* test formats. He states, "You can't transfer data between a matching test and a multiple-choice test because the formats are different." That's not true; you *can* transfer between these two formats. You'll need to add the extra choices for multiple-choice format, but the program will transfer the question side and the correct answer for the situation.

Mr. Trunzo also indicates that Multiple Choices doesn't use all your words in the Word ►

"I can't afford a tax return that isn't accurate. Neither can you."

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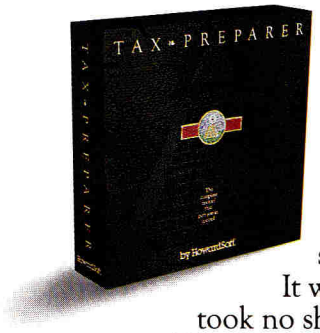
I prepare taxes. Lots of them. And I know taxes. Backwards and forwards. But the tax laws have become so complex in the last couple of years that it was taking me hours to prepare even simple returns when investments were involved. So last year after putting other tax software to the test I decided to computerize my practice with HowardSoft's Tax Preparer.®



Before buying Tax Preparer, I was skeptical, because it cost less than $300, with annual updates under $100 a year...cheap enough for individuals. But once I saw it I knew it was just about as professional as tax software can get. It was the only package that took no short cuts to accuracy: it transferred hundreds of numbers among IRS forms, computed dozens of worksheets, and recomputed AGI as often as necessary to get an accurate return. And all automatically.

"HowardSoft's attention to detail made all the difference."

Its execution of the Passive Activity Rules was nothing short of brilliant. I didn't have to complete a single IRS worksheet myself. And my lack of computer knowledge wasn't a problem because the program is intuitive to use, and comes with the most complete reference manual I've seen.

But the biggest lifesaver was the hidden automation. I had forgotten to report the self-employment tax for one taxpayer. But when I went back and checked the return, I found that Tax Preparer had already generated and completed the required Schedule SE and reflected it in the return. I also overlooked the new law that requires some taxpayers to file Form 8606 for their IRA; but the returns where this situation existed had a form generated and completed by Tax Preparer automatically! These and the other automatically-generated forms are quite a difference from tax software with "diagnostics" that tell *you* to prepare another form; if it's needed, Tax Preparer just takes care of it itself.

The final printed product really capped it off. The printing was so automatic that we printed all returns for the day while we were closing up the office. The printouts were IRS-ready, complete with automatically cross-referenced supporting statements.

I couldn't have gotten through last tax season without it. In spite of the new laws, Tax Preparer let me handle more clients in less time, without the usual errors and headaches. It was easy! I hate to admit it, but I'll bet plenty of individuals can do their own returns with it."

"Tax Preparer recomputed AGI as often as necessary to get an accurate return."

So, look. You can keep doing it the hard way, and risk an inaccurate return. Or buy a package that helps with the arithmetic but not the tax regulations.

But why risk it? Just fill out the coupon, or pick up the phone. See for yourself why Tax Preparer has been featured over the past 10 years in such diverse places as the Wall Street Journal and Business Week, PC Magazine and PC World, A+ and InCider, the Today Show and Goodmorning America. You'll get the tax software that gives you just what you need, at a price you can afford.

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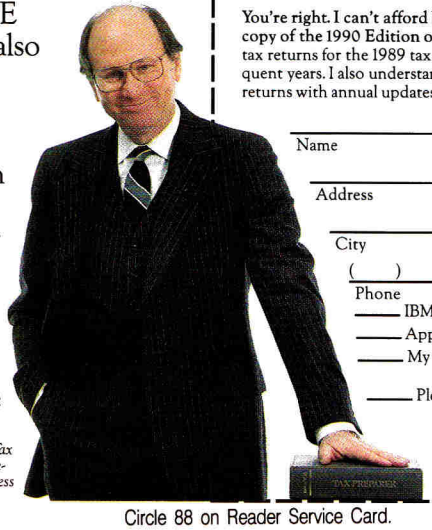
For more information, call **(619) 454-0121.** (Other professional software by HowardSoft includes a Laser Option for generating Form 1040 graphically on a laser printer, a California Supplement™ for preparing the state return starting with Federal data, and Real Estate Analyzer® for analyzing income property before and after taxes.)



You're right. I can't afford NOT to use Tax Preparer this year. Please send me my copy of the 1990 Edition of Tax Preparer. (I understand that I can prepare official tax returns for the 1989 tax year with this package and perform tax planning for subsequent years. I also understand that you will keep my program up to date for future tax returns with annual updates under $100/year.)

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HOW DOES IT WORK?

1040Works and **1040Works-X** are data files that set up AppleWorks' spreadsheet as tax schedules and forms. Modules load like any other files; no hardware of software modifications needed. Just fill out the on-screen tax forms. Both programs calculate each form, advance totals to Form 1040, figure your income and tax, print out most forms in IRS-approved, ready-to-file format. Uses standard AppleWorks commands. *inCider* magazine, *GS Buyers Guide* and *NAUG Forum* compared it to $250 software. (Latest *inCider* review, March 1989.)

WHICH VERSION IS FOR ME?

1040Works requires an Apple II or compatible with 128K RAM and any version of AppleWorks (including 3.0). If you have a computer such as the Apple IIGS with at least 256K RAM, you can use **1040Works-X**, which takes advantage of the larger AppleWorks Desktop to do the job even faster and more conveniently. (Runs with Three Easy Pieces on an Apple III, too.) CAUTION: WILL NOT WORK WITH CLARIS CORP.'S NEW APPLEWORKS-GS SOFTWARE.

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LETTERS TO THE EDITOR

Search activity. We've redesigned this feature in the program's updated version. Depending on the length of the words, you shouldn't have any trouble getting all the words in the puzzle.

Some of the other puzzles, however, such as the Acrostic, pose a different problem: The program uses a key word (which the teacher selects), then prompts the student for the letters needed to spell that word. For example, if you have a vocabulary list with 15 words, but your key word is *cat*, the program won't need to use all the words in the list. But if the key word is *industrious*, the puzzle will use more words.

One last note: Contrary to Carol Holzberg's final statement in her review of Certificates and More (October 1989, p. 40), we do offer additional certificates in our Certificate Collection.

Doreen Barcellona
Product Manager
Educational Division
Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062

GRANTING WISHES

IN "LIFE WITH APPLEWORKS" (December 1989, p. 90), Eric Grevstad states, "I wish Claris had added a 'what's new' section or a guide to the changes for AppleWorks 2.0 and 2.1 versions."

Readers may be interested to know that a cassette tape that does just that is available from the National AppleWorks Users Group (Box 87453, Canton, MI 48187, 313-454-1115). The tape is well worth the price, and some of the ideas are *better* than Claris' directions.

Phyllis R. Kuehn
2927 Deindorfer Street
Saginaw, MI 48602

IT'S WORTH IT

I APPRECIATE PAUL STATT'S CAMPAIGN for faster, less expensive Apples ("High-Rent District," Stattus Report, December 1989, p. 24), but he must base his reasoning on facts more accurate than those presented in his column.

Possibly, *you* could have purchased an Apple I in 1979 for $666. But the general public couldn't, nor did they want to do so.

In 1979 people were buying the Apple II Plus with eight slots and paying $1200–$1600 for the CPU alone. A 48K system consisting of CPU, one 5¼-inch drive and controller card, a parallel printer card, and a green monitor cost about $2100 via mail order. Add another $500 for 80 columns, lowercase character display, and a 16K RAM card. That's $2600 plus sales tax. Need a printer? An Epson MX-80 with graphics cost nearly $600. For $3200, then, you had a 64K, one-drive, black-and-white system with a printer.

Today I can buy a IIc Plus, with the same elements as the $2600 system of ten years ago, plus a monitor, for $634. Or I can buy a 1-megabyte IIGS for $1289—less than half the price of a 1979 II Plus system. That's like getting a Thunderbird for half the cost of an Escort.

Jack G. Avery
6120 E. Murdock
Wichita, KS 67208

UPDATES

Benefactors of Moscow's International Computer Club, as described in November's What's New section ("Red Apples," p. 16), can send the $10,000 membership fee to the following address (in upside-down Soviet style):
USSR
101813 Moscow, Center
Proyexd Serova, 4
International Computer Club
Address your comments to Vladimir Federov. The telephone number is 921-09-02; fax is (095) 921-09-02, from 1500 to 0500 Greenwich mean time (10 a.m. to midnight Eastern standard time).

The programs Spectragraphix 256 and Color It!, mentioned in January's Speaking of Graphics column (p. 97), are now available from Bachir Kassir, 14922M Ramona Boulevard, Baldwin Park, CA 91706, (800) 346-0811.

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

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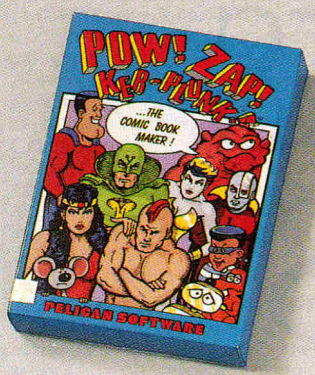

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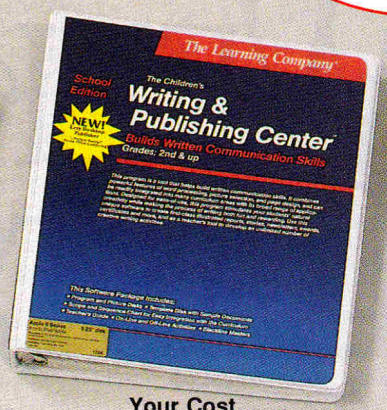

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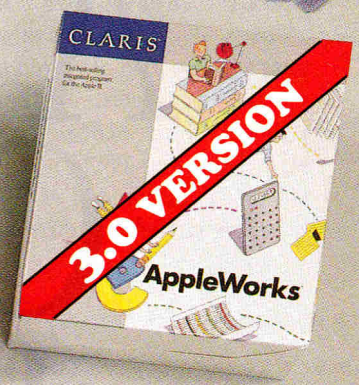

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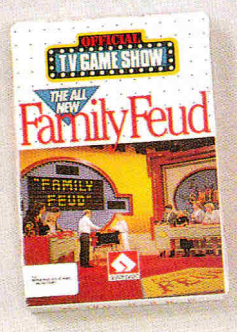

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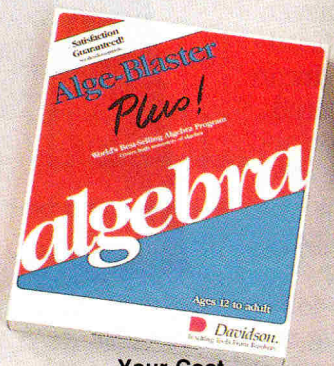

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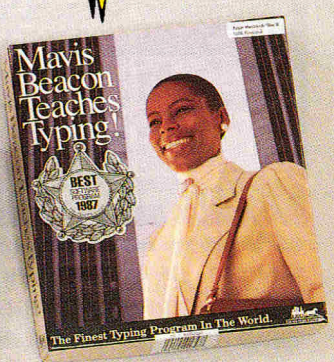

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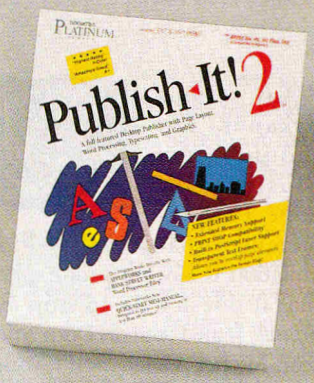

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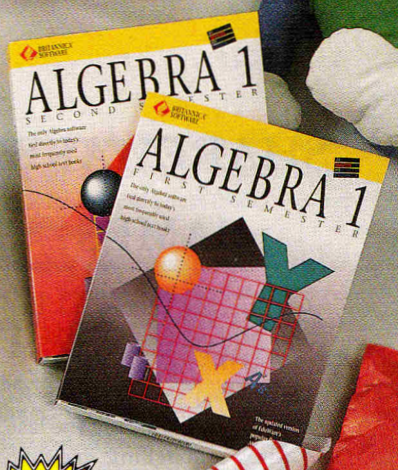

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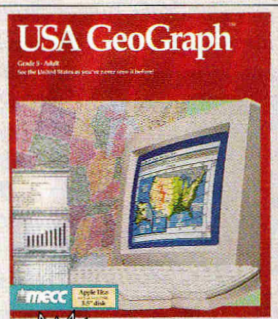

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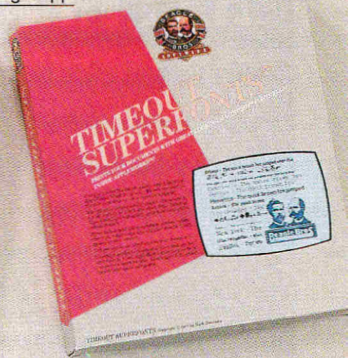

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WHAT'S NEW

edited by Paul Statt

SHAREWARE GAMES

GAMES

It costs big money to develop, package, and market a game for the Apple IIGS.

Maybe that's why some programmers are skipping the last two steps and selling exciting new games such as **Bouncing Bluster**, **Senseless Violence**, and **Orbizone** as *shareware* and selling them cheap.

What's shareware? It's software you can try before you buy. But the best part is that you can copy any shareware program as often as you like and share it. As the authors of Bouncing Bluster say, "We do not consider copying as a plague but as a blessing—as appreciated as an advertisement."

You may find Bouncing Bluster, Orbizone, or Senseless Violence on a bulletin-board system, or someone may bring a copy to your next user-group meeting. If you like a shareware game, buy it—that is, pay for it, because these struggling electronic artists need your support. (And after extensive testing, we're sure these games are free of viruses that might harm an AppleTalk network or a hard-disk drive.)

Bouncing Bluster ($15) comes from France. It looks a lot like Arkanoid, which already looked a lot like Breakout. The idea is the same: bouncing a ball against a brick wall and knocking it down. But Bouncing Bluster adds a third dimension—your ball can fly *over* walls—and many new types of "barrels."

Any serious Arkanoid fan should try Bluster. We hope Taito remembers that imitation is sincere praise, and that it doesn't try to stop *les enfants*, Jean-Francois Doue and Jean-Michel Vallat. Send your check for $15 (100 French francs) to Fantasia, 25 Rue Bossuet, 77150 Lesigny, France.

Senseless Violence ($5) is appropriately titled. While we waited for it to load, reading warnings that "prudes may be offended," we said, "It'll be okay as long as no little babies die."

Sad to say, that's exactly what happens in Senseless Violence. Imagine Frogger with infants, not tadpoles. It's not recommended.

But its authors disclaim, "If for some strange reason you don't like this game, just ask yourself one question: How much did you pay for it, eh?"

Orbizone ($5), on the other hand, despite a maddening and senseless musical score, is fun. Orbizone is to Space Invaders what Arkanoid is to Breakout: better graphics, better sound, and faster play, but the same point. You nuke any number of aliens, but no blood spills.

Orbizone and Senseless Violence are the creations of Brian Greenstone and Dave Triplett, who can be proud of their commercial success, Xenocide, from Micro Revelations. They're partners in Pangea Software, 10918 Kirwick, Houston, TX 77024, which is where you can send your checks for $5. ***—P.S.***

LOOKING AHEAD

Don't give up on the Apple II—despite Apple Computer's apparent willingness to let the II series slip into oblivion, the company isn't ready to pull the plug on our favorite machine yet.

In late November Apple representatives met with industry leaders to discuss the future of the II line—and yes, the company does see a future for it. Apple says it will meet regularly with members of the Apple II Developers Association to discuss ways to keep the II alive and well. We'll keep you posted as things progress. ***—D.M.***

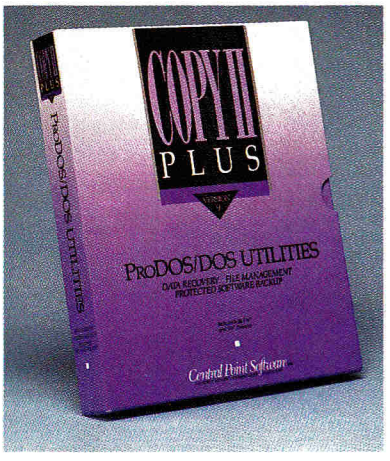
NEW COPY II PLUS

SOFTWARE

A quarter of a million copies of Copy II Plus have been sold. Given the obvious ease of stealing a program devoted to copying disks, that's a sales record to be proud of.

But Mike Brown and Central Point Software are hardly resting on their laurels. **Copy II Plus Version 9** offers a new, mouse-driven interface and additional utility programs that make it an all-purpose program selector, as well as a copy program. Version 9 also includes more than 400 new parameters that allow it to copy even protected software (for backups and archives only).

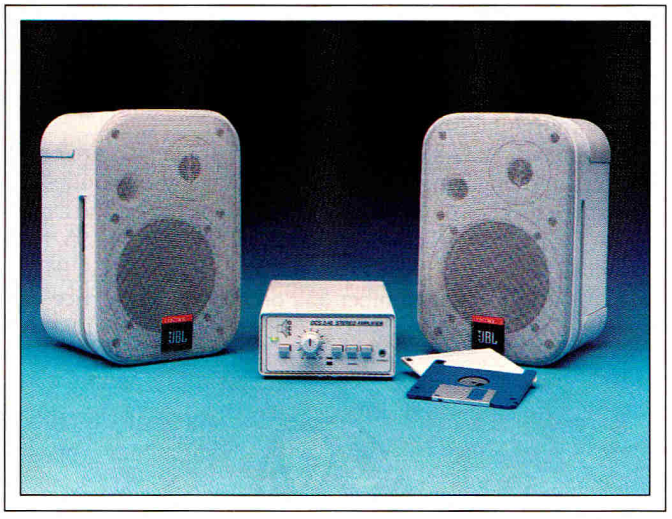
Version 9 is compatible with all Apple IIs and Laser computers with 80-column display, 128K, and at least one disk drive. It runs under ProDOS, but copies DOS 3.3 files, as well.



The price is $39.95, but owners of Copy II Plus Version 8 can upgrade to Version 9 for $18 for either 3½- or 5¼-inch disk, or $32 for both disks.

Call or write Central Point Software, 15220 Northwest Greenbrier Parkway #200, Beaverton, OR 97006, (503) 690-8090, or circle number 350 on the Reader Service card for more information. ***—P.S.***

SPEAKING UP



It's easy to plug a stereo speaker into your Apple IIGS, but controlling the volume is a problem—you have to use the Control Panel, and guess from listening to a beep how loud the music's going to play.

Orange County Speaker's *OCS 2-40 Stereo Amplifier* ($179) puts you back in control with the volume-level switch Apple forgot. It comes in stylish Apple platinum to coordinate with your IIGS or IIc Plus and also features an "equalizer" button to enhance bass and treble when listening to computer tunes. With 20 watts per channel of stereo sound (you must have a stereo card in your GS), the music will be loud. The OCS 2-40 can play stereo or monaural sound on personal stereo headphones or speakers.

You can listen to your own or pick up a pair of Orange County's *JBL Control 1* speakers for $254. They're high-performance personal loudspeakers, using a 5¼-inch woofer and a ¾-inch high-frequency tweeter. The speakers are magnetically shielded, which means you can place them next to your color monitor without seeing a free light show.

For information about the speakers and amplifier, call or write Orange County Speaker, 13686 Newhope Street, Garden Grove, CA 92643, (714) 530-3860, or circle number 351 on the Reader Service card. —*P.S.*

Desktop Newsletters

Last year in the United States, businesses, schools, clubs, and other groups produced more than half a million newsletters. "Reasonably priced desktop publishing will push these numbers even higher," according to Roger C. Parker, author of *Newsletters from the Desktop: Creating Effective Newsletters with your Personal Computer*. "The newcomer—whether to newsletters or computing," he adds, "will find help and inspiration in this book."

You can use *Newsletters from the Desktop* with any page-layout program, including (but not limited to) Medley, Springboard Publisher, Publish It!, and Graphic-Writer. Tips and techniques lead the first-time publisher gently into the mechanics of creating a newsletter and guide the publishing pro into the mechanics of computing.

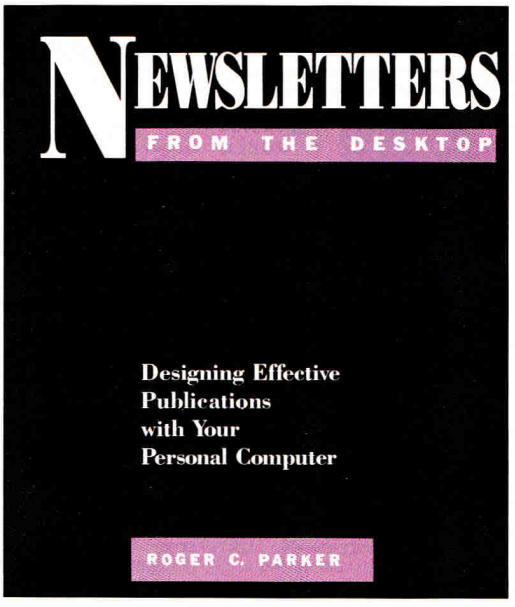
In 240 pages, 12 chapters, and more than 200 illustrations, *Newsletters from the Desktop* teaches the craft of publishing a newsletter with electronic tools—grid, nameplate, typeface, type size, layout, reader cues, and graphics—and how to put them together into an attractive, persuasive newsletter.

Desktop publishing has "freed us from the frustrations of conventional typesetting and pasteup," says Parker, who also wrote *Looking Good in Print* for Ventana Press.

Now *Newsletters from the Desktop* can help free us from some of the frustrations of *electronic* publishing.

Newsletters from the Desktop is available at bookstores in paperback for $23.95, or call Ventana Press, P.O. Box 2468, Chapel Hill, NC 27515, (919) 942-0220. Circle number 353 on the Reader Service card for more information.

—*P.S.*



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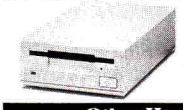

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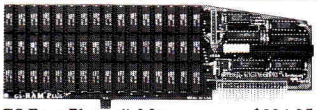
Applied Engineering



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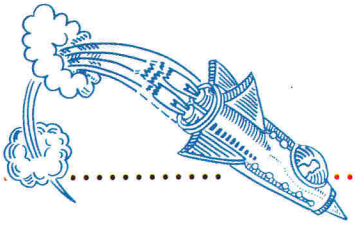
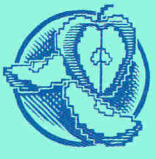


STARS AND PLANETS

Outer space fascinates kids of all ages—even a child of 3 will enjoy building and flying rocket ships, collecting moon rocks, and watching the stars while playing Advanced Ideas' **Stars & Planets**.

Stars & Planets is six learning games your child will have fun playing. The skills are simple: counting, matching, pattern recognition, letter recognition, and sequencing, among others. Advanced Ideas' philosophy is that learning takes place best when the child explores and discovers for himself or herself. Learning under this Montessori-style principle, the child need memorize no special facts or other information. Instead, he or she learns a more important lesson: that learning is fun.

What makes Stars & Planets fun on the Apple IIGS are bright graphics and engaging sounds. The package also includes colorful space stickers, outer-space coloring-book pages, and a reading list for parents, teachers, and kids, all for only $44.95, from Advanced Ideas, 2902 San Pablo Avenue, Berkeley, CA 94702, (415) 526-9100. Circle number 352 on the Reader Service card for more information. ***—P.S.***



APPLE BITS

■Frankly, most of the Software Publishers Association's news in the third quarter of 1989 was pretty bad—total Apple II software sales down almost 15 percent and recreational software sales down 28 percent. But in dollar volume, sales of **Apple II integrated software were up 51 percent**. In fact, $8 million worth of Apple II integrated software was sold, compared to only $4 million worth of Macintosh integrated software. Thanks, Claris.

■The SPA numbers tell a business story: The big money in computer software is in spreadsheets and databases, not games. But SPA thinks there could be more computers in homes and has launched a "multifaceted campaign" called **The Other Side of Computing**. It consists of "a free consumer brochure and nationwide print ads, which describe the numerous nonbusiness applications for personal computers such as recreation, home education, creativity, and home productivity." Don't they read *inCider*?

■General **Alexander Haig**, former Secretary of State under President Reagan, former commander of NATO forces and White House Chief of Staff under President Nixon, and former President of United Technologies, is now on the board of directors of Quantum Computer Services, the company that runs **America Online**. Haig cut his high-tech teeth on the board of Commodore Computers, which has a cozy relationship with Quantum.

Circle 85 on Reader Service Card.

DOUBLE DOUBLE DRIVE

Is your Disk II on its last legs? Need an extra 5¼-inch disk drive for your Apple IIe, IIc, or IIGS? Now you can buy two drives for the price of one—the **MP6 Extended-Capacity Disk Drive** from Micro-Peripherals Engineering.

The MP6 plugs directly into a Disk II interface, external-drive daisychain, or SmartPort connector and operates just like Apple's 5¼-inch drive. You can initialize, read, and write disks in all Apple II formats, including DOS 3.3, ProDOS, Pascal, and CP/M. But the real magic of the MP6 is that it can access either side, or both sides, of an off-the-rack floppy disk, without "flipping." You simply flip a switch on the front of the drive. It effectively doubles data storage. And unlike "flippy" disks, your extended-capacity 5¼-inch disks require no notching.

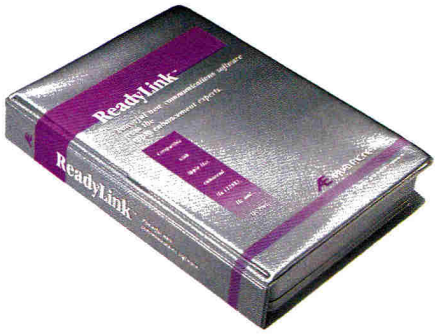
Did we say "doubles"? The installation software included in the package can actually increase a ProDOS disk's capacity by as much as 230 percent, from 140K to 160K or 230K if you use both sides. Your MP6 should last longer than a standard drive, too: You avoid the wear on the drive heads caused by flipping. (Running a flipped disk is like brushing a lint remover over a jacket backwards.)

The MP6 packs all this ability into a half-height case you'll barely notice: It's nearly noiseless in operation, especially if you're used to the din of a Disk II during track-zero recalibration. Crystal-controlled speed and head interlock should also keep the MP6 running long after its one-year warranty has expired. At the very reasonable price of $154, it's from Micro-Peripherals Engineering, 1720 Lochmoor Blvd., Jackson, MI 49201, (517) 762-1262, or circle number 354 on the Reader Service card. ***—W.K.***

UPDATES

•New documentation: Trade paperback-style *technical reference manuals* for the Apple II series are likely on their way. Cost, long production times, and questionable durability are widespread concerns for the hardback series Apple Computer now publishes in conjunction with Addison-Wesley (Reading, MA). Responding to pressure from programmers on the Internet on-line network, representatives of Apple II Developer Technical Support agreed recently to recommend that the hardbacks be complemented by trade-paperback offerings such as those available in the Macintosh world.

•Abracadata's *Design Your Own Home* series of programs have been upgraded to work with GS/OS System Disk 5.0. The software works 300 percent faster, and now includes a free Paint Your Own Home module.



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EDUCATION UPDATES

To celebrate the Year of the Young Reader (1990) Tom Snyder Productions (Cambridge, MA) has added 16-color graphics and smooth animation to the **Reading Magic Library**. The Apple IIGS versions of **Jack and the Beanstalk** and **Flodd, the Bad Guy** have "the look of Saturday-morning cartoons, but the feel of your favorite bedtime stories," according to author and dad Tom Snyder. Call (617) 876-4433 and he'll tell you the rest of the story.

Davidson & Associates (Torrance, CA) has added something extra to its popular Alge-Blaster and Spell It software, creating **Alge-Blaster Plus** and **Spell It Plus**. Alge-Blaster Plus ($49.95) covers first- and second-semester algebra in simple, step-by-step tutorial format. It contains more than 500 algebraic equations and an infinite number of possibilities for creating problems, as well as an entertaining outer-space game. Spell It Plus ($49.95) teaches spelling through the humorous antics of an athletic frog, who knows more than 1000 commonly misspelled words. Teachers can add their own words. Both Alge-Blaster Plus and Spell It Plus are available in network and site-license versions. Call (213) 534-4070 for details.

Logo Computer Systems (Montreal, Quebec) has introduced **LogoWriter Secondary** for the junior-high and high-school market. LogoWriter smoothly combines word processing and programming in the popular Logo language; LogoWriter Secondary places greater emphasis on programming. It's designed for faster learners and students who have been using LogoWriter for a couple of years. Call LCSI at (800) 321-LOGO or (514) 331-7090.

Fighting the "inventive spelling" trend, Optimum Resource (Norfolk, CT), publishers of Weekly Reader and Stickybear Software, has released **Spelling Rules**. More than mere drill, Spelling Rules uses repetition and practice to teach youngsters 21 rules of spelling, such as "i before e," formation of plurals, compound words, and more. This novel old-fashioned approach works equally well at home, in adult-literacy classes, and English as a second language classes. Call (800) 327-1473 or (203) 542-5553.

MECC (Saint Paul, MN) has followed up the success of World GeoGraph for the Apple IIGS with **USA GeoGraph**, bringing the living map home. USA GeoGraph combines maps with databases of geographical information; students can "zoom in" or "zoom out" on maps, or read statistics in tables or charts. Teachers can create their own lessons. Call (612) 481-3500.

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

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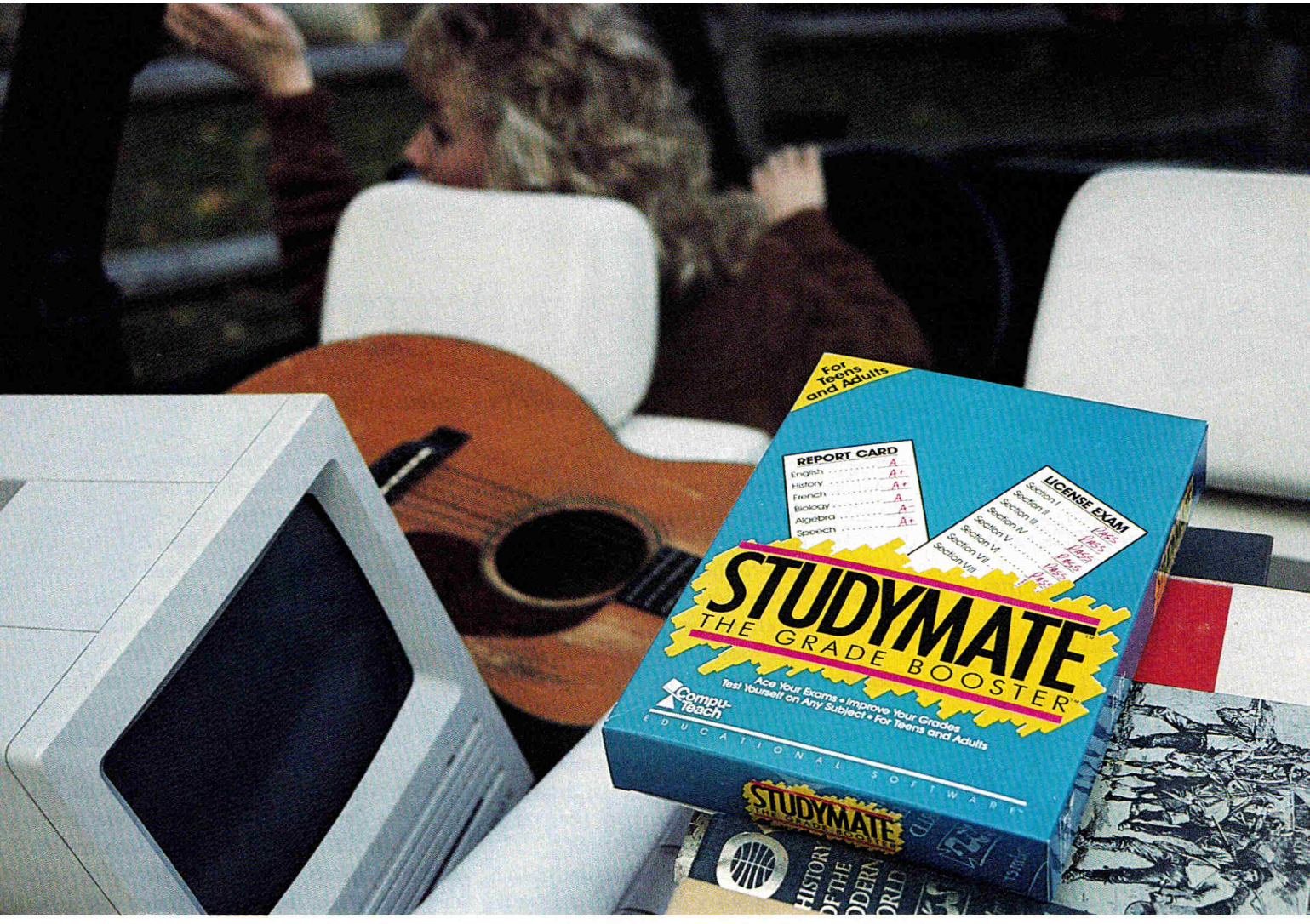

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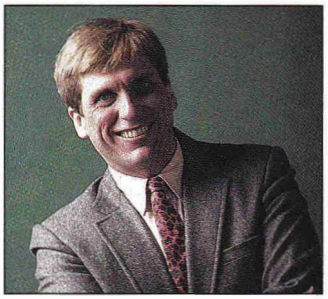


STATTUS REPORT

SERIOUS BUSINESS

By PAUL STATT * SENIOR EDITOR

Is work better than play? Better than learning? I say the best thing about the Apple II is that it's good for more than business.

THE APPLE II IS A SERIOUS BUSINESS computer, say letters to the editor of *inCider*, some software developers, and many user-group presidents. Let's assume they're right: The Apple II is a serious business computer. Is that a good thing? Is work better than play? Better than learning? If work's so great, why do they have to pay me to do it? Business is the worst fate that can befall a computer, short of a power failure.

Imagine you're an Apple IIGS. It's Christmas Eve in the computer store. Where do you hope to be booted the day after tomorrow? In a cramped office, running an accounting program every day for all the rest of your days, or in the sloppy bedroom of some lucky 8-year-old, running Arkanoid?

A serious job might earn you respect, but go with the kid. There's always a chance that an 8-year-old will grow up—play games, maybe learn to program, draw some fractals, experiment with artificial intelligence and give you a crack at thinking, attach you to a robot, write a bodice ripper of a novel, hook you up to a MIDI keyboard and jam . . . Who knows what you might get a chance to try?

Business, on the other hand, looks like the old 9-to-5 grind to me. Managers can't pay *people* enough money to do the work they expect computers to do. Adding long columns of figures isn't my idea of a good time—or even fulfilling work.

Business bores me. Unlike many of my peers who got their first real jobs last decade, I never learned to think of business as sexy, exciting, or even all that much fun. That's why I'm a writer, not a software developer or an Apple evangelist, and that's why I write for *inCider*, where computers are fun, and not for *AddingMachineWorld* or *TickerTapeWorld*. My Apple IIGS never bores me because I can always do something new with it.

Boredom isn't all that's bad about business. The "business class" seats on airplanes are right where the old "first class" seats used to be—and the same highly padded expense accounts are sitting there. "Business" means "expensive." A *business* computer is better—to the person selling it—than a *personal* computer because businesses have more money to spend than persons do.

That's why *inCider* sure wishes the Apple II were a serious business computer. You see, serious business machines are expensive. Businesses that can afford to buy serious computers spend more money than you or I could. Software developers and hardware builders can make more money selling serious business products to corporations than to you or me. The more money they make, the more they spend on ads in computer magazines, and the more I get to write. Look at *MacWorld*; think about the cost of a Macintosh.

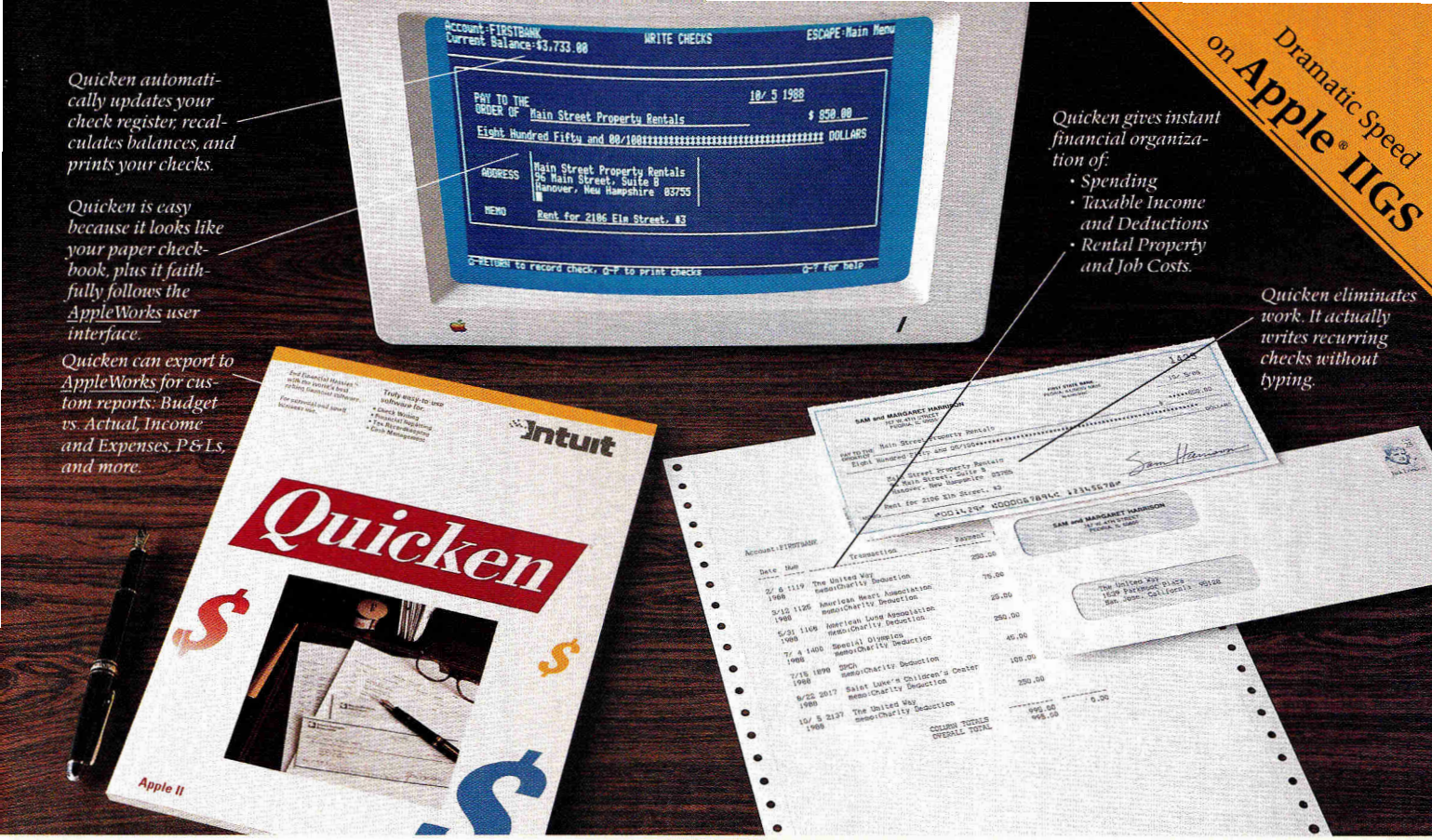
But why use computers in business at all? *The Wall Street Journal* recently investigated why American hardware manufacturers have such trouble selling computers in Japan. The *Journal* stressed the difficulties of the Kanjii alphabet and trade protectionism. It let slip the fact that few Japanese managers use spreadsheets for planning.

A spreadsheet is a great business tool, but it is *not* a replacement for understanding. Today's business students pore over spreadsheets, and probably believe the spreadsheet *is* the business. What effect will this final reduction of every company to numbers have on business in the '90s?

"The chief business of the American people," said Calvin Coolidge in 1925, "is business." It still is in 1990. But too many of the American people in 1925 were busy selling each other penny stock at top dollar. The business ended in 1929.

Brit Hume, computer columnist and Washington pundit, thinks kids who use computers in school are really studying business. That's why he thinks Apple IIs are bad for education and MS-DOS clones are good. (See "Journalist, Teach Thyself," *inCider*'s View, January 1990, for our response to Hume's recent column on computers in the classroom.) I say the best thing about the Apple II is that it's good for more than business.

It's sad to see Macs in the graveyard (I mean, the office) at the end of the day, with all the other serious business machines—postage meters, electric pencil sharpeners, dictaphones. No Apple II deserves to be a one-trick pony, even if that trick is work.□



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VIDEO MADNESS

If the image is too bright and seems to "explode" on the edges of the screen, try attenuating your IIc's video output.

By WILLIAM P. KENNEDY, Ph.D.

IIc VIDEOTAPES

COULD YOU EXPLAIN WHAT THE RF modulator port on my IIc does? I've tried to record my Print Shop graphics on videotape with limited success. The recorded image is okay toward the center, but blurs around the edges. I wonder whether using some connection between the IIc's RF modulator port and my VCR instead of connecting the IIc's "monitor out" to the VCR's "video in" will help.

Scott Gilpin
APO NY

What you refer to as the IIc's RF (radio frequency) modulator port, *Scott, is also called the* video-expansion connector *(VEC). The latter moniker is technically more accurate, because although the port delivers a variety of video, audio, synchronization, and power signals, RF isn't one of them. Rather, Apple included a small module with the original IIc (now you must purchase one through another supplier, such as Radio Shack) that plugs into the VEC and transforms the IIc's NTSC-compatible (National Television Standards Commission) video output into a broadcast-type television signal—RF-modulated video.*

While the IIc's video "out" is connected to a monitor's video "in," or, in your case, a VCR, RF-modulated video is fed into the antenna terminals of a standard television receiver or VCR, which then demodulates the signal at some preset RF channel. The process of modulating/demodulating often degrades the quality of the the source video. Generally, you'd use RF-modulated video only when the receiver doesn't have a port connected directly to its video circuitry.

In your case, however, using RF-modulated video connected to the VCR's antenna input might well improve the quality, because the direct video output appears to be "overdriving" the video-input circuitry on your VCR; the image is too bright and seems to "explode" on the edges of the screen, right? Try an RF modulator; the Radio Shack unit retails for about $30.

Alternatively, you could try attenuating your IIc's video output to apply a less intense signal to your VCR's input. One method is to attach a 500-kilohm variable potentiometer, as shown in the accompanying ***Figure****. Adjusting the video level will sometimes alleviate the image's haziness and warping. Radio Shack also sells an "audio/video processor" for about $25. It connects the video and audio from your IIc to the video- and audio-in of your VCR and contains special amplifiers for audio and video control.*

Finally, if all else fails, you might try "framing" your images with a thin band of black or another dark color on the periphery of your graphics screens. Video professionals have been using that technique since the advent of TV; although it reduces picture size, it helps reduce picture "overdrive" and the resulting haziness.

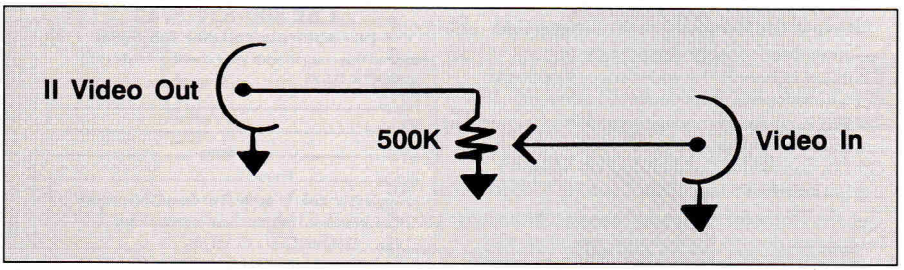

Figure. Variable video-signal attenuator.

PC TRANSPORTER COLOR

I HAVE A IIE WITH A COLOR MONITOR. I recently purchased an Applied Engineering PC Transporter, but all I get is black-and-white video. What do I need to get PC-type color video?

William Reiche
Philadelphia, PA

Unlike standard IBM PCs and PC compatibles, which require a separate interface card, the PC Transporter from Applied Engineering has an IBM-standard color graphics adapter *(CGA) video interface on board. The color video is currently RGB only, however, not NTSC, so on an NTSC compatible monitor, color or not, you see PC color information displayed in up to 16 levels of grey.*

To see CGA-compatible video in color on your IIe, you'll need to purchase an RGB monitor like that typically used with IBM PCs or PC compatibles. Such monitors use a digital video format, as opposed ►

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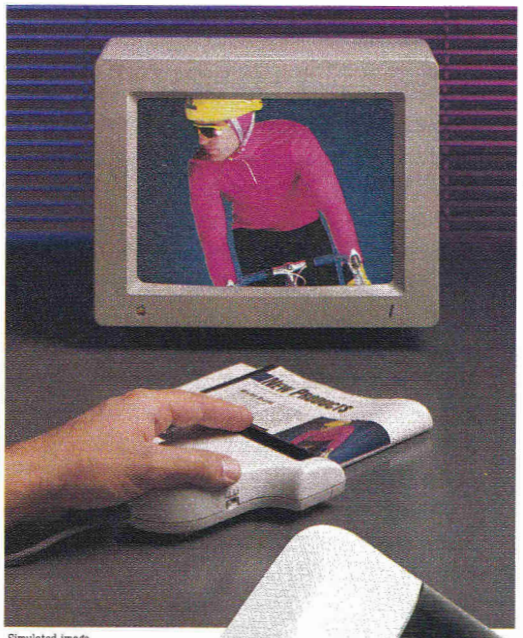

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to the analog format of Apple's RGB monitor for the GS. Simply attach the accessory connecting cable (available from Applied Engineering) from the digital monitor to the RGB-digital connector (J6) on the PC Transporter card and enjoy the color.

GS owners can view PC Transporter-generated CGA-compatible video directly on their Apple analog-RBG monitors. All you need is the special "ColorSwitch" adapter available from Applied Engineering as an accessory to the PC Transporter. Simply connect the ColorSwitch from the PC Transporter (also at J6) to the RGB-video connector on the back of your GS. Then plug the GS monitor into the ColorSwitch and watch all your favorite programs, Apple and PC, on the same screen, in color.

SCSI Hard-Disk Drives

WHY DO SOME HARD-DISK manufacturers sell drives for both the Apple II and the Macintosh, and other manufacturers sell only for the Mac? I'm especially interested in a removable hard disk. Can't SCSI-compatible hard drives for the Mac also work with the Apple II?

Phillip Tulim
Chevak, AK

Stumbled onto a dirty little secret, have we, Phillip? You're absolutely on the right track! Just about any external hard-disk drive, including the removable variety, that connects to the Apple-standard SCSI (small-computer-systems interface) port on the Mac can operate from the Apple II SCSI card (revision C). I haven't a clue why so many of those drive manufacturers are slugging it out in the incredibly competitive Mac market while ignoring the Apple II market, particularly owners of GSes, who are purchasing hard-disk drives in droves. And Mac drives typically cost less because of the competition. That's marketing for you.

The only hassle you might encounter is that many Mac-specific drives are preformatted for the Mac and, hence, won't boot an Apple II. Simply reformat the drive with any Apple II System Disk and copy ProDOS and your boot application to make it bootable.

GS owners using GS/OS need to create a bootable system disk first that contains the SCSI hard-disk device driver; use the Installer program on your GS/OS System Tools disk. Also make sure to reset the Control Panel assignment for the slot where you've installed the SCSI card to "your card"; after booting that new system disk, use the Advanced Disk Utility on the System Tools disk to format and partition the SCSI hard drive. Finally, use the Installer program to make the hard disk bootable by copying the GS/OS system files, the SCSI hard-disk driver, and any other special system files (such as those for printers) to the first partition of your hard-disk drive.

Quickies

Use PRINT CHR$(21) to go from 80- to 40-column text mode on the Apple IIc without getting stuck in "enhanced" video mode.

—Bob Strong
Charlottesville, VA

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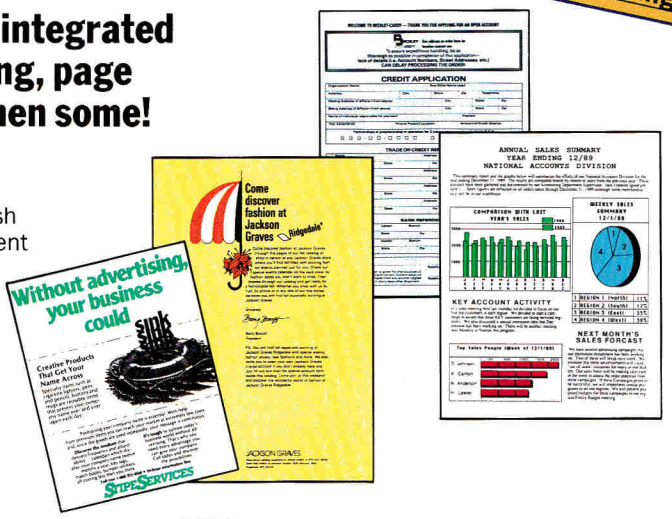

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REVIEWS

INCIDER'S RATINGS

0 Unacceptable 5 Adequate 10 Exceptional

GEOCALC

BERKELEY SOFTWORKS,
2150 Shattuck Avenue, Berkeley, CA 94704,
(415) 644-0883

Spreadsheet and charting program;
128K Apple IIe, IIc, IIc Plus, IIGS; $69.95

8
0 5 10

With 28,672 cells (256 rows by 112 columns), geoCalc is a sizable spreadsheet. It's no small programming feat for a spreadsheet of this magnitude to operate in a graphics environment on an Apple II. It's especially commendable when you consider that most of the features found in upscale spreadsheets are also at your service in geoCalc.

GeoCalc is another GEOS (Graphic Environment Operating System) product making inroads into the arena of productivity software for the II. It includes a separate chart generator (geoChart) for the GEOS environment, and is packaged much like geoFile (reviewed in February 1990, p. 30)—four disks, a copy of GEOS, and an interrupt-manager card.

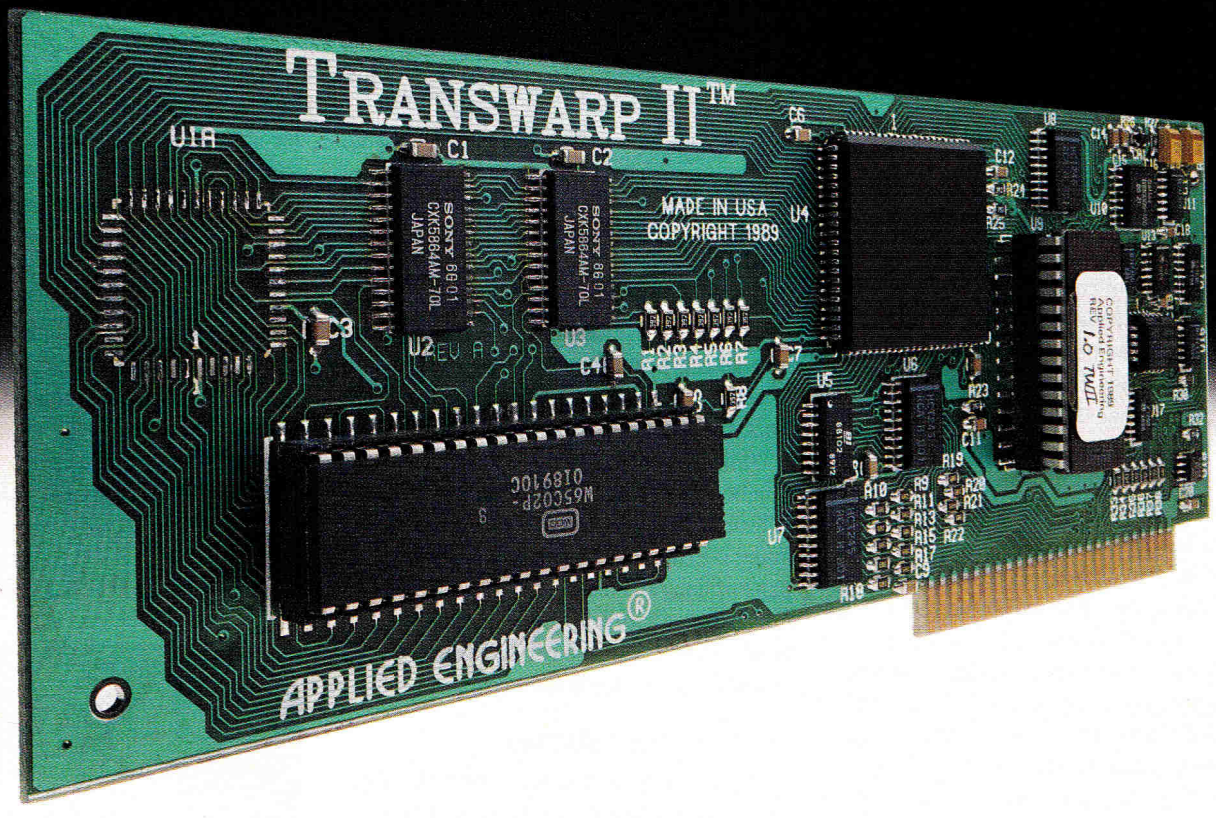
Spreadsheets are inherently more complex than databases or word processors, yet a tutorial of essentially the same design as geoFile's makes geoCalc easy to learn. After an introduction to spreadsheet terminology, the tutorial leads you through creating backup copies of the program disks, as well as the geoChart and geoCalc work disks.

Wherever your level of spreadsheet expertise falls—novice number cruncher to Lotus 1-2-3 power user—you can put geoCalc to work immediately. Regardless of your experience, however, don't skip the tutorial, or you may miss many of geoCalc's exclusive features.

Besides providing general information on the use and functions of a spreadsheet, the geoCalc tutorial gives you clear, specific instructions. There's nothing to keep even pure beginners from learning how to select all cells in an entire column or row, format numeric text, and create a worksheet.

In most respects, geoCalc behaves like a standard spreadsheet—it's just a bit slower. The loss of speed results from the updating and redrawing of geoCalc's bit-mapped graphics screens. A serious spreadsheet user may realize it's not too difficult to create a spreadsheet that will make geoCalc stop and think awhile. Place a sizable number of data on the worksheet with geoCalc's cut and paste options and you'll be waiting for the program to catch up.

The advantages of operating in a point-and-click graphics environment outweigh the sacrifice in speed, though. Unlike a conventional spreadsheet, geoCalc operation means that your hands need not touch the keyboard (if you're not using any keyboard shortcuts), except when typing data into cells. The main menu is located at the top of the screen; moving the pointer to a particular selection and pressing the mouse button lets you get at most of geoCalc's functions—from formatting a cell's contents to selecting numeric operators. You can also easily adjust the width of each ►



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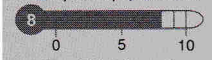
AT A GLANCE

geoFile (February 1990, p. 30, by Tim Walsh), Berkeley Softworks, 2150 Shattuck Avenue, Berkeley, CA 94704, (415) 644-0883; 128K Apple IIe, IIc, IIc Plus, IIGS; $69.95



GeoFile is slower than most mainstream databases because of its memory-taxing graphics environment, but it performs admirably and offers most standard options. Features include up to 115 entries per record, file size limited only by disk capacity, and compatibility with other GEOS applications and AppleWorks.

Like other GEOS programs, geoFile uses screen icons: You use the mouse to move a screen pointer to a selection of icons, and click once or twice to activate or stop a particular function.

The well-designed geoFile tutorial gives you an introduction to database management that is far "kinder and gentler" than most databases you're probably accustomed to.

GeoFile's ease of use is commendable, but its speed is somewhat troublesome. Accuracy and overall convenience of designing fields within each form are impressive.

New Talking Stickybear Shapes & New Talking Stickybear Opposites (February 1990, p. 32, by Jeanne Dietsch), Weekly Reader Software/Optimum Resource, 10 Station Place, Norfolk, CT 06058, (800) 327-1473; 512K Apple IIGS; 3½-inch drive; $39.95 each

The New Talking Stickybear products apply the speech capability of the Apple IIGS to excellent advantage. The sound is exceptionally clear, yet instead of attempting to pronounce everything, Stickybear says aloud only what is absolutely necessary.

Optimum Resource has also upgraded Stickybear's graphics and animation to take advantage of the GS' resolution. Children familiar with the old silent Stickybear will be pleased to see that

Continued

column of cells with quick mouse movements.

The number of scrolling tools for scanning the contents of your spreadsheet is most impressive: arrows at the bottom of the screen and an indicator at the top, plus the pointer and the cursor keys. The scroll indicator is the most powerful, with four arrows that move you to any section of the screen.

To answer the needs of everyone from engineers to bankers, there's a full range of mathematical, statistical, financial, scientific, trigonometric, logical, and user-defined functions. Choosing any of them for placement in a cell is as easy as clicking on the *Choose Function* option on the Formula menu. Other options include cell protection, assignment of names to cells, and a split window for viewing two worksheet segments simultaneously.

While geoCalc's forte may not be powerful number crunching on worksheets larger than 10K or so, the list of tools for developing formulas is exhaustive. For instance, the cut-and-paste option not only duplicates data cells, but can also copy a formula throughout any other range of cells, with the results of the formula displayed in the destination cell.

CHARTING AND PRINTING

After creating and using a geoCalc worksheet, you're launched right into geoChart, an application that creates attractive, well-defined charts of your spreadsheet data. You can generate column, bar, point, line, and area charts; scatter-point and scatter-line graphs; and pie or unibar percentage graphs.

Because you create all these charts with the mouse, no aspect of designing them is particularly difficult. Once again, follow the tutorial and you'll learn how to save a worksheet and use a "Data Mode" grid to isolate the information with which you want to work. At that point, just click on the chart icon to plot your choice.

While geoChart's print options are limited to deciding whether or not to double the horizontal size of the hardcopy chart, the module offers some less obvious advantages. GeoWrite and geoPaint can both load graphs created by geoChart, and geoPublish can also accept them as object scraps. Choose *Copy* from the Edit menu to access these options.

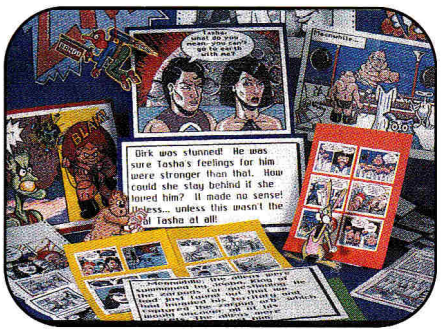
GeoCalc itself offers considerably more options. You can print a range of cells or formulas within cells from any worksheet; you can even rotate the page and include the worksheet's grid in your hardcopies.

Other options include conversion of AppleWorks spreadsheet files, DIF files, and text scraps from other GEOS applications (such as geoFile) to geoCalc format. GeoCalc's flexible design also lets you paste text scraps of spreadsheet data into geoWrite documents.

While geoCalc won't balance the federal budget in a matter of minutes, it works well for more mundane tasks. Including geoChart with the program opens up the business and education markets, where presentation graphics is considered a mandatory part of any good software package. GeoCalc is also one of the few spreadsheets that can be mastered easily by just about anyone. Slow number crunching aside, geoCalc fills an important niche as a dependable, accurate piece of integrated software for the Apple II.

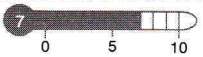
Tim Walsh
***RUN* Technical Manager**

POW! ZAP! KER-PLUNK!



PELICAN SOFTWARE, INC.,
768 Farmington Avenue, Farmington, CT 06032, (203) 674-8221

Comic-book design program; 128K Apple II family; color monitor and printer recommended; mouse optional; speech requires Echo Board or Cricket speech synthesizer on Apple IIe/IIc/IIc Plus; $39.95 retail edition, $49.95 school edition, $19.95 add-on art disks



Pow! Zap! Ker-plunk! (Editors' Choice, February 1990, p. 100) brings comic-book design in all its glorious zaniness to your Apple II. If you're familiar with Monsters & Make-Believe or any of the other products in the Pelican Software/Learning Lab Creative Writing series, Pow! Zap! Ker-plunk! (PZK) will greet you like an old friend. The interface is virtually identical to that used in those earlier programs. Basic menus make PZK easy to use; instructions on screen explain how to position graphics, speech bubbles, and ►

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AT A GLANCE

Continued

their beary friend is as charming and lighthearted as ever, and that his voice and sound effects fit comfortably with our Stickybear expectations.

Like all programs in the Stickybear series, Shapes and Opposites each include a poster, stickers, and a book, as well as excellent suggestions for parents and teachers who want to extend instruction. Although it's designed for children aged 3–6, even younger kids can enjoy and learn from the new talking versions of these Stickybear classics.

Talking Dinosaurs (February 1990, p. 34, by James Trunzo), Orange Cherry Software, Box 390, Westchester Avenue, Pound Ridge, NY 10576, (800) 672-6002, (914) 764-4104; 512K Apple IIGS; $49

A good example of what you get with Talking Dinosaurs is the module called Dinosaur's Names. Select it from the menu and the program "talks" to you, giving you instructions for the activity. Six dinosaurs appear on screen, along with their names. Click on one of the six boxes containing a dinosaur and Talking Dinosaurs speaks the animal's name.

There's nothing inherently wrong with this little activity, but that's all it does. The dinosaurs never change—not position, color, or anything else. Admittedly, some children might enjoy hearing the names spoken over and over again, but for how long?

The problem with the program isn't what it does, it's what it doesn't do: It doesn't offer enough variation to hold a child's interest for any length of time. Talking Dinosaurs is exceptionally well designed within its confining framework. Quality of speech and graphics is impressive. If your child is young, if he or she really likes dinosaurs, and if you don't mind the price of the program, take a look at Talking Dinosaurs. But that's a lot of "if"s. □

text boxes on a comic panel, or write a story for your comic strip.

Creating a comic book is simple. Youngsters begin by selecting a background from one of seven categories, each containing a variety of choices—such as street scenes, a zany spaceship interior, outdoor settings, a principal's office, and a template for a newspaper masthead. After selecting a background, youngsters start building comic panels by adding various components. They can choose graphics from a full range of categories such as heroes, heroines, creatures, villains, funny characters, and special effects. They can also insert speech bubbles and text boxes to spice up the presentation.

After selecting a graphics category, kids press the spacebar to view the clip-art choices within that category. The arrow keys (or the mouse) move the graphic to a desired location. Pressing Return stamps an element on screen. Pressing Delete erases a stamped element.

Cartoonists can have more than one copy of a particular piece of clip art on screen, and can flip elements vertically or horizontally and change the increments by which they move on screen.

Pelican Software should be commended for depicting the "good guys" in a variety of poses, including some in wheelchairs. It's interesting, though, that the authors didn't portray the heroes and heroines as both young and old, of various ethnic groups, wearing glasses, or overweight. The absence of realistic-looking role models from the "good guy" roster wouldn't be so noticeable if Pelican had positioned the product solely for the home market. The company also markets a school edition of Pow! Zap! Ker-plunk!, however, with backup disks and a teaching guide designed for the classroom. The illustrations of "real people" should therefore be more in tune with reality.

Pow! Zap! Ker-plunk! offers a variety of printing options. Youngsters can print stories or comic panels in six different formats—miniature, tall, short, skinny, standard, and poster size. They can print the text of the accompanying stories in one of four font choices (small, medium, fancy, or slant), but they can't mix fonts within a story.

Kids can also place a line border around text pages if they so desire. They can print single-page panels exactly as they appear on screen or in "outline" form, suitable for coloring with crayons, pencils, paints, or markers.

Besides printing single-page comic panels or pages of text, cartoonists can select the *Comic Page* option to configure a two-, three-, or six-panel page, with several graphics illustrations per page, just like a "real" comic book. Youngsters can also print a comic page with a mixture of text and graphics panels, or a multipanel text story. Kids can't print *Comic Page* graphics in outline form, however.

If you use Pow! Zap! Ker-plunk! with an Echo or Cricket speech synthesizer, the program will pronounce the highlighted menu options when you press the spacebar. Budding cartoonists can also hear the computer read their stories or speech-bubble text aloud.

Youngsters can listen to an entire story or a specified word; there's even an option to have the computer spell a particular word. Speech-control options govern voice pitch, volume, word pronunciation, and the time delay between spoken words. While kids can stamp several speech bubbles or text boxes on a graphics panel, only the first four of these elements can actually be spoken.

Overall, Pow! Zap! Ker-plunk! is an entertaining program with powerful educational potential for any language-arts curriculum. Its humorous graphics capabilities make writing fun. Unfortunately, it does have a few annoying quirks.

First, the printout booklet doesn't exactly match the clip-art library on disk. Second, youngsters must format a data disk before creating a comic-book panel or writing a story. If they don't have a data disk on hand, comic-book designers can print the panel or story, but they'll lose all their work in RAM if they exit to the main menu to format a disk.

Third, PZK provides a deletion option to remove unwanted graphics from a panel during design. But if kids press Escape to exit to the Comic Components menu, they won't be able to return to the panel and delete clip art already stamped. Finally, the manual is well written, but has no index, making it difficult for kids to find help quickly for specific program features.

Quirks notwithstanding, Pelican Software's Pow! Zap! Ker-plunk! is a winner. Kids who have difficulty putting their ideas into print will be able to design and write action-packed comic-book adventures. Look out Marvel and DC—with Pow! Zap! Ker-plunk! on the desktop, the competition's going be tough in the superhero business.

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

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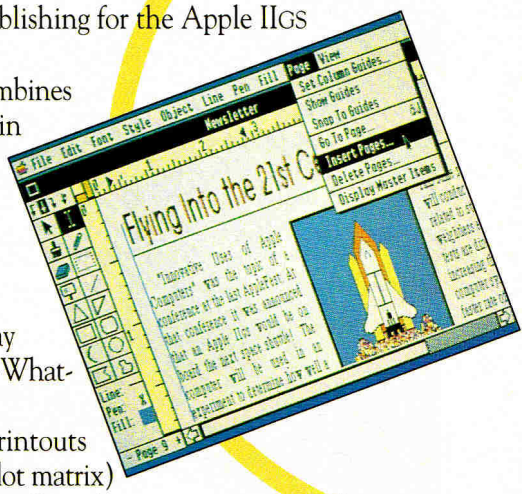

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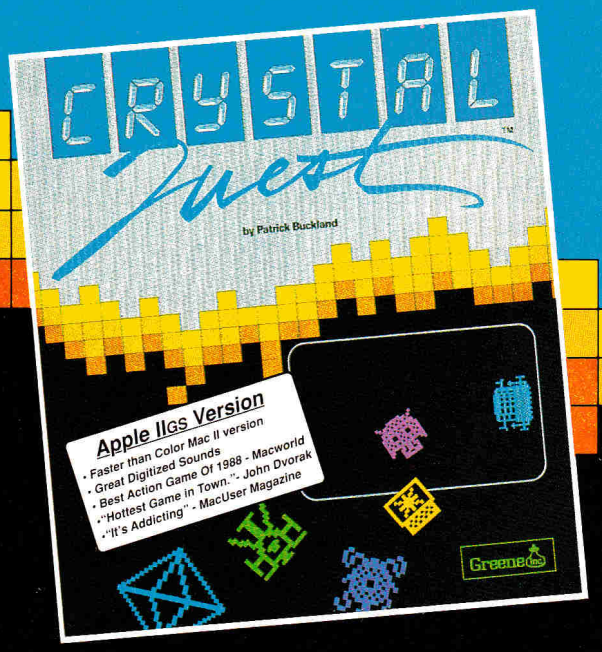

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REVIEWS

ORCA/C

BYTE WORKS, INC.,
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C programming language;
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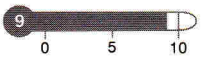
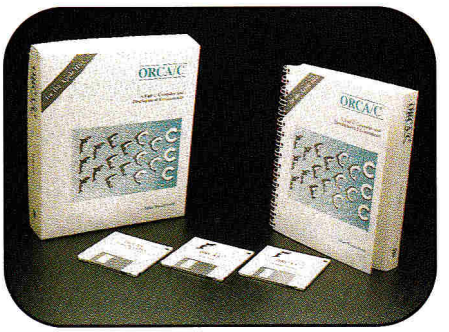


As computer languages go, C has a reputation for being particularly difficult—hard to learn and hard to use. Amateur Apple programmers such as myself typically prefer BASIC, with occasional forays into Assembler and Pascal. The GS world may be missing something good, though. C is used widely in other microcomputer systems and, as Byte Works' new ORCA/C proves, has a well-deserved reputation for combining the flexibility and sophistication of high-level



ORCA/C makes structured language accessible.

structured languages with the speed and flexibility of machine language. Is it a good choice for the GS owner who wants to write his or her own programs? It certainly looks that way.

EASY TO C

I examined ORCA/C from the perspective of a C novice with a background in other popular GS programming languages. To the uninitiated, a C listing of reasonable size may seem incomprehensible, but don't panic: Programming basics are similar across most languages. For instance, assignment statements in C such as `x = x + 7;` look identical in BASIC, with the exception of the semicolon. FOR and WHILE also have their C equivalents. If you know fundamental concepts in another language, you should be able to identify the same concepts in C.

Naturally, you'll have to spend time learning C's unique features, such as code condensation. For instance, you could also write the assignment statement above as `x += 7;`

Circle 81 on Reader Service Card.

(translation: add 7 to x and put the result in x). Procedures that require a number of lines in another language often take far fewer lines in C. Most C manuals, however, warn against excessive terseness; such code can be difficult to understand and error prone.

Two other features of ORCA/C are especially noteworthy. First, C is subroutine oriented—it forces you to write and use numbers of short functions. Input, output, memory management, strings, and math functions are kept in standard libraries you "include" in your programs. ORCA/C has custom libraries for handling GS-specific jobs such as accessing the Toolbox.

Pointers, variables that indicate other variables, are a second striking feature. C requires pointers in many situations, and although they may seem unecessarily complicated to the beginner, they're an important and powerful programming concept.

Overall, the C novice will have to spend some time learning the language. The amount of effort required shouldn't be demanding, however, and the ORCA/C environment makes learning C even easier.

EASY ENVIRONMENTS

ORCA/C requires a GS with a full megabyte of memory, at least one 3½-inch drive, and another drive (preferably another 3½-inch). While this minimum configuration is workable, additional hardware makes program development faster and more flexible. ORCA/C comes on three 3½-inch disks (boot, main program, and sample programs) and the package includes a 369-page manual.

ORCA/C gives you a choice of two different environments for program development—the Macintosh-style desktop and the 80-column text screen. The C beginner should start with the desktop. At its simplest level, you'll use the desktop for entering and editing program code. As a word processor for programming, the desktop serves nicely. It has special features for editing code and the screen updates fast.

The desktop's main advantages become obvious when you're ready to compile and debug your program code: You can watch the line-by-line execution of your code and display the contents of your variables. This function makes it much easier to understand what's happening in your initial C programs. With experience, you may also use the desktop's advanced features—such as profiling time

Continued on p. 92

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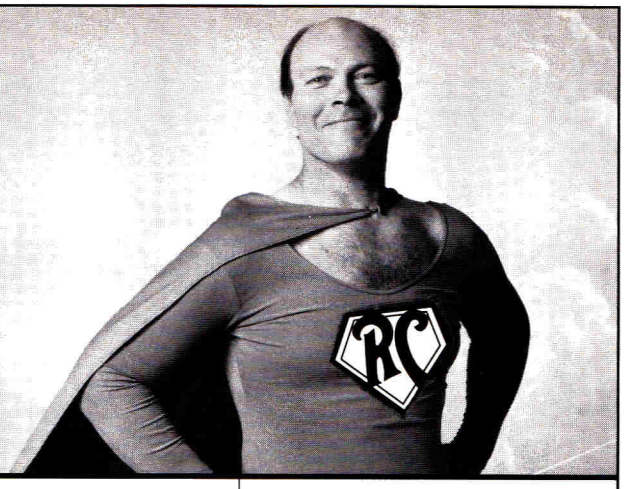

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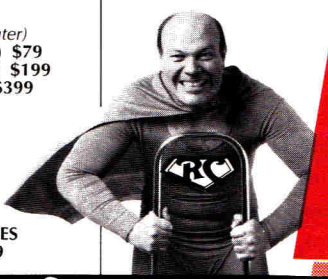

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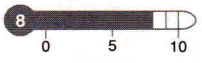
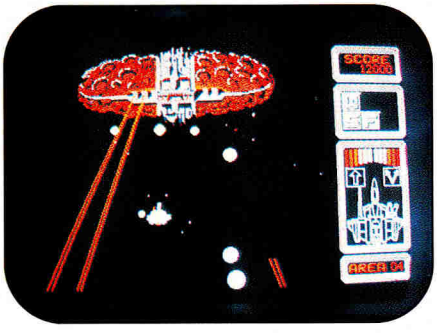


Silpheed is one of those games—one of those "sure I can do better next time" games that keep you playing until your eyes bug out. Developed by the crew who brought you Thexder, Silpheed surrounds you with the same sort of fast-moving soundtrack and captivating graphics.

Throughout the game you pilot a Super Air Fighter SA-08 Silpheed prototype. You'll blast your way through 20 levels of bad guys to get to the final confrontation with the battleship *Gloire*, which the evil outlaw Xacalite has taken over. Along the way you'll annihilate Golans (asteroid blobs that come hurtling down at you) to acquire additional weapons and extra attributes such as "weapon power up," "automatic fire," "destroy" (which eliminates everything currently on the screen), "shield advance," "invincible" (which makes you indestructible for a short while), and "all repair."

Naturally, while you're trying to do all that you've got hordes of enemy ships of all shapes and sizes coming at you, attacking alone or in pairs, threes, or full formation. Some hit fast, others slowly. They're all after the same thing, though—you and your Silpheed.

The action starts quickly and gets more intense with each level you attain. With four general battle areas—in space, above planets, within fortresses, and within an asteroid belt—you'll need to develop a varied strategy. A good way to practice the higher levels is to press Shift-9 to load the last level achieved. That way you won't have to start from the very beginning.

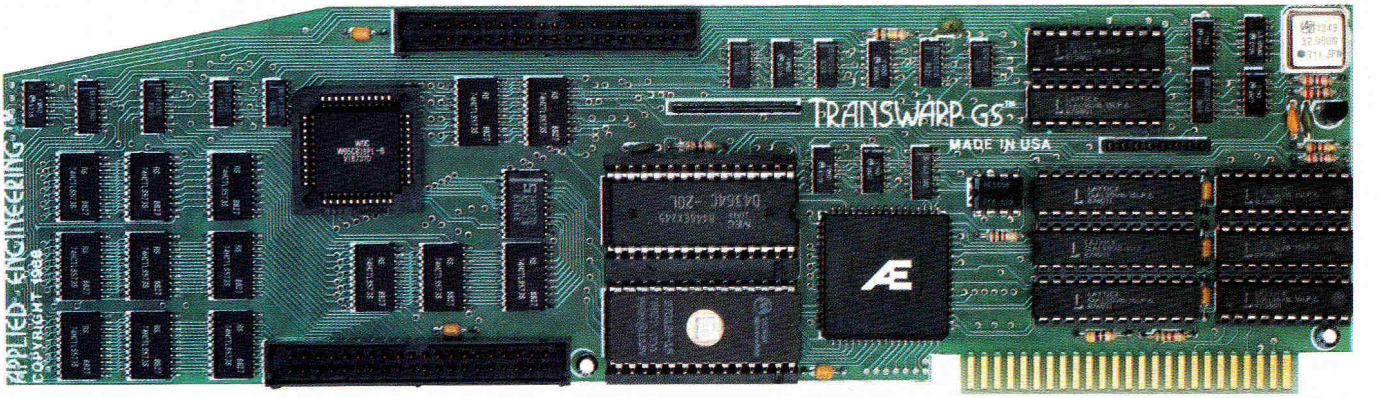


Space-critter shoot-'em-up in Silpheed.

Silpheed's only drawback is the time it takes to load. If you have a hard drive, use it; otherwise, there isn't too much time between games. (And, believe me, at first your games are going to be pretty short.) Silpheed comes on two disks to accommodate the program's music and animation.

Blowing up space critters in an arcade-action game as good as this one can drive you crazy. You'll love it and you'll hate it—it's fascinating and infuriating. You'll blaze away, cursing madly and getting blisters on your fingers until you've taken one too many hits. Silpheed's hooked you, though. You'll swear you're never going to touch it again—but two seconds later you'll be starting a new game all over again.

Lafe Low
***inCider* staff**



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Origin Systems—of Ultima fame—has recently released a sequel to its popular *Quest for Clues* hint book. Like the first volume, *Quest for Clues II* offers an overview, objectives, and general guidelines for each game covered. Clues are presented in jumbled-letter code, so you can selectively decipher the ones you need without finding out too much. It's available from Origin Systems, 136 Harvey Road, Londonderry, NH 03053, (603) 644-3360, for $24.99.

Epyx has produced the *Masters Hint Book*, with tips for Sub Battle Simulator, L.A. Crackdown, Legend of Blacksilver, and Space Station Oblivion. It sells for $7.99. Check with mail-order dealers for availability.

Sierra On-Line (P.O. Box 485, Coarsegold, CA 93614, 209-683-6858) also has a series of hint books, which take you from beginning to end in the company's adventure games. Don't worry about missing all the fun of exploration, though. Sierra's tips are presented in the same sort of scrambled-letter code found in Origin's *Quest for Clues*, so you can zero in on the particular part of the game with which you're having trouble. Sierra's hint books cover the King's Quest, Space Quest, Police Quest, and Leisure Suit Larry series and sell for $7.95 each.

SSI (Strategic Simulations Inc., 1046 North Rengstorff Avenue, Mountain View, CA 94043, 415-964-1353) produces clue manuals for its Advanced Dungeons & Dragons series. Pool of Radiance and Curse of the Azure Bonds are also covered in hint books, which sell for $12.95 each.

So if you're really tearing your hair out over a certain game, take a deep breath, relax, and crack open a book. After all, you play games to have fun, right?□

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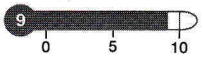

I've always thought of chess as the thinking man's—or thinking woman's—game. Sure, players move their pieces around the board and capture other pieces in an effort to trap the opposing king—but it's hard to think of chess as *violent*. It's far too elegant and sophisticated—isn't it?

Well, along comes Battle Chess. Whether you love chess but have always wanted to spice up an otherwise staid pastime, or you've always avoided chess because it wasn't exciting enough, Battle Chess is the solution.

Bash your opponent in Battle Chess.

At the beginning of a game, you see the board—displayed in spectacular graphics—from a natural perspective, as if you were sitting at a real chessboard. Make your move by selecting a piece, then the square to which you want to move. If you're a chess novice, fear not a *faux pas*, as Battle Chess allows only legal moves. You can manipulate the red or blue pieces (facing toward you or away from you), play on the animated three-dimensional board or the quicker two-dimensional board, and try a variety of difficulty levels.

After you've selected your move, the fun begins. It starts harmlessly enough: You choose a pawn to move forward, and the animated object marches up two squares. (Each piece moves dutifully where you tell it to go, without too much fanfare—except for the rook, which you'll hear about later.) Whenever either side captures a piece, though, you'll see how Battle Chess got its name.

Every piece has a special way of going to war—whether winning or losing. Pawns get bashed on the big toe and knocked over; knights get hit in a spot their armor probably doesn't cover and keel over in agony; bishops throw a holy bolt or disappear in a cosmic hole; rooks (castles) come to life and pound their opponents with a mighty brick fist or get turned into dust; queens vaporize their opponents; and the king simply shoots or stabs anyone standing in his way.

The animated takeovers in Battle Chess are hilarious to watch—especially when your piece comes out on top—and the chess algorithms at the higher levels make for a difficult match. The computer muses a while before taking a turn—but so might a human opponent after you've made a particularly crafty move.

Lafe Low
***inCider* staff**

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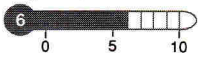
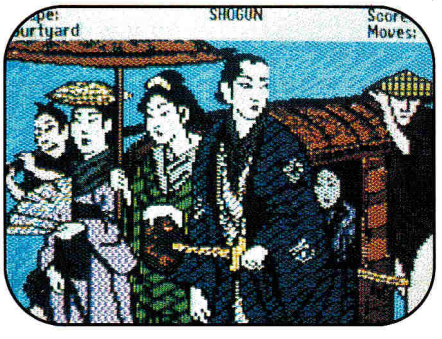


Shogun, the latest in Infocom's new line of graphics-based interactive-fiction games, comes with an impressive pedigree. First it was a best-selling hardcover novel; then it topped the ratings when it made its debut as a network miniseries. It set records in its paperback release and became a popular title when it made its way to videotape. Now, thanks to Infocom and Mediagenic, *you* can play John Blackthorne, the English sea pilot "who must learn to survive in the exotic world of feudal Japan," the setting for Shogun.



Samurai and ancient ritual in Shogun.

Shogun is a collaboration between Dave Lebling, the game's designer, and James Clavell, author of the novel. You'd guess that the ►

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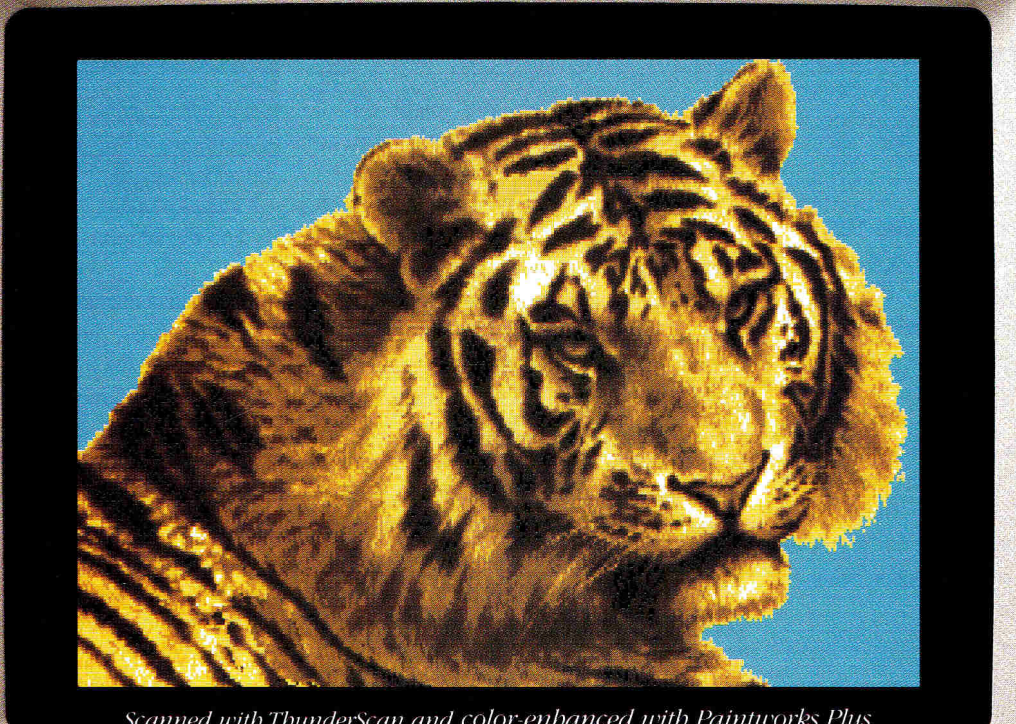

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Short Takes

Prince of Persia (February 1990, p. 36, by Bill Kennedy), Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101, (415) 492-3500; 128K Apple II, 5¼-inch disk drive; $34.95

9
0 5 10

Spectacular swashbuckling animation that starts you off in the depths of the evil Grand Vizier's dungeon and leaves you to battle your way through level after level of guards and insidious booby traps. Do it in an hour and you save the princess and become Prince of Persia.

Omega (February 1990, p. 37, by Joe Abernathy), Origin Systems, 136-B Harvey Road, Londonderry, NH 03053, (800) 999-4939; 64K Apple II; $49.95

9
0 5 10

A futuristic simulation in which your mission is to design a cybernetic tank with artificial intelligence. Choose drive systems, armor, weaponry, and instrumentation, and work your way up through ten clearance levels.

Chessmaster 2100 (February 1990, p. 37, by Paul Statt), Software Toolworks, 19809 Nordhoff Place, Chatsworth, CA 91311, (818) 885-9000 (distributed by Electronic Arts); 64K Apple II; $49.95

8
0 5 10

A lot of chess knowledge and 100 famous games crammed onto one double-sided disk. Although some of the graphics screens are occasionally garbled, you'll learn a lot from Chessmaster and have a good time doing it.

Downhill Challenge (January 1990, p. 44, by Paul Statt), Broderbund Software, 17 Paul Drive, San Rafael, CA 94903, (415) 492-3500; 512K Apple IIGS; joystick and color monitor recommended; $29.95

8
0 5 10

Choose from four events (slalom, giant slalom, downhill, and jumping) for the ride of your life. Animation is smooth and fast and calls for total concentration.

game would follow the story closely, but instead you'll find several differences between this version and the original work. It's important to realize that the game is "based on" *Shogun*; it's not a repetition of the book.

That doesn't mean that if you've read the book or seen the movie you won't have a bit of an edge. You will—Blackthorne's enmeshed in a number of similar situations in the course of the game. By recalling his actions, you may come up with some solutions—and when you're playing Infocom's version, you can use all the help you can get. Shogun is very unforgiving—virtually every wrong move results in death. In a game laden with excellent features, this design flaw is unfortunate because it leads to numerous time-consuming restarts and a lot of frustration.

Otherwise Shogun is a treat. Its 16th-century Japanese setting alone, complete with Samurai and ritual, makes it a fascinating place to adventure. Although the game won't replace a history book or even the novel as a source of information on ancient Japan, it certainly provides some insight into that time and place. As a game, the locale removes you from stereotypical situations that require stereotypical solutions.

Pay attention to the writing, because within it often lay subtle warnings of what you'll need to do within the next few turns. For example, if you find out that you're hungry, you'd better eat immediately; if you perform several other tasks before doing so, you might die of starvation. Remember—this game takes no prisoners.

Shogun includes a layered hint option, offering anywhere from three to six tips at various points in the game, in order from the least revealing to the most revealing. You may wonder, however, whether any hint is more helpful than the others. Still, this feature is a generous plus when you consider the money other companies are charging for hint books—and when you recall the times when a hint saved your life and let you continue the game.

Shogun is a demanding but enjoyable game for fans of interactive fiction. The graphics scenes alone are almost worth the purchase price. If you're a beginning gamer, though, or if you're unfamiliar with text games in general, you might try Journey, Infocom's other new release. Shogun is for the more experienced adventurer looking for a real challenge.

James Trunzo
Leechburg, PA

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8
0 5 10

Still whizzing along the highways of Test Drive II here—but now you've got new cars and new highways. The Test Drive II disk puts you in the seat of a Ferrari F-40 or a Porsche 959; when you get bored with those two cars (if you can imagine ever getting bored in either of those two rocket sleds), pop in the Supercars disk and take your pick.

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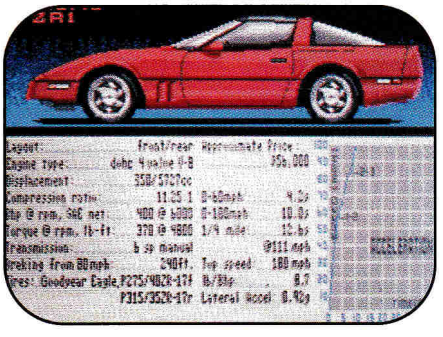

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appropriately outrageous on the GS.

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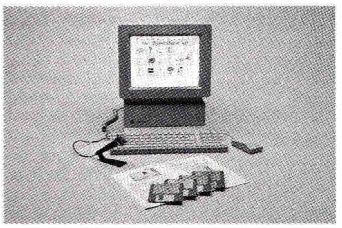

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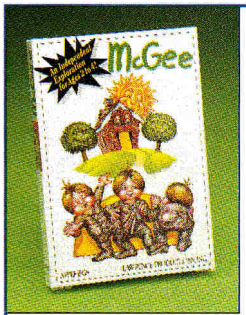

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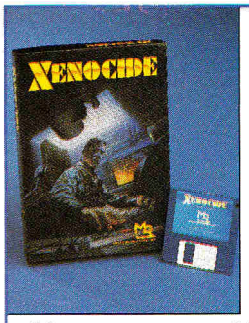

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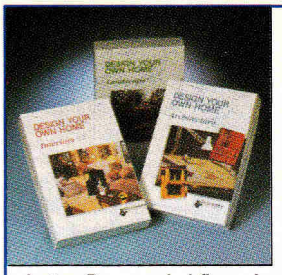

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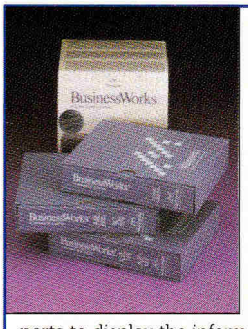

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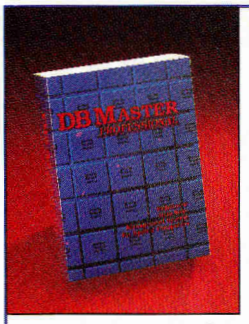

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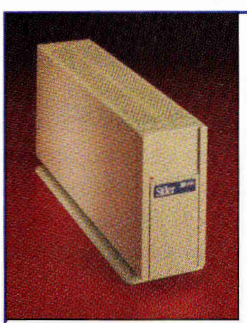

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IT'S AT PROGRAMS PLUS

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

THEY SAY IT'S NOT WHAT YOU earn, it's what you *keep* that counts. You probably breathed a sigh of financial relief as you squeaked past December 31st with all your 1989 bills out of the way—but the surprises that await you when you complete your '89 tax return could pack a deferred wallop on your already strained budget. The worst discovery of all, of course, would be to learn that you owe tax money to Uncle Sam next month.

Even if you anticipate a hefty refund this year, consider whether or not you really want to lay out a good-sized chunk of cash on a tax service that fills out IRS (Internal Revenue Service) forms for you when you *could* do them yourself—with a little assistance from your Apple II, of course. Okay, so it's not exactly like spending a few hours with John Madden Football, but preparing your tax return yourself can offer substantial benefits.

TIME IS MONEY

Usually for less than $70 the first year—and no more than half that amount in subsequent years, because annual updates are discounted—you can prepare your personal income-tax return painlessly, thanks to software that calculates quickly, accurately, and automatically. For example, enter your mortgage interest and other legitimate deductions on the screen equivalent of Schedule A. The typical tax program will total your deductions, but before transferring the amount to the second page of Form 1040, the software will compare it to the standard deduction you're allowed and enter the value that's more favorable to you.

Depending on the program you select, certain taxpayers—notably those with compli-

Tax software's not as challenging as Mean 18, it's not as creative as Paintworks Gold—but what's more fun than saving money? Don't get bushwhacked by the IRS—get an Apple II tax-preparation program to do the number crunching, and cross April 15th off your calendar.

cated tax returns entailing disparate businesses, far-flung investments, or multiple rental properties—may have to transfer data from a depreciation form to Schedule C, perhaps, or from one Schedule E to another. This minor inconvenience is a small price to pay for the otherwise time-saving features tax-return preparation programs offer.

In most cases, tax programs print ready-to-mail returns—just double-check the figures and sign on the bottom line. Some programs generate facsimile forms that are allowed by the IRS when printed on green-bar or lined paper.

Because the IRS won't accept a look-alike substitute for Form 1040 (or another signatory form), however, most programs offer the ability to print data directly on blank IRS forms. Roll a government-supplied form into your printer and the program will insert data on appropriate lines.

That's not to say you're limited to submitting forms either generated by your computer or filled in by it. Most tax programs print data only if that's what you prefer; you can transcribe data manually onto IRS forms. If you don't have access to a printer, you can simply copy the results from the computer screen. Some people also find copying numbers onto a form easier than trying to position the tax form in a printer.

PLANNING AHEAD

For many, tax preparation is a year-long struggle. If you want to expand a tax program's value beyond April 15th, use the software from time to time during the year to forecast tax scenarios that promise to position you more favorably at year's end. IRS tax tables change from year to year, but probably not significantly enough to affect any decisions you might make after playing "what if" this way.

Though tax programs and personal-finance software don't share data automatically, they can work side by side. Virtually all money-management programs help you stay organized by letting you categorize, allocate, and keep running totals of income and expenses. (See "Checking Out Seven Home-Budget Programs," January 1990, p. 48.) Enter the totals generated by your accounting program on your tax program's "dummy" 1040: Should you have additional taxes withheld from your pay? Can you decrease your tax bill by lumping anticipated medical expenses into a single year?

Incidentally, at least two personal-finance programs—**Dollars and Sense** and **Managing Your Money**—can also help you devise strategies that soften your tax landing. No accounting program we're aware of, though, actually assists you in filing your federal personal income-tax return. For that you need a separate program or template like one of the half-dozen featured here: **Swiftax**, **Taxcalc-89**, **Tax Command**, **Tax Preparer**, **Tax Pro 89**, and **KFS/Tax**. (To prepare this article we used beta versions or last year's versions of all programs. The versions you need to prepare 1989 tax returns were expected to be released in January and should be available now. See the accompanying chart for a listing of the forms and schedules these products support.) Let's take a closer look at what each program can offer the computerized taxpayer.

SWIFTAX

Ray Mauck, of the Washington, D.C., area, is one tax-software convert who wonders why people hold off purchasing a computer program to help prepare their returns, particularly when the software's as simple to use and easy to learn as Timeworks' Swiftax. The program doesn't support mouse input, but despite its nonstandard Mac-like interface featuring pop-up windows and drop-down menus, Swiftax is perhaps the most intuitive of the programs described here.

In fact, Mauck, who runs the program on an Apple IIe, claims he learned to use Swiftax in just one evening and now finds the program indispensable in preparing not only his personal tax return, but his children's, as well: One child receives more than $1000 in unearned income; another runs a window-washing business; and a third has a *Washington Post* paper route. Swiftax is the only program among the six we tested this year that supports the so-called "short forms": Form 1040A and Form 1040EZ.

Jack Frisch, director of a community mental-health center in Fort Lauderdale, Florida, also assigns Swiftax double duty: He uses it to prepare his kids' tax returns as well as his own. Using Swiftax to do his '87 taxes two years ago was just the impetus Frisch needed to add a second disk drive to his Laser 128 system. "The disk switching with one drive is abominable," he says. If you use a $3\frac{1}{2}$-inch or hard drive, you won't have to worry at all about disk swapping. Like all other tax programs described here, Swiftax isn't copy protected.

TAXCALC-89

Taxcalc-89, written by Andrew Kramer and marketed by Perfect Solutions Software, is unique in several respects. For one thing, it's the only program among the six reviewed here that's available in DOS 3.3 and ProDOS versions, and it supports every Apple II including ►

Feature-Comparison Chart

	KFS/Tax	Swiftax	TaxCalc-89	Tax Command	Tax Preparer	Tax Pro 89
Price	$24.95 (5¼") $27.95 (3½")	$69.95	$39.95 (5¼") $42.95 (3½")	$59.95	$250	$39.95
Annual update price	$14.95 (5¼") $17.95 (3½")	$35	$24.95 (5¼") $27.95 (3½")	$30	$79	$39.95
Media in package	5¼" or 3½"	5¼" or 3½" (swap)	5¼" or 3½"	5¼" or 3½"	5¼" and 3½"	5¼"
Minimum hardware	128K	128K	48K	64K	64K (128K recommended)	64K
Operating system	ProDOS	ProDOS	DOS 3.3 or ProDOS	ProDOS	ProDOS	ProDOS
Software required	AppleWorks	—	—	—	—	AppleWorks
Prints client letter?	N	N	N	N	Y	N
Batch printing?	N	N	N	N	Y	N
Tax guide included?	N	send card in	Y	N	Y	N
Multiyear planning?	Y	N	N	N	Y	N
Total # forms	18	18	12	17	24	4
Form 1040?	Y	Y	Y	Y	Y	Y
Form 1040A?	N	Y	N	N	N	N
Form 1040EZ?	N	Y	N	N	N	N
Form 1040ES?	N	N	N	Y	Y	N
Schedule A?	Y	Y	Y	Y	Y	Y
Schedule B?	Y	Y	Y	Y	Y	N
Schedule C?	Y	Y	Y	Y	Y	Y
Schedule D?	Y	Y	Y	Y	Y	Y
Schedule E?	Y	Y	Y	Y	Y	N
Schedule F?	N	Y	N	Y	Y	N
Schedule R?	N	Y	N	Y	Y	N
Schedule SE?	Y	Y	Y	Y	Y	N
Form 2106?	Y	Y	Y	Y	Y	N
Form 2119?	Y	N	Y	Y	Y	N
Form 2210?	N	N	N	N	Y	N
Form 2441?	Y	Y	Y	Y	Y	N
Form 3468?	N	N	N	N	Y	N
Form 3800?	N	N	N	N	Y	N
Form 3903?	Y	Y	Y	Y	Y	N
Form 4562?	Y	Y	Y	Y	Y	N
Form 4797?	N	N	N	N	Y	N
Form 4972?	Y	N	N	N	N	N
Form 5329?	Y	N	N	N	N	N
Form 6251?	Y	Y	N	Y	Y	N
Form 6252?	N	N	N	N	Y	N
Form 8582?	Y	N	N	N	Y	N
Form 8606?	Y	N	N	N	Y	N
Form 8615?	Y	Y	N	Y	Y	N
Form 8814?	N	Y	N	N	N	N
Prints on 1040?	N	Y	N	Y	Y	N
Prints on others?	N	N	N	Y	N	N
Prints facsimiles*?	Y	Y	N	N	Y	N
Toll-free support?	N	N	Y	Y**	N	N

***Except 1040** ****No tax advice**

KEY

Form 1040 = individual income-tax return

Form 1040A = simplified individual income-tax return

Form 1040EZ = shortest individual return, no deductions

Form 1040ES = estimated tax

Schedule A = itemized deductions

Schedule B = interest and dividend income

Schedule C = profit/loss from business or profession

Schedule D = capital gains/losses

Schedule E = supplemental income

Schedule F = farm income and expenses

Schedule R = credit for elderly and disabled

Schedule SE = Social Security self-employment tax

Form 2106 = employee business expense

Form 2119 = sale/exchange of principal residence

Form 2210 = underpayment of estimated tax

Form 2441 = credit for child and dependent care

Form 3468 = investment credit

Form 3800 = general business credit

Form 3903 = moving expenses

Form 4562 = depreciation and amortization

Form 4797 = gains/losses from sales/exchanges

Form 4972 = tax on lump-sum distribution

Form 5329 = Individual Retirement Account and retirement-plan taxes

Form 6251 = alternate minimum tax

Form 6252 = installment-sale income

Form 8582 = passive-activity loss limit

Form 8606 = nondeductible IRA contributions

Form 8615 = tax for children under 14

Form 8814 = parent's election to report child's interest and dividends

the original II Plus with 48K of ramdom-access memory (RAM).

The program doesn't boast a fancy interface or "frivolous" features. As Tom Buckley, a IIc user and an engineer for the company that makes Alka-Seltzer brand antacid, observes, "Kramer's program doesn't print on IRS forms, so the first year I used Taxcalc, I took the information off the screen. Last year, I used a printout that provides the line number [of the IRS form] and the amount. By the time my printer would have printed a given form, I had the information written in by hand."

Tom Cordalis, a veteran Arizona high-school teacher and computer consultant, couldn't agree more with Buckley's assessment. Cordalis notes, "I've purchased other income-tax programs in the past, and it was a nightmare trying to align forms in my printer. I must have gone through 16 blank 1040 [forms] to get it right."

Taxcalc-89 offers a host of other time-saving features. The program's question-and-answer narrative helps determine the forms and schedules you need to file. Its built-in calculator lets you sum expenses from receipts and cancelled checks while you're working at the computer. Flashing asterisks on screen alert you to tax tips in the program's well-written user's manual. And Kramer, a tax adviser as well as a teacher, offers toll-free support for questions about the program and about taxes.

TAX COMMAND

While most of us worry about completing a single tax return, Francis Gappa, a professional tax preparer from Middleton, Wisconsin, prepares a couple hundred returns each year with his Apple II Plus and Tax Command from Bruce Thompson's Practical Programs. Gappa sometimes employs his wife and another data-entry clerk and notes that "the program's so easy to use I don't have to train them."

Yet Tax Command offers power enough to complete 90 percent of the returns Gappa prepares each tax season. For the relatively few complicated returns he encounters, Gappa enters data on input sheets and has a local tax service crunch those numbers on its mainframe computer.

But Tax Command isn't just for professional preparers. Two years ago when Robert Sanders took early retirement from Wisconsin Bell, he discovered too late that exercising that option together with deriving income from limited partnerships would make his federal taxes come up "short to the point where I was penalized." Since then Sanders has used Tax Command and Thompson's stand-alone forecasting program, **Tax Command Planner**, to avoid tax woes. Sanders notes, "Social Security will be starting for me soon, and I'll be able to find out easily the impact that's going to have."

Tax Command, like most tax programs, doesn't offer state tax-return modules: no big deal, according to Sanders, who plans to create a Wisconsin state-tax template using AppleWorks.

TAX PREPARER

Despite its relatively high first-year price, individual taxpayers as well as professional tax preparers like HowardSoft's Tax Preparer. Bill O'Hanlon, a psychotherapist, lecturer, and writer from Nebraska, has been using the program for three years.

"I noticed that as I began to make more and more money each year my tax accountants would charge me more," O'Hanlon confides. His taxes weren't any more complicated, he says, but apparently his accountants sensed that he could afford steeper fees.

O'Hanlon (who owns a IIe, a IIc, and a GS) singles out some of his favorite Tax Preparer features: Its "road map" data-entry system lets you progress quickly from one tax form to another in logical steps, and the program automatically transfers repeating data, such as your name and Social Security number, from one year's update to the next. "That's what computers are for," he quips.

Before he purchased the program, O'Hanlon read the favorable reviews that Tax Preparer seems to pile up year after year. When it was time to take the plunge, O'Hanlon knew he'd get what he paid for: the most comprehensive tax program available for the Apple II, an attractive update policy, good technical support—and a tax deduction. (Any computer program that assists you in preparing your tax return may be deductible.)

These same features attract professional preparers, too, such as Gwyn Ellis, of Albuquerque, New Mexico. Ellis prepares nearly ►

100 returns each year, many of them for fellow schoolteachers who've invested in rental property and limited partnerships. "I've even convinced several people to purchase the program themselves because they need a lot of help," Ellis says, "and that's one thing the manual provides. It has tons of information about current tax laws."

She also likes Tax Preparer's unique batch-printing capability. Ellis performs data entry during regular working hours and then prints returns at night. "I can go off and do my chores," she says, leaving the computer unattended.

TAX PRO 89

Of the half-dozen programs described here, only Tax Pro 89 combines simple bookkeeping, tax planning, and tax-return assistance in AppleWorks Classic spreadsheet format. (Another AppleWorks spreadsheet template, **Tax Analysis**, helps Canadian taxpayers make peace with Revenue Canada.)

With Tax Pro 89 you enter on a monthly basis any data that are likely to have tax consequences at the end of the year. The template sums and stores information such as wages, withheld taxes, IRA contributions, and deductible expenses, and provides instant feedback by computing your projected tax from the spreadsheet's built-in table.

As Jack LaFave, an attorney in Houston, Texas, notes, "My wife works part-time, and I have oil and gas investments as well as income from a profit-sharing plan. I put these amounts into Tax Pro, and the template gives me an idea of what I have to pay in estimated taxes."

LaFave's tax life is so complicated that in the end he leaves tax-return preparation to a certified public accountant. But, he teases, "I use Tax Pro to check my C.P.A."

KFS/TAX

KFS/Tax templates may represent the AppleWorks Classic method of choice for taxpayers who routinely file more than the handful of forms Tax Pro 89 supports. Far from the least capable program reviewed here, KFS/Tax is nevertheless the least expensive, with yearly updates priced at only $14.95.

Cliff Wilder, a semiretired photographer for David Bank Studios in the Minneapolis-St. Paul area, says, "What I like best about the program is the fact that I can sit down at any time and enter new numbers to see how my tax situation is changing." Wilder still hires an accountant to prepare his actual tax return, but last year—thanks to KFS/Tax—the estimated taxes he submitted were within $150 of his liability.

As a GS user and proud member of the Sun Coast Apple Tree (SCAT) user group in Clearwater, Florida, Edward Blech has used KFS/Tax for four years and calls it "a fantastic program. It used to take my accountant three hours just to get my paperwork in order. I started using Dollars and Sense and cut his work down to one hour. Now I do my own taxes and just have the accountant double-check the results."

Blech's accounting bill could drop even further this year. David Kronk, the financial consultant who developed KFS/Tax, offers free technical support and free advice on simple tax matters to registered users of his templates. If you've ever languished "on hold" waiting for an IRS tax assistant to take your call, you'll appreciate having another resource to turn to during the tax season.

A third option for U.S. AppleWorks users is **1040Works**, a well-established tax template that's been available since the 1986 season.

BUY NOW OR PAY LATER

It's not too late to avoid feeling mugged by the IRS come April 15th. Make a decision now to invest in one of the easy-to-use tax-return preparation programs reviewed here and to purchase yearly updates. You'll waste less time, avoid troublesome arithmetic errors, and in one way or another save money. Wouldn't it be a welcome change to keep more of what you earn for yourself?□

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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Eden Prairie, MN 55346
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Westport, CT 06880
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Timeworks Inc.
444 Lake Cook Road
Deerfield, IL 60015-4919
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Granite Software
Box 105
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Toronto, Ontario M6B 3Z9
Canada
E-mail address, GEnie:
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Taxcalc-89
Perfect Solutions Software
3701 Savoy Lane
Suite 106-D
West Palm Beach, FL 33417-1141
(800) 780-7786
(407) 471-7786
$39.95 5¼-inch disk
plus $2 shipping
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Tax Command, $59.95
Tax Command Planner, $69.95
Practical Programs
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Suite 704
P.O. Box 93104
Milwaukee, WI 53203
(800) 776-7047
(414) 272-7269

Tax Preparer, $250
California Supplement, $95
HowardSoft
1224 Prospect St.
Suite 150
La Jolla, CA 92037
(619) 454-0121

Tax Pro 89
John B. Slack
41 Wellington Court
Sugarland, TX 77478
(713) 242-8332
$39.95
requires AppleWorks

1040Works, $24.95
1040Works-X, $27.95
Personal Financial Services
P.O. Box 1401, Dpt. J
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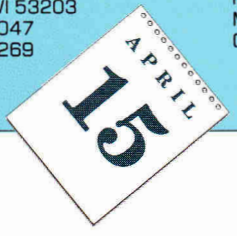

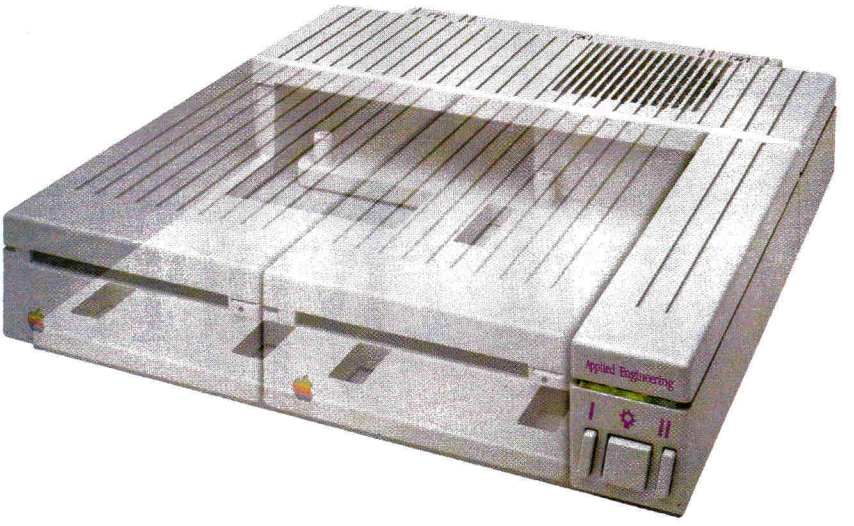

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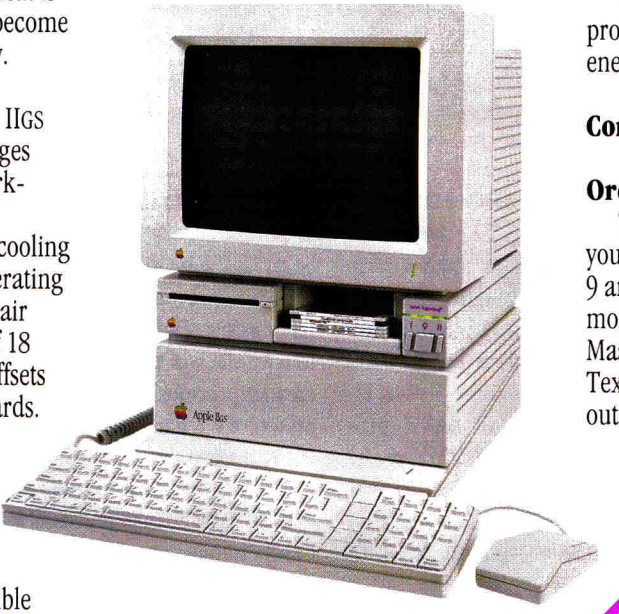

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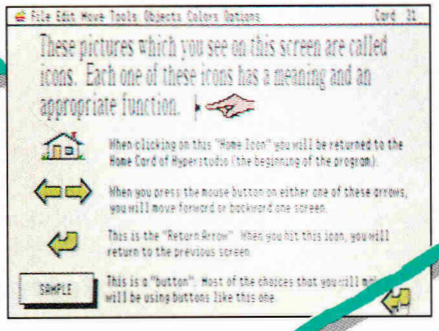
By JEFF CABLE * WEST COAST EDITOR

Exploring HyperStudio

You've heard the buzzwords—*hyper* this, *stack* that—but what can you *really* do with HyperStudio? With new version 2.0, impressive interactive "programs" are easier and better than ever.



REMEMBER THE "GOOD OLD DAYS" OF do-it-yourself computing? The wealth of Apple II software you see on today's store shelves didn't exist seven or eight years ago. Back then, I thought the only way to make my Apple II do what I wanted was to write my own application. After some feeble attempts at creating a "powerful" BASIC program, I ended up with a 40-column database manager that could sort just a small list—very slowly. I used it awhile—until I got my first glance at AppleWorks. What I saw was a program that was easy to use, fast, and infinitely more sophisticated than anything I'd created. That was the end of my programming days. Until now....

PROGRAMMING FOR THE MASSES

HyperStudio, from Roger Wagner Publishing, gives everyone a chance to enjoy programming—without the frustration of learning how. If you want to create a lesson plan or explore a particular subject, you can use HyperStudio to build your own "program"—as simple or as intricate as you like. No elaborate toolbox commands, no PEEKs or POKEs—with HyperStudio, programming isn't hard labor, it's fun.

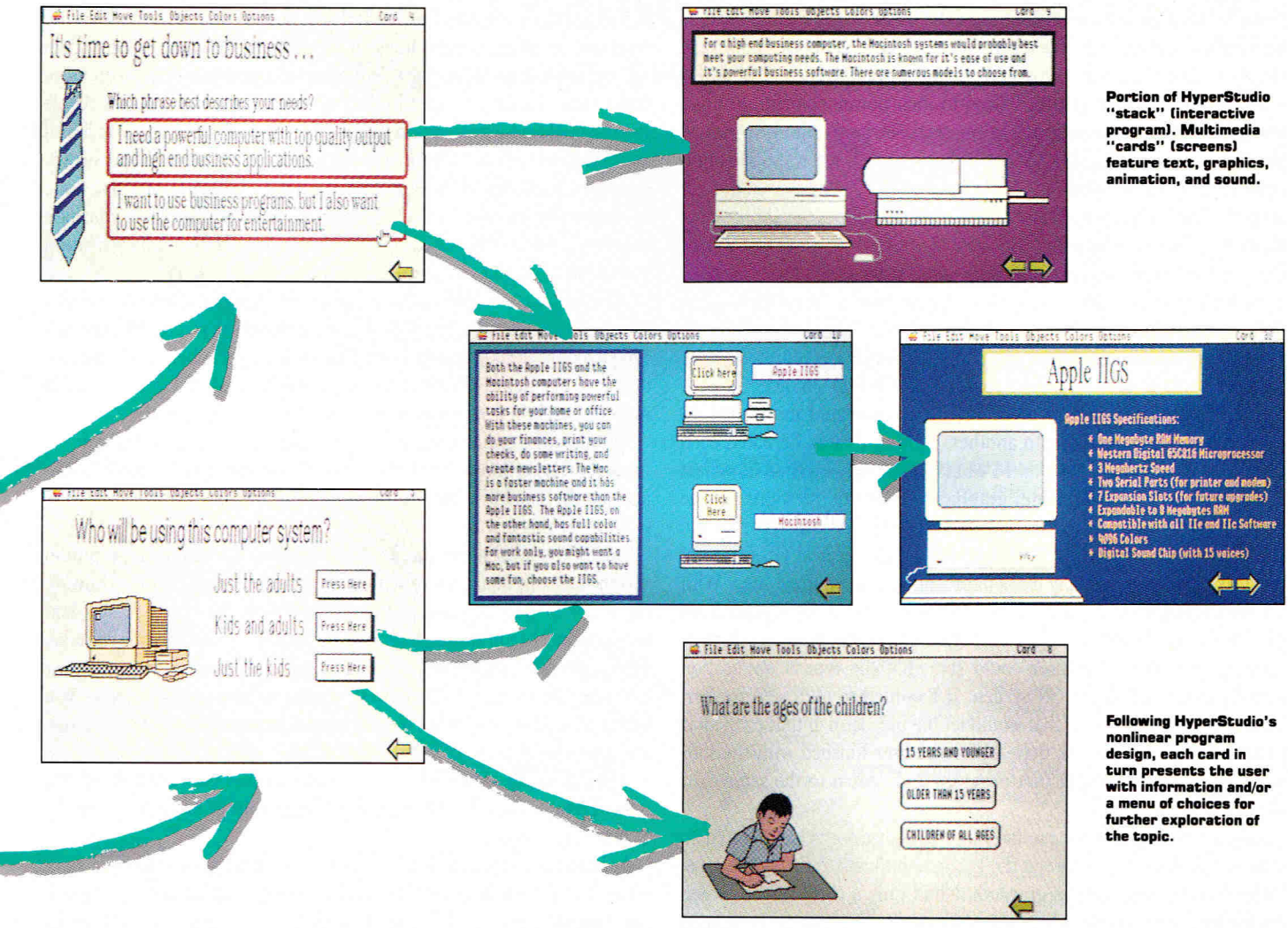
The first time I used HyperStudio on my GS, I headed straight for the demo stacks that come with the program. (A *stack* is a program in HyperStudio; it's composed of a sequence of screens called *cards*.) I began at the main screen—the Home Card—and started investigating. Navigating my way through three or four stacks, I got a little impatient (after years of not programming anything but my VCR) and decided to try a stack of my own: I imported a picture of a house, which I had created previously with Paintworks Gold, then put an invisible button on top of the garage and designed it so that a picture of a car appears when a user points and clicks on it.

As crude as that is, it gives you an idea of how easy this program is to use. After I created this small stack, my years of pent-up programming desire caught up with me and I decided to design a full-fledged HyperStudio stack with all the bells and whistles.

SOMETHING TO SAY

The first, and most important, stage of my HyperStudio design was selecting a topic that would be fun as well as beneficial for Apple II users. The subject could be anything—as long as I was knowledgeable and enthusiastic about it. Given these criteria, it didn't take me long to make a decision: My stack would cover Apple computers.

There's one question people ask *inCider* staff members all the time: "Which Apple computer is best for me?" Of course, there's no easy



Portion of HyperStudio "stack" (interactive program). Multimedia "cards" (screens) feature text, graphics, animation, and sound.

Following HyperStudio's nonlinear program design, each card in turn presents the user with information and/or a menu of choices for further exploration of the topic.

answer, so we spend a lot of time explaining the strengths and weaknesses of the various Apple models. Could I create a HyperStudio stack that would guide users through that array of choices and help them pick the Apple system best suited to their needs?

The next step was determining a logical approach to creating the stack. The first card would ask the user whether he or she would be using the computer for home or business. If the user selected *Business*, the program would ask whether he or she wanted a computer with high-end output (a laser printer) and design capabilities, or a computer for small business and other applications. If the user picked *Home*, then the next card would ask about his or her family. Who would be using the computer—adults, kids, or both? These questions would then lead to other questions on other cards, which would narrow down the choices.

As I thought about all questions I wanted to ask, I realized I needed to organize my thoughts. I took a clean piece of paper and started a flowchart: I drew a small picture of my first card and then separate arrows to two new cards. One represented the answer for *Business* and the other for *Home*. For each question I wanted to ask, I branched out with another card for each answer. Several pieces of paper later, I knew what I wanted my stack to do. Then it was time to have fun.

As I mentioned, the best thing about HyperStudio is its ease of use. Without writing a line of programming code, HyperStudio lets you create a program using graphics, animation, sound, and text. And the new version of HyperStudio, 2.0, is a dramatic improvement over previous editions. Several features in earlier HyperStudios weren't activated, and more than a few of the activated features were bug infested. In the current shipping version, everything works as it should have originally—with a couple of extra goodies thrown in (more on that later).

STACK THE DECK

The first card in my stack welcomes the user to this new program. Before venturing further, he or she has the option of viewing a help screen. On this card I put three different buttons. Adding a button to a card is as easy as pointing and clicking. You decide whether you want it to be rectangular, a rounded rectangle, a shadowed rectangle, or invisible (to put over a graphic).

The first button is labeled *Help* and brings up a screen that explains how to move from one card to another, along with the functions of various icons. The second is an invisible button on a picture of a small house; clicking here returns the the user to the Home Card. The third button is located in the bottom right-hand corner of the screen; it's a small right arrow that points to the edge of the screen. When the user activates this button, he or she is transported to the next card, which,

in this case, explains the purpose of the stack. Every card I designed has arrow buttons at the bottom of the screen, so that no matter what point in the stack the user has reached, he or she can move forward or backward to other cards. It's a good idea to mark all options on screen clearly so that the stack is easy enough for anyone to use.

To do HyperStudio justice, I tried to incorporate colorful graphics and sound effects into the cards in my stack. HyperStudio provides all the common painting tools, so that you can draw intricate super-high-resolution graphics without ever leaving the program. Although HyperStudio's tools are adequate, you can also import graphics from many popular GS paint programs, such as Paintworks Gold, Paintworks Plus, and DeluxePaint II, as well as sequences from animation programs.

As with graphics, you can import sound effects from third-party digitizers or from the sound digitizer that's included with each HyperStudio package. I added the sounds to impress the user, but also because it was so easy and fun I couldn't pass up the chance.

After days of working on my stack, I'd accumulated more than 40 cards I could link from one to another. I found that as I created each card, new ideas would arise, and I would amend my original flowchart by adding new cards with better graphics or different questions. At one point, after I had created a card showing the GS and its technical specifications, I wanted to show the user what a typical GS program looks like. From my usually dull editor's mind came a great idea. With a screen-saver desk accessory, I could preserve text and graphics from the GS Finder, AppleWorks GS, and other programs, then use them as cards in my stack: The user could see what the typical application actually looks like on the GS' screen. If I wanted to go a step further, I could even add a button that would let the user launch that particular program from a hard-disk drive. After the user finished with the software, he or she could quit that program and return to the same card in my stack.

Another brainstorm hit me halfway through my stack; I wanted to explain the difference between the Macintosh Plus and the Apple IIGS. Unfortunately, with all the graphics, I had only a third of the screen left for text. With previous versions of HyperStudio, I would have been limited to the available space, but in version 2.0, I was able to add a scrollable text window. This approach offers two advantages: room for a large amount of information through which the user can scroll and read at his or her own pace, and a professional look.

The text window in my stack looks identical to similar windows found in the most powerful software packages on the market, and it was embarrassingly easy to create: I just drew a rectangle the size of the text box and HyperStudio did the rest. When I showed my stack to potential users, they thought I'd mastered the complex programming commands you need to create scrolling text windows in BASIC, Pascal, or C. Now the secret's out.

PRODUCT INFORMATION

HyperStudio 2.0
Roger Wagner Publishing
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If HyperStudio's so easy to use, what do you do about security? After spending days creating my stack, I didn't want users to be able to change it. In my worst nightmare, I could see people selecting the drawing tools and painting squiggly lines on my carefully designed screens, then saving the stack with their new rendition incorporated. I can sleep more easily now, thanks to HyperStudio's new locking feature. In the Apple menu you'll find a new option called *Preferences*. Select it and you'll find *Lock Stack*, which does what its name implies. After entering a password, you can unlock the stack only by typing the exact case-sensitive code back into the password area. There's also an option that lets you hide the tool menus so that the user doesn't have access to them. By activating both *Hide Items* and *Lock*, you can make your stack safe.

Another important new feature for stack designers lets you display the card number in the top right-hand corner of the screen. While that's not particularly significant for stack users, it's a great help to the author of the stack. Before this feature was implemented, I'd get lost inside my own stack, not knowing which card I was working with.

Among other options, you can change the default of the sound volume for your HyperStudio stack from the *Preferences* menu, and you can activate the *TouchWindow* option if you have the appropriate hardware to support this feature.

One of the biggest drawbacks of the previous version of HyperStudio was the lack of a method to edit buttons. Once you had created a button, there was no way of erasing it from the screen. To cancel it, you had to place another button, which had no action, on top of your mistake. This approach was not only inefficient, but also took up more of your GS' valuable memory. The newest version of HyperStudio shows you where all the buttons are located on screen and lets you delete or change any predefined button.

The stack I've described in this article is just one example of the many possible uses for HyperStudio. Here's a list of just a few ideas for HyperStudio stacks.

At home, for instance, you can create a stack for your coin collection, which could contain graphics of each coin with explanations and grading. You can create a family tree with pictures and voices of your family members. You can draw a picture of your garden, and then design the stack so that when the user selects an area of the garden he or she receives an explanation of the variety of plants growing there. You can also create your own phone book, Rolodex-type address list, recipe file, and so on with graphics and sound.

At school, teachers can use HyperStudio to create study guides. Instructors can teach children about anatomy, for example, by having students simply click on the appropriate body part. With HyperStudio's animation capabilities, you could even show the movement of the heart or lungs. School libraries can have HyperStudio running on an Apple IIGS to help students locate particular books.

In business, supermarkets can use HyperStudio to help customers find the proper aisles for various items. Warehouses can design stacks that pinpoint the proper storage area and product information after a user selects a particular product.

The great thing about programming is that you're not limited by someone else's definition of good software. The bad thing about programming is that it requires years of dedication and an aptitude for technology. That's where HyperStudio 2.0 comes in. Now you can create custom programs that are easy to design and even simpler to use. As with any project, what you put into your stacks in terms of time and effort is what you'll get out of them. All you need to get rolling, though, is a IIGS and an idea.□

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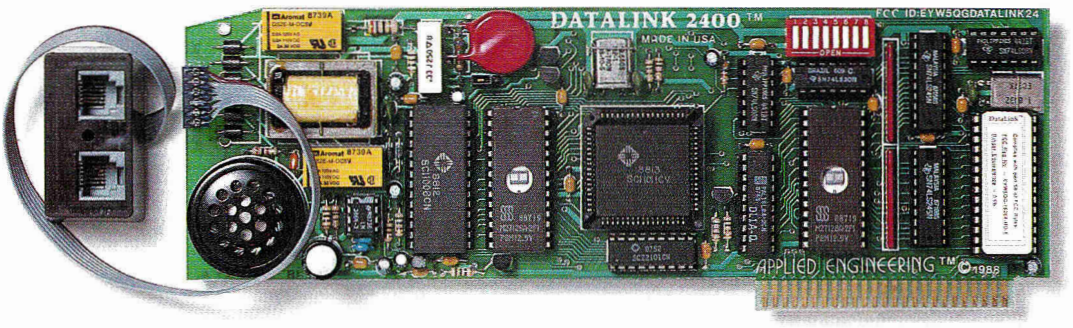

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Illustration * Jamie Hogan

Face to Face

Looking for the right type? Bold, graceful, stark, lighthearted—type design enhances the emotion behind your message, for an impact your reader can't miss.

By JOE ABERNATHY * CONTRIBUTING EDITOR

FONTS—OR TYPE STYLES—CONVEY SERIousness, laughter, love, tragedy. The proper use of fonts can put you on a par with professionals; however, "font abuse" can send your publication down in flames. You encounter dozens of fonts every day—they make up the headline on this article, the byline, the words you're reading now. Whenever you notice a difference in the way type appears, it means that a different font is being used.

What if you can't find just the right font for your newsletter about Romantic poets or your brochure on basketweaving? Thanks to font editors, you can change your program's type to make it suit your needs, or you can even design your own. Font editors are a new breed of utility program—one that lets you dramatically improve the scope and quality of Apple IIe and IIGS printed output.

PATHETIC PRINTERS

Apple II users are long-suffering where printing is concerned. The saga began with the early, low-quality thermal and dot-matrix printers, and continues with laser printers you probably can't afford and ImageWriters that run second best. As you might expect, the Apple II marketplace is crafting its own solution to this problem via software.

The GS is in special need of help. Using Apple's landmark "desktop" approach to writing and document design, the GS would seem to be ideal for today's men and women of letters. This computer was designed from the ground up with the written word in mind. You can compose your document, design the page on which it will appear, and print the finished product in color, with graphics. You can turn your home or office into a print shop.

That, at least, is the theory. In practice, most people doing serious writing experimented with GS word processors and then went back to the original AppleWorks to get business-quality output. Without a LaserWriter, the GS' printed product tends to look blocky and amateurish, not the sort of effect you want to achieve on a research paper or résumé.

This print problem has two parts. First are the printer drivers, hidden parts of the system software that control both print quality and speed. Both the new GS/OS (System Disk 5.02) and GS-specific software, such as AppleWorks GS, offer improved printer drivers and support for more printers, so the driver situation is slowly correcting itself.

The other half of the equation is the selection of fonts itself. Within months of the introduction of the GS, there were hundreds of fonts available. Either a whole bunch of graphic artists were burning the midnight oil, or fonts were being ported in from somewhere. You guessed it—they're all Macintosh fonts converted to work on the Apple IIGS.

That's both good and bad. It's nice to have the fonts, but because the screen resolutions of the two machines differ, very few of these typefaces look as good as they should. In fact, most look terrible. Therein lies the heart of the Apple II printing problem, and that's where font editors come into the picture. If you're looking for quality and variety in print, the advent of font editors is important to your work.

Before surveying the font-editing software that's available, let's clarify what we mean by "GS fonts." In older word processors and page-layout software, fonts were either built into the product or they weren't available. That includes products such as Publish It!, Springboard Publisher, and The Print Shop. With the introduction of the GS, Apple defined a standard for sharing fonts. Software developed since then can make use of so-called GS fonts, even though the program may be running on a IIc. You may be thinking that Publish It! and the other programs mentioned above have been recently updated and should now support GS fonts. You're right, they should—but right now most are content to sell proprietary font disks. (See "Hot Off the Press," February 1990, p. 42, for more information on desktop-publishing programs.)

Apple IIe/IIc products that benefit from font editors include AppleWorks with Beagle Bros' TimeOut SuperFonts installed and ►

GraphicWriter III. The Font Factory GS editor, while requiring a GS to run, can port fonts into Publish It! format (and perhaps others by the time you read this article).

Four font editors are now available, with widely divergent features and quality. **Font Factory GS** is clearly the Cadillac of the field. Depending on your needs, however, you may choose to save money with **Fontasm** or **Font Doctor**, two shareware products for the GS. If you own a IIe or IIc, on the other hand, your only choice is **GS Font Editor**, whose name refers not to the machine on which it runs, but to the types of fonts it edits.

FRESH FROM THE FONT FACTORY

Seeing a program as well constructed as **Font Factory GS** is refreshing. Now in its fourth release, this mature product from Seven Hills Software is laden with the small touches that add up to top software. Of the four products compared, Font Factory is the easiest to use and has all the features you'll need to do the job right.

For one thing, you can have several font windows open at the same time, making it easy to compare fonts and perform cut-and-paste functions. You can flip letters to create an upside-down font, or rotate them to create a vertical font. You can enlarge fonts to 255 points in size (120-point type is the largest you're likely to ever see in a newspaper, and then only for reports of catastrophes). When enlarging a font, you can employ "smoothing" to get rid of the jaggies—an important feature.

You can create dedicated styled fonts—italic, shadow, and so on—for a nicer effect than the GS system software provides. Font Factory's utilities include the ability to exchange GS-type fonts with those of Publish It!; other proprietary font formats are in the works.

The only thing missing is a way to test a sample of your font. You can get a standardized printout, but you can't see what letters look like in the combinations you choose.

GS FONTS FOR YOUR 8-BIT APPLE

GS Font Editor, from Beagle Bros, includes one very important feature. Of the four programs available, it's the only one that runs on the IIe and IIc. It also costs the most. It does have a samples window, but you can't test the font on the printer. You can scale fonts up, but not if doing so exceeds an artificial internal memory limit. This seems to occur at different sizes, depending on the font you're editing. (For example, I encounter an apparent lack of memory using an Apple IIGS with 2 megabytes of random-access memory.)

GS Font Editor is convenient as a character-based editor, but I wouldn't want to use it for any heavy work that involves building a font or making changes to a family of fonts.

PHANTASMAGORIA

Fontasm is a shareware program, but, like a lot of shareware software, it's good enough to be sold commercially. Fontasm is easy to use, and generous in its features. You can see samples of your font, print samples, and resize fonts in batches. The character-editing window is perhaps the most convenient of all those compared. A number of options allow doubling of font dimensions, an interesting feature that serves the "Better Text" print option in your word processor. (See the accompanying sidebar, "Printer's Checklist.") Fontasm also includes a utility for converting Macintosh fonts to GS format.

This editor is a good low-cost alternative to Font Factory. It lacks some of the latter's features, however, and won't allow you to work on very big fonts without producing a false out-of-memory condition.

THE DOCTOR IS IN

Another shareware program, **Font Doctor**, is a basic font editor offering one unique feature: You can save a font as Merlin or APW source code, a feature some programmers will welcome. Editing features aren't very convenient, however, and you can't create a font larger than 48 points. You can print samples of your font, though. Font Doctor also displayed a few minor bugs during our testing.

The program's author, Mark T. Collins, runs a **Font Clearinghouse** through which you can obtain public-domain typefaces for a small fee. The clearinghouse assigns a distinct I.D. number to each font. Collins' clearinghouse (and a similar service run by **A2-Central**) offers font registration to ensure that your computer delivers the font you're asking for. If each font didn't have its own unique number to identify itself to your computer, you might ask for Times, for instance, but receive the wrong typeface, forcing you to exclaim, "What the Helvetica?"

LOOKING GOOD

The first temptation with a font editor is to create a typeface all your own. Likewise, the first rule of professional design is to resist the first

Printer's Checklist

Print quality, or lack thereof, is a favorite target of GS users. In many cases, however, we can take steps to make the most of what we have:

•Make sure you're using the latest printer driver available. On the GS, check your */SYSTEM/DRIVERS/ subdirectory. Experiment by exchanging the Apple driver with the one from your word processor. Sometimes (with AppleWorks GS 1.02 or 1.1) an older printer driver or the standard Apple driver may provide better output than the one included with your word processor.

•Using AppleWorks GS, make sure *Condensed Print* is selected in the *Page Setup* screen from the Edit menu.

•When choosing fonts, make sure you have a font available that's exactly twice the size of the one you actually want to use. Then select *Better Text* from the *Print* dialog. This will automatically call in the larger font and scale it down to the size you want, greatly improving print quality.

•To design italic, block, shadow, and the like, use Font Factory GS. Otherwise, GS/OS will create its own styled font, and it won't look nearly as good. —*J.A.*

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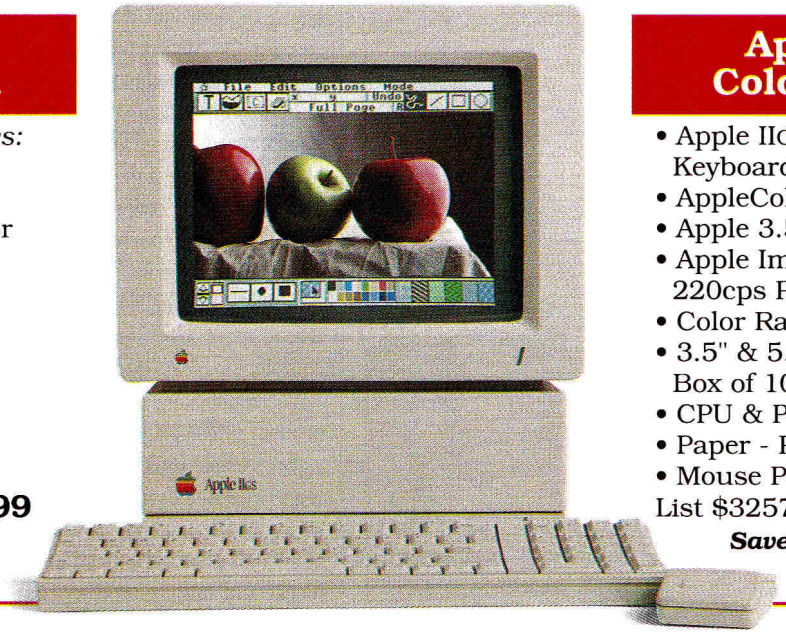

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There are, of course, exceptional situations in which you might want to create a custom font from scratch. One good place for this is letterhead stationery. A dedicated font for letterhead might include a set of characters along with a set of graphics or images for use wherever your company logo appears.

When choosing fonts, avoid graphics assault. If there are hundreds of fonts available, you should use as many as possible on every page, right? Please don't. If you're publishing a newsletter, select no more than two fonts (both either serif or sans serif) and use them for everything. Use the same fonts in every issue. Use varying sizes, plus light and boldface to give graduated impact to stories. Use italic, shadow, block, and outline type sparingly; any distortion of a letter makes it harder to read.

You may think that's an excessively conservative approach. But consider a major newspaper, such as *The Houston Chronicle*. Its graphics/art department runs on a network of Macintosh computers with LaserWriters. Loaded on those LaserWriters are exactly four fonts—two for hard news, two for feature pages. You *can* publish a lighthearted newsletter with only two fonts. Just pick the right two.

Finally, think clean. If it looks good to you, it will look good to others. If it doesn't, you couldn't pay anyone to read it.□

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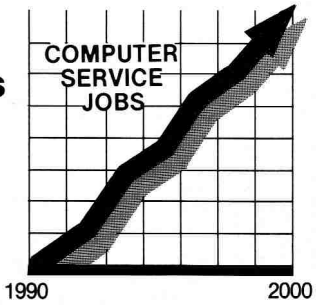

Jobs for computer service technicians will almost double in the next 10 years, according to the latest Department of Labor projections. For you, that means unlimited opportunities for advancement, a new career, or even a computer service business of your own.

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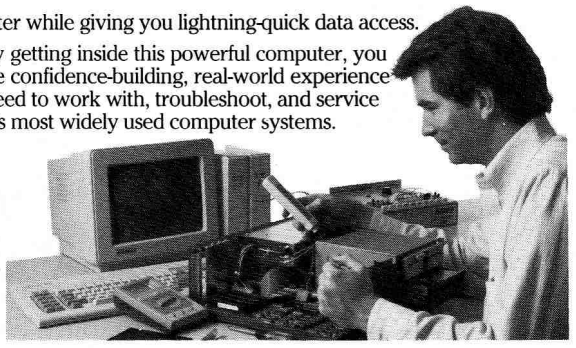

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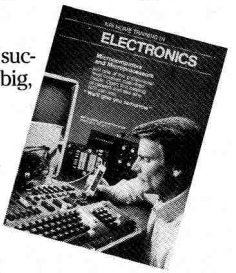

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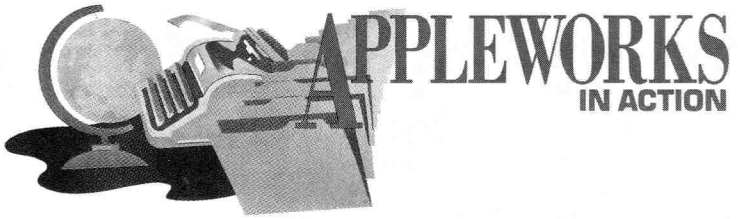


THE TAXMAN COMETH 2

Project your tax exposure and ward off unexpected disaster with additional formulas for last month's spreadsheet.

By RUTH K. WITKIN

IT'S PROBABLY NO MORE THAN A bizarre coincidence that income-tax-return day—April 15—happens to also be the anniversary of the sinking of the *Titanic*. If you get that sinking feeling as the dread date approaches, now's the time to grab hold of the nearest lifesaver—the income-tax spreadsheet you started last month ("The Taxman Cometh 1," February 1990, p. 60). Projecting your tax exposure now, even at this late date, can help ward off unexpected disaster.

Last month, you entered all labels and numbers in **Figures 1** and **2**, all formulas in **Figure 1**, and most of the formulas in **Figure 2**. That was a long, arduous session.

In this installment you'll enter the rest of the formulas in **Figure 2**, starting with Formula 21, and the labels, numbers, and formulas shown in **Figure 3**. This one's a bit easier, so hang in there.

ABOUT THE IF FUNCTION

The IF function, well represented in both parts of this two-parter, lets a formula produce one of several possible answers, based on a test condition. Here's a brief primer on how it works.

The basic structure of an IF formula is *@IF(Test,Then,Else)*. The Test statement uses a *comparison operator* to set a condition that can be true or false. These comparison operators are:

<	less than
>	greater than
<=	less than or equal to
>=	greater than or equal to
=	equal to
<>	not equal to

If the Test proves true (the condition is met), the Then statement produces the answer. If the Test proves false (the condition fails), the Else statement produces the answer.

A more sophisticated version, known as a "nested" IF (you saw one last month), can produce one of three or more answers. The number of nested IFs you can use depends on the amount of room on the entry line.

You can also combine IF with such functions as @AND and @OR, available now in AppleWorks 3.0, which lets you use more than one Test statement in a formula.

ENTERING MORE FORMULAS

Now load the AppleWorks program and bring the spreadsheet named **TAXES89** to the screen. Recall from last month's session that many formulas couldn't produce correct answers because they lacked the results of related formulas. Things are different now. Your formula results this month should match those in the accompanying **Figures**. Even better, they make the formulas you entered last month generate the correct answers.

Let's start where you left off with Formula 21. As before, protect each formula from any change immediately after you create it.

FORMULA 21: DEDUCTIONS AS % OF AGI

Formula 21 is a convenience formula that produces a percentage of AGI (adjusted gross income), so that you can see whether certain expenses or losses qualify as a deduction. In I49, Formula 21 calculates 7.5 percent of AGI, the amount you can deduct for unreimbursed medical and dental expenses.

Cell location: I49

Formula: +B34*G49

Copy Formula 21 into I51: Leave the cursor on I49 and press OA-C. Hit Return twice. Press the down-arrow key twice and hit Return. Press Return again and type **R**.

FORMULA 22: CASUALTY OR THEFT LOSS

Formula 22 is a variation on Formula 21, here calculating 10 percent of AGI less $100, the deductible for casualty or theft loss.

Cell location: I50

Formula: +B34*G50−100

FORMULA 23: EXCESS

The Test statement in Formula 23 looks at I49. If I49 is greater than zero (meaning you've entered a number in I49), the Then statement enters either the amount generated in J49 less I49 or zero, whichever is greater. If I49 is equal to or less than zero (I49 contains zero or is empty), the Else statement enters zero instead of the negative number you'd get by subtracting the AGI amount from nothing.

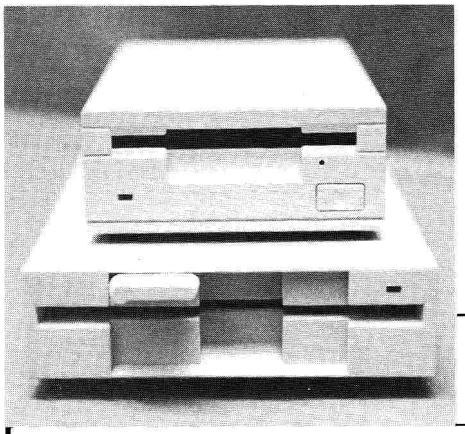
Cell location: K49

Formula: @IF(I49>0,@MAX
(J49−I49,0),0)

Now copy Formula 23 into K50 and K51: Leave the cursor on K49, press OA-C, and hit Return twice. Press Down Arrow, type a period, and press Down Arrow again. Hit Return and press OA-R.

FORMULA 24: AGI COPY

Formula 24 copies the AGI amount that th formula in B34 generated and enters it in I5'



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Cell location: I57
Formula: +B34

FORMULA 25: SOCIAL SECURITY TAXABLE—ALTERNATE 1

Formula 25 enters either the Social Security taxable amount or zero. The Test statement checks to see whether your adjusted gross income (I57) is greater than the Social Security taxable amount (K55 through K58) it finds by looking up your file code (F4) in the Social Security taxable table (J55 through J58). If AGI is greater than this amount, the Then statement adds one half of Social Security income (K3) to adjusted gross income (I57) reduced by the Social Security taxable amount, then divides the result by 2. If, on the other hand, AGI is equal to or less than the Social Security taxable amount, the Else statement enters a zero.

Cell location: E59
Formula: @IF(I57>@LOOKUP(F4, J55.J58),(K3*.5+I57+K4–@LOOKUP(F4,J55.J58))/2,0)

Use the edit-in technique to enter this long formula: With the cursor on E59, enter **1**. Then press OA-U followed by OA-Y. Type the entire formula, double-check the characters, then press Return.

FORMULA 26: SOCIAL SECURITY TAXABLE—ALTERNATE 2

Formula 26 enters either 50 percent of Social Security income or zero. As with the formula in E59, the IF function checks to see whether adjusted gross income (I57) is greater than the Social Security taxable amount (J55 through J58).

If it is, the Then statement enters one half of Social Security income in G59. Otherwise, the Else statement enters a zero.

Cell location: G59
Formula: @IF(I57>@LOOKUP (F4,J55.J58),K3*.5,0)

Your spreadsheet should now look like the one in **Figures 1** and **2**. Press OA-S to store it on disk.

CALCULATING AMT

Alternative Minimum Tax (AMT) is a parallel method of taxation intended to prevent taxpayers from avoiding their just share of income taxes through exclusions, deductions, and credits. Tax experts say most taxpayers won't be affected by AMT. Still, it's good to know where you stand if there's even the slightest chance you may be subject to AMT provisions. **Figure 3** shows the third page of the income-tax spreadsheet, which deals with AMT.

	A	B	C
1	TAX FORECAST FOR 1989		
2			
3	INCOME:		
4	Wages, salaries, tips, etc.	61,425	
5	Interest income (taxable amount)	3,550	
6	Dividend income	600	
7	Refund of taxable state and local income taxes	820	
8	Alimony received	0	
9	Net business income or (loss)	14,325	
10	Net capital gain or (loss up to $3000)	1,050	
11	Taxable pensions, annuities, IRA distributions	0	
12	Taxable scholarships, prizes, grants	0	
13	Rents and royalties minus expenses	1,855	
14	Net income from partnerships and rental property	0	
15	Income from estates and trusts	0	
16	Unemployment compensation	0	
17	Taxable Social Security amount	0	
18	Other income	0	
19		----------	
20	TOTAL INCOME	83,625	1
21			
22	ADJUSTMENTS TO INCOME:		
23	Reimbursed employee business expenses	425	
24	Deductible IRA contributions	4,000	
25	Keogh contributions and SEP deductions	1,891	
26	Self-employed health insurance deduction	0	
27	Net passive losses from limited partnerships (reduced by 80%)	0	
28	Penalty on early withdrawal of savings	0	
29	Alimony paid	0	
30	Other adjustments	0	
31		----------	
32	TOTAL ADJUSTMENTS	6,316	2
33		----------	
34	ADJUSTED GROSS INCOME (AGI)	77,309	3
35		==========	
36	DEDUCTIONS:		
37	Unreimbursed medical/dental expenses (exceeding 7.5% of AGI)	1,257	4
38	State and local income taxes	1,234	
39	Real estate and property taxes	4,555	
40	Mortgage and investment interest	1,022	
41	Other deductible interest expenses	0	
42	Personal interest (deductible portion-limit 40%)	0	
43	Charitable contributions	1,500	
44	Casualty and theft losses (exceeding 10% of AGI)	0	5
45	Moving expenses	0	
46	Other deductions (exceeding 2% of AGI)	0	6
47		----------	
48	TOTAL DEDUCTIONS (or standard deduction if greater)	9,568	7
49			
50			
51	PERSONAL EXEMPTIONS	8,000	8
52	TAXABLE INCOME	59,741	9
53	REGULAR TAX CALCULATION (before credits)	12,705	10
54	TAX CREDITS (child care, elderly, business, housing, etc.)	375	
55	REGULAR TAX CALCULATION (after credits)	12,330	11
56	TAX WITHHELD AND ESTIMATED TAX PAID	12,930	
57	AMOUNT YOU OWE OR (REFUND)	(600)	12
58	SOCIAL SECURITY OWED ON BUSINESS INCOME	1,865	13
59	NET TAX EXPOSURE (income tax and social security owed)	1,265	
60			14
61			

Figure 1. Tax-forecast spreadsheet.

There's virtually as many ifs, ands, and buts in working with AMT as with regular tax computations, so it's wise to consult your tax preparer or reference materials for complete information. Form 6251 calculates AMT (*Alternative Minimum Tax—Individuals*).

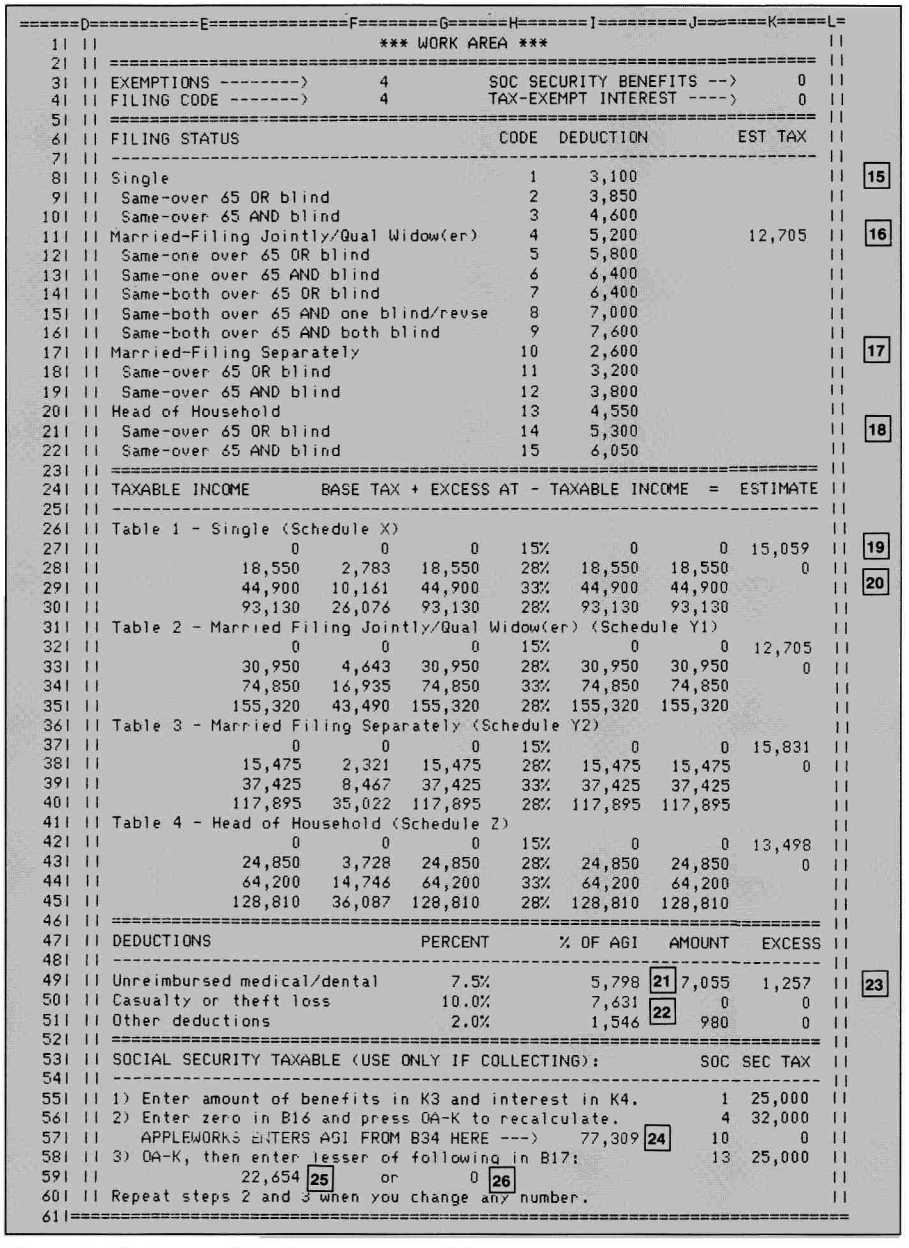
Using **Figure 3** as a guide, follow these instructions to set up the AMT spreadsheet:

Column width. Use OA-L to change the width of columns M through S from the current nine characters to ten characters. Reduce column T to four characters.

Entries. Referring to **Figure 3**, enter all labels and numbers *except numbers in formula cells*. Each formula cell is highlighted, with or without a formula number beside it.

Indented labels. In column M, indent one or two spaces (for example, indent one space in M4 and two spaces in M7). Type quotation marks and press the spacebar the proper number of times before typing. In O51, indent five spaces, and in Q45, nine spaces.

Lines. For horizontal lines, type quotation marks first, then hold down the equal-sign key. For short lines in column S, type quotation marks, press the spacebar, then type nine minus signs. Copy the vertical lines in



```
======D==========E==============F========G======H=======I=========J=======K=====L=
  1| ||                              *** WORK AREA ***                              ||
  2| || ============================================================================ ||
  3| || EXEMPTIONS -------->       4          SOC SECURITY BENEFITS -->       0  ||
  4| || FILING CODE ------->       4          TAX-EXEMPT INTEREST ---->       0  ||
  5| || ============================================================================ ||
  6| || FILING STATUS                              CODE  DEDUCTION         EST TAX  ||
  7| || ---------------------------------------------------------------------------- ||
  8| || Single                                        1     3,100                   || 15
  9| ||  Same-over 65 OR blind                        2     3,850                   ||
 10| ||  Same-over 65 AND blind                       3     4,600                   ||
 11| || Married-Filing Jointly/Qual Widow(er)         4     5,200          12,705   || 16
 12| ||  Same-one over 65 OR blind                    5     5,800                   ||
 13| ||  Same-one over 65 AND blind                   6     6,400                   ||
 14| ||  Same-both over 65 OR blind                   7     6,400                   ||
 15| ||  Same-both over 65 AND one blind/revse        8     7,000                   ||
 16| ||  Same-both over 65 AND both blind             9     7,600                   ||
 17| || Married-Filing Separately                    10     2,600                   || 17
 18| ||  Same-over 65 OR blind                       11     3,200                   ||
 19| ||  Same-over 65 AND blind                      12     3,800                   ||
 20| || Head of Household                            13     4,550                   ||
 21| ||  Same-over 65 OR blind                       14     5,300                   || 18
 22| ||  Same-over 65 AND blind                      15     6,050                   ||
 23| || ============================================================================ ||
 24| || TAXABLE INCOME       BASE TAX + EXCESS AT - TAXABLE INCOME  =  ESTIMATE   ||
 25| || ---------------------------------------------------------------------------- ||
 26| || Table 1 - Single (Schedule X)                                              ||
 27| ||              0         0        0    15%         0         0    15,059   || 19
 28| ||         18,550     2,783   18,550    28%    18,550    18,550         0   || 20
 29| ||         44,900    10,161   44,900    33%    44,900    44,900             ||
 30| ||         93,130    26,076   93,130    28%    93,130    93,130             ||
 31| || Table 2 - Married Filing Jointly/Qual Widow(er) (Schedule Y1)              ||
 32| ||              0         0        0    15%         0         0    12,705   ||
 33| ||         30,950     4,643   30,950    28%    30,950    30,950         0   ||
 34| ||         74,850    16,935   74,850    33%    74,850    74,850             ||
 35| ||        155,320    43,490  155,320    28%   155,320   155,320             ||
 36| || Table 3 - Married Filing Separately (Schedule Y2)                          ||
 37| ||              0         0        0    15%         0         0    15,831   ||
 38| ||         15,475     2,321   15,475    28%    15,475    15,475         0   ||
 39| ||         37,425     8,467   37,425    33%    37,425    37,425             ||
 40| ||        117,895    35,022  117,895    28%   117,895   117,895             ||
 41| || Table 4 - Head of Household (Schedule Z)                                   ||
 42| ||              0         0        0    15%         0         0    13,498   ||
 43| ||         24,850     3,728   24,850    28%    24,850    24,850         0   ||
 44| ||         64,200    14,746   64,200    33%    64,200    64,200             ||
 45| ||        128,810    36,087  128,810    28%   128,810   128,810             ||
 46| || ============================================================================ ||
 47| || DEDUCTIONS                    PERCENT      % OF AGI     AMOUNT    EXCESS  ||
 48| || ---------------------------------------------------------------------------- ||
 49| || Unreimbursed medical/dental      7.5%          5,798 [21] 7,055     1,257  || 23
 50| || Casualty or theft loss          10.0%          7,631 [22]     0         0  ||
 51| || Other deductions                 2.0%          1,546      980         0  ||
 52| || ============================================================================ ||
 53| || SOCIAL SECURITY TAXABLE (USE ONLY IF COLLECTING):              SOC SEC TAX  ||
 54| || ---------------------------------------------------------------------------- ||
 55| || 1) Enter amount of benefits in K3 and interest in K4.            1  25,000  ||
 56| || 2) Enter zero in B16 and press OA-K to recalculate.              4  32,000  ||
 57| ||    APPLEWORKS ENTERS AGI FROM B34 HERE --->    77,309 [24]      10       0  ||
 58| || 3) OA-K, then enter lesser of following in B17:                 13  25,000  ||
 59| ||              22,654 [25]     or        0 [26]                           ||
 60| || Repeat steps 2 and 3 when you change any number.                          ||
 61|==============================================================================
```

Figure 2. Work area of tax-forecast spreadsheet.

column L to column T.

When you've finished, press OA-S to store the spreadsheet on disk. Now enter the AMT formulas.

FORMULA 27: TAXABLE INCOME

Formula 27 copies the taxable income calculated in B52 to S4.

Cell location: S4

Formula: +B52

FORMULA 28: TOTAL INCOME SUBJECT TO AMT

Formula 28 adds taxable income (S4) and net operating-loss deduction (S5) to produce the total income subject to AMT in S7.

Cell location: S7

Formula: +S5+S4

FORMULA 29: STANDARD DEDUCTION

Formula 30 enters either zero or the standard deduction calculated in B48, whichever is less. If the Test statement is true—the standard deduction is greater than the corresponding number (I8 through I22) retrieved as a result of looking up the file code in the deduction table (H8 through H22)—the Then statement enters a zero. Otherwise, the Else statement copies the standard deduction from B48.

Cell location: S10

Formula: @IF(B48>@LOOKUP (F4,H8.H22),0,B48)

FORMULA 30: PERSONAL EXEMPTIONS

Formula 30 copies the amount calculated in B51 to S11.

Cell location: S11

Formula: +B51

FORMULA 31: UNREIMBURSED MEDICAL/DENTAL

Formula 31 copies the amount calculated in K49 to S12.

Cell location: S12

Formula: +K49

FORMULA 32: OTHER DEDUCTIONS

Formula 32 copies the amount calculated in K51 to S13.

Cell location: S13

Formula: +K51

FORMULA 33: TAXES LESS REFUND

Formula 33 enters in S14 the result of adding the state, local, real-estate, and property taxes paid (B38 and B39) less any refunds of taxable state and local income taxes (B7) or zero, whichever is greater.

Cell location: S14

Formula: @MAX((B38+B39)−B7,0)

FORMULA 34: INTEREST ADJUSTMENTS

Formula 34 adds the interest deductions (B40 through B42) and enters the result in S15.

Cell location: S15

Formula: @SUM(B40.B42)

FORMULA 35: TOTAL ADJUSTMENTS TO INCOME

Formula 35 adds all adjustments to income (S26 through S10) and enters the result in S28. It includes the line in S27 and empty cell S9.

Cell location: S28

Formula: @SUM(S27.S9)

FORMULA 36: TOTAL TAX-PREFERENCE ITEMS

Formula 36 adds all tax-preference items (S39 through S31) and enters the result in S41. It includes the line in S40 and empty cell S30.

Cell location: S41

Formula: @SUM(S40.S30) ►

```
=========M=========N=========O=========P=========Q=========R=========S======T==
   1|                    ALTERNATIVE MINIMUM TAX (AMT)                        ||
   2|=========================================================================||
   3|INCOME SUBJECT TO AMT:                                                   ||
   4| Taxable income                                          59,741  ||  27
   5| Net operating loss deduction                            29,510  ||
   6|                                                        --------  ||
   7|  TOTAL INCOME SUBJECT TO AMT                            89,251  ||  28
   8|                                                                  ||
   9|ADJUSTMENTS TO INCOME:                                            ||
  10| Standard deduction                                           0  ||  29
  11| Personal exemptions                                      8,000  ||  30
  12| Unreimbursed medical/dental expenses                     1,257  ||  31
  13| Other deductions                                             0  ||  32
  14| Taxes paid less any refund                               4,969  ||  33
  15| Interest adjustments                                     1,022  ||  34
  16| Depreciation of property placed in service after 1986        0  ||
  17| Circulation/research/experimental expenditures after 1986    0  ||
  18| Mining exploration and development costs after 1986          0  ||
  19| Long-term contracts entered into after 2/28/86               0  ||
  20| Pollution control facilities placed in service after 1986    0  ||
  21| Installment sales of certain property                        0  ||
  22| Adjusted gain or loss                                        0  ||
  23| Certain loss limitations                                     0  ||
  24| Tax shelter farm loss                                        0  ||
  25| Passive activity loss                                        0  ||
  26| Beneficiaries of estates and trusts                          0  ||
  27|                                                          --------||
  28|  TOTAL ADJUSTMENTS TO INCOME                            15,248  ||  35
  29|                                                                  ||
  30|TAX PREFERENCE ITEMS:                                             ||
  31| Value of appreciated property donated to charity        14,500  ||
                                                                  Continued
```

Figure 3a. AMT area of tax-forecast spreadsheet.

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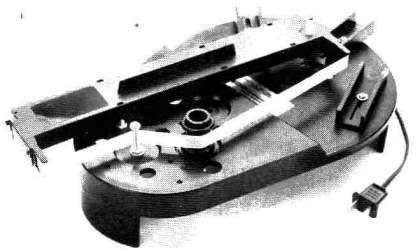

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FORMULA 37: AMTI

Formula 37 adds total income (S7), adjustments to income (S28), and tax-preference items (S41) and reduces the result by net operating-loss deduction (S43) to calculate the alternative minimum taxable income (AMTI) in S44.

Cell location: S44

Formula: (S7+S28+S41)−S43

FORMULA 38: MINIMUM PERSONAL EXEMPTION

Formula 38 looks up the filing code (G4) in the exclusion table (P54 through P57), retrieves the corresponding maximum personal exemption in the lookup table, and enters this amount in P45.

Cell location: P45

Formula: @LOOKUP(F4,P54.P57)

FORMULA 39: ALLOWABLE PERSONAL EXEMPTION

While Formula 38 uses the LOOKUP function to retrieve the maximum allowable exclusion based on filing status, Formula 39 uses the IF, LOOKUP, and MAX functions to enter either the allowable personal exemption based on alternative minimum taxable income or zero.

The law calls for AMTI to be reduced by the exemption amount shown in column Q in the AMT *Work Area*: $30,000 (single), $40,000 (married, filing jointly), $20,000 (married, filing separately), or $30,000 (head of household).

The result is further reduced by 25 percent of the amount by which AMTI exceeds the amount shown in column N in the AMT *Work Area*: $112,000 (single), $150,000 (married, filing jointly), $75,000 (married, filing separately), or $112,500 (head of household). For example, a joint filer with alternative minimum taxable income of $310,000 or more is ineligible for an AMT exemption (in other words, *25%*($310,000−$150,000)=$40,000*).

Cell location: S45

Formula: @IF(S44<310000,@MIN
(P45−(.25*(S44−@LOOKUP
(F4,M54.M57))),P45),0)

FORMULA 40: AMT CALCULATION

Formula 40 takes AMT calculations a step further, multiplying AMTI (S44) less allowable personal exemption (S45) by 21 percent to produce the Alternative Minimum Tax calculation in S46.

Circle 288 on Reader Service Card.

Cell location: S46
Formula: (S44–S45)*.21

FORMULA 41: REGULAR TAX CALCULATION BEFORE CREDITS

Formula 41 copies the amount calculated in B53 to S47.

Cell location: S47
Formula: +B53

FORMULA 42: TAX DUE

Formula 42 enters either the Alternative Minimum Tax (S46) or regular tax (S47), whichever is greater, in S48.

Cell location: S48
Formula: @MAX(S46,S47)

This completes the formulas, so press OA-S to store the newly expanded spreadsheet on disk. This spreadsheet is now all yours to play with. A word of caution: Some formulas in an early part of the spreadsheet need results produced by formulas in a later section. Recalculation passes by these early formulas and doesn't return after adjusting related formulas. To be accurate, always press OA-K three times after entering new numbers.

Continued

```
32| Tax-exempt interest on private activity bonds after 8/7/86      2,780  ||
33| Excess of allowable depletion deduction                             0  ||
34| Accelerated depreciation of real property before 1987           5,500  ||
35| Accelerated depreciation of leased personal property            2,300  ||
36| Amortization of certified pollution control facilities              0  ||
37| Incentive stock options exercised                               5,000  ||
38| Intangible drilling costs                                           0  ||
39| Reserves for losses on bad debts of financial institutions          0  ||
40|                                                                 ------- ||
41|  TOTAL TAX PREFERENCE ITEMS                                     30,080  || 36
42|                                                                         ||
43|ALTERNATIVE TAX NET OPERATING LOSS DEDUCTION (max 90% of T5)     25,084  ||
44|ALTERNATIVE MINIMUM TAXABLE INCOME                              109,495  || 37
45|PERSONAL EXEMPTION - MAXIMUM:   40,000 [38]      ALLOWED:       40,000  || 39
46|ALTERNATIVE MINIMUM TAX CALCULATION                             14,594  ||
47|REGULAR TAX CALCULATION (before credits)                        12,705  || 40
48|TAX DUE (greater of Regular tax or AMT)                         14,594  ||
49|                                                                       || 41
50|=======================================================================|| 42
51|                        *** AMT WORK AREA ***                          ||
52|=======================================================================||
53|EXEMPTIONS TABLE              EXCLUSION TABLE                          ||
54|       1   112,000                   1    30,000                      ||
55|       4   150,000                   4    40,000                      ||
56|      10    75,000                  10    20,000                      ||
57|      13   112,500                  13    30,000                      ||
58|                                                                       ||
59|                                                                       ||
60|                                                                       ||
61|=======================================================================
```

End

Figure 3b. AMT area continued.

PRINTING THE SPREADSHEET

This spreadsheet prints on three pages. After AppleWorks prints the first page, it continues by itself printing the second and third pages.

Turn on your printer. Now press OA-P and hit Return to confirm *All*. Press Return to select the printer (or type a printer number, then Return). Now type today's date (or, if you have a computer clock, type @, the *at* sign), and hit Return twice. The printer whirs away, producing all three pages of the income-tax spreadsheet.

Multipart columns invariably generate requests for reprints from people who missed one or the other part. Please address such requests to *inCider* Editorial, 80 Elm Street, Peterborough, NH 03458.

NEXT MONTH

Next month, in a burst of AppleWorks desktop publishing, you'll use the word processor to create the front page of *The Babyshoes Gazette*, a three-column newsletter for babysitters who watch over those near and dear to you.□

WRITE TO RUTH WITKIN AT 5 PATRICIA ST., PLAINVIEW, NY 11803. ENCLOSE AN SASE FOR A REPLY.

BUON APPETITO!

From soup to nuts, Publish It!'s got everything you need to serve up an attractive menu.

By CYNTHIA E. FIELD, Ph.D.

THERE'S NOTHING LIKE A SLICE OF pizza with the works to satisfy an appetite. Of course, if you're watching your waistline, you may be craving salad with dressing on the side. Satisfying fickle tastes (and responding quickly to suppliers' price changes) is no mean feat for any restaurant manager. But equipped with an inexpensive Apple II desktop-publishing system, the savvy restaurateur can keep customers happy *and* help manage cash flow by modifying menus almost at the flick of a switch.

GATHER UTENSILS

Eugene Tramonti, a Rhode Island computer consultant, has been showing Providence-area restaurants how to beef up their menus with an Apple IIe and **Publish It!**. This month's column is based on work Tramonti did for a neighborhood pizza-and-pasta restaurant.

The establishment's original menu was an unwieldy 11 by 17 inches. Worse still, this near-poster-sized document was hand-printed on ordinary white paper with uneven pen pressure and crossed-out errors. Tramonti's creative juices started flowing as soon as he saw it!

Though Eugene Tramonti sank his teeth readily into this restaurant project, you can adapt his template easily to any type of business that could benefit from a good-looking publication of similar dimension.

Take a standard piece of 8½-by-11-inch paper, print it on both sides, fold it in half vertically, and create a final four-panel document 4¼ inches wide by 11 inches high. This type of design might be suitable for publications such as promotional brochures, playbills, and product catalogues.

Start up Publish It! (any version of the program is suitable for this project) and work in *Size to Fit* mode (Open apple-4 or Special menu). Use the text tool to rubber-band two text areas. (Hold down the mouse button and drag.) Make each about 3¼ inches wide and 10 inches long.

These areas comprise the two inner panels of the restaurant's menu. The first text area accommodates foods listed under *PIZZA*, *ITEMS*, and *OTHER STUFF*. The second text area focuses on *PASTA* dishes.

OPEN THE COOKBOOK

Start the first text area about one-half inch from the top and left-hand margins. With the area selected (it displays corner "selection handles"), press Open apple-M or click on the *Show Specifications* option under the Objects ►

Object	Left Start	Top Start	Width	Height
Page 1 (inside menu)				
Text Areas				
Left	0.462	0.611	3.254	10.000
Right	4.444	0.611	3.258	10.000
"Paperboy"	4.926	8.206	0.981	0.851
Graphics Elements				
"Paperboy" clip art	4.804	7.959	2.398	2.129
Page 2 (front/rear covers)				
Text Areas				
Left	0.459	0.551	3.243	9.595
Left "Remember Us"	2.063	8.712	1.277	0.981
Right Upper	4.552	0.551	3.313	5.250
Right Lower	4.552	7.200	3.313	3.000
Graphics Elements				
"Reminder" clip art	0.768	8.694	0.908	1.013
Thick Rule	0.000	10.423	8.000	n/a

Table. Specifications for menu objects (inches).

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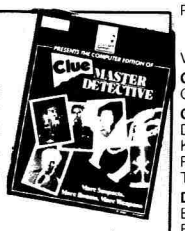

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T.D. 2: Calif. Scen. GS ... $14
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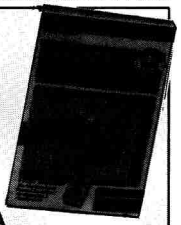

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menu. Edit the specifications according to the values given in the accompanying **Table**.

Rubber-band the second text area beside the first. Use *Show Specifications* and the **Table** to fine-tune the placement and sizing of this and all subsequent objects.

At the bottom of this right-hand panel, Tramonti placed the illustration of the paper carrier from the *Newsboy* file on Timeworks' **Symbols & Slogans** artwork disk. If you don't have access to this add-on library, use the analogous drawing of a man carrying a sandwich board in the *Ads* file on the original Publish It! artwork disk. In either case, use the graphics frame tool to reserve an area for the illustration.

Inside the newspaper or sandwich board, rubber-band a small text area. This section will later accommodate the phrase *Grinder Menu on other side*. Publish It! 2 users may want to make this text area transparent by clicking on the *Transparent* radio button in the text area's *Show Specifications* dialog. Doing so can prevent a text area from blocking parts of an underlying illustration. After it's completed, page 1 should look similar to **Figure 1**.

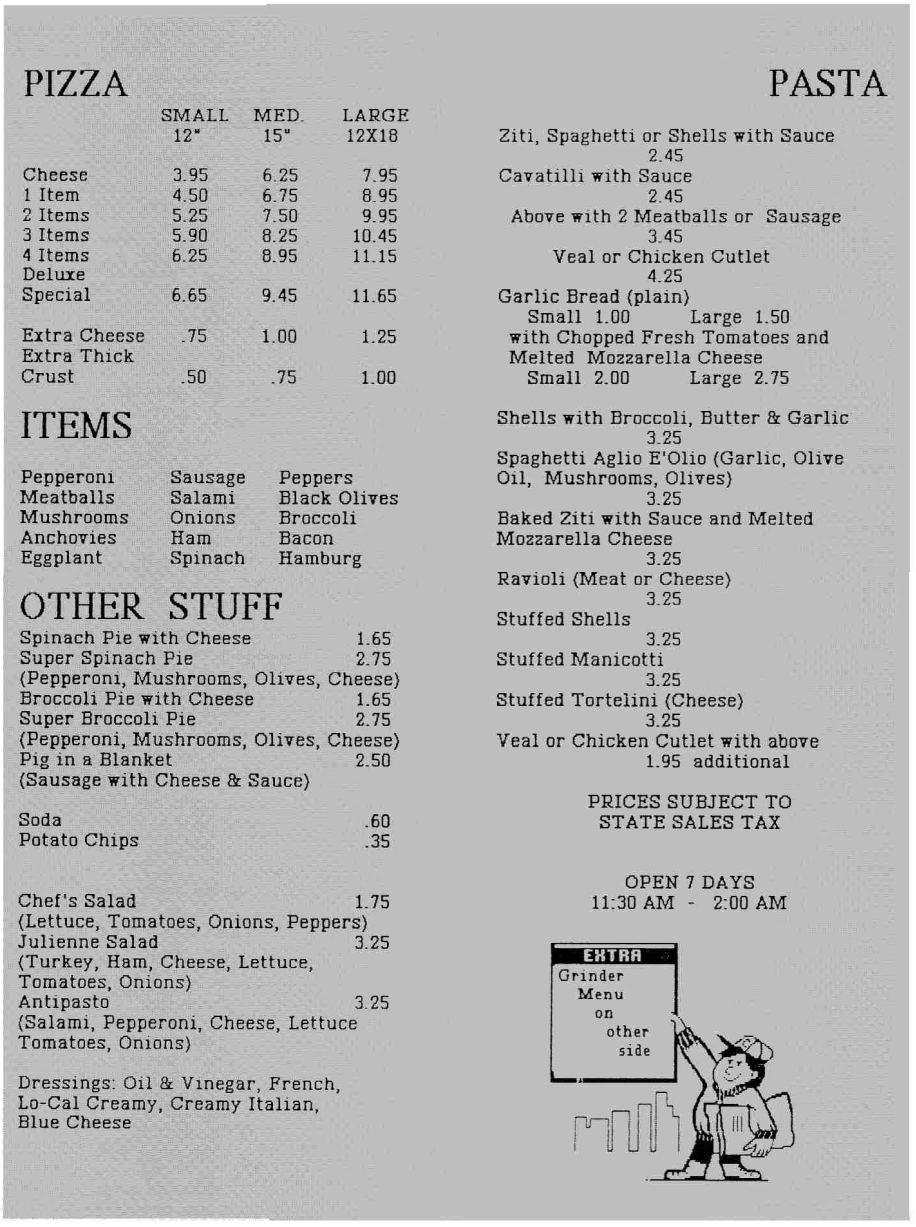

Figure 1. Page 1 of template.

COLLECT INGREDIENTS

Add a second page to your template by clicking on the right paging arrow at the bottom of the toolbox. Page 2 (the completed version appears in **Figure 2**) accommodates the two panels that serve as the menu's back and front covers, respectively.

Create the text area (about 3¼ by 9½ inches) that will later hold the restaurant's selections of *HOT OVEN GRINDERS*. The rear cover of Tramonti's menu sports a final *Remember Us!* message with an illustration he selected from the *Reminders* file on the Symbols & Slogans artwork disk. Rubber-band a graphics area for the artwork you'll use. Next to it, create a small text area.

The front cover of Tramonti's menu features two text areas: The upper one sports the restaurant's name and address; the lower one highlights the restaurant's special service—free delivery within a limited area with no minimum-purchase requirement—and its telephone number. Rubber-band these areas now.

For artistic effect, Tramonti added a thick rule near the lower edge of the menu's cover. Select the thickest line weight and the black pen pattern (Objects menu), then use the line tool to craft the rule. Begin at the left-hand edge of the page and about 10½ inches from the top. Make the line about 8 inches wide.

MIX WELL

The basic template's now complete. Save it as Menu.A or under another meaningful name. Because you want to save this file on a data disk and not on the program disk, Publish It! 2 owners should press Open apple-A or invoke the *Save As* option under the File menu. The program will poll disk drives attached to your Apple. Click on the *Drive* radio button until the program finds the desired data disk. When it does, type the name you want for your file and press Return.

With your template prepared, filling it in is a snap. Import clip art by first selecting a graphics frame with the pointer. Then click on *Import Picture* in the File menu. Use the cropping box to zero in on the illustration. Press the spacebar to invert it (change black on white to white on black) if you like.

For text, you can either type data directly into Publish It! or, as Eugene Tramonti prefers to do, type the information into an AppleWorks word-processing file. He imports the information later into Publish It! for fine-tuning and printing.

In Publish It! link the text areas where you want information to flow, then select *Import AppleWorks File* from the File menu. To link text areas, select the link tool, click on the first area, then the second, the third, and so on in

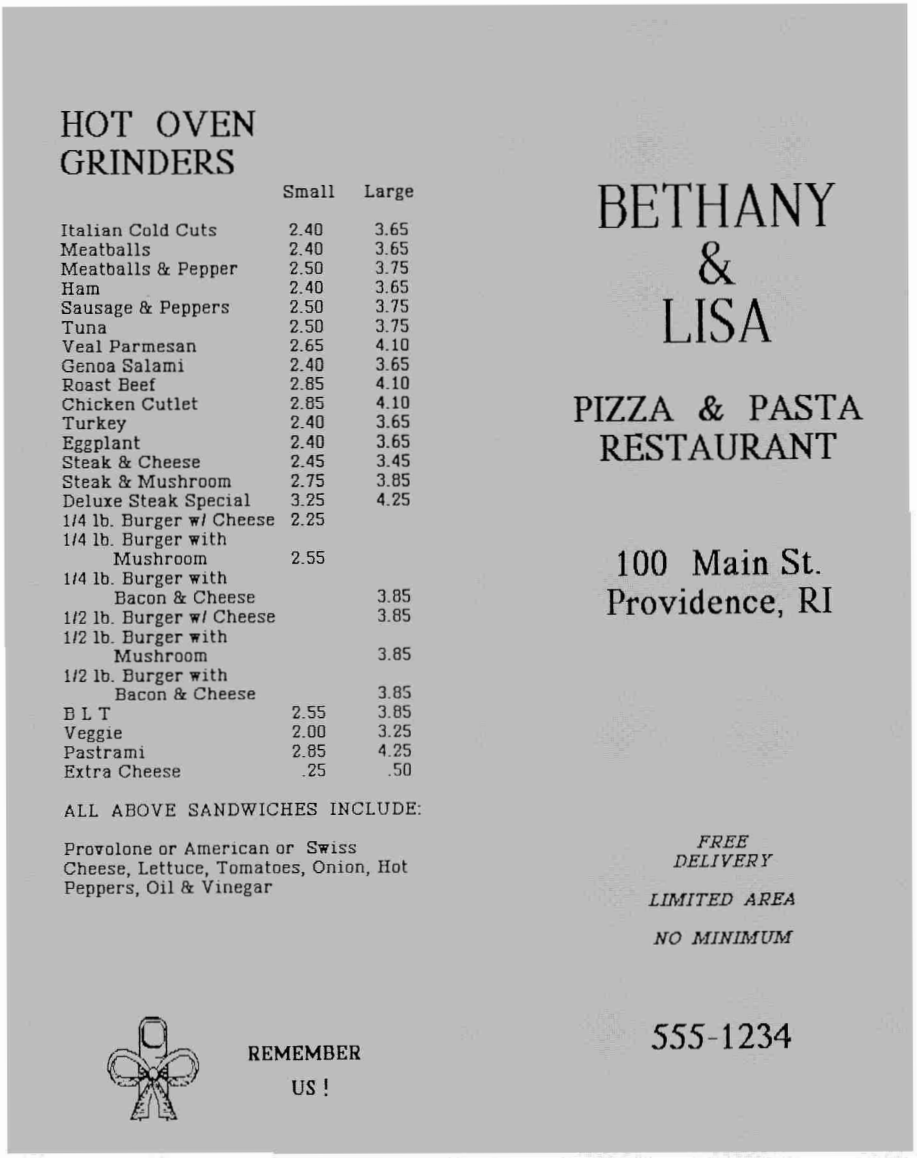

Figure 2. Page 2 of template.

sequence. Complete the chain by clicking one final time on the link-tool icon in the toolbox.

CHECK THE RECIPE

Tramonti encountered one disconcerting problem with this method. Tab settings he used in AppleWorks didn't translate well to Publish It!. In fact, price listings didn't line up at all. Worse, there seemed to be no "fix" short of inserting the I-beam into the menu's text areas, deleting all prices, then retyping them in Publish It!—a frustrating task.

To simplify entering format-heavy text such as menu listings, you'll probably want to type everything in Publish It!. Because each menu panel takes up less than a full screen width, horizontal scrolling shouldn't be the annoyance it usually is. Use Publish It!'s tabs to space columns of data. If you have Publish It! 2, take advantage of its WYSIWYG (what you see is what you get) *Preview* mode (Open apple-K or File menu).

Be warned: You can still encounter problems when you try to line up items whose prices require more or fewer digits than other prices in the same column. For example, every item in the *Small* size column under *HOT OVEN GRINDERS* has a price that includes a dollar amount, such as *$2.55*. If you insert a space before the price of *Extra Cheese*, which costs just 25¢, decimal points won't line up. Spaces made with the spacebar seem to take up a different amount of space from typed characters.

NOW YOU'RE COOKING

I discovered a fudge factor that's easier to use than fiddling with Publish It!'s *Character Spacing* option (Page menu). Wherever you need a "space holder," use a zero. Enter the cost of *Extra Cheese* as 0.25, the cost of a large *Cheese* pizza (under the *PIZZA* section on the inside left panel of the menu) as 07.95, and so on, as shown in **Figure 3**. Using zeroes as place holders wherever you need prices to line up properly may look dumb, but wait—you're not finished yet.

After printing the your menu's final proof, cover up the place-holding zeroes with typewriter correction fluid. The result? Perfectly oriented columns of data.

ARRANGE AND SERVE

Replicating the rest of Tramonti's menu is easy, thanks to his use of original Publish It! program fonts. Use 36-point Wilmette for the restaurant's name and 12-point Wilmette for the *Remember Us!* message on the back cover.

Use 24-point Deerfield for the headings *PIZZA*, *ITEMS*, *OTHER STUFF*, *PASTA*, and *HOT OVEN GRINDERS*. Use 12-point Deerfield for menu items and prices and 10-point Deerfield for the *Grinder Menu on other side* message hawked by the newsboy.

SIDE DISHES

Prior to printing the final proof in double-strike mode, select the menu's text, section by section, and make it boldface. To select text, insert the I-beam into a text area and drag the mouse across the text, or press Open apple-E.

If you receive the message that the "block" is too large to be selected, try again by selecting a shorter section of text. Once selected, press Open apple-B or pull down the Fonts menu and click on *Bold*. Don't forget to save your completed publication under a name such as Menu.Final.

With a fresh ribbon, print both pages of your menu's final version. Run off the first page (with the menu's inside panels) on a copy machine to make the number of menus you need. Reinsert these sheets and copy the second page (the menu's cover). For best results, use sturdy colored paper or card stock. Fold the menus in half lengthwise, and place them at your tables! ►

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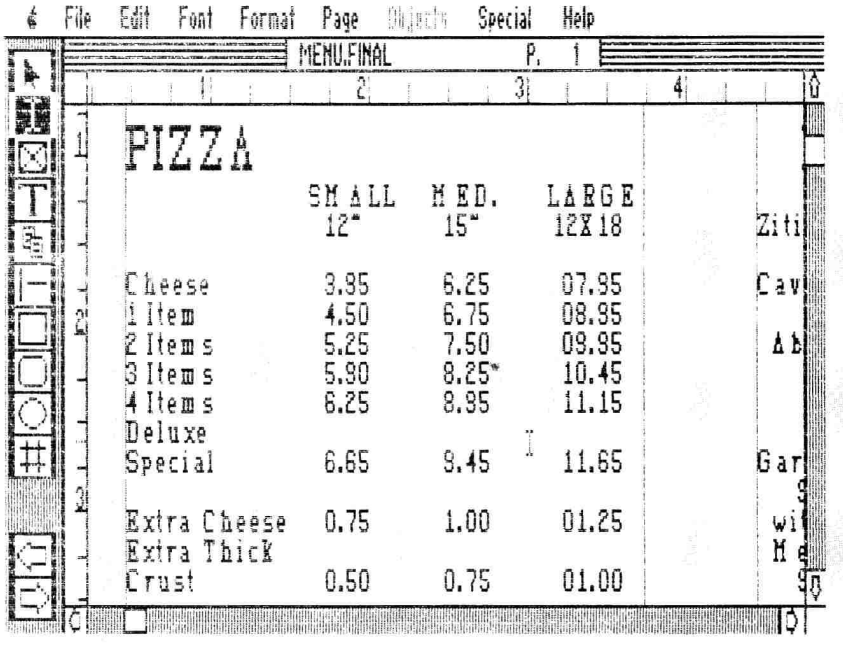

Figure 3. Use zeroes as place holders when working with tabs.

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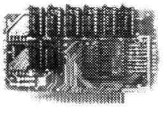

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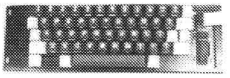

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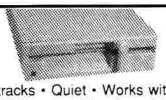

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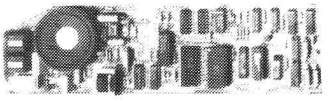

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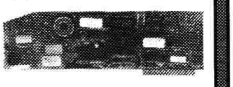

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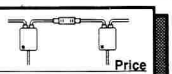

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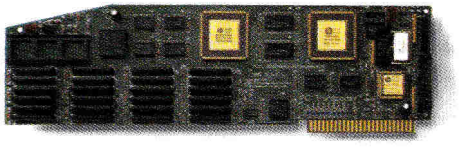

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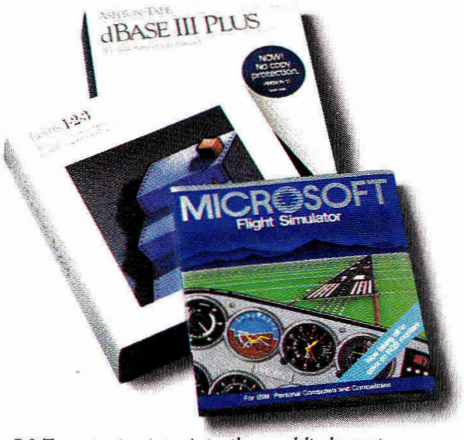

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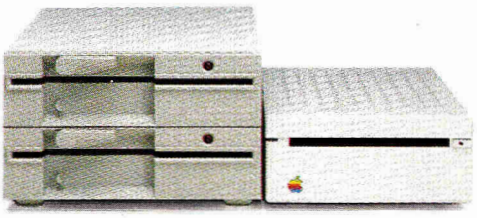

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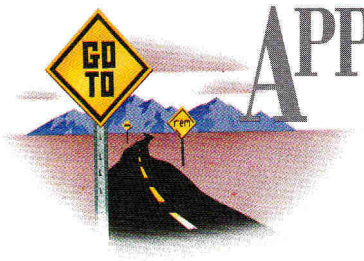

TEACHER'S TUTOR 2

Where can you find good educational software? Create your own—programs that will inspire the next generation of thinkers and leaders.

By DAN BISHOP

IF THERE'S A CRISIS IN EDUCATION today, we have the tools to overcome it. Apple IIs at home and in the classroom are powerful allies in the struggle to motivate students and teach them the skills they need in an increasingly complex world. What programs are best? If you can't find the type of software you're looking for, Applesoft BASIC can give you the building blocks to design your own.

QUICK REVIEW

January's column (p. 84) introduced Teacher's Tutor, a generic educational program you can use with just about any topic you can think of. Although it's versatile in that sense, the program imposes several restrictions on the types of questions you can ask—and there's room for improvement in the area of "user friendliness," as well. This month's modules (**Listings 1**, **2**, **3**, **4**, **5**, and **6**) present major subroutine changes that correct those deficiencies. For the full Teacher's Tutor program, refer to January's listings and incorporate this month's additions and alterations; then add questions, hints, and answers of your own to complete the program. Make up your own categories, type in your own problems and responses, and create programs that will help train and inspire the Einsteins, Shakespeares, Rembrandts, and Churchills of tomorrow.

The original Teacher's Tutor begins with a greeting message (subroutine 200), performs some bookkeeping operations to initialize the scoreboard data, then presents a menu and obtains the student's selection (subroutine 1500) as S. The menu provides options for quitting the program (S=0), for math problems (S=1) or general-information problems (S=2), or for random selection of problem type by the computer (S=3). If the student wants to quit, the program displays the scoreboard (subroutine 1000) and a goodbye message (subroutine 900). If he or she chooses random selection, the program assigns a value of 1 or 2 to S before proceeding.

Once S has a value, the computer selects (subroutine 2000 or 3000) and displays (subroutine 2100 or 3100) the problem. In BASIC those commands look like this:

```
ON S GOTO 2000, 3000
ON S GOSUB 2100, 3100
```

The display subroutine also returns the answer to the problem as the variable A. The program then calls subroutine 300 to get the student's response (R) and subroutine 400 to evaluate the response (does A=R?). The subroutine returns a variable K$ as either "OK" or "NO" (depending on whether the student responded correctly or not).

If K$="OK" the program calls subroutine 500 to congratulate the student, then displays the updated scoreboard and cycles back to the menu. If K$="NO" after the evaluation subroutine, the computer tells the students the answer is wrong and displays a hint (ON S GOSUB 2110, 3110) if this is the student's first attempt at the problem.

The program then cycles back to redisplay the problem. If the student misses on the second try, the computer displays the correct answer (ON S GOSUB 2120, 3120), followed by the updated scoreboard. The program then returns to the main menu.

Lines 2200–2990 contain all the math problems, while lines 3200–3990 contain the general-information material. Each problem includes question and answer, hint, and an explanation of the answer in successive lines.

In the initial call to subroutine 2000 or 3000, the program assigns a random value to Q, designating which problem in the set the computer will ask. When the program then calls subroutine 2100 or 3100, it issues an ON Q GOTO command, displaying the problem listed at the designated line number.

ON Q GOSUB commands also appear at subroutines 2110 and 3110 to display hints and at subroutines 2120 and 3120 to display solutions. Code for a sample question, hint, and answer sequence appears in **Listing 7**.

Several of the program's deficiencies are apparent. First, A and R are numeric variables: The computer will evaluate only numbers as responses. That's fine for math problems, but it restricts other topics to multiple-choice questions that use a numbered list of possible answers. A second hitch is that the program can't keep track of the questions it has already used. With random selection, the same questions could appear more than once; some may never appear during the student's session.

The scoreboard routine demonstrates a third difficulty. The program displays only the total number of problems attempted, the total number of correct answers, and the total percentage score. With several problem types available, you may want a breakdown and a ►

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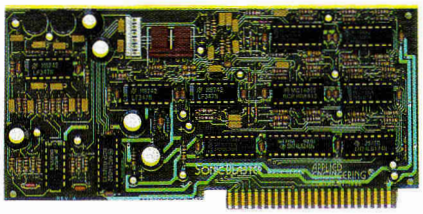

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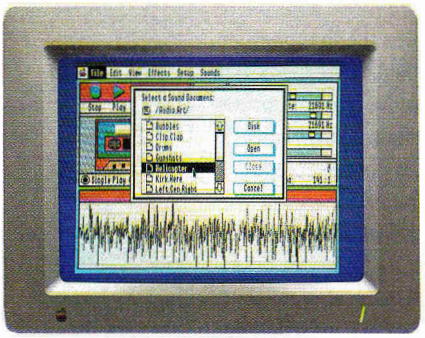

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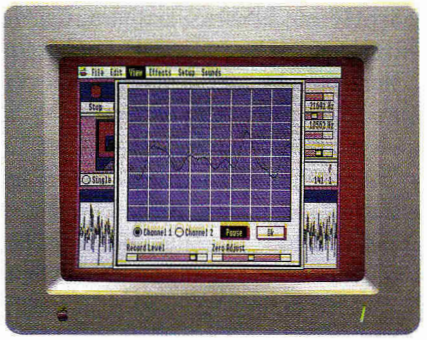

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percentage score for each type as well as for the entire session. This month's program, Teacher's Tutor 2, deals with all these flaws and spruces up the menu routine, too.

CHARACTER RESPONSES

Many teachers dislike multiple-choice questions; perhaps one reason our young people graduate from high school (and college) with little factual knowledge is extensive use of easy-to-grade multiple-guess tests. It's easier to pick out *1492* from a list of four or five dates than to fill in a blank with the correct answer. And students never have to worry about spelling if everything is already written for them.

Applesoft provides some simple methods for handling character and string responses. Subroutine 300 (**Listing 1**) obtains the student's response as a string, R$, and converts it to R, the numeric equivalent, or zero if R$ isn't numeric. (January's program can also handle string input, to avoid crashing if the student enters a nonnumeric character.)

Listing 1 also contains a revised version of subroutine 400, which evaluates the student's response. Lines 400–480 actually contain three subroutines. The first, lines 400–410, is the same as before, handling numeric response. The second, lines 430–440, takes care of a character-string response, which must match the answer to the question exactly (R$ = A$). For instance, the student would answer a question such as "To what part of speech does the word *from* belong?" with a single word.

More-difficult questions must allow for a variety of different responses. For example, "Who was president during the Civil War?" might receive answers such as "Lincoln," "Abe Lincoln," and "Abraham Lincoln," as well as the usual and amazing variety of incorrect responses. Another example is the problem "Name one of the states that lies on the Pacific Ocean." Here the answer must be exact, but it may also be one of five possibilities. Lines 450–480 provide a subroutine to manage such cases. The correct answer, A$, must contain all possible correct responses: "ABE LINCOLN OR ABRAHAM LINCOLN" in the first example, and "ALASKA, WASHINGTON, OREGON, HAWAII AND CALIFORNIA" in the second. Subroutine 450 looks at the student's response, R$, and looks for an exact match against any part of A$.

GETTING AROUND IT

This approach has one flaw: A student can answer the first question with "ABRAHAM" or "BE LINC" and get the problem correct. Shorter responses won't work ("L," for example), because the question passes back an additional parameter, CT, from the question along with A$. CT is the minimum number of characters allowed for a correct response. In this case, because "LINCOLN" is the shortest acceptable answer, CT is 7. This extra requirement reduces the likelihood of the program's counting a weird response as correct.

One bonus you'll get with string handling is that the student must spell the answer correctly to be counted. (The program won't accept "Lincon.") Is it too much to expect our students to learn to write and spell properly?

Note that you must assign values for A$ in quotation marks, as shown above. For example, instead of A = 2 (which is still appropriate for math and multiple-guess questions), you must enter values this way:

```
A$ = "ALASKA, WASHINGTON, OREGON, HAWAII AND
     CALIFORNIA"
```

Although the commas and the word *AND* (or *OR*) aren't necessary, Teacher's Tutor 2 prints the value for A$ when the student misses a

Listing 1. Response match: exact or partial.

```
295  REM   [194]
296  REM  ******************  [3184]
297  REM  GET RESPONSE  [2709]
298  REM  ******************  [3184]
299  REM   [202]
300  INPUT "    YOUR ANSWER?  ";R$  [4391]
305 R =  VAL (R$)  [624]
310  RETURN   [189]
395  REM   [202]
396  REM  ********************  [1044]
397  REM   EVALUATE RESPONSE  [1197]
398  REM  ********************  [1044]
399  REM   [178]
400 K$ = "NO"  [801]
405  IF  ABS (R - A) < (D * A) THEN K$ = "OK"  [2640]
410  RETURN   [197]
430 K$ = "NO"  [853]
435  IF R$ = A$ THEN K$ = "OK"  [2078]
440  RETURN   [193]
450 K$ = "NO":LR =  LEN (R$):LG =  LEN (A$)  [2385]
455  IF LR > LG THEN  RETURN   [1409]
456  IF LR < CT THEN  RETURN   [1375]
460  IF LR = LG THEN  GOTO 430  [2047]
465  FOR I = 1 TO (LG - LR + 1)  [1628]
470 TA$ =  MID$ (A$,I,LR)  [2848]
475  IF R$ = TA$ THEN K$ = "OK"  [2289]
480  NEXT I: RETURN   [543]
```

Listing 2. Scoreboard subroutine.

```
995  REM   [314]
996  REM  ************************  [2775]
997  REM   SCOREBOARD  [804]
998  REM  ************************  [2681]
999  REM   [322]
1000  HOME   [359]
1005  VTAB 3: PRINT "     YOUR SCORE:"  [4175]
1010  VTAB 4: GOSUB 1690: PRINT   [1977]
1015  PRINT "                  TOTAL  NUMBER   PCT"  [3077]
1020  PRINT "                ATTEMPTS CORRECT SCORE"
      [3401]
1025  PRINT   [196]
1030  PRINT "---------------------------------------"
      [6911]
1035  FOR I = 1 TO N  [817]
1036 PC = 0: PRINT M1$(I + 1,1);  [2047]
1037  HTAB 19: PRINT T(I);  [996]
1038  HTAB 28: PRINT RT(I);  [1092]
1039  GOSUB 1080: HTAB 34: PRINT PC" %"  [2213]
1041  NEXT I  [394]
1042  PRINT "---------------------------------------
    "  [6423]
1043  PRINT : PRINT "TOTALS:";  [793]
1044  HTAB 19: PRINT T(0);  [1150]
1045  HTAB 28: PRINT RT(0);  [905]
1046 I = 0: GOSUB 1080  [725]
1047  HTAB 34: PRINT PC" %";  [1012]
1060  GOSUB 150  [689]
1065  RETURN   [201]
1080  IF T(I) = 0 THEN  RETURN   [1339]
1085 PC = 100 * RT(I) / T(I)  [2219]
1090 PC =  INT (10 * PC + .5) / 10: RETURN  [2355]
1495  REM   [330]
1496  REM  ************************  [2561]
1497  REM  ZERO SCOREBOARD & FLAG ARRAYS  [2271]
1498  REM  ************************  [2563]
1499  REM   [306]
1500 D = 0.01:C = 1  [1416]
1505  DIM T(N),RT(N)  [990]
1510  FOR I = 0 TO N  [892]
1515 T(I) = 0:RT(I) = 0  [1796]
1520  FOR J = 1 TO US(0,I)  [1282]
1525 US(J,I) = 0  [1738]
1530  NEXT J,I  [544]
1535  RETURN   [441]
```

Listing 3. Problem selector, with flag variable.

```
1895  REM   [330]
1896  REM  ********************  [4791]
1897  REM   PROBLEM SELECTOR  [3321]
1898  REM  ********************  [4393]
1899  REM    [306]
1900 Q =  INT (US(0,S) *  RND (1) + 1)  [1835]
1905  IF US(Q,S) = 0 THEN US(Q,S) = 1: RETURN   [3598]
1915 Q = Q + 1: IF Q > US(0,S) THEN Q = 1  [3045]
1920  GOTO 1905  [297]
1925  RETURN   [201]
1995  REM   [306]
1996  REM  ************************  [2372]
1997  REM  MATH PROBLEM SELECTOR  [1728]
1998  REM  ************************  [2476]
1999  REM   [314]
2000 Q =  INT (4 *  RND (1) + 1)  [1883]
2005 P1 =  INT (12 *  RND (1) + 1)  [2351]
2010 P2 =  INT (12 *  RND (1) + 1)  [2237]
2015  RETURN   [317]
```

Listing 4. Improved menu subroutine.

```
1595  REM   [308]
1596  REM  ******************  [4428]
1597  REM  READ MENU DATA  [3026]
1598  REM  ******************  [4508]
1599  REM   [316]
1600  HOME : READ M1,N,NQ: DIM M1$(M1,2)  [3098]
1605  DIM US(NQ,N)  [1836]
1606  READ M1$(0,0)  [1577]
1607  FOR I = 1 TO N  [999]
1608  READ US(0,I)  [1672]
1609  NEXT I  [416]
1610  FOR I = 1 TO M1  [1259]
1615  READ M1$(I,0),M1$(I,1),M1$(I,2)  [5352]
1620  NEXT I  [451]
1625  RETURN   [333]
1629  DATA  9, 5, 10, "MASTER MENU - TEACHER'S TUTOR
    "  [8407]
1630  DATA  10, 5, 6, 4, 4  [3451]
1631  DATA  "?","      HELP      ","PRESS <?> WHEN A
    NY OPTION IS HIGHLIGHTED TO RECEIVE HELP MESSAGE
     FOR THAT ITEM."  [20610]
1632  DATA  "G","    GEOMETRY    ","THIS SELECTION D
    ISPLAYS ONE OF FOUR     PROBLEM TYPES IN GEOMETR.
    Y."  [17391]
1633  DATA  "E", "    ENGLISH     ","THIS SELECTION
    DISPLAYS QUESTIONS ABOUT THE PARTS OF SPEECH."  [16626]
1634  DATA  "H", "    HISTORY     ","THIS SELECTION
    DISPLAYS QUESTIONS ABOUT HISTORICAL EVENTS."  [16166]
1635  DATA  "L","   LITERATURE  ", "THIS SELECTION D
    ISPLAYS QUESTIONS ABOUT AMERICAN LITERATURE."  [16197]
1636  DATA  "A", "   ASTRONOMY   ", "THIS SELECTION
    DISPLAYS QUESTIONS ABOUT THE CONSTELLATIONS."  [16417]
1637  DATA  "R", "RANDOM SELECTION", "THE COMPUTER S
    ELECTS PROBLEMS FROM ALL  CATEGORIES BY RANDOM S
    ELECTION."  [18932]
1638  DATA  "S", "     SCORES     ","THIS SELECTION
    DISPLAYS THE SCOREBOARD"  [12187]
1639  DATA  "Q","      QUIT      ","THIS SELECTION EN
    DS THE PROGRAM."  [10694]
1690  INVERSE : PRINT  SPC( 40);: NORMAL : RETURN   [1524]
1695  REM   [188]
1696  REM  ******************  [1006]
1697  REM  MENU DISPLAY  [994]
1698  REM  ******************  [934]
1699  REM   [196]
1700  HOME : VTAB 5: GOSUB 1690: PRINT   [1065]
1705  PRINT "     ";M1$(0,0): GOSUB 1690: PRINT   [2801]
1706  VTAB 10: HTAB 12: FOR I = 1 TO M1  [1525]
1710  PRINT M1$(I,0);" ";  [916]
1715  NEXT I  [358]
1720 M = 1: GOSUB 1750  [1331]
1725  INVERSE   [288]
```

Continued

problem on the second attempt. Arrange A$ to make this feature read properly.

EVALUATION TIME

A final note on character responses: To use the correct evaluation subroutine, the main program must include an ON S GOSUB command instead of the simple 60 GOSUB 400 command found in January's program. Each problem-type S in your program must fit into one of the three categories of evaluation. (You can't mix evaluation methods within one problem type.) If types 1 and 2 require exact-word responses, 3 requires a numeric response, 4 allows varied response, and 5 requires an exact-word response, your main program would include the following line:

60 ON S GOSUB 430, 430, 400, 450, 430

SUPER SCOREBOARD

With five different problem types, Teacher's Tutor 2 uses a more elaborate scoreboard display than January's program. **Listing 2** shows lines 1000–1090 for this subroutine, and lines 1500–1535, which initialize the scoreboard variables. Displayed are the total number of questions attempted, number of correct answers, a percentage score for each problem type, and a grand total for all problems worked. The general approach is the same in both programs, but the bookkeeping here is a little more complicated.

The two variables in January's program are T and RT, for *total worked* and *number right*. Teacher's Tutor 2 uses two arrays, T(i) and RT(i), where *i* corresponds to the problem type (S) or zero (for the grand totals). Now instead of T = T + 1 (line 40) to increment the total number of attempted problems each time a new question is assigned, the expression is as follows:

40 T(S) = T(S) + 1 : T(0) = T(0) + 1

Similarly, the following line yields the number of correct responses:

95 RT(S) = RT(S) + C : RT(0) = RT(0) + C

You must increment both the subtotals for the individual problem type, T(S) and RT(S), and the grand totals, T(0) and RT(0). C, you'll recall, equals 1 if this is the student's first attempt at working the problem; 0.5 if it's a second try; and 0 (zero) if he or she missed twice.

ANOTHER DIMENSION

Note that you must dimension arrays with BASIC's DIM statement before you can use them. To dimension the T and RT arrays, the computer must know the number of problem types and the total number of questions for each type. The program supplies this information as DATA statements the computer reads at the beginning of the program (lines 1629 and 1630 in **Listing 4**).

Line 1629 reads as follows:

1629 DATA 9, 5, 10, "MASTER MENU—TEACHER'S TUTOR"

The *9* tells the computer there are nine menu options (M1); the *5*, that there are five problem categories from which to choose (N); and the *10*, that the largest problem set contains ten questions (NQ).

Line 1630's DATA statement is shown below:

1630 DATA 10, 5, 6, 4, 4

It lists the number of problems available in each category, in the order in which the categories appear in the menu list. Once the computer knows the number of problem types (N), it can dimension and zero the scoreboard arrays (lines 1505–1530 in **Listing 2**). ►

Continued

```
1730  VTAB 12: HTAB 1: GOSUB 1690: PRINT   [2048]
1735  PRINT "PRESS RIGHT OR LEFT ARROW KEYS TO
          CHANGE SELECTION."  [4056]
1736  PRINT "PRESS LETTER KEY TO SELECT MENU ITEM, O
    R <RETURN> TO SELECT HIGHLIGHTED ITEM."  [5213]
1738  RETURN   [305]
1745  REM   [316]
1746  REM  ********************  [2022]
1747  REM  DISPLAY 1 MENU ITEM  [1408]
1748  REM  ********************  [2022]
1749  REM   [324]
1750  VTAB 10: HTAB 10 + 2 * M  [1735]
1751  INVERSE : PRINT M1$(M,0);  [2404]
1755  VTAB 12: HTAB 12: PRINT M1$(M,1);  [2233]
1760  NORMAL   [353]
1765  RETURN   [325]
1766  REM   [330]
1767  REM  ********************  [2569]
1768  REM  UN-HILITE ITEM  [1255]
1769  REM  ********************  [2571]
1770  VTAB 10: HTAB 10 + 2 * M  [1719]
1775  NORMAL : PRINT M1$(M,0);  [2410]
1785  RETURN   [333]
1793  REM   [194]
1794  REM  **********************  [3848]
1795  REM  KEYBOARD ENTRY OF MENU   [4672]
1796  REM  SELECTION AND CHOICE  [4291]
1797  REM  VALIDATION  [2270]
1798  REM  **********************  [3944]
1799  REM   [202]
1800  GET Z$: IF MF THEN  VTAB 22: HTAB 1: PRINT  SPC(
    119):MF = 0  [3609]
1805  IF M > 1 AND  ASC (Z$) = 13 THEN S = M - 1: RETURN
     [2482]
1810 Z = 0: FOR I = 2 TO M1  [1159]
1815  IF Z$ = M1$(I,0) THEN Z = 1:S = I - 1:M = I  [2800]
1820  NEXT I  [428]
1825  IF Z = 1 THEN Z = 0: RETURN   [1384]
1830  IF  ASC (Z$) <  > 21 THEN  GOTO 1850  [1387]
1835  GOSUB 1770:M = M + 1  [1676]
1840  IF M > M1 THEN M = 1  [1103]
1845  GOSUB 1750: GOTO 1800  [1204]
1850  IF  ASC (Z$) <  > 8 THEN  GOTO 1870  [1357]
1855  GOSUB 1770:M = M - 1  [2084]
1860  IF M < 1 THEN M = M1  [1233]
1865  GOSUB 1750: GOTO 1800  [1900]
1870  IF Z$ <  > "?" AND  NOT ( ASC (Z$) = 13 AND M =
    1) THEN  GOTO 1800  [4421]
1875  VTAB 22: HTAB 1  [1167]
1880  INVERSE : PRINT  SPC( 40);: NORMAL   [1598]
1885  PRINT M1$(M,2);:MF = 1  [2741]
1890  GOTO 1800  [1199]
```

Continued

```
3221  RETURN   [177]
3240  PRINT "ADVERBS MODIFY VERBS. 'QUIETLY IS AN
     ADVERB."  [3440]
3241  RETURN   [185]
3398  REM   [308]
3399  REM  ********************  [4424]
3400  GOSUB 1690: PRINT "WHAT IS THE MOST COMMON ANT
    ONYM FOR THE WORD 'LOVE'?"  [4833]
3401  GOSUB 1690:A$ = "HATE": RETURN   [2562]
3420  PRINT "ANTONYMS ARE WORDS THAT MEAN THE
       OPPOSITE OF EACH OTHER."  [13407]
3421  RETURN   [325]
3440  PRINT "HATE IS THE ANTONYM OF LOVE.": RETURN   [6606]
4248  REM   [194]
4249  REM  **********************  [1005]
4250  PRINT "NAME ONE OF THE COUNTRIES THAT BELONGED
     TO THE AXIS POWERS IN WORLD WAR II."  [5147]
4251  PRINT :A$ = "GERMANY, ITALY, OR JAPAN":CT = 5:
     RETURN   [6572]
4270  PRINT "THE AXIS POWERS WERE THOSE COUNTRIES
     AGAINST WHOM THE UNITED STATES FOUGHT.": RETURN
      [6096]
4290  PRINT "THERE WERE THREE AXIS POWERS IN WW II."
      [2828]
4291  RETURN   [309]
4998  REM   [196]
4999  REM  **********************  [616]
5200  PRINT "WHO WROTE 'THE GRAPES OF WRATH'?"  [6967]
5205  PRINT :A$ = "JOHN STEINBECK"  [2053]
5206 CT = 9: RETURN   [798]
5220  PRINT "THIS AUTHOR ALSO WROTE 'CANNERY ROW'."  [7689]
5221  RETURN   [321]
5240  PRINT "JOHN STEINBECK WROTE 'THE GRAPES OF
     WRATH' ABOUT THE DUST BOWL YEARS IN THE GREAT D
    EPRESSION ERA."  [7103]
5241  RETURN   [201]
6198  REM   [330]
6199  REM  **********************  [5480]
6200  GOSUB 6900: HOME : PRINT "WHAT IS THE NAME OF
    THE LARGER CONSTEL- LATION TO WHICH THE BIG DIPP
    ER BELONGS?"  [17023]
6201 A$ = "URSA MAJOR"  [2697]
6202  RETURN   [309]
6220  PRINT "THE CONSTELLATION IS SHAPED LIKE A BIG
     BEAR."  [9307]
6221  RETURN   [313]
6240  RETURN   [321]
6900  GR : COLOR= 13: PLOT 10,9: PLOT 17,11: PLOT 19
    ,16: PLOT 23,20: PLOT 23,28: PLOT 29,31: PLOT 31
    ,24: PLOT 39,1  [5718]
6901  HTAB 1: VTAB 21: RETURN   [1032]
```

Listing 5. Sample problems. Note graphics at 6900.

```
3090  REM  SAMPLING OF PROBLEMS  [4130]
3091  REM  IN PROGRAM  [2000]
3092  REM  **********************  [3662]
3096  REM  **********************  [4242]
3097  REM  ENGLISH - SHORT ANSWER  [4398]
3098  REM  **********************  [4242]
3099  REM   [188]
3100  ON Q GOTO 3200,3250,3300,3350,3400  [2756]
3110  ON Q GOSUB 3220,3270,3320,3370,3420  [2737]
3115  GOSUB 150: RETURN   [875]
3120  ON Q GOSUB 3240,3290,3340,3390,3440  [2777]
3125  PRINT "THE CORRECT ANSWER IS "A$  [5369]
3130  GOSUB 150: RETURN   [1272]
3198  REM   [194]
3199  REM  ********************  [956]
3200  GOSUB 1690: PRINT "THE RED FOX HID QUIETLY IN
    THE LOG.": GOSUB 1690  [8353]
3202  PRINT "TO WHAT PART OF SPEECH DOES THE WORD
       QUIETLY   BELONG?"  [4333]
3203  PRINT :A$ = "ADVERB": RETURN   [2207]
3220  PRINT "QUIETLY MODIFIES THE VERB HID IN THIS
     SENTENCE.  WHAT CLASS OF WORDS NORMALLY MODIFIE
    S VERBS?"  [6724]
```

Continued

Listing 6. Main program code.

```
1  REM   TEACHER'S TUTOR II  [3757]
2  REM  INCIDER'S APPLESOFT ADVISOR  [5614]
3  REM  MARCH, 1990  [2583]
4  REM  DAN BISHOP  [2132]
5  REM  **********************  [4085]
6  REM   [186]
10  GOSUB 200: REM  TITLE & GREETING  [1954]
15  GOSUB 1600: REM  READ MENU DATA  [1826]
20  GOSUB 1500: REM  INITIALIZE ARRAYS  [2030]
25  GOSUB 1700: REM  MENU DISPLAY  [1757]
26  GOSUB 1800: REM  MENU RESPONSE  [1740]
30  IF S = M1 - 1 GOTO 110: REM  END  [1968]
31  IF S = M1 - 2 THEN  GOSUB 1000: GOTO 25: REM  SH
    OW SCOREBOARD  [6061]
35  IF S = M1 - 3 THEN S =  INT (N *  RND (1) + 1): REM
     RANDOM SELECTION  [3721]
36  IF T(S) = US(0,S) THEN  HOME : VTAB 10: PRINT "T
    HERE ARE NO MORE QUESTIONS IN THE     ";M1$(S +
    1,1);"CATEGORY.": PRINT "PLEASE MAKE A DIFFERENT
     SELECTION.": GOSUB 150: GOTO 25  [13138]
40 T(S) = T(S) + 1:T(0) = T(0) + 1  [2899]
44  REM  GENERATE PROBLEM OR SELECTION  [5963]
```

Continued

Continued

```
 45  ON S GOSUB 2000,1900,1900,1900,1900  [2838]
 49  REM  DISPLAY PROBLEM  [3135]
 50  HOME : ON S GOSUB 2100,3100,4100,5100,6100  [6100]
 55  GOSUB 300: REM  GET RESPONSE  [1671]
 59  REM  FOR EVALUATION, USE 400 FOR NUMERIC ANSWERS
     , 430 FOR EXACT STRING MATCHES, AND 450 FOR PART
     IAL STRING MATCH (BUT INCLUDE CT VALUE WITH A$)  [26944]
 60  ON S GOSUB 400,430,450,450,430: REM  EVALUATE RE
     SPONSE  [5995]
 64  TEXT : HOME  [608]
 65  IF K$ = "OK" THEN  GOSUB 500: GOTO 95  [1833]
 70 C = C - 0.5: GOSUB 700  [1808]
 75  IF C < 0.1 GOTO 90  [1541]
 79  REM  DISPLAY HINT  [2607]
 80  ON S GOSUB 2110,3110,4110,5110,6110  [1193]
 85  GOTO 50: REM  TRY AGAIN  [1553]
 89  REM  DISPLAY ANSWER  [2951]
 90  ON S GOSUB 2120,3120,4120,5120,6120  [1247]
 95 RT(S) = RT(S) + C:RT(0) = RT(0) + C:C = 1  [3826]
100  GOSUB 1000: REM  SCOREBOARD  [2012]
105  GOTO 25  [736]
110  GOSUB 1000: GOSUB 900: REM  GOODBYE  [3587]
115  END  [358]
```

Listing 7. Sample question, hint, and answer.

```
3200 PRINT "WHICH OF THE FOLLOWING IS A CARBOHYDRATE?"
3205 PRINT " 1) ASPIRIN     2) SUCROSE     3) GLYCERINE"
3210 PRINT " 4) MONOSODIUM GLUTAMATE      5) SODIUM CHLORIDE"
3215 A = 2 : RETURN
3220 PRINT "HINT: SUGARS BELONG TO THE CARBOHYDRATE FAMILY."
3225 RETURN
3230 PRINT "SUCROSE, A SUGAR, IS A CARBOHYDRATE."
3235 RETURN
```

Designing the program to avoid the same question appearing twice is only slightly more difficult. The key is to assign a *flag* to each question. The program initially gives these flags a value of 0 (zero); then, as the program chooses a question, it changes that question's flag to 1. Thus, when it selects a question, the computer checks its flag value before displaying the question. If the flag value is 0, it changes it to 1 and displays the question; if the value is already 1, the computer cycles back to find a question it hasn't used yet.

For this method to work, the computer must also know the number of questions available in each category. When the student selects a category, the computer must first determine that questions are still available in that category (line 36 in **Listing 6**). If not, it displays a message, and the master menu reappears. Without this test, the computer could find itself in an endless loop, trying to locate an available question when none is left. T(S) contains the total number of questions asked from category S; US(0,S) contains the total number of questions in category S, as read from the DATA statement mentioned earlier.

FLAG IT DOWN

As for the flags themselves, a two-dimensional array is the answer, US(j,i), where *i* is the category value, S, and *j* is the question number within that category. When the computer reads the DATA statements at the beginning of the program, line 1629 provides the number of categories, N, and the size of the largest set of questions, NQ. The program uses them to dimension US(j,i) as DIM US(NQ,N). The computer reads the total number of questions in each data set from line 1630 into US(0,i) (lines 1600–1625 in **Listing 4**) and sets the rest of the ►

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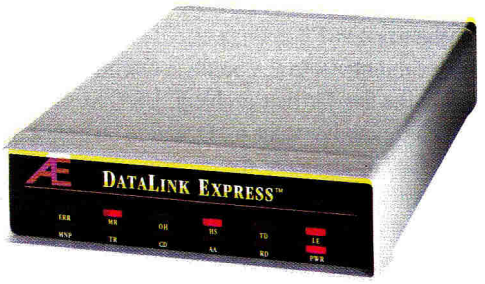

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elements (the flags) in US to 0 (zero).

When the computer selects a problem Q from category S (**Listing 3**), it first checks the flag for that problem, US(Q,S). If the flag value isn't 0 (zero), it selects another value for Q, and so on until it finds an unused problem. Before returning to the main program, it sets US(Q,S) to 1, ensuring that it won't use that problem again.

The math-problem selector is slightly different (lines 1900–1920) and remains unchanged from January's program. Here, because the number of different problems is unlimited, the computer sets and checks no flags. The program uses Q to select one of the four math-problem types; P1 and P2 are the randomly generated values the problem uses. The computer checks the total number of math problems presented against the number in the DATA statement. This technique provides a built-in limit on the number of math problems the program asks.

A BETTER MENU

The menu in January's program uses simple PRINT commands to display options, and an INPUT command to obtain the student's selection. Teacher's Tutor 2 has a more "user-friendly" menu. The computer reads the information displayed as DATA statements (lines 1600–1639 in **Listing 4**).

Each menu item consists of three data elements: a single character representing that element in the menu display; a single word or short phrase for that element; and a longer "help" phrase describing the selection in more detail. Here, for example, is line 1639:

1639 DATA "Q", "QUIT", "THIS SELECTION ENDS THE PROGRAM."

Once the program reads these data into the menu array, M1$, it can display them with a GOSUB 1700. Lines 1700–1785 handle the menu display, which for the data in **Listing 4** looks like this:

? G E H L A R S Q
LITERATURE

In this example the *L* is highlighted; the name of that selection appears on the display. The student can change the highlighted character and the name with the right- and left-arrow keys, and can type ? to display that selection's help phrase. To select an item, the student either presses the appropriate letter key or moves the highlight to the desired letter and presses Return. Lines 1800–1890 (**Listing 4**) contain the code for the keyboard-selection routines. (See "Menu Selector," Applesoft Adviser, December 1987, p. 129, for a discussion of selection-subroutine operation.)

DRILL QUESTIONS

As you might guess, the problems themselves occupy much of the program space. **Listing 5** displays a sample question segment for five character-answer problems. The math segment (the *Geometry* selection, lines 2200–2995) is the same as in January's program. Lines 3200–3995 are reserved for English problems; 4200–4995 are for history; and so on. Instead of allowing 100 line intervals for each problem, Teacher's Tutor 2 allows only 50.

Thus the questions themselves come at lines 3200, 3250, 3300, and so on; lines 3220, 3270, 3320, and so on provide the hints; and lines

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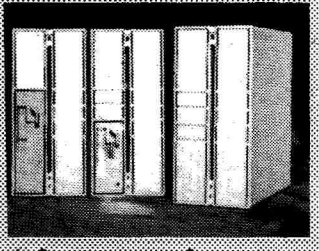

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3240, 3290, 3340, and so on give the solutions.

GIVE ME A HINT

You can use the hints to provide additional information about the subject. If you can anticipate probable incorrect responses, you can present a different comment for each one when you give the hint or the solution to the problem. Just precede each hint with this statement: IF R$=... THEN PRINT ....

Direct both the hint and the solution GOSUB commands to the same line number if you want this feature to work on both attempted answers. You can use C's value (1.0, 0.5, or 0.0) to cut off the sequence of possible hints before displaying A$, the answer to the problem on the first go-round:

IF C>0.1 THEN RETURN

IMAGINE

This technique is tremendously reinforcing and allows the tutorial nature of the program to realize its greatest advantage. It also requires you, the instructor and author of the questions, to use your imagination.

Also shown in **Listing 5** (lines 6200–6901) is a sample problem that includes a graphics display as part of the question. Because Teacher's Tutor 2 handles each problem as a single unit, you can create individual problems that use either low- or high-resolution graphics or sound as part of the question. The basic program handles such problems without modification, but you'll have to shorten your questions to fit into the text window below the graphics window. Line 64 (**Listing 6**) converts display mode to text before the program proceeds. You can be as creative as the capabilities of your computer will allow.

DETAILS

Listing 6 (lines 1–110) contains the changes you'll need to convert January's main program to Teacher's Tutor 2. If you compare the two listings, you'll be surprised at how similar they are; January's program flowchart (p. 85) remains essentially the same. This is one of the major advantages of using subroutines to achieve program modularity: You can make important changes in an individual subroutine without seriously affecting the rest of the program.

Specific segments in January's column that remain unchanged are lines 145–245, 495–930, and 1995–2560. These sections also contain subroutines you can spruce up with graphics and sound without worrying about problems in other parts of the program. For a disk copy of the complete Teacher's Tutor with sample questions for each category, mail $12 and an initialized or formatted disk (indicate DOS or ProDOS) to the address below.□

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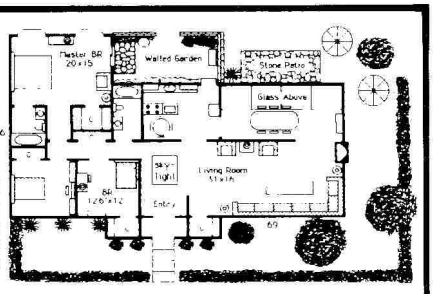

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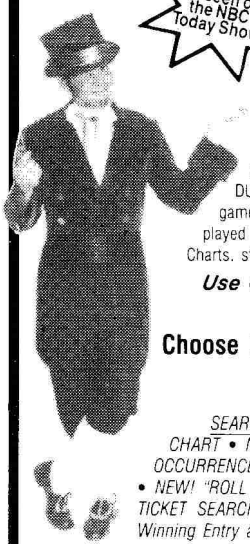

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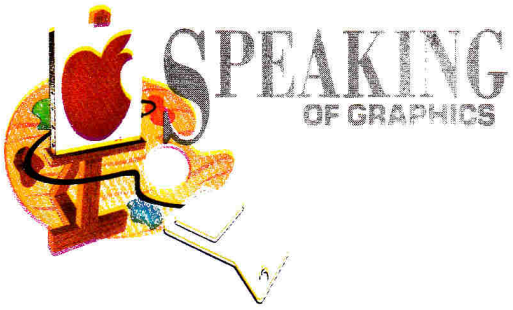

MAIL CALL

Our readers respond . . . . From animation to color fringing to file conversion, sharing your questions and project ideas helps other graphics enthusiasts develop their creativity.

By ROBERTA SCHWARTZ and MICHAEL CALLERY

IT'S TIME AGAIN FOR ANOTHER letters-to-the-graphics-editors column. We respond individually to all letters we receive, but some of them involve issues we're sure more of you want to know about. So here goes. . . .

MOVING IT

Steve Zaske from Corvallis, Oregon, wrote to ask about animation software for the Apple IIGS. Steve's a broadcasting major and wants high-quality animations for titling and other TV graphics.

Steve's **Apple II Video Overlay Card** provides the necessary connection between the computer and his VCR. (See our features "Roll Video," May 1989, p. 42, and "Reel-World Images," July 1989, p. 40, for more information.) We've reviewed all the animation software for the Apple II at one time or another.

Fantavision, one of our favorite programs (Editors' Choice, February 1988, p. 120), doesn't produce the detail Steve wants, owing to its vector-graphics approach. Each Fantavision object is composed of lines; the computer knows the lines, not the actual dots that make up the screen image.

When an object is animated, the computer generates the screen image (a bit map) from the vector information. If the software allowed you an infinite number of lines per object, you could create detailed images. Fantavision places restrictions on the number of line segments per object, however, making it difficult to create detail.

. . . BIT BY BIT

What Steve needs is a bit-mapped animation program. With a bit-mapped program, you control every pixel in the image and can create as detailed an image as you require—given, of course, the 320-by-200 resolution of the Apple IIGS super-hi-res color screen. (The resolution of the GS' black-and-white screen is 640 by 200 pixels.)

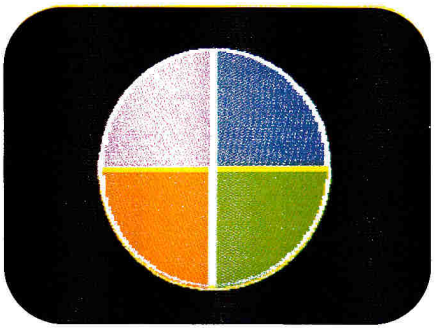

Figure 1. Video color wheel.

Art & Film Director (Reviews, July 1989, p. 28) from Epyx is the only product currently available that lets you create super-hi-res bit-mapped animation. Art & Film Director is a tad harder to use than we'd like, but it's powerful. With practice, you should be able to create impressive animation screens.

By the way, don't forget the animation capabilities of **Paintworks Gold**: for many applications this popular program may provide all the animation you need.

LIVING COLOR

Steve also wanted to know why more products don't tap the 256 color capabilities of the Apple IIGS.

The primary difficulty, we think, is the user interface: How does the programmer let you determine which scan lines are assigned to which palettes?

If you're animating, the problem is only exacerbated, because you may have to change palettes on the fly as an object moves vertically on screen.

If you're a programmer, you can use products such as Bachir Kassir's **Spectragraphix 256** to create animation that uses all 256 possible on-screen colors, but it won't be easy. (Then again, no animation is easy!)

PURPLE SHADOWS

Gary Hayman from Greenbelt, Maryland, wrote to ask whether there's a way to eliminate the annoying purple and green shadows he finds when plotting shapes on the standard hi-res screen.

The answer's yes—and no. These "shadows" are a result of the way the Apple II produces color in standard hi-res mode; you can't eliminate them without changing your shapes.

Now this may surprise you, but the Apple II in hi-res mode doesn't produce a color display. You see color on screen, but it isn't real. Technically, it's an artifact of the size of the Apple II hi-res pixel and the way the video signal is timed.

Steve Wozniak, designer of the original Apple II, wanted the computer to have color, and he wanted it cheap. The colors green and violet are located 180 degrees apart on the ►

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video color wheel (**Figure 1**), so, using very simple timing circuitry, Woz designed the color electronics of the Apple II to output even pixels at the green-wave angle and odd pixels at the purple-wave angle.

All the Apple II knows is that a bit is turned on in video RAM (random-access memory). If that bit falls on an even x-coordinate, the pixel will be green; if it falls on an odd x-coordinate, the pixel will be purple; and if two adjacent bits are on, the pixel will be white.

. . . AND SUNSET HUES

Incidentally, orange and blue came later in the history of the Apple II and are created according to the same video-timing principles: Orange is 180 degrees from blue on the video color wheel (and 90 degrees from green and violet).

If an unused bit in each byte of video RAM is turned on, the whole byte—or seven pixels—will be "phase shifted" 90 degrees to blue or orange, rather than green or violet.

If this explanation seems hopelessly technical to you, don't worry. It simply means that any shape that's one pixel wide *must* be colored.

And that leads to the solution to Gary's problem: Edit your shapes so that they're two pixels wide rather than one, and the violet or green shadowing will disappear (**Figure 2**).

DOUBLE-HI-RES BLUES

Shawn Lin from Springfield, Missouri, wrote to ask whether there are any programs that tap the 560 potential horizontal dots of double-hi-res mode.

Shawn notes in his letter that **Dazzle Draw**'s smallest brush is too large. Dazzle Draw forces you to work in color, which reduces the resolution of double hi-res from 560 by 200 to 140 by 200: It takes four bits to make a single colored pixel, and there are only 560 usable bits across the double-hi-res screen. (In Dazzle Draw zoom mode, select *color on*, then *color off*, from the Goodies menu to see the difference in horizontal resolution. By the way, there are actually 640 horizontal bits in double-hi-res, but 80 of them aren't used to form pixels.)

. . . AND THE CURE

Try **Beagle Graphics** from Beagle Bros. Although the user interface of the paint program in Beagle Graphics isn't as elegant as Dazzle Draw's, it does offer a brush that's one bit wide.

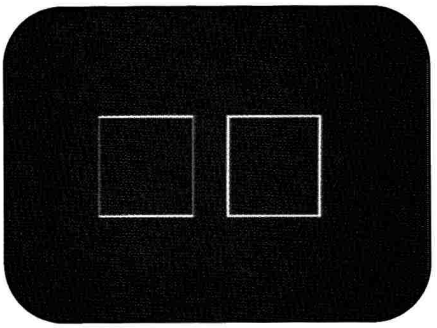

Figure 2. Two-pixel border (right) eliminates violet and green shadows.

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Note that you should turn color off (use either the color controls on your monitor or the color/monochrome toggle on the Control Panel of the Apple IIGS) for 1-bit-wide lines, or shapes will be colored (for much the same reason as the green/purple problem of standard hi-res).

SIZE IT UP

A number of readers asked us about file conversion, which seems to be a major ongoing problem for Apple II graphics people.

Jerry Taylor of Hilton, New York, asked whether you can shrink full-sized standard hi-res screens to use with **The Print Shop**. There's a way—try Roger Wagner's **Graphic Exchange**.

You can load a standard hi-res screen and choose a scaled transfer to shrink the whole image to a Print Shop-sized image or expand a Print Shop graphic to full screen.

CONVERTING GIFs

Luis Villa from Nogales, Arizona, wrote for help in converting GIF (graphic interchange format) files to Apple II formats.

A number of on-line services use GIF to provide graphics for different computer systems. That is, you can convert an Apple II graphic to GIF format, upload it to an IBM PC, and convert it for the PC.

The idea is a noble one, but the variety of graphics capabilities involved (color, resolution, and so on) make full conversion impossible. Still, you can exchange the basic graphics image.

We've had little experience with GIF files and can offer Luis no practical help. How about you? We're certain that someone out there must have some experience with GIF conversions.

Write us and tell us what programs you use, where you got them, and any tips you might have for Luis (and us). We'll relay them in a future column. Until then, keep those cards and letters coming, folks!□

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Continued from p. 37

spent in subroutines, examining memory, or displaying hardware instructions and status. The ORCA desktop also includes special windows for showing either text or graphics output.

Once you've mastered some C, you might want to switch to the text screen. In look and feel, it has more in common with Applesoft BASIC. From the # prompt, you issue commands for entering the text-screen editor, compiling program code, or manipulating files.

This environment is somewhat less "user friendly" than the desktop, and it doesn't include many of the desktop's debugging features. Many experienced programmers prefer the text environment, however, because it's faster and you can customize it.

ORCA/C can produce programs for text-screen, graphics-only, or Macintosh-style desktop programs. It includes commands that simplify setting up both graphics and desktop applications. It's also simple to write new and classic desk accessories. The samples disk includes examples of all the above programs.

In the way third-party add-ons such as the TimeOut series have made AppleWorks more useful, you can add to your ORCA/C programs. ORCA/C uses the same environment as the other Byte Works and Apple Programmers Workshop languages, so you can mix portions of other languages, such as Assembler and Pascal, with ORCA/C. Commercial or public-domain utilities also work with it.

Add-on libraries can save you the tedium of writing your own rountines. For instance, 360 Microsystems' Text Toolkit improves text-screen input, output, and menus. Several other companies have announced tools that will help you develop GS desktop applications.

MANUALS AND TEXTBOOKS

The recent adoption of a C standard by the American National Standards Institute (ANSI) was an important development for the language. ORCA/C is ANSI-compatible. For the beginner, that means that a wide variety of books, articles, and other materials for learning C are available. ANSI-compatible code written on a Cray supercomputer or an IBM compatible should work under ORCA/C.

The ORCA/C manual includes an introduction to the environment and GS programming possibilities. A set of reference chapters outlines the language features as implemented in ORCA/C. The manual doesn't contain a tutorial, though.

On the other hand, several excellent texts are available. The most important is *The C Programming Language* (Prentice-Hall, $30), by Kernighan and Ritchie. Commonly known as "*K&R*," it's the C bible written by the original authors of the language. A nice companion to *K&R* is *The C Answer Book* (Prentice-Hall, $22), by Tondo and Gimpel, which answers and explains the exercises in *K&R*.

C: An Advanced Introduction (Computer Science Press, $22.95), by Gehani, provides a quicker and more detailed introduction to C for the advanced programmer. At the opposite end of the experience spectrum, *C Primer Plus* (Howard W. Sams, $24.95), by the Waite Group, is a leisurely introduction for the novice programmer.

There are two other titles you might want to have in your C library. If you work your way through the puzzles, answers, and explanations in *The C Puzzle Book* (Prentice-Hall, $26), by Feuer, you'll have a sophisticated understanding of C. If you want to have a good C reference handy when developing programs, a good choice is *C: A Reference Manual* (Prentice-Hall, $27), by Harbison and Steele.

For those and any other titles, make sure you specify the ANSI C edition. A well-stocked bookstore should carry these titles, or at least be able to order them. You could also check with your local library.

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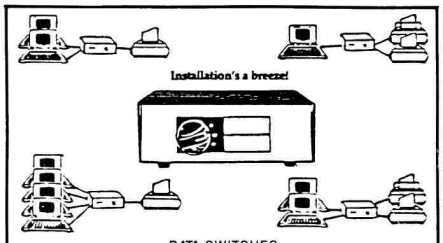

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languages is caused by the linker, which combines your compiled code with routines from standard and custom library files. The first time you load the linker into ORCA/C, the language keeps it in memory so that subsequent linking of short programs should be faster. Longer programs, however, may purge the linker. The next version of ORCA/C should use GS/OS version 5.0 and improve the linker speed significantly.

Because C is a high-level language, it takes less time to write a C program than an equivalent assembly-language program. A good C implementation such as ORCA/C will also produce programs that are more compact and efficient than other high-level languages.

ORCA/C makes the language accessible to the C beginner. If you've never programmed before, though, you should probably start with some form of BASIC. If you're frustrated with the limitations of other GS languages, your investment of time and money in ORCA/C will be well rewarded.

Ron Berntson
Saskatchewan, Canada

ONCE UPON A TIME GS

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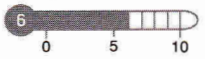
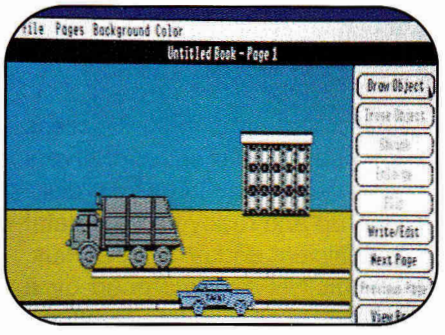


I've put Once Upon a Time through its paces on a variety of computer systems—the Apple IIe, the Macintosh, and the IBM PC. Not only does the Apple IIGS version offer the best graphics, it also incorporates natural-sounding, digitized human speech when reading the names of objects, delivering instructions, and providing on-line help.

Once Upon a Time is a creative-writing package for children aged 6–12. It features word-processing tools and graphics kids can use to publish their own storybooks, complete with text and pictures. The program uses pull-down menus and a palette of option buttons for inserting clip art, writing, editing, and viewing completed storybooks.

Kids can print their finished books in color on an ImageWriter equipped with a color ribbon. The package also includes a box of eight colored pencils so that youngsters can brighten up the final product if they print their stories in black-and-white.

The speech is unobtrusive; it augments the interactive quality of Once Upon a Time by helping young authors learn how to use the



Storybook beginnings. . . .

program with minimal adult supervision. Kids will be able to concentrate on story ideas and creative strategies, rather than wasting time mastering software features.

The talking GS version of Once Upon a Time comes on two disks: a "Master" boot disk and a "Storybank" clip-art collection containing picture sets with "Farm," "Main Street," and "Safari" themes. Neither disk is copy protected, so you can make backups.

Each picture set includes more than 30 theme-related graphics. The Farm and Safari libraries both contain sketches of several different types of animals. Main Street includes store fronts, buildings, cars, and other urban scenes. Unlike Once Upon a Time for the 8-bit Apple II and the IBM PC, however, the GS version lets kids mix and match graphics from all three picture sets in a single story.

Kids begin by selecting a scene from the four available on the Background menu, each with day and night motifs. Next they click on the *Draw Object* button to call up a list of graphics in a given picture set.

To actually "draw" an object on screen, kids must type its name in the selection window; youngsters can't select an object with the mouse. The developers designed the program this way to build spelling skills in young writers. But because the mouse simplifies program operation, Compu-Teach should consider providing it as an option in future revisions. Teachers or parents could then customize the software to the needs of individual writers.

Once youngsters enter an object's name and click on *OK*, the program reads the word aloud, and the graphic appears in the picture window, shaded in blue to indicate it's the selected object. Young artists can drag selected ►

objects around the screen, or shrink, enlarge, or flip them for special effects. They can also change a selected object's hue by pulling down the Color menu and clicking on a choice.

The shrinking and enlargement options let kids add perspective to what would otherwise be a two-dimensional illustration. Kids can stamp more than one copy of a graphic in the picture window, but they have to repeat the drawing procedure each time they place an object. By simply pointing and clicking on an object with the mouse, they select it for moving or modification.

When youngsters finish a picture design, it's time to write the story. Clicking on *Write/Edit* calls up a text window with room for up to four lines of text. The program features automatic word wrap, so writers don't have to press Return at the end of each line.

Kids can correct their typographical errors by pressing Delete to backspace over and erase unwanted text. Youngsters can also cut (Open apple-X), copy (Open apple-C), and paste (Open apple-V) text as they type (even though these keyboard commands aren't documented in the manual). The program doesn't offer any font, type-style, or type-size choices to enhance the text.

If children need more space for their writing, they can click on the *Next Page* button to add a blank "sheet" with room for up to 15 lines of text. Youngsters may append as many pages as they like. The *Next Page* option also lets them add a regular graphics screen with the usual space for four lines of text.

The *Insert Page* command lets writers put a blank graphics or text area between two existing pages. *Delete Page* erases the current work space. Kids can use *Copy Page* to duplicate the current screen, eliminating the need to redraw an entire page if they want to make only minor changes. To rearrange the order of story sheets, authors can click on *Swap Pages*; *Clear Page* erases all text and graphics from the current area.

Clicking on *View Page* activates an electronic slide show that displays each page of the currently selected storybook in order; the story pages flip automatically. Unfortunately, though, the pages turn so quickly that it's difficult to read the text at the bottom of the picture window.

Children must remember to save their storybooks if they want to store them on disk. The program offers only limited storage space on the master disk, so be sure to have a 3½-inch ProDOS disk on hand before beginning a project. You can't initialize a disk within the program, and, oddly enough, Once Upon a Time won't let you save your work to a 5¼-inch disk; the *Disk* button toggles only available 3½-inch drives.

Kids can print only one storybook page per sheet of paper. Youngsters can add a title page to the printed storybook by selecting *Change Title* from the File menu. This option calls up a space for typing in the title of the book and the author's name. The title page doesn't print along with the story, however, nor does it appear when you click on the *View Page* button.

The talking GS version of Once Upon a Time will motivate kids to write. The software makes it easy for them to create, revise, and publish richly illustrated stories. Some minor quirks notwithstanding, the program is a creative-writing tool that will successfully supplement any elementary-school language-arts curriculum. Youngsters who know they're writing for an "audience" will put more effort into their compositions.□

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

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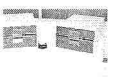

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PICK UP ANY TEXTBOOK FROM ANY DECADE and you'll see that print-based education has remained left-to-right and top-to-bottom in its orientation. The structure of books has rippled through the whole of education to have an impact on both the educational delivery system and on the physical environment in which education takes place.

In the early days of formal education, before movable type, lecturers would recite classic works, which students would then transcribe to build their own libraries. This task was well suited for the lecture halls of the time, in which numerous students faced the speaker.

Once books became generally available, the lecturer's role changed to that of an interpreter of the subject matter. The idea of the teacher as content expert remained, and educators continued to design classrooms whereby all eyes were directed to the front of the room. As long as we perceived the mind as "a vessel to be filled" rather than as "a fire to be kindled" (to quote Plutarch), this structure served us well.

Most modern classrooms in this country continue to perpetuate a physical structure that dates from the days before the Renaissance. Nowhere is this more evident than in high-school and college classrooms, where, in many cases, the seats are even bolted to the floor.

In these same buildings, however, we can see educators who are adept at kindling fires—teachers who motivate students to excel far beyond the skill levels of their instructors. We're talking about the athletic coaches: Their educational environments are designed expressly to help each student excel in a particular area of study. A scan of your local newspaper's sports pages shows how effective these environments can be.

NONLINEAR MOVES

Now that educational computing has clearly moved beyond the fad stage, we need to think about the physical environment in which computers exist. Computer applications such as **Geometry** from Broderbund or MECC's **World GeoGraph** aren't replicas of the left-to-right, top-to-bottom print paradigm. Instead, like other fine programs, they let students explore routes of their own construction. This same multipath ability is a hallmark of videodiscs and most of the educational technology developed in the past 20 years.

But what does it mean to bring a nonlinear medium into a rigid classroom, which, by its very design, was created for single-focal-point teaching through a sequential process? At best, computers appear here as awkward adjuncts to an Iron Age curriculum. Each of us has a desire for knowledge, yet each of us has his or her own learning style, dominant intelligence, and unique outlook on life. Educational computing has opened Pandora's box, and the classroom will never be the same.

Even so, thousands of teachers insist that we don't need to examine their roles. They're comfortable with the smell of old oak desks and book pages and chalk dust, and can't see that their world has not only failed to lead us into the future, it hasn't even kept up with the past. On the other hand, a growing number of educators are exploring teaching methods that honor whole-mind cooperative learning, multiple intelligences, and so on. Their classrooms may not be as orderly, but their students are fully engaged in the learning process. Computers are comfortable tools in these nonlinear environments.

The teacher's function in these settings ranges from expert to coach to cheerleader, with a smooth transition among these roles. In an appropriately equipped environment students can receive an overview of and a context for a particular subject, then explore the topic largely on their own. For example, history students with access to the *Visual Encyclopedia of the Twentieth Century* videodisc series can create their own news reports of historical events in which they intersperse film clips with live interviews of students playing the part of historical figures.

As these changes become more commonplace in our schools we need to think about redesigning our physical plant. For example, any school built ►

today without provisions for ceiling-mounted video projectors in each room is already out of date.

What would an appropriate classroom contain? First, the seating arrangement should be flexible. For some tasks students should be able to sit in one large circle. For others they should be able to sit around tables with four to eight students per cluster. A quiet corner with comfortable chairs or large pillows would be perfect for those who want to read without being disturbed.

As for technology, a wall-mounted audiovisual console should accept a variety of media: videotape, videodisc, audio cassettes, digital-audio tapes, and compact discs at least. (If you're thinking about the high cost, notice how much of this equipment you probably already have in your home.) Audio programming should be directed to a quadraphonic speaker system at the corners of the room. For nonrectangular rooms, other speaker arrangements might be better.

One entire classroom wall should be devoted to a rear screen, behind which lies a video projector capable of creating wall-sized images. The teacher would control the image sources from his or her workstation. Genlock boards, such as Apple's **Video Overlay Card**, let the instructor blend multiple sources. Students, for example, can overlay rectangles on classic works of art to see how often the "golden section," as described in Euclidian geometry, appears.

As for the students, each workspace should provide room for a notebook computer, such as the one I keep hoping Apple will create. This machine would run for weeks on penlight cells and would use a RAM disk to eliminate moving parts. Its display would support text and high-resolution monochrome graphics, and school-based peripherals would give it access to file servers, printers, full-screen monitors, disk drives, and so on. Because Atari is already selling a similar MS-DOS computer for less than $400, I refuse to accept Apple's protestations that it can't be done.

PRODUCT INFORMATION

Apple II Video Overlay Card
Apple Computer
20525 Mariani Ave.
Cupertino, CA 95014
(408) 996-1010
$549

Geometry
Broderbund Software
17 Paul Drive
San Rafael, CA 94903
(415) 492-3500
$79.95

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

NATURAL INTERFACE

The instructional environment of the future should provide a nonlinear multisensory interface to the natural learning styles of our students. The issues aren't technological, they're political. Are you afraid to let your students loose with knowledge? Many in education seem to have adopted the motto "Don't rock the boat." I suggest that our motto, like Keating's in the film *Dead Poets Society*, should become "*Carpe diem*—seize the day!"□

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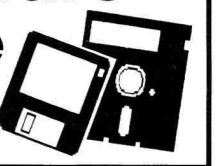

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NOTE THIS

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

FOOTNOTING IN APPLEWORKS 3.0

By John J. Kuntz

IF YOU'VE ATTEMPTED ANY WRITING projects lately, you've probably noticed that AppleWorks 3.0 has no provision for bottom-of-the-page footnotes. Before you reach for the scissors and glue, though, try the following procedure for creating professional-looking footnotes.

Place a superscript asterisk at the end of the word requiring a footnote. Press Open apple-O to bring up the options menu, type **+B** (*Superscript Begin*), then hit Return and Escape. Now type an asterisk (Shift-B), hit Open apple-O again, and type **+E** (*Superscript End*). Finally, hit Return and Escape.

To find the bottom of the page where you want your footnote to appear, hit Open apple-K and select the printer you're using. From the asterisk, scroll down until you see the end of that page.

Convention demands that a solid line across the page should separate text from footnote, so hit Control-L for *underline*. Move the cursor across the page by hitting the spacebar, then press Return, which ends the underline automatically. Type your footnote, starting with the superscript asterisk.

Because you've now changed the text and its pagination, repeat the OA-K routine. You'll see that your footnote has become a *head*note at the top of the next page! Of course, that's not what you want, but it tells you the number of lines your footnote requires.

Move the cursor to the beginning of the underline, hit OA-M to move the text, and choose *within document* for the entire footnote. From the *original end-of-page line*, move the cursor back the same number of lines as the footnote contains, and hit Return. Repeat the OA-K routine again to verify that the footnote is entirely at the bottom of the page (and doesn't spill over to the next page).

You'll also want to verify that subsequent text begins on the next page, rather than following the footnote immediately. Fair warning: It may take you more than one try at moving the text to place it just right, especially if there's more than one footnote on the same page.

In such cases, be sure to use one asterisk for the first footnote, two for the second, and so on. If you've persevered, your footnote should print at the bottom of the page, and the lines of text it displaced will be at the top of the next page.

Your manuscript will look more professional if the footnote is visually different from the text. Try double-spacing your text, six lines and 12 characters to the inch. Then single-space your footnotes eight lines and 17 characters to the inch.

This variation will make your footnoting procedure a little tricky and will sometimes require some trial-and-error before you can place the footnote entirely at the bottom of the page, with ensuing text on the next page where it belongs.

Write to John J. Kuntz at 4706 Northwest 28th Street, Gainesville, FL 32605.

SCREEN EXPANDER

By Adrian Danieli

IF YOU USE YOUR APPLE II FOR creating BASIC games and utilities, you probably find that an extra text screen or two can come in handy. But Applesoft provides only one text screen, and printing an entire screen—a help screen, for example—can be quite tedious. Next time you sit down to write another adventure game, try the accompanying program, Screen Expander. This machine-language utility lets you access up to eight different text screens from BASIC.

Type in and SAVE Make.Screen.Exp (**Listing 1**). When you RUN it, the program creates and BSAVEs at location 768 ($300) the machine-language utility Screen.Expander.

To use the utility, simply BRUN Screen.Expander from disk or BLOAD Screen.Expander from disk and CALL 768 to initialize it. Thereafter, simply access any of eight text screens with the ampersand (&) command followed by the screen number (1–8). To see a sample, type in Scr.Exp.Demo (**Listing 2**).

Screen Expander works only in 40-column text mode. Also, the program stores the screen data in descending order beginning at RAM location $9000 (36864). If you use a number of string variables in your program, you should probably set *HIMEM: 36864 – (1024 * p)*, where *p* is the number of screens you intend to use.

Write to Adrian Danieli at 404 Stone Church Road, Tiverton, RI 02878.

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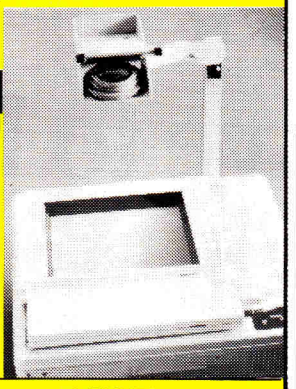

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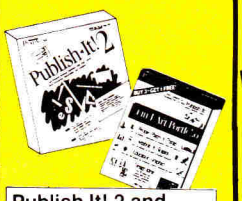

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Listing 1. Make.Screen.Exp.

```
10  REM  MAKE.SCREEN.EXP  [3113]
20  REM  by Adrian B. Danieli  [3851]
30  REM  Copyright 1989, inCider  [4733]
40  REM  [194]
50  TEXT : HOME : PRINT "Make SCREEN.EXPANDER"  [4722]
60  PRINT "By Adrian Danieli"  [3797]
70  FOR I = 1 TO 40: PRINT "-";: NEXT I  [1755]
80  VTAB 12: PRINT "Loading data into memory..."  [2748]
90  FOR I = 768 TO 945: READ D: POKE I,D: NEXT I  [3056]
100  VTAB 14: PRINT "Saving SCREEN.EXPANDER..."  [2879]
110  PRINT  CHR$ (4);"BSAVE SCREEN.EXPANDER,A$300,L17
    8"  [2722]
120  VTAB 16: PRINT "All done!": END  [2075]
500  REM  [316]
510  REM  IMPORTANT data:  [1045]
520  REM  [194]
530  DATA  162,112,134,1,160,0,132,0  [4136]
540  DATA  162,31,169,160,145,0,200,208  [4659]
550  DATA  251,230,1,202,208,246,169,140  [4807]
560  DATA  133,4,162,76,142,245,3,162  [4346]
570  DATA  42,142,246,3,162,3,142,247  [4395]
580  DATA  3,96,133,5,32,192,222,169  [5888]
590  DATA  4,133,1,165,4,133,3,169  [5468]
600  DATA  0,133,0,133,2,32,142,3  [5197]
610  DATA  165,5,201,49,208,5,169,140  [6132]
620  DATA  76,161,3,201,50,208,5,169  [5916]
630  DATA  136,76,161,3,201,51,208,5  [5960]
640  DATA  169,132,76,161,3,201,52,208  [974]
650  DATA  5,169,128,76,161,3,201,53  [952]
660  DATA  208,5,169,124,76,161,3,201  [1017]
670  DATA  54,208,5,169,120,76,161,3  [938]
680  DATA  201,55,208,5,169,116,76,161  [1053]
690  DATA  3,201,56,208,5,169,112,76  [1014]
700  DATA  161,3,32,185,246,96,162,4  [1039]
710  DATA  160,0,177,0,145,2,200,208  [2705]
720  DATA  249,230,1,230,3,202,208,242  [2865]
730  DATA  96,133,4,133,1,169,4,133  [2608]
740  DATA  3,169,0,133,0,133,2,76  [2433]
750  DATA  142,3  [3370]
```

Listing 2. Scr.Exp.Demo.

```
10  REM  Scr.Exp.Demo  [2533]
20  REM  by Adrian Danieli  [3321]
30  REM  Copyright 1989, inCider  [4733]
40  REM  Assumes Screen.Expander already BRUN  [7250]
50  REM  and in 40-column text mode  [5313]
60  TEXT : HOME  [408]
70  & 1:I = 1: GOSUB 200  [2095]
80  & 2:I = 2: GOSUB 200  [2163]
90  & 3:I = 3: GOSUB 200  [2179]
100  FOR I = 10 TO 100 STEP 10  [1758]
110  & 1: GOSUB 210  [1133]
120  & 2: GOSUB 210  [1191]
130  & 3: GOSUB 210  [873]
140  NEXT I  [225]
150  & 1: END  [443]
200  HOME : VTAB 10 + I: PRINT "This is screen #";I: RETURN  [5698]
210  FOR J = 1 TO 10000 STEP I: NEXT J: RETURN  [2000]
```

QUICKIES

Make changes to your GS Control Panel "stick" without switching the power off and on. After exiting the Control Panel, press the open-apple, option, control, and reset keys simultaneously. This will activate the GS' built-in test software and reset the Control Panel just as though you switched off the power. After a few moments press Control and Reset to reboot.

—Jim Hart
Jacksonville, NC

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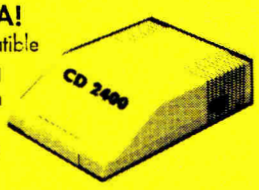

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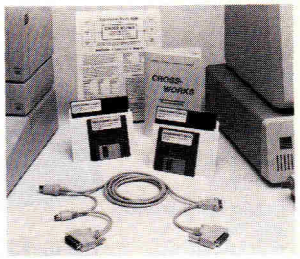

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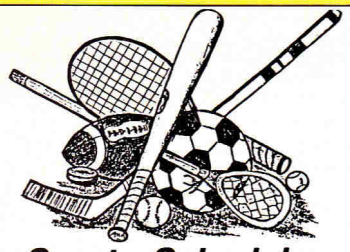

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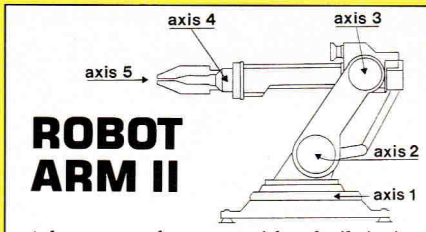

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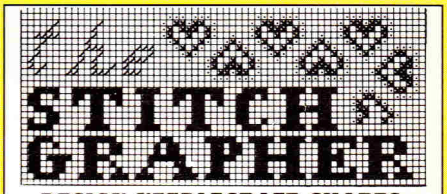

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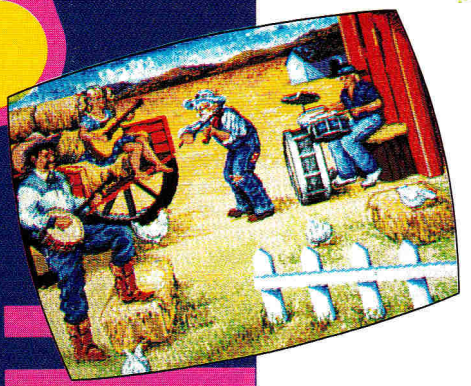
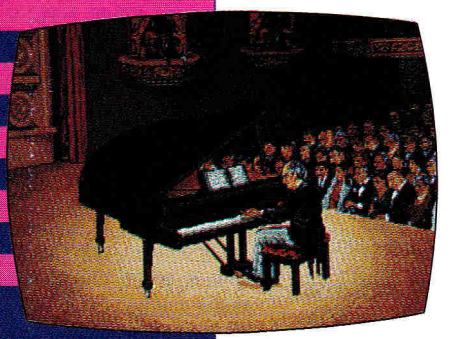




THERE'S A GROWING WORLD OF SERIOUS MUSIC SOFTWARE FOR the Apple IIGS—digitizers, sequencers, composition utilities—all manner of professional-sounding programs. But "serious music software" is just that—serious, complex, and technologically sophisticated—and that means it's probably out of reach for most computer-bound audiophiles. If you're a GS music lover who's been looking for something more down-to-earth, now's your chance to sound like a pro—and all you have to reach for is your mouse. Broderbund's **Jam Session** puts you in the band even if you can't hum a tune to save your life.

Select a song—the list includes rock, classical, reggae, pop, and rap tunes—and you're free to jam along, playing whatever instrument suits your mood. Try your hand at a few guitar riffs, some keyboard improvisation, even a drum solo.

Play whatever you want for as long as you want—and you'll sound terrific, so don't worry about being booed off the stage. You can change the tempo of any riff, the type of riff you'll play with any given keystroke, even the length of the song—all without knowing one note from the next. You can also save your improvisations for playback to impress your friends.

"I guess I've always been a frustrated musician," says Review Editor Lafe Low. "Sure, I'd rather be playing bass with Little Feat or the Grateful Dead, but since I can't play bass, I doubt I'd pass an audition. Jam Session lets me pick a tune and play along, and where I miss a beat, it graciously fills in the cracks."

Jam Session is essentially the same program as Electronic Arts' Instant Music (Editors' Choice, October 1987, p. 144); they were written by the same person, Ed Bogas. But instead of showing you only a keyboard and a note scale, Jam Session gives you the whole animated band. Whether you're watching a lone concert pianist, a jazz duo with a guitar and a stand-up bass, a country ensemble sittin' out behind the barn, or a rock band complete with guitars, keyboards, and drums, you can join right in and play along.

Jam Session for the Macintosh has won numerous Software Publishers Association awards—including Best Entertainment Program, Best Sound, and Best New Use of a Computer. Now this versatile program is available for the GS, as well. It's priced at $49.95, from Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101, (415) 492-3200. We're jammin'—and we hope you like jammin', too.□

EDITORS' CHOICE SINGLES OUT ONE PRODUCT EACH MONTH THAT THE *INCIDER* EDITORS FEEL IS A SIGNIFICANT ADDITION TO THE APPLE II FAMILY. PRODUCTS EVALUATED MAY NOT BE AVAILABLE YET FOR RETAIL DISTRIBUTION.

BIG TALKERS

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

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

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

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

Circle 92 on Reader Service Card.

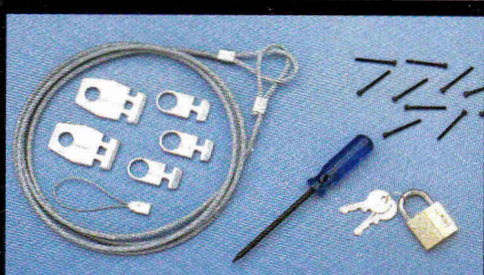
Street Electronics Corporation
6420 Via Real, Carpinteria, CA 93013
(805) 684-4593

System Saver IIGS, $99.95

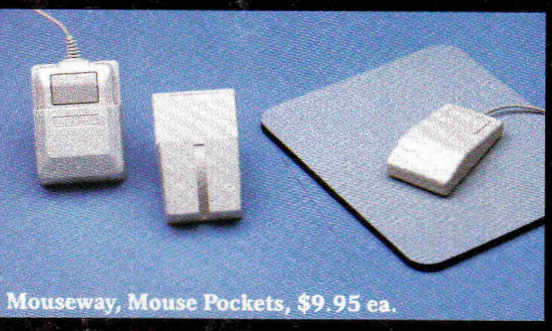
"If it didn't say Kensington on the front, you might think it came from Cupertino."

Editors' Choice
inCider magazine

System Saver®, $89.95

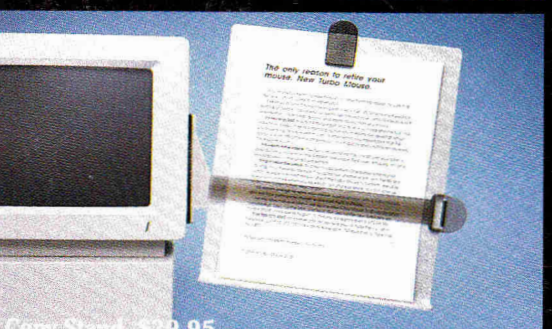


Apple® Security System, $49.95

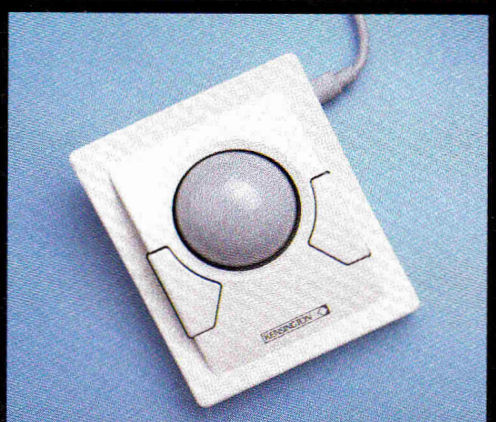


Mouseway, Mouse Pockets, $9.95 ea.

IIGS Anti-Glare Filter, $49.95

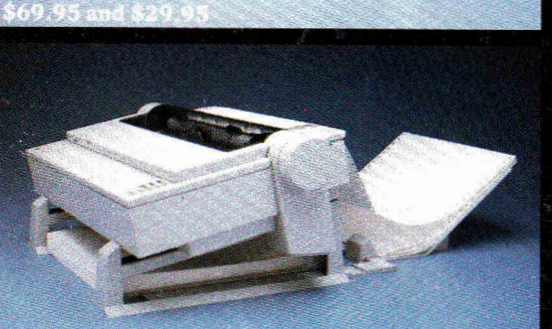


Copy Stand, $29.95

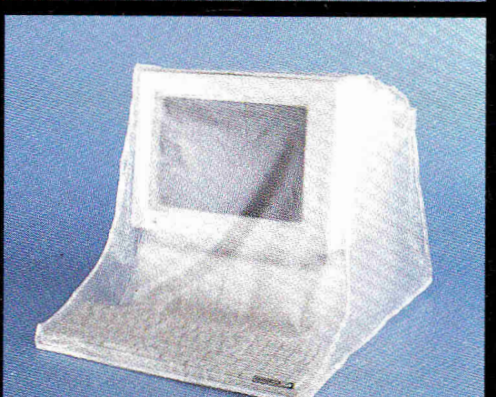


Turbo Mouse® ADB, $169.95

Printer Muffler® 80 and Stand, $69.95 and $29.95



Universal Printer Stand, $24.95



Dust Covers, $9.95 to $24.95

That's why inCider magazine named System Saver IIGS Editors' Choice for March '88.

They were impressed at how well its styling blends in with the IIGS. They appreciated the convenience of its front-mounted switches. And they loved the way it offers surge suppression, extra outlets and a cooling fan, all for $99.95. In summary, they thought it went "a long way toward making the computer easy to use."

Of course, we were delighted with their reaction. After all, making the Apple II easier to use is something we've been working on for the last seven years. In fact, we've figured out so many ways to do it, we can't fit them all on one page.

That's why we've also made it easy for you to get more information. Just call the toll-free number below, and we'll send you a free 20 page brochure. Or write to us at Kensington, 251 Park Ave. S., NY, NY 10010. (212) 475-5200.

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