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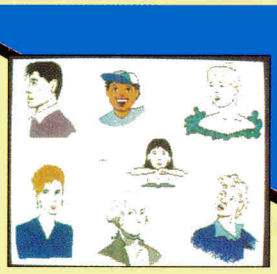

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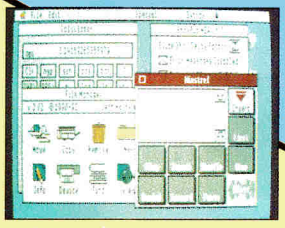

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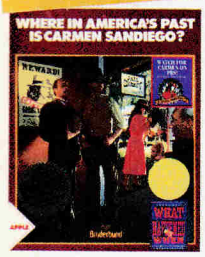

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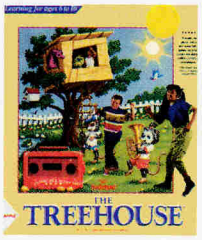

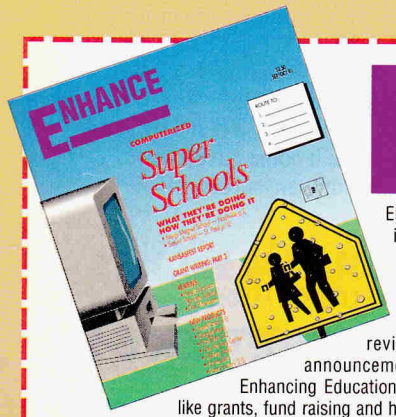

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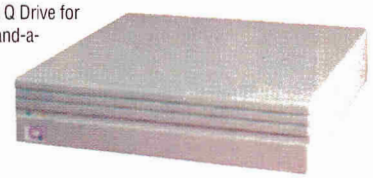

The Q Drive features a fast, reliable Quantum mechanism using the latest technology, including auto-parking heads, a voice-coil actuator, and a track buffer. And since the Q Drive uses the industry-standard SCSI interface, you get complete compatibility with your current computer system—and your next, whether it's an Apple II, Macintosh, or IBM.

Comes with Switch Hitter and 15 MEG. of free software

The Q Drive's plain-English manual covers more than installation and setup. It even tells you how to manage your mass storage effectively. From GS/OS and ProDOS to backups and maintenance, it's all there, including a glossary of hard drive jargon. And no hard drive is easier to set up and use—install a card, connect two cables, and turn on the power. The Q Drive automatically configures itself to match your computer, and the latest system software is already installed.

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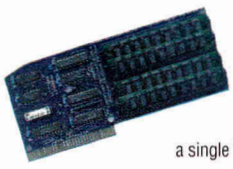

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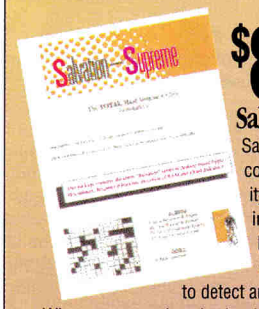

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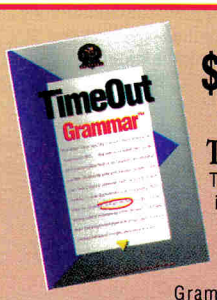

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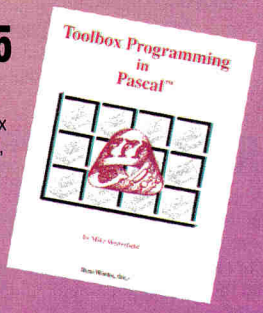

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inCider/A+ (ISSN #1054-6456), an IDG publication, is published monthly by A+ Publishing, a subsidiary of Macworld Communications (a division of IDG Communications), 80 Elm St., Peterborough, NH 03458. Phone: (603) 924-0100. Second-class postage paid at Peterborough, NH, and additional mailing offices. (Canadian second-class mail registration number 9590.) Subscription rates in U.S. are $27.97 for one year, $43 for two years. Foreign orders must be prepaid in U.S. funds drawn on a U.S. bank. One year only: Canada $37.97 (price includes GST, #126038405), Mexico $37.97, foreign surface mail $47.97, foreign air mail $82.97. Nationally distributed by International Circulation Distributors. **Postmaster:** Send address changes to *inCider/A+*, Subscription Services, P.O. Box 58618, Boulder, CO 80322-8618. (Send Canadian changes of address to *inCider/A+*, P.O. Box 1051, Fort Erie, Ontario 12A 5N8.)

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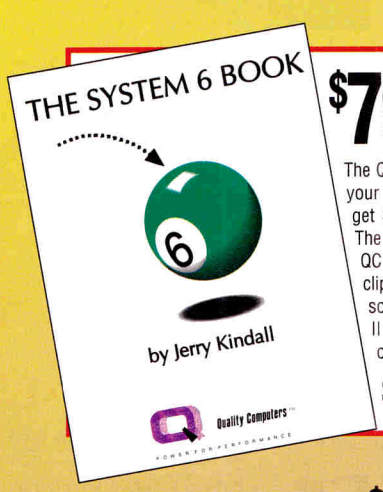

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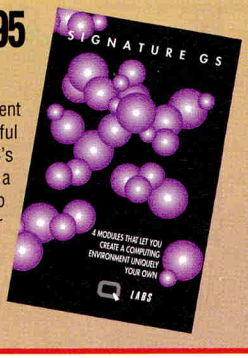

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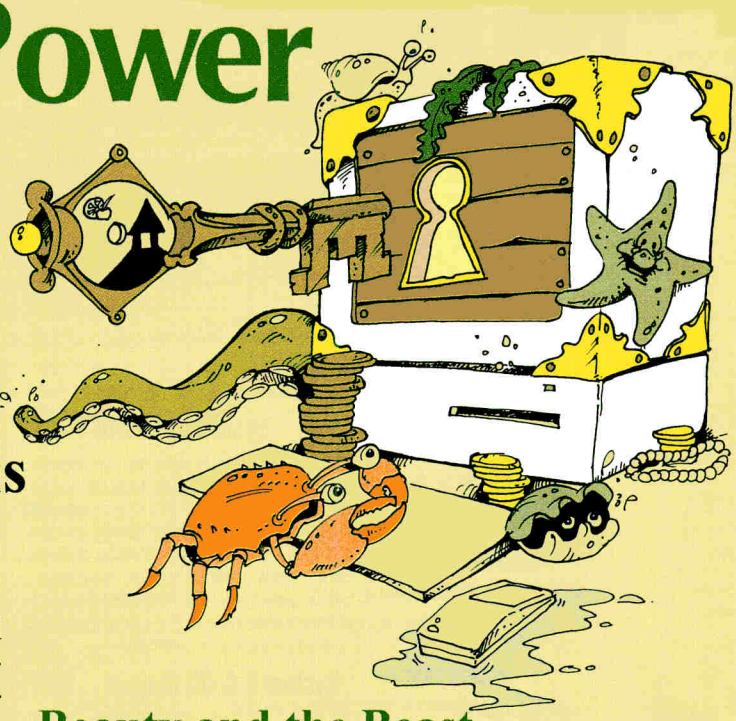

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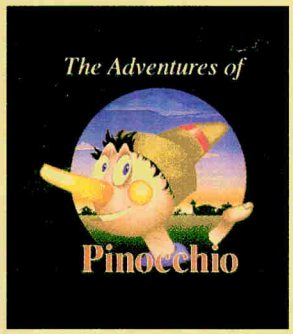
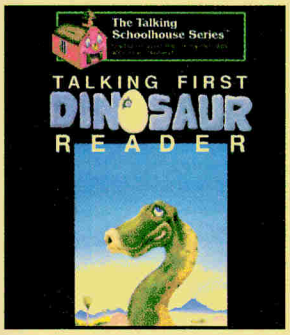


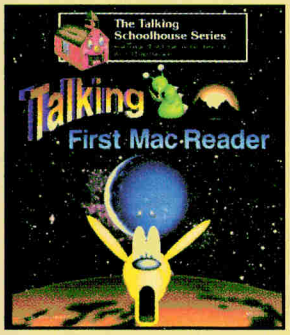
New for the Mac, this original adaptation of Pinocchio is exquisitely illustrated, taking full advantage of the high-res power of the Mac. These high-density disks are filled with all-new adventures brought to life by vivid graphics and digitized sound. Kids can click on difficult words for definitions, and comprehension questions monitor progress.

The Adventures of Pinocchio #MC1000 $59



Recently released for the Apple IIGS and Macintosh, this fun program provides a charming experience for young readers. **Let's Go Back in Time** allows kids to interact with the program making choices that alter the outcome. 3 stories featuring dinosaur characters are also included: **What Could This Be?, Bertha's Missing Garden, & The Different Dinosaur.**

Talking First Dinosaur Reader #MC700 $59 (Mac) #C1047 $49 (GS)



Join Electro as he travels through the galaxy befriending strange aliens! This amusingly animated first reader program for the Mac features an endearing cartoon character who helps children develop early reading skills. Kids learn to read word-by-word,completing sentences with pictoral clues. **Talking Words, Word Match, Sentence Ender, Read Along.**

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OCTOBER

1992 Vol. 10 No. 10

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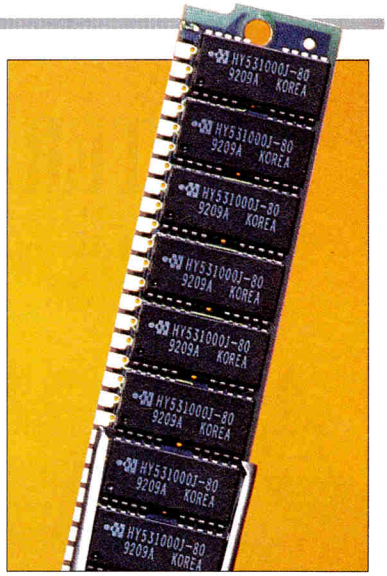
Scalpel! Sutures! RAM chips! Extra memory gives your productivity software room to work — so get inside your Apple's head and beef up your system's brainpower.

Maximum Security by Cynthia E. Field 38
Listen up, people: Let's be careful out there. At home, in school, and at the office, an abundance of affordable computer-security products — including special cables, locks, and access-control programs — help safeguard your Apple II or Mac from theft and tampering.



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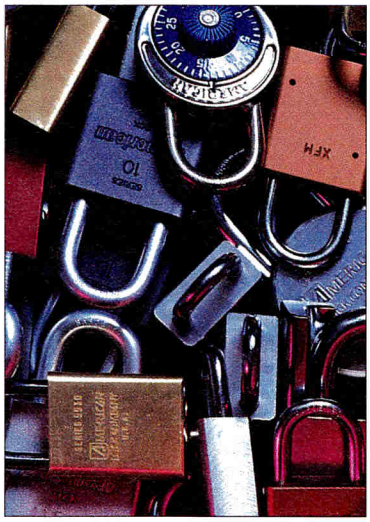

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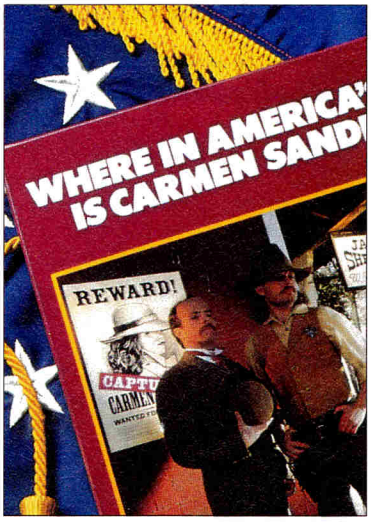

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Would *Moby Dick* be better if you had the option of blowing off the hunt?

An old journalism professor once told me that "until you can wrap a fish in a [colorful expletive deleted] television or line a bird cage with a [same colorful expletive deleted] radio" there would always be a place for the print medium. If you take that at surface value, you'd think he meant that magazines and newspapers are good only for their secondary, less-literary purposes. But print — books, newspapers, magazines, newsletters — has a tangible aspect that most of us find comforting. We read books at the beach, newspapers on the subway, magazines on an airplane.

By DAN MUSE * EDITOR IN CHIEF

Now the "look and feel" of fiction, especially, may be changing. In an article in the June 21, 1992, issue of *The New York Times Book Review* called "The End of Books," writer Robert Coover discusses the role hypertext has had and will have in literature. Although far from a rallying cry for the elimination of books, Coover's analysis does imply that hypertext has great literary potential. *Hypertext*, as Coover points out, is a generic term that refers to writing done in a nonlinear, nonsequential manner, which was made possible only by the computer.

"There are no hierarchies in these topless (and bottomless) networks," he writes, "as paragraphs, chapters, and other conventional text divisions are replaced by evenly empowered and equally ephemeral window-size blocks of text and graphics — soon to be supplemented with sound, animation, and film."

We at *inCider/A+* are also excited about the potential of hypermedia. We draw the line, however, at even suggesting that this type of technology can or should replace literature. Would Melville's great *Moby Dick* have been better if you had the option of blowing off the hunt for the great whale in favor of a jaunt to a South Seas island?

The "nonsequential works" Coover envisions do already exist — in the form of entertainment products (mostly on the PC side of the market) that feature elaborate storylines, rich graphics, full sound tracks, and so on. In fact, many computer-game producers refer to their products as "interactive fiction." The analogy is more often to movies than books, but the desciption is close to what Coover defines in his article.

New storage and communication technologies solidify the trend. As CD-ROM products proliferate, for instance, the extent to which these interactive, multimedia story plots can twist becomes even greater. And on-line hypertext stories in particular may take on infinite possibilities. Stories can grow in multiple directions from multiple authors — like those in that party game you play in which someone writes a sentence to begin a story, then another person writes the second sentence, someone else writes the third sentence, and so on.

The problem with comparing hypertext-based works with traditional novels or movies is that it calls for the assumption that books or films need to be replaced or improved upon. Literature as it currently exists and what Coover sees in the future are different. We shouldn't think of one replacing the other.

Before anybody decides that we need to rework a definition and a standard for literature, let's remember what literature is all about — storytelling. In a novel, I want to identify with a character. I want to be saddened, excited, repulsed, and so on by the plot. In this brave new hypertext world, plot lines are infinite. Characters can be added or changed. I don't want to make decisions about how the story should unfold. I want to get lost in it.

So what should you do when someone tells you that the classic novel will be replaced by hypertext on a computer? What would Hemingway have done if someone told him *A Farewell to Arms* was too linear? Imagine the possibilities. ❑

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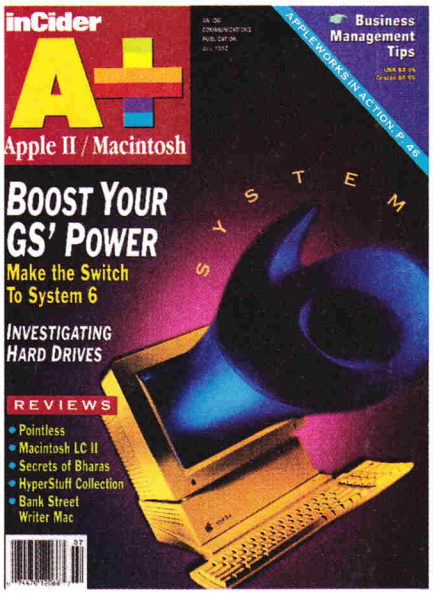
LETTERS



IN THE TRENCHES

AFTER READING JULY'S LEARNing Curve ("Small World," p. 64), I felt as if I were a regular churchgoer being lectured about attendance. The problem is that those who rarely attend never hear this sermon. Similarly, those who teach and embrace technology are the ones who read *inCider/A+*. Dr. Thornburg missed his target audience.

What Dr. Thornburg doesn't seem to realize is that we have a public school system in this country. It's intended to provide all students with equal opportunities for education. If I let a student use a personal assistant in a classroom where other students didn't have access to such items, I'd be crucified by parents and administrators. If parents want to expose their children to technological advancements, they'll have to do it on their own.

Children need to learn how to perform by hand many operations that can be accomplished on a personal assistant with far greater ease. I'm sure the point the teacher in Dr. Thornburg's story was trying to make was that the student needs to understand and learn alphabetization. Her example, a card catalogue, was a bad choice given her community, but for my school library, the argument is valid.

Thornburg's ignorance of the real world of teaching shows when he states, "Other teachers . . . watch the clock tick toward retirement, hoping they won't have to learn anything new." The reality is that 50 percent of first-year teachers quit. By the eighth year, 50 percent of those remaining have also quit. In our state, ten is the magic number, because a teacher can quit and retrieve his or her retirement-account funds after only ten years. Thus, you don't find many teachers waiting for the traditional retirement age.

The technology-acceptance problem is not so much with teachers (yes, there are some), but with administrators, school boards, and parents. Teachers shouldn't have to pay for technological advancements out of their own pockets. Take a good look at where school funds are spent: I've seen many districts spend millions on athletics and then tell teachers not to ask for luxuries such as personal assistants or computers for their students.

Dr. Thornburg has missed the real reason why teachers use so little technology. Why should teachers use computers to post grades when they're required to also produce a hand-written gradebook? And teachers don't decide what equipment students can have in the classroom; they merely enforce each district's policies. If you want your child to be allowed to use a personal assistant, go to the principal, the superintendent, or your school board.

The solution lies with the community. Communities should refuse to let school boards and administrators build multi-million-dollar football stadiums [at the expense of academic equipment]; they should insist on putting a computer with CD-ROM drive on every student's desk.

If teachers are given access and training they'll embrace technology, but they're on the bottom rung of the ladder. If you want change, start at the top.

William Rascher
P.O. Box 996
Grapeland, TX 75844

I agree with much of what Mr. Rascher has to say. The challenges facing public education involve a system much larger than the school itself; the community plays an important role, too. Volunteering part-time in a classroom in one of the poorest districts in my state, I'm often frustrated when I see educators whose spirit is so diminished by lack of adequate funding that they have, in many cases, given up trying to make the changes in education that are so sorely needed.

As I pointed out in "Homecoming 2" (June 1992, p. 64), universal access to technology is possible. This has been demonstrated by the Buddy System in Indiana for almost five years, yet, until recently, there has been little clamor to extend this program nationwide.

Still, universal access is only part of the challenge. Change at all levels of the educational system is required if we are to ensure that technology is used appropriately. To require both manual and computer posting of grades, for example, is ridiculous, of course. Any district that supports such a regulation is impeding the kind of change we're talking about.

There's still another problem — and it's within our own ranks. As I travel across North America, I often encounter a significant minority of teachers who are so wedded to the past that they've lost all relevance in the lives of their students. Last month I met a high-school teacher who requires student papers to be written in longhand, and who criticized elementary-school teachers for no longer teaching the "Palmer hand." Like the teacher in my column, this gentleman lived in a world of isolation, blissfully unaware of the world into which his students were graduating.

That world is changing so fast that the National Geographic Society had to issue five new global maps in a single eight-month period — yet some teachers think we have enough time in our curriculum to spend a year or more teaching long division just so that children can become poor replicas of a $3 calculator. Sorry — that just doesn't compute. — David D. Thornburg

MUSICSPEAK

I'VE BEEN USING PYGRAPHICS' **MusicWriter GS** for a few years now and have had pretty good luck with it. I'm interested in comparing notes [*Ouch! — eds.*] with users of not only MusicWriter, but any professional-level composition program that produces good hardcopy. I'll gladly reimburse the price of a stamp for anyone willing to drop me a line.

Bryan A. Johnson
825 Sherwood Drive
Lake Wales, FL 33853

NOT-SO-TOTAL CONTROL

THANKS FOR THE REVIEW OF **TotalControl 2.0** in the April 1992 issue (p. 50). The introductory blurb mentioned that TC requires a 3.5-inch drive. Actually, it will work with a single 5.25-inch drive on an unenhanced IIe. Of course, it works noticeably faster on a GS with a hard drive.

Also, one of the most-powerful TC features wasn't mentioned. *Imports* lets an AppleWorks 3.0 database file receive data automatically from other database and spreadsheet files, even if those files aren't on the desktop. For example, after you enter a customer number in a record, the program can fill in name and address categories instantly by importing from another database, while extracting the account balance from a spreadsheet.

Randy Brandt
JEM Software
7578 Lamar Court
Arvada, CO 80003

WANTED: 65C02 MERCENARY

WE'RE LOOKING FOR AND WILL pay cash for an Apple IIe assembly-language routine that will dump the hi-res graphics screen to an ImageWriter II. The ability to handle color differentiation would increase its value to us. Does anyone have such a routine around that you'd like to turn into $200 to $300 cash? Please call us at (800) 537-2182 or (313) 996-0626.

David L. Ross
Micro Video
210 Collingwood
Suite 100
P.O. Box 7537
Ann Arbor, MI 48107

GNO/ME SEARCH

IN YOUR OCTOBER 1991 ISSUE, p. 17, you mentioned a developer called **Procyon**, which designed a "multitasking environment" for the Apple IIGS called GNO. I'm interested in contacting the company — can you provide an address and phone number?

Frank Morales III
1319 East Waddell Street
Lindsay, CA 93247

***GNO/ME** for the Apple IIGS is currently available for $80 plus shipping, from Procyon Inc., 1005 North Kings Highway, Suite 309, Cape Girardeau, MO 63701, (314) 334-7078. — eds.*

DIRECTORY ASSISTANCE

I CALLED YOU A FEW MONTHS ago and asked whether you knew anyone who could repair damaged disk directories, and you gave me Pete Johnson's phone number. I called him and after talking to him for a few minutes, I knew that all was not lost. I sent him my two damaged disks, and he repaired both to my complete satisfaction: I didn't even lose a file.

Thank you for giving me Pete's name and address; I'd like to inform all your readers of this service. His new address is 316 1st Avenue Northwest, New London, MN 56273, (612) 354-5619.

Gregory R. Naughton
310 Buxton Street
Harrisville, RI 02830

INCIDER/A+ WELCOMES READERS' COMMENTS. WE RESERVE THE RIGHT TO EDIT FOR CLARITY, STYLE, AND SPACE. ADDRESS YOUR CORRESPONDENCE TO LETTERS, *INCIDER/A+*, 80 ELM STREET, PETERBOROUGH, NH 03458.

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add $60 for RamFast SCSI card

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1.4"x5.5"x7.5"
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New 21MB
Floptical Drive $679
Records like a floppy drive on three different types of diskettes: 21MB, 1.44MB and 720K..
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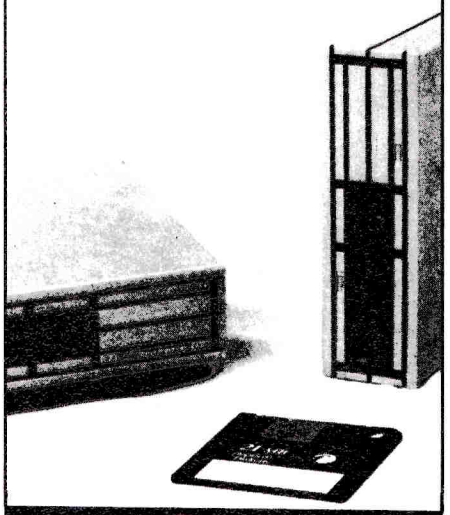


Tulin Technology
2156H O'Toole Ave.
San Jose, CA 95131
Tel: 408-432-9057
Fax: 408-943-0782

Circle 231 on Reader Service Card.

TAKING WINGS

Wings for Learning, a division of Sunburst, has released a number of exciting new educational programs for Apples just in time for the new school year:

- **Build a Circuit.** $79, Apple II, grades 4–8. Simulation lets students connect batteries, bulbs, motors, switches, and wires on screen.
- **Safari Search.** $79, Mac and Apple II versions, grade 2 and up. Math and problem solving. 12 search games, each on a 5-by-5 grid. Seek out hidden animals by collecting information from clues provided as you explore the grid.
- **Label Land.** $65, Apple II, grades 2–12. "What's my rule?" challenges: Number Land (math), Bird Land (visual thinking), Map Land (geography). Make inferences and construct problem-solving strategies.

Also just released, Wings for Learning's **Journeys in Mathematics** series was designed with the latest standards of the National Council of Teachers of Mathematics in mind: Students construct their own knowledge through exploration, practice, discussion, and reflection. It consists of four modules:

- **What's Your Strategy.** $79, Apple II, grades 4–6. Coins, shapes, and Sunburst's The Factory.
- **Computational Games.** $79, Apple II. Algorithms, place value, commutivity, associativity, identities, inverses, order of operations.
- **Data and Decisions.** $89, Apple II, grades 4–6. Collect, organize, analyze, and present information. Graphing software simplifies data-collection and research projects.
- **My Travels with Gulliver.** $65. Supplementary games and activities on audio tape, integrating math, literature, writing, and drawing.

Site licenses and network versions are available. Contact Wings for Learning at 1600 Green Hills Road, Scotts Valley, CA 95067-0002, (408) 438-5502, or circle 350 on the Reader Service card.

FUTURE SHOCK

Someday you'll be telling your grandchildren that "when I was young, people simply bought books and read them, went to the movies and watched, and turned on the TV just to see what was on." "You mean you didn't decide how the story went at all?" the youngsters will ask in disbelief.

Someday Greg Roach, publisher of the electronic literary journal *HyperBole*, will be remembered and praised as a pioneer publisher of interactive hypertext. And you may be among the few to remember that it all started with an Apple IIGS.

Roach is a playwright, actor, and director in Houston. In the early '80s he was messing around with computers, so the story goes — he'd picked up a IIc, one of Apple's first attempts at a portable model, in 1985 — but hadn't attempted anything creative. In Texas in 1985 "interactive literature" wasn't a phrase you heard in polite company. Nobody was studying hypermedia, even if a few daring poets and artists were mixing media in words and paintings.

Then Roach bought a GS: "I was amazed at the promise and the potential of HyperStudio," Roger Wagner Publishing's authoring toolkit, Roach told us in 1991 when he first released *HyperBole*. (See Editors' Choice, September 1991, p. 72.) He discovered that creating multimedia let him play all the roles in each work — as well as direct, write, and produce.

Greg Roach didn't study hypermedia in college — nobody did. Instead, he learned to write, and it shows in his interactive work. Roach brings an artist's sensibility to multimedia: He knows that what to leave out is just as important as what to leave in. *HyperBole* for the GS, and now for Mac HyperCard as well, doesn't attempt to use every hypermedia trick in every story — no more than a painter would want to splash every color on every canvas.

Multimedia and "hyperliterature" are a very personal form of communication, according to Roach. "I think it's almost more like letter writing," he observes. "The media we're used to — movies, books, and so on — involve one author reaching out to many readers, viewers, and so on. Hyperliterature involves one author, too, but reaching out to only one reader at a time. That's what's exciting about it. It's actually a throwback to the letter."

Stewart Brand, futurist pundit and author of *The Media Lab* (Penguin, 1988), compares the spread of information by broadcast — one sender, many receivers — to a streetcar: "You can be on or off it, and you can pick your stop (channel, station), period. Why can't you drive it like a car, anywhere you want?" Greg Roach and his colleagues at *HyperBole* are creating stories you can drive like a car. Remember them, because someday your grandkids will want to hear your stories of the Model T of hyperliterature. *HyperBole* is available for the Mac and the Apple IIGS. For more information, contact *HyperBole* at 2402 Yoakum #2, Houston, TX 77006, (713) 522-0383. — **P.S.**

"Hyperliterature's actually a throwback to the letter."

Excerpt from The Madness of Roland, available on CD-ROM.

NEW SOFTWARE

◆

GOOD FOOD

CoNi's **Food Friends Nutrition Program** for the Apple II is a stimulating and informative source of the basic understanding of the food groups every growing child needs. Designed for preschoolers and older children, Food Friends introduces five robots — Breadbot, Fruitbot, Milkbot, Meatbot, and Veggiebot — who teach children about nutrition. After mastering the basics, the young chef can combine a tasty meal from the five groups, and proudly print a heaping plate.

Food Friends includes an activity book with games and puzzles that reinforce the concepts learned on the computer. The game and book ($39.95 for both, $29.95 game only) are available from CoNi Corp., 5839 Abbott, Fort Wayne, IN 46816, (219) 447-2337, or circle number 351 on the Reader Service card for more information.

◆

TAKING STOCK

Serious stock-market players need up-to-the-minute reports. Renef Industries' **Portfolio Review** obtains stock quotations from the Dow Jones News/Retrieval service and also provides a number of reports to measure performance accurately — at a fraction of the cost of doing it by hand.

Stocks, funds, and options are organized into individual portfolios, or files, on disk. Once you set up the files, quotation retrieval is fast and all but automatic. According to the publisher, using a GS and a 1200-baud modem, you can download quotations for about

SYMBOL	DATE	PRICE	DJ AVG	PRICE CHANGE	DJ AVG CHANGE	BETA
AMERICAN HOME PRODUCTS						
AHP	04/16/92	78 1/4	3366.50			
AHP	04/24/92	76 1/4	3324.46	-2	-42.04	2.0
AHP	05/01/92	78 1/4	3336.09	2	11.63	7.5
AHP	05/15/92	75 5/8	3353.09	-2 5/8	17.00	-6.6
AHP	05/22/92	75 1/2	3386.77	-1/8	33.68	-0.2
AHP	05/29/92	75 1/8	3396.88	-3/8	10.11	-1.6
AHP	06/05/92	71 1/2	3398.69	-3 5/8	1.81	-90.7

40 stocks in two prortfolios in less than four minutes on line. If you can fit all your stocks into a single portfolio, your on-line time may be less than a minute.

Dow Jones has a special agreement with Renef to provide a free password and an hour of free on-line time to users of Portfolio Review — according to Dow Jones, the value of this free offer is more than $200. That one free hour will last a long time when your on-line time is measured in minutes. Portfolio Review for the II is a bargain at $55, from Renef Industries, 1234 Pam Anne Drive, Glenview, IL 60025, (708) 724-8451. Circle 352 on the Reader Service card for more information.

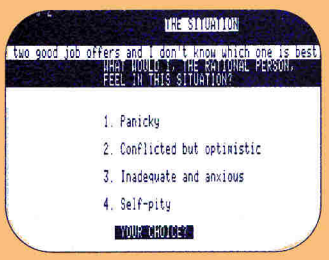
◆

STRAIGHT THINKING

The Omnibus version of **The Rational Person**, psychological testing software, is now available for Apple IIs. It's a game that explains the difference between rational and irrational thinking, and teaches the connectedness between thoughts and feelings. It's suitable for junior-high-school students and up, including adult education.

The Omnibus version covers a wide range of situations to demonstrate the flexibility of its teaching-game format. Topics include work and school underachievement, anger and aggression, drug and alcohol dependency, and problems with relationships.

The Rational Person sells for $49.95. The publisher can create custom versions of the software for special needs. For details, contact PsychSoft, 2503 North Halsted Street, Chicago, IL 60614, (312) 871-2626, or circle number 353 on the Reader Service card.



NEW HARDWARE

◆

AUXILIARY MEMORY

Sequential Systems has introduced the **MEG-80Z**, a low-cost, 1-megabyte RAM expansion card for Apple IIes. It fits into the auxiliary slot and sports a compact, low-power design that uses CMOS "Zip"-style memory.

The MEG-80Z is compatible with almost all II programs, including Claris' all-time best-seller, AppleWorks 3.0. The card comes with Sequential's **RamDisk** and **WorksLaunch** software. The 1MB MEG-80 Z carries a suggested retail price of $99.95, but is also available to educators direct from the manufacturer at a discount price of $79.95. For more information, contact Sequential Systems, 1200 Diamond Circle, Lafayette, CO 80026, (303) 666-4549, or circle number 354 on the Reader Service card.

NEW RESOURCES

▲ ◆ ■

CARMEN RESCUE

Where in the world can players turn to find inside information about Carmen Sandiego? Try the two latest releases in Hayden's **Carmen Discovery** series: **The Where in the World Is Carmen Sandiego? Book** and **The Where in the USA Is Carmen Sandiego? Book.**

Featured are a complete alphabetical listing of cross-referenced clues, game hints, suspect descriptions, and a checklist of stolen treasures. The Discovery books are intended as helpful supplements, not replacements for documentation. They make the games more enjoyable without sacrificing educational value.

Where in the World and Where in the USA are available wherever books are sold. Contact Hayden Books, 11711 North College Avenue, Suite 140, Carmel, IN 46032, (800) 428-5331, or circle 355 on the Reader Service card.

SHAREWARE SOLUTIONS
BY JOE KOHN

ROYAL FLUSH

While millions of dollars are gambled away every year in the casinos of Atlantic City and Las Vegas, Apple IIGS owners can enjoy all the excitement of high-stakes card playing right in their own homes, schools, or offices — without the risk of losing big bucks.

Blackjack Tutor. Freeware, by Dave Tribby. The classic card game 21, set up to offer expert advice during play. Tribby hopes you'll use Blackjack Tutor to learn how to play the game based on commonly accepted rules for winning, and then take your knowledge to Las Vegas. Blackjack Tutor lets you customize the game so that it uses an actual casino's house rules. The program keeps track of your winnings, gives advice, generates a running graph of your winnings or losings, and lets you buy insurance or double-down your bet. If you're an experienced card player, you'll like this one. If you're not already a card shark, you will be after a few sessions.

Video Poker. $10 shareware, by Todd Wood and Doug Davies. Draw-poker simulation, similar to the video-poker games found in Las Vegas casinos. You start with $100, and you can bet from $1 to $5 per round. You're dealt five cards up; just click on the cards you want to trade in. If you're lucky, you'll get a pair of jacks or better, and a monetary payoff.

Casino Solitaire. $10 shareware, by Todd Wood and Doug Davies. A variation of the popular Klondike game. You're dealt seven stacks of cards, with only the top card of each turned up. As the leftover 24 cards are turned over, you can add them to your stacks in descending numerical order, or you can attempt to build four piles at the top of the game screen, in ascending order by suit. Start each pile with the ace of each suit as it becomes available, and try to add all 52 cards to the piles. You'll soon discover that it's actually possible to lose a one-player game.

Pyramid Solitaire. $10 shareware, by Todd Wood and Doug Davies. A brain teaser that'll also reinforce math skills. You're dealt 28 cards face up, arranged in the shape of a pyramid. Just click on any two adding up to 13, and that pair is removed. The object is to remove all cards from the pyramid. Sound easy? It's not.

Monte Carlo. $5 shareware, by Todd Wood and Doug Davies. Similar to the board game mah-jongg. You start with 20 cards, dealt face up, on a 4-by-5 grid. The goal is to remove all cards by clicking on adjacent pairs. It's a fast-moving game — it's possible to lose 100 times in two hours. When you do win, the software rewards you with an animation.

Card Converter. Freeware, by Todd Wood and Doug Davies. Not a card game itself, but a utility that lets anyone with a GS paint program create custom cards for any of the addicting Wood/Davies classics described above.

Carte Primus. $15 shareware, by David Manthey. Five games: cribbage, gin rummy, hearts, pinochle, and pitch. The software includes historical information about each game, and you can edit the back designs of all cards. The interface features a colorful desktop with pull-down menus. Choose the Learning Aids and Suggested Moves options for coaching. You can play each game in several different styles at various levels of difficulty. Although to start you'll need some general understanding of how each game is played, the tutorial components may be enough to make you an expert fast.

Klondike Solitaire/Klondike Solitaire NDA. $10 (each) shareware, by Bill Tudor. The new-desk-accessory version plays from within any GS/OS program that displays the Apple pull-down menu (including HyperStudio, AppleWorks GS, and the Finder). Both versions keep track of your high scores, but the stand-alone game has more customization options. For example, you can change the color of the game background or alter the rules. For those who don't like to lose, there's even a cheat mode.

Solitaire. $10 shareware, by Bill Hamshire. Another variation of Klondike solitaire, with several different user-definable game options available. For example, you can play alone or you and your GS can play a game simultaneously. You can choose between flipping one card or three cards each turn, and you can select different methods of scoring your game. You can also save any game in progress.

Wisconsin Rummy. $10 shareware, by Bill Hamshire. A colorful variation of classic gin rummy, played against two computerized opponents. You try to arrange your entire hand by suit and in consecutive order. Each player is dealt 13 cards; you try to discard your sequential groups before your opponents do. There's a hitch, though; different cards carry varying values, and your goal is to collect as much money as possible. You may just find yourself up all night trying to figure out suitable strategies.

Hearts. $10 shareware, by Bill Hamshire. Play alone or with up to five computer opponents. Depending on the number of players, 10 or 13 cards are dealt, and each player must discard cards from his or her hand and pass them to another player. The object of the game is to either discard all hearts in your hand, or stick one of your opponents with all 13 hearts by the end of the game.

Euchre. $10 shareware, by Bill Hamshire. An open-ended card game similar to whist. It's played with a 32-card deck, and you team up with a computer partner to challenge the GS. Each player is dealt five cards, and a trump card is dealt face up. Each round, your goal is to follow with the highest card of the same suit as the trump card. Win three rounds and you've won that game. You can play some rounds alone, or your partner may choose to play alone. Once you learn the basic concept, Euchre becomes a fast-moving strategy game that will keep you coming back for more.

Sheepshead. $10 shareware, by Bill Hamshire. Based on a 19th-century German card game similar to skat, also played with a 32-card deck. Each of five players is dealt six cards. You team up with an unknown partner, and try to get rid of all your cards by tossing them in sequential suit, and amassing as many points as possible.

GS owners who are also avid card players are indeed a lucky lot. Thanks to a handful of dedicated shareware programmers, you'll find enough high-quality games to last a lifetime — a plethora of colorful point-and-click simulations, all based on variations of traditional card games. And the GS interface lets designers add those vital extras — most of the Hamshire games, for instance, let you display a statistics window for continuous feedback at any time during game play. These are games of chance, but skill and strategy count, too. For fun and relaxation, for practice and instruction, for excitement and delightful frustration, deal your GS in.

FOR THREE DISKS OF SHAREWARE CARD GAMES FOR THE GS, SEND $10 (U.S. FUNDS ONLY) TO JOE KOHN, 166 ALPINE STREET, SAN RAFAEL, CA 94901. OUTSIDE NORTH AMERICA, ADD $2 FOR SHIPPING. MOST GAMES REQUIRE 1 MEGABYTE OF RAM AND SYSTEM 5.0 OR LATER. COST COVERS MATERIALS AND SHIPPING ONLY; YOU'RE STILL RESPONSIBLE FOR SHAREWARE FEES WHERE APPLICABLE.

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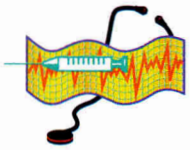

APPLE CLINIC

POINTS OF VIEW

There's more to this monitor business than meets the eye: big savings for Mac owners with VGA video.

By CYNTHIA E. FIELD, Ph.D.

VGAPPLE?

FOR BUDGET-STRETCHED SCHOOLS and families, substituting a low-cost VGA (*visual graphics adapter*) color monitor for one of Apple's pricey RGB (red/green/blue) displays is an enticing prospect. VGA monitors typically sport under-$300 price tags, but they usually take up residence with newer IBM PCs and compatibles.

We began exploring the possibility of hooking up inexpensive VGA monitors to Apple IIs and Macs when Eddie Chan posed questions about VGA/RGB compatibility in the May 1992 Clinic ("Monitor Resolution," p. 14). Our initial response prompted California reader M. Steven McClanahan to write: "You (incorrectly) state that the resolution of the Apple High Resolution RGB Display is the same as VGA — 640 by 400 pixels. The Apple 12-inch RGB Display's resolution is 512 by 384, [and] standard VGA is 640 by 480."

Right you are, Steven. But there's more to this monitor business than meets the eye. According to James Engineering's Beverly James, Apple built VGA compatibility into the Mac LC/LC II and the Quadra. (By contrast, she says, the Apple II is "not set up for VGA.") Pin assignments (functions) in Mac and VGA video connectors differ, though. That means you can't attach a VGA monitor to a Mac directly. That's the bad news.

The good news is you *can* attach a standard, super-, or ultra-VGA monitor to your Mac if you use James Engineering's inexpensive **MacVGA** adapter as a go-between. Variations of the MacVGA unit are available for the Mac LC and the Quadra, and at press time the company was developing the **MacVGA II** for the Mac II family. (See "Clinic Referrals" for details.) Each adapter re-routes VGA video-cable pin assignments appropriately so that they match those of the Mac's video port. In practice, adding a VGA monitor to an LC takes less than a minute: Stick the appropriate MacVGA adapter into the video port on the back of the Mac, and insert the monitor's video cable into the adapter.

At press time James Engineering had tested some four dozen brands and models of VGA monitors — as well as a few LCD

G R A P E V I N E

YES, YOU HEARD IT THROUGH THE . . .

The on-line community: thousands of people who laugh, argue, chat, gossip, and help each other out over the phone lines. Every day, that community offers tips and advice to fellow users via commercial on-line services and the free worldwide Internet/Usenet system. Each month, inCider/A+ will be sharing pointers and on-line flavor with those of you who haven't yet joined up. For experienced modem jockeys, we'll have valuable money-saving hints to help you get more byte for your buck, and give you a peek at what gives on some of the other services.

INTERNATIONAL FLAVOR

✔ If you use FTA's **NoiseTracker**, try holding down the shift key while pulling down the Desk menu, and you'll enter FTA's "Underground." For some "Easter Egg" fun, type Help, Toshiba, Switzerland, Gogo, Himself, FTA, SSS, ACS, and Delta.

✔ Henrik Gudat of Bright Software recently announced on Usenet that he'll send out a working demo of the sophisticated and amazing math program **GSymbolix** for only $3 (cash only, no checks). Send your dollars to Bright Software, P.O. Box 18, 4153 Reinach 2, Switzerland.

APPLEWORKS NEWS

✔ A series of questions and answers posted on GEnie's A2 area has identified an annoying bug in the **AppleWorks 3.0 spell checker**, with a workaround solution. If your custom dictionary contains duplicate words and you display misspellings via the summary on-screen method, this bug will inform you that you have 65,535 unknown words. Remove all duplicates and your spell checker will behave correctly: Just create an alphabetized database from your Cust.Dictionary, and look at it closely in multiple-record layout. Delete any duplicates with the Open apple-D command. If you have **UltraMacros**, load your custom dictionary as a database, compile the following macro, and invoke it with Option-C:

```
start
C:<adb OA-L rtn esc rtn OA-9 OA-C rtn>1<rtn OA-9 :
OA-Y>ZZZ<rtn OA-A rtn rtn begin : $1 = cell tab $2 = cell :
OA-tab if $1 = "ZZZ" then OA-D rtn OA-1 endmacro endif down :
$3 = cell tab $4 = cell OA-tab if $3 = $1 and $4 = $2 then :
OA-D rtn up endif rpt>!
```

Using either the manual or the macro method, press Open apple-P to save the duplicate-free dictionary by printing the file back to disk as ASCII text.

(*liquid-crystal display*) panels. LCD panels project computer images onto a movie screen for presentation to large audiences. (For details, see our review of the InFocus 1600LC PC Viewer, September 1992, p. 52, and "MTV Comes Home," Learning Curve, April 1992, p. 64.) Of 51 monitors and panels tested with the Mac LC, the majority (39) were compatible with the MacVGA/Mac LC setup. Among them were the Goldstar 1430, Leading Technology's 500V, NEC's Multisync 2A, Packard Bell's PB8509 V, the Sony CPD-1302, and the Zenith CM1492. Marginally compatible VGA monitors — including the Cordata CMC-1412A we tested — display faded or "washed-out" colors. Incompatible monitors require stronger video signals than the LC can generate, resulting in an unusable black display.

The bottom line? James Engineering recommends that you select one of the monitors listed on its compatibility "scorecard" — or that you personally test any VGA monitor you're considering for use with the Mac. To twist a phrase, compatibility is in the eye of the beholder.

FIT TO PRINT

I'M A TEACHER WITH AN APPLE IIGS and **AppleWorks 3.0**. It would be very convenient, especially at report-card time, to be able to use a wide-carriage printer model to put my comments on those documents.

Marion Olson
Catania, Italy

*Don't buy that wide-carriage printer just yet, Marion. Instead, try Beagle Bros' **TimeOut SideSpread** (now marketed by Quality Computers) for an inexpensive software fix. This AppleWorks enhancement works transparently "inside" AppleWorks and is compatible with most dot-matrix printers, including two to which you say you have access — the ImageWriter II and the Okidata Microline. Simply put, TimeOut SideSpread rotates spreadsheets 90 degrees, letting you create extra-wide documents and make hardcopies on ordinary 80-column printers. And if you record grades in an AppleWorks 3.0 database file, you can still use TimeOut SideSpread. Just invoke the AppleWorks* Clipboard *command (Open apple-C) to transfer grades to a spreadsheet before printing.*

YOU'RE PLAYING OUR SONG

WE'RE INVOLVED WITH THE Indiana Federation of Music Clubs' Junior Festival, which includes record keeping of festival-day activities for more than 2600 entrants in grades 1 through 12. We're in desperate need of a bar-code program and reader wand for our Apple IIGS (and **AppleWorks 3.0**) so that we can tabulate judges' scores quickly. We've inquired about this, but everyone seems to say nothing's available.

Phil and June Brumley
Brownsburg, IN

*Right — and the Apple IIGS is obsolete, I suppose. Well, not according to Karen Starnes at TPS Electronics, who says her company's **UniScan 300** bar-code reader "definitely works" with the Apple IIGS. The UniScan system includes a decoder box, cable, and bar-code wand. Just connect the box via the ADB* (Apple Desktop Bus) *port on the GS' keyboard.*

When you pass the wand over a bar code, the action simulates keyboard entry. That is, instead of your typing in the information, the bar-code reader automatically enters it into the computer for you. According to Starnes, the system decodes all standard "symbologies" (bar-code formats) and works with your existing software.

*Printing the bar-code labels from your GS may or may not present a challenge, however. The UniScan 300 system comes with a free **SuperDisk** collection of Macintosh bar-code fonts. If you can borrow a friend's or colleague's Mac, you can easily use your current special five-digit code to design the labels you need.*

*If not, call **Customark** or another bar-code manufacturer. According to Customark's Steve Allen, the company can print small quantities of*

✔ Numerous messages posted on all the on-line services we polled inform **AppleWorks GS** users that they can use **fonts** larger than 48 points by holding down the shift and option keys when selecting Choose Font. Some users report no problems with this method; others report problems with fonts larger than 70 points.

BARGAIN HUNTING

✔ To make **GEnie** (800-638-9636) or **CompuServe** (800-848-8199) more affordable, use an off-line processor to automate log-on, message retrieval, message response, e-mail retrieval, e-mail response, and downloading of multiple library files. Off-line processors act as a "front end" for most of the popular terminal programs, and let you participate in on-line activities while not connected to the remote system — thereby saving lots of money in connect charges. One such processor, **Co-Pilot**, is an easy-to-use super-hi-res shareware program for the GS ($25), available for downloading from GEnie and CompuServe. Two versions work with either Beagle Bros' **Point-to-Point** ($59.95) or Q-Labs' **Talk Is Cheap** ($39.95), both available from Quality Computers, P.O. Box 665, St. Clair Shores, MI 48080, (800) 777-3642.

✔ **Internet/Usenet** is a free worldwide network connecting thousands of university and corporate computer systems. Apple II users generally post 100 to 200 messages per day in the comp.sys.apple2 "newsfeed." If your school or company doesn't provide free Internet/Usenet access, link up via a local **ProLine** site. ProLine is a nationwide networked Apple II bulletin-board system providing e-mail, conferencing, and file-exchange capabilities. For a complete listing of all ProLine sites, send a self-addressed, stamped envelope to Morgan Davis Group, ProLine Site List, 10079 Nuerto Lane, Rancho San Diego, CA 91977. If you're new to the network, make sure you read the monthly option FAQ (Frequently Asked Questions), a combination Internet/Usenet user guide and Apple II trouble-shooting manual. For the latest edition, contact Daniel DeMaggio via e-mail at dmag@engin.umich.edu.

— Joe Kohn, Contributing Editor

GRAPEVINE IS A MONTHLY COLUMN OF ON-LINE HINTS, TIPS, ARGUMENTS, CHAT, AND GOSSIP. CONTACT JOE KOHN AT JOKO (AMERICA ONLINE), 76702,565 (COMPUSERVE), J.KOHN (GENIE), 76702.565@COMPUSERVE.COM (INTERNET) OR JOKO@AOL.COM (INTERNET).

custom codes on any size label you choose for as little as $75. Allen estimates that creating 2600 mylar labels for your music festival would cost approximately $139.

If you need to economize (and who doesn't?), print and test some public-domain GS bar-code fonts with the UniScan 300 reader. The National AppleWorks User Group (NAUG) includes some on its ***Font Collection #10*** *disk. NAUG's Warren Williams says he has no personal knowledge of anyone who has used the fonts. But it costs less than $10 (with a money-back guarantee from NAUG) to try them with your bar-code reader. To test GS fonts, use a program such as* ***AppleWorks GS***, ***Publish It! 4***, *or AppleWorks 3.0 with* ***TimeOut SuperFonts****.*

WestCode Software's Rob Renstrom offers another possibility — converting Mac PostScript Type 1 or Type 3 bar-code fonts to TrueType format with the Macintosh program ***FontMonger****. You can use TrueType bar-code fonts on your GS if you first install* ***Pointless****, WestCode's TrueType font utility.*

Install System 6 on your GS and you'll be able to read a Macintosh disk containing converted fonts directly. (For details, see our Bridging the Gap column: "Tailor-Made Type," September 1992, p. 16, and "In Search Of . . ." in this issue, p. 22.) For best results, Renstrom recommends printing bar codes with a high-resolution ink-jet printer.

KEEP THE PAST BLASTING

I'VE BEEN USING AN APPLE IIe, CP/M, and WordStar since 1984, but ever since my son let his friend use our computer to type a term paper, the WordStar disk doesn't function. I'd appreciate it if you could shed some light on this problem.

Chouwanee S. Clark
Mobile, AL

WordStar, one of the most feature-filled word processors for the IBM PC, enjoyed only limited acceptance in the Apple II world. For one thing, the program ran under CP/M (Control Program for Microprocessors), Digital Research's proprietary operating system. At first blush, many contemporary Apple II enthusiasts, accustomed as they are to DOS 3.3, ProDOS, and GS/OS, may consider your question unique. Yet it speaks to an important issue that potentially affects all computer users: How can you replace a favorite, albeit "obsolete," program disk when it becomes damaged?

First, as you observe in your letter, it's prudent to make sufficient backups. When that fails, try contacting the program's publisher — if the company's still in business, that is. Be sure to call a few mail-order houses, too. They may have leftover copies in inventory.

Recently ***Big Red Computer Club*** *(BRCC) licensed the rights to sell dozens of Apple II programs published originally by companies such as Accolade, Activision, Britannica Software, California Dreams, Casady & Greene, Electronic Arts, Interplay, Merit Software, Microrevolutions, Mindscape, Sierra Online, and The Software Toolworks — giving a slew of popular Apple II products a new lease on life.*

Be sure to touch base with a local user group (call the ***Apple User Group Connection*** *toll-free for the names of clubs in your area) or post a "software wanted" message on an electronic bulletin-board service such as* ***America Online***, ***CompuServe***, *or* ***GEnie****. A user-group member or on-line subscriber may have a legitimate copy of the program you need.*

Not surprisingly, you can often purchase replacement software from used-computer dealers, such as ***Sun Remarketing*** *and* ***B&R Computer Services****. Sun's 1992 catalogue lists golden oldies such as* ***AppleWriter II*** *and* ***Catalyst II****. B&R's offerings include* ***AceWriter*** *(a word processor sold originally with Franklin Ace computers) and — ta da! — the Apple II CP/M version of* ***WordStar 4.0*** *($49). By the way, if further testing reveals that the problem is actually with your CP/M card and not WordStar itself, B&R offers the* ***StarCard*** *(with documentation) for only $59.*

WRITE TO APPLE CLINIC, *inCider/A+*, 80 ELM STREET, PETERBOROUGH, NH 03458. PLEASE ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE.

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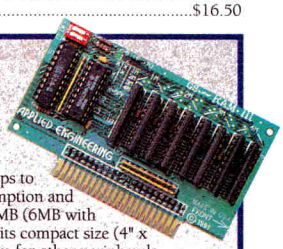

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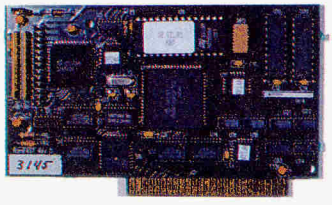

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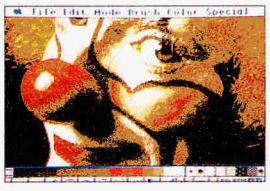

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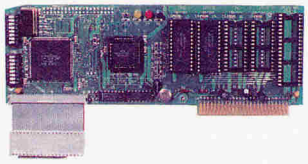

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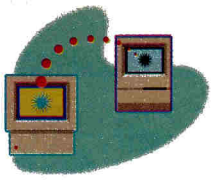

BRIDGING THE GAP

IN SEARCH OF . . .

Stalking the wild Palatino: Dedicated font hunters pursue their quest for the perfect typeface.

By GREGG KEIZER

YOU CAN NEVER HAVE TOO MUCH fun — and you can never have too many fonts. In the endless search for a better typeface, font explorers leave no stone unturned. They'll hunt for the perfect type, no matter where the journey takes them — even if it ends up on the Macintosh.

A MENU OF OPTIONS

Last month's column, "Tailor-Made Type" (p. 16), outlined how easily you can move fonts between the Macintosh and the Apple IIGS when you opt for TrueType, the outline-font technology promoted by Apple and Microsoft. With a copy of **Pointless**, WestCode's TrueType interpreter for the IIGS, you can display crisp type on that computer's screen and print sharp text to non-PostScript printers. And in a boon to bridge builders, Pointless gracefully handles TrueType font files shifted from the Macintosh.

I think Pointless is indispensable to anyone working with an Apple IIGS. But what if you're pounding the keys of an Apple IIe? What if you just can't afford Pointless, or think its name is all too appropriate? Are you stuck with only the type Apple gave you?

Hardly. There are ways to share fonts between Macs and Apple IIs that don't involve TrueType or even Pointless.

Be forewarned, though: Building this bridge is for truly dedicated font seekers only. Some of the techniques are tedious, and require a slew of software. (Most programs are freeware or shareware, however.)

ONE LAST PITCH

Before turning our backs on Pointless, though, I feel obligated to tell you about how it can spread TrueType type, sharing the font wealth with Apples that never saw a copy of the program.

Pointless can take a TrueType font — which, you'll remember, is represented by a single file that includes the mathematical model of the typeface — and turn individual type sizes into more-familiar bit-mapped font files. In effect, Pointless can break up a TrueType font into discrete parts you treat just as you do any non-TrueType screen font.

Move a Macintosh TrueType font file to the GS and install it with Pointless. (See "Tailor-Made Type," September 1992, p. 16, for details.) Now reopen the Control Panel and select Pointless by double-clicking on its icon, as if you were installing another TrueType font.

Rather than hit the *Add* button, though, highlight a TrueType typeface in the list, then move the mouse pointer to *Save Bitmap* . . . and click. At the next screen, type in the desired point size as the filename extension.

If you want to create a bit-mapped font file of New York in 15 points, for instance, you'd see *New.York.15* when you finished (**Figure 1**). Hit Return or click on *Save* and a 4K bit-mapped file is stored on disk.

Like any GS font, this bit-mapped file carries the $C8 filetype moniker. That means it's identical in format to any GS font file, and can be installed on any GS *System* disk or folder. It's ready for display and print purposes.

And because some 8-bit Apple II software can use GS font files — the desktop-publishing program **Publish It! 4** from Timeworks and Beagle Bros' **TimeOut SuperFonts**, an AppleWorks 3.0 add-on now marketed by Quality Computers, are the most popular — you can slice small pieces from TrueType and feed them to an Apple IIe/IIc.

BLOW IT UP

Many font collections hand you only a small number of possible point sizes — 10, 12, 14, 18, 20, 24, and 36 most likely — and thus restrict you to those predetermined sizes. Pick a TrueType font file with Pointless, though, and you can

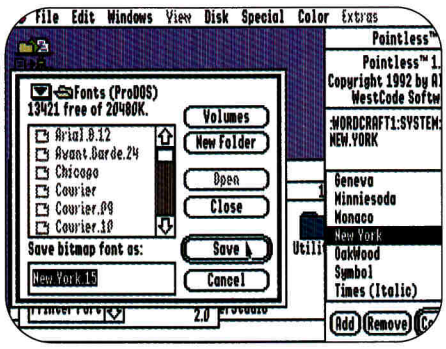

Figure 1. WestCode's TrueType interpreter Pointless for the GS also includes an option that creates bit-mapped $C8 (GS) fonts from TrueType.

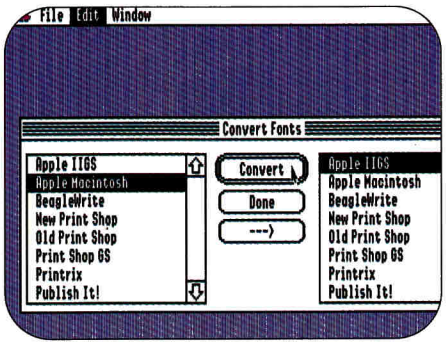

Figure 2. Font Factory GS converts non-TrueType Mac fonts to $C8 format (for use in 8- and 16-bit II programs compatible with GS fonts).

create bit-mapped font files for every point size from 1 to 255.

Pointless' knack of building bit-mapped fonts also comes in handy for anyone who likes to print large. You've probably noticed that when you tell AppleWorks GS to print in 48-point type, the resulting text is as stair-stepped as a ziggurat. That's because printers demand a multiple of the size you've selected. The ImageWriter II, for instance, prints with a font twice the size of the one you've used in the document.

To print clearer type in larger sizes, use Pointless to save the necessary bit-mapped fonts to disk. You can hunt up an attractive TrueType display font, for example, then save bit-mapped files in both 48- and 96-point sizes.

With Pointless and a bit of work, you can print the same type on Macs, Apple IIGSes, Apple IIes, and even Windows-capable PCs.

WORKIN' IN THE FONT FACTORY

If you're not convinced of TrueType's prowess, you can still steal fonts from the Macintosh and move them to the Apple IIGS, even share those $C8-type fonts with Apple IIes and IIcs.

The next-best way to shift fonts is with **Font Factory GS**, a font editor from Seven Hills Software. Though its strong suit is altering existing fonts and creating fonts from scratch, it also converts Macintosh fonts to GS format painlessly.

As in TrueType font sharing, the only tough part of the job is getting Macintosh font files to the GS. If the machines are connected via LocalTalk, you can simply copy Mac fonts to the file server or stick them in a shared folder, then retrieve them from the Apple IIGS.

The GS' HFS FST (*hierarchical file structure file-system translator*), the new translator that lets the GS read from and write to 400K and 800K Mac floppies, can also serve as an effective bridge between Mac and GS when you put Font Factory to work. Just copy the font files to a Mac floppy, then walk the disk to a System 6-equipped Apple IIGS.

The only caveat seems to be on the Macintosh side. Font Factory can't handle Macintosh fonts saved in suitcase form, but instead needs the font files freed from that semi-archival format. If you're running

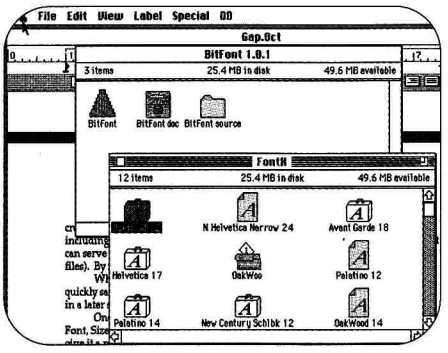

Figure 3. The freeware program BitFont for the Mac creates bit-mapped files from screen, TrueType, or Adobe Type Manager fonts and saves them in suitcase format.

System 7 on the Mac, the solution is simple — just double-click on a suitcase file and pull out the individual font files. Mac owners relying on System 6 (or earlier) will have to use *Font/DA Manager* to break the font files from the suitcase. Font Factory can deal only with screen fonts — it doesn't know what to do with TrueType or Adobe Type Manager fonts (no surprise). You can use **BitFont**, however (see "Roll Up Your Sleeves" below), to save images of TrueType fonts as screen fonts, then do the Font Factory GS conversion.

As soon as you have the Mac fonts on your Apple II, run Font Factory GS and pick *Convert Fonts . . .* from the *Edit* menu. Make sure you've highlighted *Apple Macintosh* on the left side of the screen and *Apple IIGS* on the right, with the arrow pointing right (**Figure 2**). Select a volume, then a Macintosh font file, and click on *Open*. When the conversion process is complete, save the file to the GS' *Fonts* folder.

You may have to edit the font's information — its name, family number, and size — but essentially the font is ready to use on the GS as soon as you reboot and open a GS application. And you can use these fonts not only on the GS, but also on the Apple IIe or IIc with software that accepts $C8-type font files — such as Publish It! 4 and TimeOut SuperFonts, mentioned above.

Font Factory's $40 cost is a small price to pay for such a snappy bridge between Macintosh and Apple IIGS. If you're thinking of sharing fonts, buy Font Factory GS.

SOFTWARE SHOPPING

Once you walk away from Pointless and Font Factory GS, though, sharing fonts gets tough. You can still manage to move font files from the Macintosh to the Apple IIGS, but it's not a job for the point-and-click crowd.

If you're willing to go to work, you can move Mac fonts to the GS without laying down a buck. You need a passel of freeware — available from the usual sources (on-line services, public-domain libraries, and user groups) — and more than a dash of patience, but the end will justify the means. Before you begin, though, you need to shop for the necessary software. Here's your list:

- **BitFont**, a Macintosh utility that saves individual font sizes and styles as suitcase-form files
- **HFSLink**, an 8-bit Apple II Mac-to-GS file-transfer and translation utility
- **FontHacker**, an Apple IIGS program that converts the font from Mac to GS format
- **FontScan**, a GS application that's a big help settling font-family conflicts (though not required)

All four are available on America Online, which is where I tracked them down. Note that you should also download **GS-ShrinkIt**, an Apple IIGS archiving and decompression application, which you'll need to expand each of the other program files listed above.

ROLL UP YOUR SLEEVES

Start this dirty job on the Mac, the wellspring of fonts. Nothing personal here, just a matter of numbers. Because the world works with far more Macs than GSes, you're more likely to find that just-right font already available on that machine.

Fire up **BitFont** on the Macintosh. This intriguing public-domain utility creates a bit-mapped file from any font you can display on the computer, including screen, TrueType, and Adobe Type Manager. (In other words, BitFont can serve the same function as Pointless in building bit maps from outline-font files.)

By itself this isn't ground-breaking. What makes BitFont necessary to this Mac-to-GS font shift is its ability to quickly save individual type sizes and styles in the suitcase format you'll need for a later step.

Once BitFont's running, select a typeface, size, and style combination from the *Font*, *Size*, and *Style* menus. Next, select *Create Bitmap Font . . .* from the *File* menu, give it a memorable name, say **Oakwood**

12, and save it to an 800K Macintosh-formatted floppy disk (**Figure 3**). After some mental processing, the Mac sticks a font-suitcase file on the disk.

More familiar to Mac users who haven't moved up to System 7, font suitcases are archives that can hold multiple font files. In this case, though, there's just one font inside the suitcase. (You can check by double-clicking on the suitcase if you're using System 7, or by running *Font DA/Mover* if you're using a pre-7 system.)

Repeat the process for each bit-mapped font you want to move to the IIGS.

SNEAK IT OVER

It may seem like a technological step backward, but the only way to transfer these Mac font files to the GS is "sneaker-net": walk the floppy from machine to machine.

What happened to AppleTalk or to the GS' newfound ability to read Macintosh disks? They're still around, but they won't do this time. That's because you need to not only transfer the Mac font files to the GS, but translate them, too.

HFSLink, a decidedly rough freeware program, predates GS System 6's HFS FST. HFSLink walks Mac files to the GS (but not in the other direction), and, as it does, can manipulate their file format. That's the key.

What you want to do is change the font-suitcase files into GS-formatted binary files with a $06 filetype. (The next step in the font-swapping process demands these binary files.)

You'd think such translation would be a snap, but the Mac complicates things with the way it splits a file into two parts: the *data fork*, which holds the actual information, and the *resource fork*, which contains file-description information, such as length and formatting instructions.

A font file is all resource fork. You just can't move the font file from Macintosh to GS with something like Apple File Exchange or the HFS FST — neither utility can twist that resource-fork-heavy Macintosh file into a ProDOS binary file. But HFSLink can.

Run HFSLink on your Apple IIGS and you're staring at a simple menu. No 16-bit pull-downs here — just five choices. Pick *P* to change the ProDOS prefix so that the transferred and translated files all end up in a convenient location. You might want to set up a separate folder on the GS to hold the font files temporarily until you finish the entire process.

Choose *F* to set the filetype of the converted files. You want to create binary files with the $06 filetype, so make sure that one's listed. Don't worry about the *Current auxtype* line in the ensuing box — HFSLink handles that on its own.

Finally, pick *T* to transfer files. Stick the Macintosh floppy into the GS' 3.5-inch drive and highlight a font file. It should look something like this in the list:

FFIL DMOV Helvetica 17 0K 5K

That just means that it's a suitcase file called *Helvetica 17* (created earlier with BitFont), with 0K in its data fork and 5K in its resource fork.

You don't even need to provide a filename, since HFSLink adds a *.R* extension automatically to indicate that its resulting file is a resource fork. Translation is fast, even on an unaccelerated GS, and in a few moments you can verify that the files are indeed in GS form.

Just head to the appropriate folder, highlight one of the files that end in *.R*, and press Open apple-I. The information box that appears lists the file as *Binary*, and its icon is a pattern of *0*s and *1*s. You're ready to move on to the next step in the font switch.

HACK A MESS OF FONTS

You're more than halfway home now. But the next freeware program, **FontHacker**, is the touchiest of the bunch. If you've followed the previous steps to the letter, you shouldn't have any trouble. *Shouldn't* — not *won't*.

File Edit List

/WORDCRAFT1/SYSTEM/FONTS/

File list for folder: /WORDCRAFT1/SYSTEM/FONTS/

File Name	Font Name	Points	Family No
Ariel B 12	Ariel B	12	*-2
Shaston.16	Shaston	16	*-2
New.York.15	New York	15	2
Geneva.10	Geneva	10	3
Geneva.12	Geneva	12	3
Geneva.14	Geneva	14	3
Geneva.16	Geneva	16	3
Geneva.18	Geneva	18	3
Geneva.20	Geneva	20	3
Geneva.24	Geneva	24	3
Venice.14	Venice	14	5
Venice.12	Venice	12	5
Venice.24	Venice	24	5
Palatino.14	Palatino	14	9

Figure 4. FontScan for the GS spots duplications and conflicts among font-family ID numbers.

FontHacker is another 8-bit program for the 16-bit GS. It's missing menus and mouse control — in fact, it's written in Applesoft BASIC — but it'll do the job. But before you run it from the GS desktop, make a note of the pathnames of each of the font files you plan to translate. You'll need them in a minute.

FontHacker does much the same thing as the almost-mythical Apple development tool **Font Munger**. The latter program never made it into public hands, though, and today is virtually impossible to find. Essentially, this Apple II program translates Macintosh font resources into GS $C8-format font files. Most of the time all you have to do is stand back and let it do its thing.

Enter the complete pathname of the first file and press Return. Hit Return a second time to use the maximum size, 64K. FontHacker then reads the font file's header information and displays it on screen. Don't throw your hands up in despair at all the numbers; you can usually just step through the program's defaults without changing a thing.

FontHacker asks you to define the range of characters you want to translate. Typically you'll want to translate them all, so just press Return at the next two prompts. (For some larger fonts, though, you may want to restrict it to the first 128 characters. If that's the case, enter **127** at the second prompt.)

Press Return three more times to accept the default values FontHacker's identified, then enter a font name of your choice: **Helvetica**, **Palatino**, and so on. The GS is case-sensitive here, so make sure the first character is uppercase.

At the *Font family* prompt, enter a number. Any number will do at this point. (Later, you can resolve conflicts with FontScan.) Just make sure you use the same value for all font files of the same typeface. In other words, all Helvetica fonts might use 7, while all Palatino fonts might use *45*.

Style comes next — with four possible values available — plain, bold, italic, and bold italic. Enter the appropriate number; **0** for plain will be the most common, though you may have saved bold, italic, or bold-italic styles during your first step with BitFont on the Mac.

Type in the font size — **17**, for instance, for a 17-point bit-mapped font — and press Return. Answer **Y** to the next prompt, press Return after the font-header information reappears (with any changed values evident), and type in the pathname of the saved font file.

Normally, you'll want to type **System/Fonts** as the filename's prefix here so that it's saved directly to the *Fonts* folder inside the *System* folder. Remember that the filename format for GS fonts is of the form *Fontname.Fontsize*, as in *Helvetica.17* or *Palatino.36*.

FontHacker then converts the font to GS form. The process may take a minute or so when both source and destination files are on a hard-disk drive, but moving between floppies takes longer. FontHacker's author recommends you use a RAM disk for fast conversions, but for all but the largest font files, a hard disk does fine.

You can convert another Mac font immediately, or press **N** to exit. Reboot the GS to put the font additions into effect.

SCAN IT, MAN

Most of the time, that's your last step, but if you've introduced any font-family conflicts, you should run **FontScan**, another freeware GS program, to resolve them.

Pick *Search for problems* from the *List* menu, and look for any font-family value duplications (**Figure 4**). If there are any, you'll need to edit each conflicting bit-mapped font file.

And since FontScan shows you the family values for established fonts, you can note those for reference. Next time you translate a Times font, for instance, you'll know that its font-family value is *20*.

Once you're through with FontScan, load an Apple IIGS application that uses GS fonts — AppleWorks GS is a good pick. Pull down the *Font* menu and you should see the converted font names in the list. Select one and pick an available point size, then type away. Text in that font should appear as crisp as any screen font, and as long as there's a font file in a size exactly twice what you see on screen, even print fairly sharp on an ImageWriter II.

Compare some converted font printed from the GS with text in that same font printed from the Macintosh, and you may see some differences, particularly in line length and character and word spacing. Overall, though, the two should be more similar than different.

CLEANUP

Of course, you can attack these fonts with an editor if you want to make some changes. Several are available, including two freeware/shareware programs: **Fontasm** and **Font Doctor**. Fontasm is stronger of the two, and costs only $20 to register.

Remember that you can use these newly converted GS fonts not only on an Apple IIGS, but also on an Apple IIe or IIc running software such as Publish It! 4 or TimeOut SuperFonts. This low-cost font bridge runs all the way from the high-priced Macintosh to the lowly IIe.

Quite a chore, this font conversion — but in the end, rewarding. Now you can speak loudly with new display fonts in big, bold type, or lecture formally with a new serif text font — all without lifting a creative finger. You can never have too many fonts — or too much fun building bridges. ❑

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tech support
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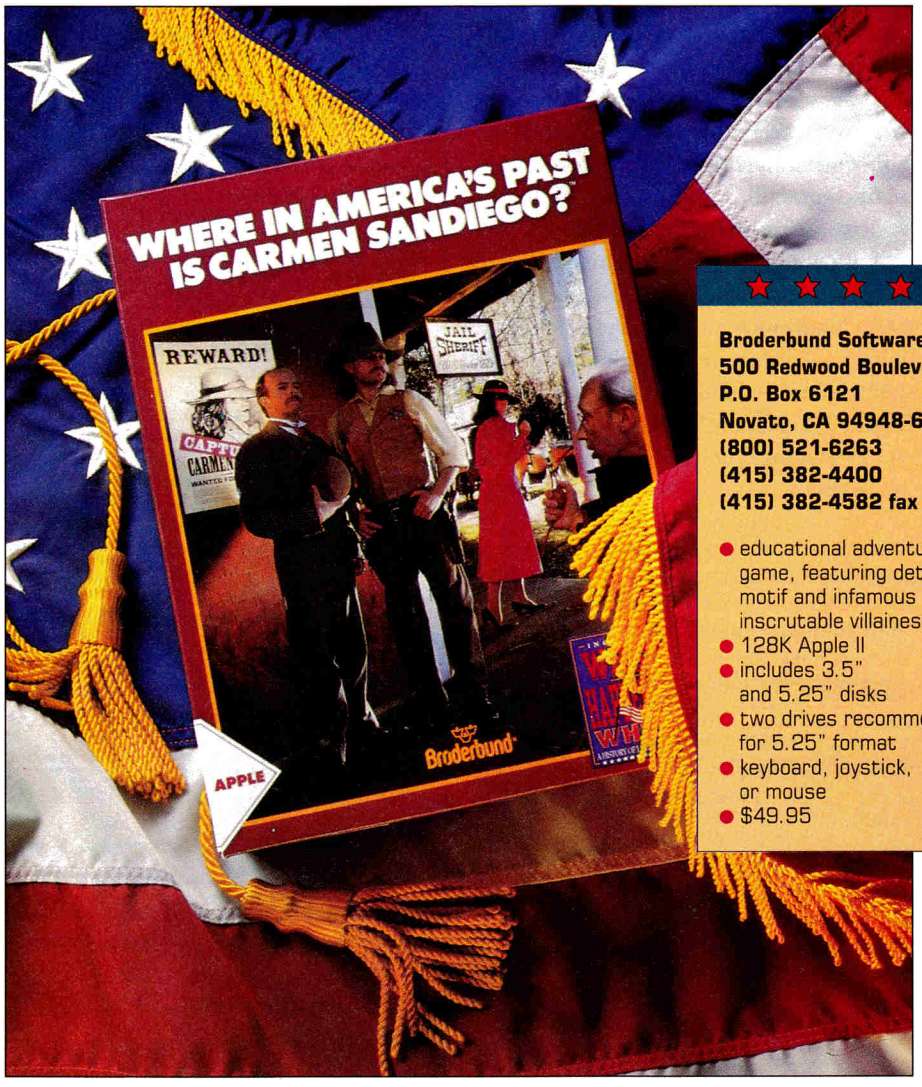
WHERE IN AMERICA'S PAST IS CARMEN SANDIEGO?

She's baaaack . . . . Carmen Sandiego, arguably the most elusive — and hands-down the most prolific — crook in the computer-gaming world, returns to the Apple II in Where in America's Past Is Carmen Sandiego? Silliness and good humor abound in a wild romp through the annals of the American story, while a new cast of characters and new history and geography challenges help make this one the best Carmen yet. *Nothing* escapes the clutches of Carmen's V.I.L.E. (Villains International League of Evil) gang. During a given game, a larcenous henchman might steal the last convertible Cadillac ever produced (Michigan, 1976). Or a *femme fatale* on a big-time ego trip might filch Ellis Island (New York, 1892). And, despite what you may have heard elsewhere, it was actually Carmen's goons who cracked the Liberty Bell when they dropped the goods during an aborted heist in 1782. At least that's the story according to the game's colonial tabloid-style *User's Guide*. Most computer manuals are no laughing matter, but this one most definitely is.



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Like a formulaic romance novel, Where in America's Past can't miss, thanks in large part to its time- and television-tested game design. As in earlier Carmen comedies (including Where in the World, Where in the USA, Where in Europe, and Where in Time Is Carmen Sandiego?), your stint begins when you add your name to the ACME Detective Agency's duty roster. As you solve crimes committed by Carmen and her 15 recently recruited cohorts, you rise in rank — from *Greenhorn* to *Tenderfoot*, *Birddogger*, *Tracker*, and *SuperScout*. The program offers seven levels of difficulty in all and saves games for up to 24 detectives.

While Stretch the faithful crime hound sleeps on the job, the Chief hands out assignments. He describes the crime, drops a clue about the perpetrator's gender, and tells you how much game time the Federal Time Travel Commission has allotted for you to solve the case. That means pursuing the perp and gathering clues as efficiently as possible with the help of a new-and-improved crime-fighting device — the Chronoskimmer 450SL time-travel machine.

Each Chronoskimmer screen features crisp, colorful, double-hi-res graphics, depicting a scene from one of 45 possible U.S. destinations. Some graphics screens include images of famous Americans, such as Thomas Edison and Martin Luther King, Jr. Each Chronoskimmer screen also

Photography • Larry Dunn

provides authentic information about the historic period. For example, the text accompanying a pioneer scene from the mid-1800s reads: "The Conestoga wagons that carried settlers across the Midwestern plains during this period were usually pulled by oxen." If you click on the *Read More* button, you can learn other neat things about the period. Unfortunately, it's tempting sometimes to gloss over or even skip the factual stuff altogether as you doggedly pursue your prime suspect.

You gather and sort evidence by clicking on the Chronoskimmer's hot buttons — labeled *Search*, *Records*, *Map*, and *Launch* — which appear in the lower third of the screen. When you select *Search*, three new buttons pop up: *Ask Bystander*, *Consult Source*, and *Listen In*. Clicking on any of these may help you determine the perpetrator's whereabouts and gather clues pertinent to his or her personal profile.

Click on the *Warrant* button and then the *Evidence* button. Select a characteristic — *Sex*, *Hair*, *Eyes*, (favorite) *Animal*, *Artist*, or *Athlete* — and scroll through the available choices until you locate the accurate one. As you complete this electronic checklist, the ACME crime computer narrows down the list of suspects and eventually issues the appropriate arrest warrant — if your time hasn't run out, that is.

MODUS OPERANDI

Indeed, tracking suspects through time and space can be a challenge. From the evidence you gather — or the electronic mail you receive intermittently as you play the game — you have to figure out not only where the criminal is, but also to what historic period he or she fled. Suffice it to say that unless you're a *Jeopardy*-level history and geography whiz, *What Happened When* — the 1500-page reference book included in the Carmen package — will prove to be an indispensable tool. This "Chronology of Life & Events in America" is so extensively indexed it's easy to look up the facts you need to know to crack a case — or to secure a well-deserved promotion.

A United States map appears when you click on the *Map* button on the Apple II screen. (Carmen's double-hi-res graphics images look surprisingly good on the Apple IIGS, too. Change the Control Panel's speed setting to *normal*, though. Ditto for IIc Plus users.) It's divided into five

APPLE II REPORT

MUST BUY!
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WORTH A SECOND LOOK

ANIMAL FACTS & ADVENTURES

Troll Associates Inc.
100 Corporate Drive
Mahwah, NJ 07430
(800) 526-5289

- new science game/database
- 48K Apple II
- $39.95

Two game-style activities encourage children in grades 4 through 6 to learn interesting facts about animals in ponds, oceans, and deserts. In Animal Facts, players begin as Scouts: They must identify an animal based on clues describing its physical characteristics, habitat, food, traits, and life cycle. The program's database contains information about 15 animals, including tarantula, frog, blue whale, and road runner. Once youngsters complete five missions, they can compete against the computer in Animal Adventures, a challenging electronic board game resembling Stratego. Sound and colorful animated graphics provide reinforcement in both activities, making this educational package as enjoyable as it is informative.

APPLEWORKS DATA DISK 109/110 APRIL 1992

Teachers' Idea
& Information Exchange
P.O. Box 6229
Lincoln, NE 68506

- new AppleWorks data files
- 128K enhanced Apple IIe
- $39.95 (6-disk subscription)

TI&IE's bimonthly AppleWorks Data Disk always contains several interesting files. The April issue offers valuable insights into computer use, putting AppleWorks to work in the classroom, and database skills (counting, calculating, selecting, and sorting). It includes a StoryWorks file called Gunfighter-Stack, which takes kids on a trip back in time to the Wild West. A celebrities database has names and addresses of selected "rich and famous" people, so youngsters can send them letters. A ClassWill (from teacher to students) is designed to leave children with fond memories of their classmates at year's end. A "mad-libs" activity, in the form of a Poetry.Topics database, encourages students to write wacky poems. You'll find an article highlighting ways to use AppleWorks in conjunction with Zillions, a bimonthly kids' magazine published by the folks who do Consumer Reports. If you use AppleWorks in a classroom, you'll find that TI&IE disks always have much to offer.

BUILD A CIRCUIT

Wings for Learning/Sunburst
1600 Green Hills Road
Scotts Valley, CA 95067
(800) 321-7511

- new electricity simulation
- 128K enhanced Apple IIe
- $79

With Build a Circuit, children in grades 4 through 8 use an Apple II to explore characteristics of simple and complex electrical circuits without fear of shock. The software encourages youngsters to use their knowledge of electricity to build on-screen circuits with simulated batteries, motors, switches, light bulbs, and various kinds of wires. A "test" option lets them verify each circuit they construct. Circuits are complete when motors spin or lights glow. The program features a Challenge section with several circuit puzzles. Youngsters can print their circuit designs, as well. Build a Circuit is a great science simulation if you want to introduce the topic of electricity before moving on to "real" materials. It also helps develop important science skills such as observation, prediction, hypothesis formulation, and data analysis.

BULLETIN BOARD MAKER: CLASSROOM ART

Pelican/Queue, Inc.
338 Commerce Drive
Fairfield, CT 06430
(800) 232-2224

- new kids' desktop publisher
- 128K enhanced Apple IIe
- $44.95

Create attention-grabbing bulletin-board displays with this simple poster maker. This versatile product features 15 templates suitable for a wide range

Continued on p. 28

regions: *West*, *Midwest*, *Southwest*, *South*, and *East*. Select an area and zoom in to choose the felon's destination state. Finally, select any one of the nine time periods; the game spans U.S. history from pre-1800 to today. Click on *Launch*, and the Chronoskimmer time-warps you to another era.

RAP SHEET

To finger the right guy or gal, read their daffy dossiers on your Apple II or, better still, flip through the stack of *Culprit Cards* provided. Each card features a candid photo of the villain on the front and a brief bio on the back. Sick puns are standard fare. Just ask Rhoda Lottamiles, the bike messenger, or Della Kitessen, the restaurateur who "dances with coyotes."

Like some real-life con artists, Carmen's associates can be a charming bunch. Among them are Laverne "Eat at your own risk" Onions, a short-order cook at Della's Calf-A; Skip Tumelu, the pretty-boy department-store mannequin; Homer DeBrave, retired slow-pitch softball player; and Phil R. Yup, the tone-deaf clarinetist who doesn't know right from left, let alone right from wrong.

Thanks to Where in America's Past Is Carmen Sandiego? Carmen and her goofy gang continue to do their share to boost kids' geography and history smarts. Hard-core Carmen addicts probably won't be sated, however, until they can pursue the criminals they love to hate in other venues. (The digestive system, music and art history, and the periodic table come to mind.) All it takes is imagination and humor, and the folks at Broderbund have an abundance of both.

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

★ ★ ★ ★ ★

TIME TREKS

Earthquest/Davidson & Associates
125 University Avenue
Palo Alto, CA 94301
(415) 321-5838

- history game
- 2MB Mac Plus or higher
- requires hard drive
- includes HyperCard
- $59.95 consumer version
- $89.95 school version

APPLE II REPORT Continued from p. 27

of classroom themes and calendar events. You can print signs, announcements, worksheets, flashcards, and mobiles; on-screen menus lead you through the design process. Any design can contain text and pictures, or just text; you can position graphics from the program's clip-art library anywhere on screen, then flip them vertically or horizontally. You can also add borders for emphasis. A text editor supports seven fonts in a variety of styles. The software can print in any of four sizes — miniature, standard, large, and poster. A Teacher's Guide offers suggestions for classroom projects. Bulletin Board Maker is a great low-end desktop publisher for home and school.

DINO DIG

Troll Associates Inc.
100 Corporate Drive
Mahwah, NJ 07430
(800) 526-5289

- new dictionary-skills builder
- 48K Apple II
- $39.95

Children in grades 3 through 6 keep company with animated dinosaurs in this dictionary-skills builder from Troll. Five activities teach youngsters how to sort words alphabetically, use guide words at the top of dictionary pages, identify correct pronunciation, separate words into syllables, and find correct definitions. Colorful graphics and sound add sparkle to the presentation, but some activities take too long to finish. Although kids can play at several levels of difficulty, reinforcement is often too simple to be motivating; youngsters may tire of the exercises before they complete them. The idea behind this product is good, because kids should learn to use a dictionary, but program activities are of uneven quality.

LABEL LAND

Wings for Learning/Sunburst
1600 Green Hills Road
Scotts Valley, CA 95067
(800) 321-7511

- new classification-skills builder
- 64K Apple II
- $65

The title of this package suggests a printing utility — yet Label Land is actually a problem-solving application that helps elementary-school kids in grade 2 and up develop classification and inference skills. Three games challenge youngsters to identify common attributes (labels) for groups of items. The first activity, called Birdland, uses pictures of birds; Map Land targets USA state geography (borders, direction, and time zones); Number Land lets youngsters work with numbers from 1 through 99. Kids can play each game at five levels of difficulty. They begin by practicing with examples in which they learn about labels, then work with Challenge activities to find one or more mystery labels for groups of objects. The highest level asks players to identify two mystery labels, plus the condition that defines their relationship. Even adults will find themselves intrigued by Label Land's engaging exercises.

MATH IN THE WORKPLACE: WORKING WITH LINES AND ANGLES

Educational Activities, Inc.
P.O. Box 392
Freeport, NY 11520
(800) 645-3739

- new job-related geometry package
- 48K Apple II
- $119

This high-school math package is intended for students in grade 9 and up. It teaches mathematical decision making based on lines and angles in job-related activities. The first part of the program is a tutorial introducing two dozen geometric concepts (including line segments, acute versus obtuse angles, congruence, diameter, parallel lines, and rays). Multiple-choice questions review materials learned. In part 2, students choose one of six vocations (construction, health, home

Imagine an encyclopedia of history on disk: a compendium of words, pictures, and sounds you can see or hear at the click of a mouse. The great thinkers have recorded their thoughts here, and every maker of history has carefully noted his or her deeds for posterity.

Sound too good to be true? It is. As it stands, Time Treks is an entertaining game that suffers from inaccurate and incomplete historical facts and a weak programming platform. Let me say again and loudly that Time Treks as a game is fun to play. But the "Built-in Historypedia: Thousands of History Facts" promised on the package would be a poor substitute for a children's color encyclopedia at the same price.

FIRST THINGS FIRST

Let's accentuate the positive. Time Treks is a game first, described in the 20-page reference guide included as a "race through history . . . . Dangerous tyrants from the past are threatening to destroy the past and control the present." In the manner of most popular education games, you don't need to find the proper battle-ax to slay the tyrant: You simply need to answer more history questions correctly than he does.

The screen displays a 6-by-5 grid of 30 *Time Tiles*. You need to claim 16 before the Time Tyrant does. Choose your question from among eight different *Time Tiles*, which include serious types such as *Time Facts* (trivia questions), *Time Gallery* (multiple-choice), *Time Match* (matching), plus two more-lighthearted tasks called *The Underground* and *Mousemaze*.

To answer the serious questions, you have to use the historical information presented in the Time Treks program. The facts in the *Archives*, as they're called, are presented under the headings of "Timelines" and "Themes." Timelines for seven historical periods from early eras to the present are cross-referenced with themes containing articles and maps covering the topics of daily life, communication, time, explorers, history, empires, religions, continents, maps, science, and wars.

Some questions can be answered only by clicking on a name or a word at a specific place in the archives; others just require the correct answer. If you don't know the answer, search the *Archives* as quickly as you can, because there's a time limit and the clock's ticking. Not only does the time challenge heighten the fun, but you'll learn to look up facts quickly and accurately in a computer database — a useful skill to acquire when young if you're going to pay for Dow Jones News

economics, agriculture, industrial technology, business) and use an electronic protractor to solve related problems involving lines and angles. An on-line glossary provides definitions; a management system keeps a record of student scores. Reproducible activity sheets supplement on-line instruction, with sound effects providing reinforcement.

SCIENCE PROJECT DATABASES

Applied Educational Technology
P.O. Box 37
Tigerville, SC 29688
(803) 895-4496

- new information source
- 128K Apple II
- requires AppleWorks 3.0
- $20 plus 10 percent shipping

This inexpensive computerized guide helps students find projects for science fairs. The author, a science teacher with more than 17 years' experience, has compiled a wealth of information into 11 AppleWorks databases, letting youngsters search by research topic or grade level. Databases detail how to acquire background information on specific topics, build lab equipment, write a research paper, use a computer to simplify experimentation, and enter a science fair. Also included are a bibliographic database listing recent science-project books and information on 35 commercially available microcomputer interface kits.

TUTOR-TECH 2.7

Techware Corporation
P.O. Box 151085
Altamonte Springs, FL 32715-1085
(800) 34-REACH, (407) 695-9000

- upgrade/hypermedia toolkit
- 128K Apple II
- stack creation requires mouse
- $195, $35 upgrade v2.5, $19 upgrade v2.6 serial number 39999 or below, free upgrade v2.6 serial number 40000 or above

Tutor-Tech brings hypermedia-authoring tools to the Apple II, letting you create interactive mini-applications or "stacks." Stacks contain "cards" combining text, graphics, and speech, with sequences generated by videodisc player, VCR tape, or Apple's Video Overlay Card. Tutor-Tech ships with clip-art libraries, sample stacks, background displays, and a variety of drawing tools to simplify stack building. The latest version, 2.7, offers support for music without special composition software. Other new v2.7 functions include reference (background) pages; XCMDs (external commands) to change directories, launch other applications, and execute binary files; slot- and player-independent videodisc control; and a command-key shortcut to open stacks.

TWO VERTICES

William K. Bradford Co.
310 School Street
Acton, MA 01720
(800) 421-2009

- new upper-level math package
- 128K Apple II
- printing requires ImageWriter
- $60

Two Vertices is appropriate for classes in advanced math that have already completed one year of algebra. It uses the concept of iteration (repetition) to teach youngsters how to generalize patterns from specific actions. Problems involve moving back and forth on a line segment: Each move forward or backward is a set fraction of the distance. Students determine both the fraction and direction for each move, then ask the program to iterate. The software generates a histogram showing the position and frequency of each move. This package challenges kids to investigate what happens when they alter math variables. Student worksheets supplement on-line activities. Overall, however, the documentation would benefit from detailed tutorials explaining how the program works.

— Carol S. Holzberg, Ph.D.

Retrieval, Nexis, Lexis, or some other commercial on-line information service when you grow up.

EMPTY EMPTOR

If in the future you pay good money for information, we hope you'll get better data than Time Treks offers. On a nifty animated map of the Magellan crew's first circumnavigation of the globe, for example, it's clearly indicated that the explorer sailed east from Spain to the Indian Ocean, not west through the straits that bear his name, as he actually did. A mistake like that raises doubts about the accuracy of the other facts in the *Archives*.

Another interesting error crept into the description of the death of explorer James Cook. Cook was "eaten by savages (1778)" according to Time Treks. The (paper) encyclopedias I checked all omitted the cannibalism, to the probable relief of Hawaiian Islanders.

But before reactionaries rejoice that Time Treks dares to be "politically incorrect," let me note that Time Treks lists as fact such controversial historical theories as the similarity of the organization of the United States to that of the Iroquois League. In another section, the program equates the trial-and-error approach of tribal and shamanistic practices to the scientific method as practiced in laboratories and universities. Without making a judgment as to the relative merits of culture, this seems an odd comparison at best.

The reason for some of the peculiar "facts" in the *Archives* is apparent in the bibliography. It combines material from sources you might expect, such as various atlases, chronologies, and encyclopedias, with curiosities such as articles and essays from *Time* magazine. The research behind Time Treks can charitably be called spotty.

RE-SEARCH

You'd expect the research to be more accurate because the Time Treks team saved time by using HyperCard as its programming language. I needn't repeat the drawbacks of a HyperCard application: It's slow, it crashes at odd times, it's slow, it's in black-and-white, and it's slow. Time Treks simply can't keep up with all the work involved in playing a game *and* storing historical archives. But the best part of the game, *The Underground*, uses HyperCard wonderfully. The Underground is the home and study of a delightful archaeologist: His bookshelves are filled with exotic tomes and knick-knacks he's picked up on his travels, such as rare poisons and concoctions. It's reminiscent of the walrus' cave in Cosmic Osmo, one of the original HyperCard games. There's also a hole that leads to the *Mousemaze*, another good place for kids to explore.

The subterranean rooms are better suited to roaming and poking than drill and practice In fact, the only way to master Mousemaze and Underground questions is to explore both places thoroughly; your knowledge of history won't help much here, but a sense of humor will.

In the obligatory comparison (in reviews of "edutainment" software) to Broderbund's Carmen Sandiego series, an important difference needs to be stressed. The data in the Carmen games is found in a companion book — an almanac, an atlas, or a chronology. Time Treks ambitiously attempts to translate its historical facts to disk, with mixed success. Time Treks should try to be either a little less, perhaps simply an entertaining game, or a little more — by taking more time with the details.

Paul Statt
Senior Editor
inCider/A+

★ ★ ★ ★ ★

WEEKLY READER FRACTIONS AND DECIMALS MATH WORD PROBLEMS

Optimum Resource, Inc.
P. O. Box 100
Norfolk, CT 06058-1000
(203) 542-5553

- drill-and-practice math program
- 48K Apple II
- requires one 5.25-inch drive
- copy protection
- $49.95

You remember word problems, don't you? "Sam has 18 toy race cars and 8 toy sports cars. One half of all his cars are red. How many red cars does Sam have?" Word problems can be difficult for young students because they require both math and reading skills. Fractions present still another hurdle — they're a mathematical mountain range smack dab in the middle of elementary school, and many students have difficulty climbing them.

Now to the rescue comes Weekly Reader Fractions and Decimals Math Word Problems, the latest in a long series of respected titles from Optimum Resource. This program takes students through an increasingly difficult series of word problems. It runs on all Apple IIs — from the ancient 48K II Plus to a Macintosh LC equipped with the II Card. This lowest-common-denominator approach limits the power of the program, but it also means it runs on all IIs found in schools and homes.

THE STUDENT TRAIL

The program covers 25 skill levels and includes basic math operations on regular fractions, whole and mixed numbers, reciprocals, and decimals. Each level includes five word problems; problems substitute different sets of numbers each time they're accessed.

The software's text-only screens are uncluttered and readable, but a little boring. Students use formatted boxes to enter responses. The program ignores inappropriate keystrokes and allows for easy corrections.

Spencer, my ninth-grade tester, also found the word problems only mildly interesting, even though the topics ranged from toy cars to physics. It's true that kids don't like word problems, but that's what educational software should compensate for, right?

The reading level is appropriate for the intended audience, but problems use both metric and American measurement systems; if your students are unfamiliar with either one, they may be confused.

Adding insult to injury, some of the problems aren't realistic: No one spends three sevenths of a dollar, for instance, and Olympic times are always expressed in 100ths of a second, even if they can be reduced to 50ths.

TRACKING THOSE NUMBERS

After an incorrect answer, the program highlights words and numbers in the

Continued on p. 52

Don't be left in The Shadow. . . .

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SILICON SURGERY

Scalpel! Sutures! RAM chips! Extra memory gives your productivity software room to work — so get inside your Apple's head and beef up your system's brainpower.

Jethro Bodine — a name that blasts from the past at Baby Boomers who watched *way* too much TV back in the '60s. Famed nephew of Jed Clampet, patriarch of *The Beverly Hillbillies*, Jethro dreamed of becoming, in rapid succession, a secret agent, a movie producer, and in a fit of pure genius, a *brain surgeon*. Dumb as a stump, low at least a quart of IQ Pennzoil, Jethro wanted to put his hands deep inside the heads of folks like you and me.

We may not be as dull as Jethro, but we, too, can follow in his imaginary footsteps and become brain doctors. We won't dip into the gray matter of humanity, but inside the silicon head of our computer. We're gonna be *RAM surgeons* — it's so easy even Jethro could handle this operation.

SMART AS A WHIP

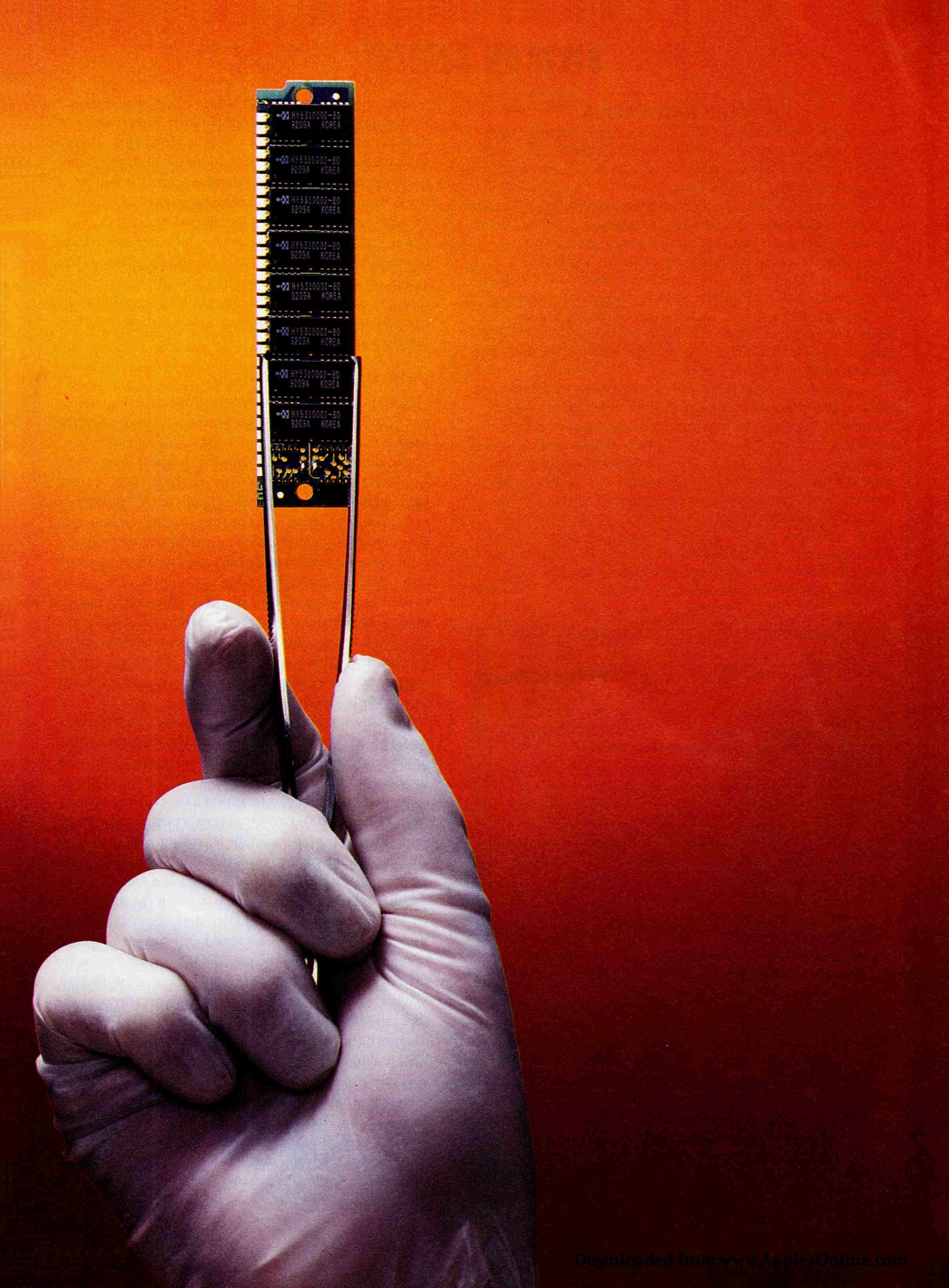
And it's sure not going to kill the computer. Just the opposite, for our digital neurosurgery comes with an iron-clad guarantee to make the patient smarter, faster, and brawnier. Add more memory to your Apple IIe, GS, or Mac, and you'll be able to create huge AppleWorks documents, build an ultra-fast RAM (*random-access memory*) disk, and, in the case of the Macintosh, keep more software at your point-and-click beck and call.

In fact, if you're still working with the memory Apple gave its machines, you're working with a crippled computer. A 2-megabyte Macintosh Classic or LC, or a 1.25-megabyte Apple IIGS just can't cut it today. Big software on both platforms demands and deserves big RAM.

Even simple Macintosh software such as MacDraw II, Claris' entry-level drawing program, needs 2 megabytes on a color machine. Innovative Apple IIGS software such as Pointless, WestCode's TrueType font interpreter, needs 1.25 mega-

By GREGG KEIZER

Photography • Ed Judice



Downloaded from www.AppleIIOnline.com

IF I ONLY HAD A BRAIN

One thing that would make almost every Apple IIGS owner rush out for more RAM would be a 16-bit version of the Macintosh's MultiFinder, which lets you launch, then keep active, as many applications as will fit into memory.

Play with a RAM-heavy, MultiFinder-equipped Macintosh (System 7 integrates MultiFinder's features, but doesn't call it by name) and you'll quickly see what additional memory can do. With a 4-megabyte Mac, you can launch ClarisWorks, MacWrite II, and MacLinkPlus, for example, in quick succession, then zip from one open application to another by simply pulling down a menu at the far right of the screen. (See the accompanying **Figure**.) You handle file maintenance by returning to the desktop in the same fashion. There's no need to close an application and return to the desktop to reach another program.

The Apple IIGS' system software has never had a MultiFinder-like feature, even though users would certainly welcome it. WestCode, publisher of Pointless, was rumored to be working on a GS MultiFinder, but according to WestCode's John Oberrick, "It's been pushed to a back burner." Even though "it worked in a lot of general circumstances," serious software-compatibility problems prevent WestCode from realizing the project, Oberrick claims, adding that AppleWorks GS was the prime offender. Without AWGS, of course, any GS MultiFinder would be doomed, since that integrated package is a mainstay of the GS' software suite.

Too bad. If ever there was a practical use for memory, it lies in something with the functionality of MultiFinder. **— G.K.**

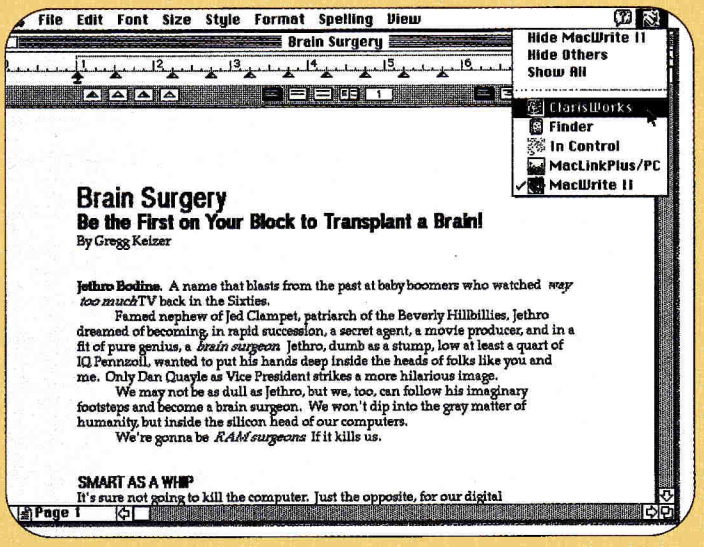


Figure. MultiFinder for the Mac lets you keep several applications open at the same time.

bytes minimum — more if you're using a popular printer like the HP DeskJet. To keep up with the digital Joneses — and their brand of software — you need more memory. Fortunately, the days of high-priced brains are long gone. Today, memory comes cheap, as little as $39 a megabyte for IIGS RAM. You can pump up your computer's silicon brain tissue — and your productivity — for less than you might think, certainly inexpensively enough to justify the cost, considering the benefits you'll reap.

And you won't even have to learn a whole lot of anatomy. Want a quick lesson? Let's start with the II. Memory's on display in two places inside an Apple IIe or IIGS. There's *main memory*, the RAM chips soldered to the logic board (that big green circuit board that fits across the bottom of the computer's case), and *expansion memory*, attached to add-on cards you plug into an empty slot.

You won't fool with the memory already on the logic board. Additional memory for both the Apple IIe and IIGS comes on a card you snap into a slot; Apple engineers didn't allow for more RAM chips to be plugged into the logic board itself (and you can thank them for that, believe you me).

PUMP UP THE BRAINPOWER

Picking a memory board for the II is easier than it used to be, owing to the smaller number of vendors in the market. But how do you know what kind of card's best? Apple IIe owners have the simplest decision. Because no Apple IIe software requires more than 128K to run, extra memory's purpose is almost exclusively AppleWorks enhancement. (With the appropriate utility, however, other programs may be able to use the extra memory as a *RAM disk* — an area set aside for temporary file storage. It's faster than a physical disk drive, but your data disappears as soon as you turn off your machine.) Another megabyte of memory will let you load all of AppleWorks 3.0's modules into RAM, where it's instantly available, as well as expand the desktop so that you can build larger databases, spreadsheets, and documents. (For details, see the sidebar "AppleWorks Gets Some Elbow Room.")

Apple IIe-specific boards with 1 megabyte aren't hard to find. In fact, the classic **RAMWorks III** board from Applied Engineering is still widely available, either directly from AE or through mail order. RAMWorks III's most common configuration is 1 megabyte; expect a street price anywhere from $175 to $200. Because it also acts as an 80-column card, you simply swap it with the 80-column card in the IIe's auxiliary slot, install the bundled software to modify AppleWorks so that it can use the extra room, and start working.

Other sellers of Apple IIe cards can beat the RAMWorks III's price, though. Quality Computers, for instance, sells its own **Q-RAM IIe** memory card in a 1-megabyte configuration for $100, while you can find the bargain-basement-priced Sequential Systems **MEG-80Z** for even less by mail.

What's the difference? Beyond the warranty and the reputation of the seller, not much. Most Apple IIe boards use much the same sort of memory chip — banks of 256-kilobit chips, 32 to the megabyte — and without piggyback-like extenders, they all max out at that limit.

Your best bet, considering the price of memory, is to bump up your Apple IIe by a megabyte with an affordable memory card. Don't expect to recycle the card in another computer (though you may be able to stick the chips into some older Apple IIGS boards). For the Apple IIe, shop for price, then warranty.

The RAM Surgeon General's pick? Quality Computers' Q-RAM IIe card. It runs $100 per megabyte and carries a five-year warranty.

Beefing up the brains of an Apple IIGS takes a little more thought, mainly because the machine consumes more memory, though other considerations intrude, too.

It used to be that Apple IIGS memory-expansion boards looked a lot like Apple IIe boards: long cards with RAM chips piled on. Now, though, many GS cards are smaller and put their chips on miniature rectangular circuit boards called SIMMs (*single in-line memory modules*), which sport a connector along one edge. SIMMs, in turn, plug into the memory card, and can be removed or replaced easily: modular memory, basically.

Eight 1-megabit chips ranked on one SIMM make a megabyte of memory in this SIMMCity. Stick four SIMMs on one board and you've got 4 megs of RAM for the GS. You can buy a 1-megabyte SIMM for anywhere from $40 to $50.

The **Q-RAM GS** is just such a board. Diminutive compared to older memory cards, Quality Computers' Q-RAM GS holds as much as 4 megabytes in its four SIMM slots, and costs $240. You don't have to go straight to 4 megs, though, for this card, as many others do, lets you configure for 1, 2, or 4 megabytes. Buy the card now, fill just two SIMMs, then later, when you have the money, fill the remaining slots. All you have to do is flip a tiny DIP switch or two.

One advantage of the Q-RAM GS, at least for anyone thinking about moving to a Macintosh someday, is that its SIMMs are identical to those used in Mac models such as the Classic, Classic II, LC, and LC II. If you retire your GS, you can shift its brains to your new Mac. Amazing but true, this tabloid trick of moving minds.

Most Apple IIGS boards top out at 4 megabytes; more than that and, barring some fancy footwork, the GS' DMA (*direct memory access* — bypassing the central processing unit) is disabled, which slows down the computer drastically. Several cards manage to move beyond that limit, though. CV Technologies' **GS Memory Board**, for instance, holds as much as 4 megabytes itself, but because it can carry another card on its back, you can expand the GS' memory total by as much as 8 megabytes. Several mail-order houses sell this 8-megabyte combo for around $330.

Some Apple IIGS boards, such as Applied Engineering's **GS RAM III** and Sequential Systems' **RAM GS**, don't use SIMMs, but depend on individual chips instead. You pay a premium price for the GS RAM III (a 4-megabyte configuration runs around $290, street price), but the RAM GS is dirt cheap, at only $150 for the same amount of brainpower.

Installing more memory in the Apple IIGS is a snap, almost literally. Buy the board and snap it into the GS' memory-expansion slot (up near the right front corner of the logic board as you look at it from above). To add more later, snap out the board, then snap in another SIMM or two.

Considering the memory requirements of the GS' System 6, as well as those of software such as HyperCard IIGS and Pointless, 4 megabytes will serve you well. SIMMs are best, but not mandatory — the GS-to-Mac memory swap may sound terrific, but chances are you'll still want a RAM-fat GS beside any Macintosh you might add later.

For the Apple IIGS, the RAM Surgeon General recommends a 4-megabyte board from Quality Computers (Q-RAM GS or the new **Q-RAM GS II**, a $200 card that doesn't use Mac-style SIMMs), CV Technologies (GS Memory Board, at about $200 by mail order), or Applied Engineering (GS RAM III, which runs around $280 mail order).

THE MACINTOSH MESS

Adding memory to a Macintosh is rarely more difficult than operating on the Apple IIe or IIGS. Much of the credit goes to the modular SIMM, for with the exception of the Classic, all Macs use SIMM-style memory that snaps directly into small slots on the logic board. These SIMM slots are grouped in banks of either two or four slots, depending on the Mac model.

Getting the cover off may be your biggest challenge. In fact, you'll probably want to leave the job to a service technician if you own one of the compact Macs — a Plus, SE, SE/30, Classic, or Classic II — since their cases don't just snap off, as do the tops of the LC, LC II, and IIsi.

Once the cover's off, it shouldn't take long to find the existing SIMM memory. Just look for the small circuit boards jutting up at an angle. It's your job to fill those slots with SIMMs.

APPLEWORKS GETS SOME ELBOW ROOM

The single smartest reason to make your Apple II big in the brains department is to improve AppleWorks' performance.

Even AppleWorks 3.0 will work on an Apple II with a measly 128K of RAM, but it can use much more. With additional RAM, you can preload AppleWorks' three modules into memory at startup. Rather than wait for the floppy disk to load the next application or printer instructions, you can switch from word processor to spreadsheet to database instantly.

AppleWorks' desktop, the space dedicated to open documents, busts wide open with more RAM, too. A 2.25-megabyte Apple IIGS running System 6 (a memory hog) still has more than 1 megabyte available for the desktop, for instance. That means you can create or open more and larger documents, then keep them there while you use the clipboard to copy and paste from one to the other.

A RAM card also bumps up the maximum size of AppleWorks files. At just 128K, for instance, AppleWorks won't let you make a word-processor document larger than 2250 lines. Up the memory, though, and you can create a document as long as 22,600 lines, enough for a decent-sized novel.

AppleWorks 3.0 recognizes as much as 2 megabytes of RAM automatically (but no more), so you don't need to make any changes to it. Earlier versions, however, require modification. Before you buy more memory, make sure you're getting the patch software. You may also want to check out any bundled RAM-disk utilities, which let you set aside a section of RAM your Apple II can use as it would a physical disk drive (although file storage here is temporary — gone when you turn off your system). **— G.K.**

SHOPPING FOR BRAINS

Mail order's the way to go when you're pricing memory. Not only is it hard to find Apple II or IIGS memory products at Apple dealers these days, but you'll save yourself money by shopping direct.

Decide how much memory you want to buy, then start calling around. Hit the mail-order houses and look for ads for memory vendors in inCider/A+ and Macworld. Price three or four, minimum, to get both an average price and the lowest quote.

Ask whether a step-by-step video's available to help you install the memory, or whether the seller offers toll-free technical support for the inevitable questions. (You'll want good documentation, too, preferably with plenty of pictures, but that's impossible to judge over the phone.)

Ask about the memory chips' speed, too. Typical are 100-, 80-, and 70-nanosecond chips; the lower the number, the faster the chip. Fast Macintosh models like the IIci and IIfx need fast RAM — 80-nanosecond is a minimum — but other Macs can get by with 100-nanosecond chips. Apple IIs, no speed demons, don't need fast memory, and will do just fine with 100-nanosecond (or even slower) chips. (The numbers at the top right of the chip indicate its speed.)

Apple IIGS users looking to beef up a board like the Q-RAM GS shouldn't forget that it uses Macintosh-style SIMMs, and that because of this crazy thing called supply-and-demand, SIMMs advertised in the back of Macworld generally cost less. **— G.K.**

For the most part, a SIMM is a SIMM is a SIMM in the Macintosh world. The most common hold eight 1-megabit chips, and are called 1-megabyte SIMMs. In other words, each SIMM you snap into place adds another megabyte of memory. Two-megabyte, 4-megabyte, 8-megabyte, and even 16-megabyte SIMMs are also available, but only the first two sizes are close to affordable for most of us. You can buy SIMMs from a variety of sources (see the accompanying sidebar "Shopping for Brains"), and in many cases, install them yourself in minutes. The most affordable sources are mail-order sellers specializing in memory; most offer toll-free ordering and long-lived guarantees. (Check advertisements in *inCider/A+* and *Macworld* — you'll find scores of memory dealers, and some hearty competition.) Prices for 1-megabyte SIMMs start at around $35, while 2-megabyte and 4-megabyte SIMM costs begin at $80 and $120, respectively.

What *can* mess up your mind is figuring out how much RAM each model can take, and what configuration each allows. Because of certain Mac peculiarities (and general lack of DIP switches), each bank (remember, that's two or four SIMM slots) must be either completely filled or completely empty — no half measures allowed. Other restrictions demand that you don't mix SIMM sizes in the same bank, and that the larger-capacity SIMMs go into what's called Bank A.

Let's pump up an LC's brain, for instance. Two megabytes of RAM are already soldered to the Mac LC's logic board, but two SIMM slots are grouped in a single bank over on the right. Pop 1-megabyte SIMMs into each slot and you now have a 4-megabyte machine (2+1+1). Spend bigger bucks for 2-megabyte SIMMs, and the LC has 6 megabytes ready to work (2+2+2). Like the Apple IIGS, the Mac recognizes the new RAM immediately — you don't have to configure the machine, touch a control-panel device, or modify software.

If you're using System 7, think of 4 megabytes as your minimum memory requirement. A couple of megabytes of RAM just isn't enough to do more than start the computer and keep one application active. The more sophisticated your software suite, the more memory your Mac should have. If you typically work with major-league programs such as Aldus' desktop-publishing program PageMaker, for instance, consider upgrading your computer to 6 or 8 megabytes. For the Macintosh crowd, the RAM Surgeon General advises adding inexpensive 80-nanosecond SIMMs until the machine's total rings up at 4 megabytes (5 megabytes for the IIsi).

SCALPEL! SUTURES! DOCUMENTATION!

You don't have to play Jethro's game of just *pretending* to be a brain surgeon — you can become one without much grief, and for little more than you'd spend on a couple of computer games.

You don't even have to go it alone, for Apple II and Macintosh memory products typically come with at least minimal documentation. Read it, and if you're having trouble, call the mail-order house that sold you the silicon and ask technical support to talk you through the problem.

Compared to getting printers and modems up and running, making more memory is a snap. Scalpel! Silicon! Sutures! Relax — this won't hurt a bit. ❑

CONTRIBUTING EDITOR GREGG KEIZER IS THE AUTHOR OF BRIDGING THE GAP, *INCIDER/A+*'S MONTHLY COLUMN ON II/MAC CONNECTIVITY. WRITE TO HIM AT 4420 HILYARD STREET, EUGENE, OR 97405. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

PRODUCT INFORMATION

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CV Technologies
1800 East Whipp Road
Kettering, OH 45440
(513) 435-5743
$99 OK
call for additional pricing

GS RAM III,
$119 0MB to $499 4MB
call for pricing and trade-ins
RAMWorks III,
$159 to $429 1.5MB
call for pricing and trade-ins
Applied Engineering
P.O. Box 5100
Carrollton, TX 75011
(214) 241-6060

MEG-80Z, $99.95 1MB
$79.95 educator discount
RAM GS, $199/$149 2MB
$249/$199 4MB
Sequential Systems
1200 Diamond Circle
Lafayette, CO 80026
(303) 666-4549

Q-RAM GS, $240 4MB
Q-RAM GS II, $199.95 4MB
Q-RAM IIe, $99.95 1MB
Quality Computers
20200 Nine Mile Road
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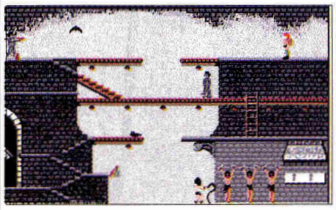

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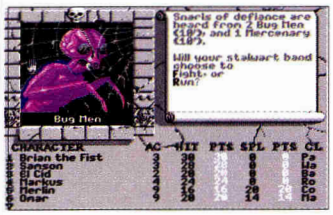

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Mixed Up Mother Goose	$15	$20
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Blackjack Academy	$20	$20
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Bubble Ghost	$10	$15
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Jack Nicklaus' Golf	$20	$25
Mean 18 Golf	$20	$24
Serve and Volley	$15	$20
4th & Inches	$15	$20
FTA		
Photonix II	$15	$20
Micro Revelations		
Xenocide	$18	$23

Title	Member's Price	Non-Member's Price
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Transylvania III	$10	$12
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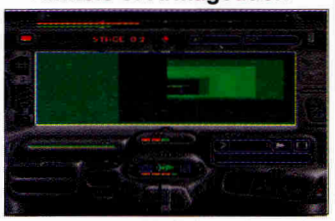

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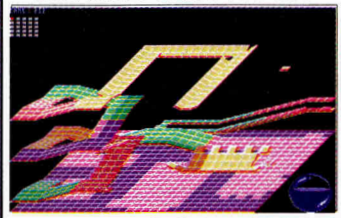

Shareware Game 10-Pack: Get ten 3.5" disks full of the greatest shareware & freeware games for the Apple IIGS including Milestones GS, Star Trek Classic, Bouncing 'Ferno, Columns, Floortiles, Cosmocade, Cribbage, Blackjack Tutor, Space Clusters and many others. Requires 1.25 Megs of memory (1.5 Megs for Star Trek) and a joystick. **Order product number GP54 for only $28.**

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Apple IIGS

By CYNTHIA E. FIELD, Ph.D.

MAXIMUM SECURITY

Listen up, people: Let's be careful out there. At home, in school, and at the office, special cables, locks, and access-control programs safeguard your system against break-ins and tampering.

You can take the Fifth on this if you want, but how much of your hard-earned dough is tied up in your computer system? $2000? $5000? $10,000 or more? You doing anything to protect that investment from theft and tampering? Playing cops 'n' robbers is fun on TV, but nobody in real life wants to find his or her property at the top of the hot sheet down at the local stationhouse.

An abundance of widely available computer-security products makes safeguarding your Apple II or Macintosh easy, whether it's at home, in school, or at work. And this kind of protection's no racket: Security-hardware and software companies aren't out to rob you. Most products cost surprisingly little, compared with the value they provide.

Each is geared to a specific type of security problem, as well. At home and in your community, for example, the prevailing concern may be to thwart any roving creep who's majoring in B&E (breaking and entering). Physical-security products such as cables and locks can at least slow down a thief, if not discourage him altogether. (For a brief look at the special benefits offered by computer-insurance policies, see the accompanying sidebar "When All Else Fails.")

Photography • Ed Judice

MAXIMUM SECURITY

But keeping your own children from auditing the family's stock-portfolio database should probably rank high on your computer security checklist, as well. Locking disk cabinets and special access-control software can save weeks' or months' worth of your work or personal records.

At school the need for computer security mushrooms: Professional tradition and school regulations dictate that teachers and administrators ensure the confidentiality of exams and grades. It goes without saying that today's personal-computer-based workstations and local-area networks make an educator's record-keeping tasks infinitely easier than they were when Wally and the Beaver were in school. But greater convenience imparts greater vulnerability. Here, setting "privileges" can keep everybody on the straight and narrow.

To the concerns already mentioned add two well-publicized, contemporary security problems: virus infection and software piracy. Computerized bulletin-board systems (BBSes) and on-line services are sometimes blamed unfairly for aiding and abetting the spread of viruses and illegal copies of programs. You do need to be vigilant on line, but it's often easier for your computer to "catch" a virus when you share physical disks with other users. And, unless you take reasonable precautions, students who enjoy access to your school's Apple IIs and Macs can readily steal copyrighted software — an embarrassing, if not legally precarious, situation for a school to find itself in.

MOTIVE, MEANS, AND OPPORTUNITY

Securing your computer system physically is your first line of defense. Whether you perch your Apple II or Mac in the den, classroom, or office, there's a mind-boggling array of cables, clamps, brackets, and locks from which to choose.

You've got to give Apple credit for engineering molded security-lock brackets and special security-lock openings into many of its products — including the GS, the Mac, and newer monitors and drives. Both the **Curtis Apple Security Kit** and the **Kensington Apple Security System** provide metal clips that install permanently in Apple models' security slots. (To locate these openings, find the security-lock icons on the back of your computer and monitor.)

According to the literature we've seen, spring-steel prongs inside each slot "grab" the clip securely, making it virtually impossible to remove security clips without inflicting physical damage on the computer's case. Cosmetic defects not only reduce the value of a computer system, but also scream a warning to resellers, exchanges, and private buyers that the system may be hot.

The Curtis and Kensington kits also include small wire loops that attach to the computer's keyboard. You can secure peripheral devices such as printers and external hard-disk drives, too. Simply replace the slotted screws in the printer or SCSI (*small-computer-systems interface*) cable terminal with tamper-resistant screws provided in the security-kit package.

Weave the thick wire cable included in the kit through built-in brackets, metal clips, and wire loops. For additional protection, you can wind the cable around a desk rail or other furniture before closing the padlock. Kensington's **Security System for LaserWriter II** with its hasps, screws, wire cable, and padlock provides similar protection for laser printers.

Cable-based designs are common to some other physical-security systems, as well. For example, a special anchor at one end of the **Tufnut Applesnap Cable Anchor System** fits the security-lock slot in your Apple. An anchor at the other end attaches to your desk with a bolt and dual-nut system. (You must drill a hole in the desk first.)

Some computer-security product manufacturers offer "universal" systems that accommodate Apple computers and non-Apple components alike. The **Pro-Tech Computer Security Kit** and SecurTech's **RightOn Spot Anchor** — with their glue-on clamps and sturdy wire cables — are similar to systems described above. The **Pro-Tech Security Pad**, **RightOn Spot Link-5**, and **Security Stick** attach your computer to a desk via sturdy steel or plastic anchors secured in place by adhesive and metal fasteners. At least one security manufacturer claims that breaking the security-adhesive bond alone requires a pulling force of more than 2800 pounds, and overcoming an adhesive/hardware fastener system can require up to 7000 pounds of force.

In addition to providing Apple-specific security clips, the **MacKablit Security System** from Secure-It includes hex fasteners and a heavy-duty cable with integral Master-brand padlock. The manufacturer also sells glue-on fasteners to secure peripheral devices, and a **Disk Drive Lock** that denies access to the Mac's built-in floppy. A disk-drive lock helps prevent unauthorized users from stealing programs and data and stops malcontents from infecting your system with viruses. **DriveLock** is Kent Marsh Ltd.'s version of the same device.

PassProof, Kensington Microware's hardware/software security kit for Macintosh computers (at press time there was no version for the Mac LC/LC II, however), includes a disk-drive lock as well as security plates to block the Mac's SCSI and floppy ports. Once these locks are in place, no one can start up your system via an external floppy, hard disk, or CD-ROM drive. PassProof software provides additional layers of protection. Not only must an authorized user enter a password, but his or her activities are recorded automatically in a security log.

FOR YOUR EYES ONLY

Although they won't deter serious snoops, disk-storage cases such as the **Curtis Locking 3 1/2 File** have psychological value because they send a "hands off" message to passers-by. For less than $15 ("street" or mail-order prices make security products even better values), you can dissuade kids from cruising the family's finance spreadsheets — or browsing through business documents you prepare at home after hours.

Because they're typically made of plastic, disk-storage units can be compromised if stolen. Needless to say, keeping backups of important data in a safe place is a wise policy. If you work in a more-or-less public-access area at school, you may want to secure data disks in a locked closet during lunch breaks and at night.

Screen-blanking utilities such as **Phantasm** — included in the Quality Computers' **Signature GS** collection of Apple IIGS utilities — and Kent Marsh's **QuickLock** for Macs can help protect the confidentiality of information appearing on your computer display. Whether you're a

teacher designing an exam or an administrator fine-tuning the school budget, all you have to do is click the mouse on a predetermined spot or enter a command at the keyboard. The screen immediately darkens, shielding documents from view by casual observers.

Virtually all screen blankers activate automatically after a preset period of computer inactivity, and some require a password before you can resume working. Multifaceted products — including Kensington's PassProof and the **Empower** series from Magna — offer built-in screen-blanking capabilities as well as hardware and software access controls.

Screen blankers sometimes include entertaining, animated scenes that can help prevent *burn-in* — permanent etching of your monitor's phosphor coating. Among the most popular screen-blanking programs for the Mac are Berkeley's **After Dark** and **More After Dark**, with dozens of animated displays, including tropical fish and whimsical flying toasters.

UNDERCOVER OPERATIONS

The Mac has long been lauded for its ease of use. But ease of use also means ease of misuse. That virtually all Mac programs require hard drives only compounds the need for security. Without appropriate access control, someone using your computer can read, modify, and even trash your programs and data files.

Take a close look at one or more of the programs described here. For example, depending on your security requirements, Magna's **Empower I**, **Empower II**, or **Empower Remote** should fill the bill. Empower I offers a lower level of security than its more-advanced siblings, but does include user registration, password protection, screen lock-out, an access log, and system-access controls. For example, the software can preclude system startup from a floppy. Empower II's increased security includes folder protection, desk-accessory controls, and registration of guests and work groups. Similarly, Remote lets a system administrator protect Macs communicating over a network.

ASD's **FileGuard** is another comprehensive access-management program. A system administrator sets custom privileges for each user who logs onto the system. You can prevent disk insertions, create write-protected folders (for exams, say), set up "drop folders" (for student work), and password- or copy-protect the applications on your hard drive. Instead of typing passwords, users can slide a magnetic strip card — a VISA or ATM (*automatic teller machine*) card, for example — through the optional **MaccessCard Reader**.

UltraSECURE, from usrEZ Software, offers a feature set that's similar in many ways to Empower II's and FileGuard's. But ultraSECURE also boasts advanced data-encryption capabilities. *Encryption* is the automatic conversion of ordinary text to indecipherable code, making encrypted files difficult if not impossible to crack.

UltraSECURE implements the National Institute of Standards and Technology's Data Encryption Standard, or *DES*. (UsrEZ also offers **Camouflage**, a dedicated data-encryption program for the Mac.) The DES method is so sophisticated that a warning printed on the ultraSECURE package reads: "This product incorporates advanced technologies which require approval from the U.S. Department of State for export outside the U.S.A. and Canada."

Fortunately, most schools and individual users don't require quite that much security. For the average class or computer lab, folder-level security may be all you need. Or should we say **FolderBolt** from Kent Marsh Ltd. may be all you need?

This impressive product meshes with the Mac desktop, creating a security system that's both unintimidating and transparent. The system administrator can create read-only folders and drop folders, and students can create password-protected personal folders in which to safeguard their work-in-progress. The system administrator can override all passwords, protect the *System* folder, and review the user log.

Kent Marsh Ltd.'s modular approach to Macintosh security lets you integrate the company's other products as needed: If security requirements dictate, you can incorporate **NightWatch Classic** or **NightWatch II** (for hard-disk-level security), or **MacSafe II** (for network security).

TEN TIPS FOR SAFER APPLES

- Secure your computer equipment physically to deter theft. Additional products include the inexpensive **CASELOCK** and the semipermanent anchor **PRO-TECH MACPAD**.
- Help your police department help you by joining Operation Identification. Engrave valuable equipment with your state's abbreviation followed by your driver's-license number. Place an Operation Identification warning decal in a window near your front door.
- Register your computer and other valuables with a centralized database service. That way, law-enforcement agencies can more easily return recovered equipment if it's stolen. You can both register and "tattoo" your Apple II or Mac with the **S.T.O.P.** system or the **IDENTIFAX HOME PROTECTION KIT**. For higher-level security, **IDX's COP** system encodes your Mac's hard drive and generates audible tones to help police and the registry's central computer identify the Mac's rightful owner.
- Secure vital data disks. Use locking disk cases or, even better, store disks in a locked cabinet or fire (document) safe.
- Invoke a screen blanker to prevent passers-by from sneaking a peek at sensitive information and to help protect your monitor from burn-in. Choose one that requires a re-entry password if you leave your desk while working.
- Prevent unauthorized access to the computers in your office or school.
- Don't let students mess up the Mac Finder, Apple II desktop, or GS Control Panel. Additional products include **EASYSHARE MAC MENU** and **EASYSHARE IIx** (for Apple IIs), which let teachers create custom restricted menus, and **LOCKOUT 2.0**, which prevents students from altering GS Control Panel settings.
- Pack a search-and-destroy program, such as the Mac shareware product **PD VACCINES**, on your next viral-reconnaissance mission to help identify and eradicate the invaders.
- Avoid unscrupulous BBSes (bulletin-board systems). Some renegade "boards" let you download stolen commercial software, and you may get more than you bargained for.
- Purchase an appropriate insurance policy to cover potential financial losses.

— C.F.

MAXIMUM SECURITY

On the lighter side, at press time we previewed a unique new product from Edmark: **KidDesk**, a lively, colorful, child-oriented access-control program for Macs, scheduled for release this fall. KidDesk gives each child in the family or class his or her own desktop, with access to only those programs the parent or teacher has determined. Icons for those programs appear on the desktop, making it simple even for preschool kids and nonreaders to select and launch favorite software. With the menu bar hidden, and requiring a three-key code to exit, KidDesk prevents young children from accessing or deleting other programs or data files on the computer's hard disk. Extras include a talking clock to help build time-telling skills, a calculator with built-in game-style activities, a calendar with bright stickers to identify important dates, and voice mail for messages from parent or teacher. At press time a classroom-network version of KidDesk was under development.

AN OUNCE OF PREVENTION

In addition to human tampering, the forces of nature can be formidable enemies, as well. But your system needn't go defenseless. Popular surge-protection devices such as the **Curtis Command Center** are essential if you live or work in an area prone to frequent lightning strikes or power problems; special mats such as Curtis' **Touch Me First** pad will help dissipate static electricity before you begin computing.

While these units can help prevent natural disasters from wreaking havoc with your hardware and software, damage of the microscopic kind can exact just as great a toll on your data. We're talking about viruses — and there's nothing natural about them.

A virus is a few lines of code inserted into a larger program via host or carrier software. Whenever you run an infected program, those lines take control of your computer for a second or two — long enough to scan your disks and insert themselves into as many programs as they can. The virus lies dormant until your system meets a particular condition — such as the elapse of a certain amount of time, perhaps — set by the programmer who wrote the virus code; then it damages or destroys your data. A virus may also spread to other users' software through public-domain and freeware programs transferred via bulletin-board systems.

While protection against Mac viruses is a common component of many do-it-all security products, perhaps the most widely known among stand-alone infection fighters is **Symantec Antivirus for Macintosh**, or SAM.

The program's easy to install and effortless to use. Start up your Mac or insert a floppy disk and SAM's *Intercept* mode automatically goes to work scanning files. Or use SAM's *Virus Clinic* mode to seek out and destroy viruses on vulnerable disks or file servers.

Symantec offers a 60-day money-back guarantee and provides a 24-hour *Virus Newsline*. You can download signature files ("vaccines") from the company's BBS as well as from America Online and CompuServe.

The recently released **Central Point MacTools 2.0** is replete with utilities that repair damaged disks, "undelete" files, and optimize hard drives, but it also offers the module *Central Point Anti-Virus* for detecting and neutralizing known Macintosh viruses.

WHEN ALL ELSE FAILS

You could say "bad guys" see things a little differently from the rest of us. Take the typical burglar. He may salivate over electronic equipment he can fence for quick cash. A computer vandal or disgruntled programmer may get his jollies by foisting a new virus on an unsuspecting public — or government. A spurned employee may steal your company's secrets to sell to your competitors. These criminals all have their price, but all too often they don't bear the cost of their misdeeds. You do.

The good news is you can help protect yourself by becoming more educated about computer security. The bad news is you can never protect yourself completely. To make matters worse, there isn't much you can do to control natural disasters. Suffice it to say that you should consider purchasing a low-cost computer-insurance policy. Before you buy a dedicated policy, though, check with your current insurance agent first. Your homeowner's or renter's policy may cover the family compu...ter at least partially. Some policies even protect business equipment you use at home, although coverage is usually limited to a couple thousand dollars — far less than the average business spends on an office computer, answering machine, fax, and photocopier.

Like policies that protect personal possessions, houses, or cars, policies covering computer hardware and software vary widely. Companies listed here pay for replacement of stolen computers or those damaged in a fire or flood, but only ComputerInsurance PLUS covers losses from earthquakes, for example. At least two of these companies require you to submit a schedule (list) of hardware components and serial numbers when you apply for coverage. Policies generally replace properly registered, purchased software, as well as hardware. But DATA Security Insurance is unique — it protects you against loss of data and employee fraud.

Annual premiums quoted by the three companies we contacted range from $49 to $400 (for $2000 to $30,000 coverage, respectively). Deductibles vary, but at $50 to $100 they're quite reasonable. Generally speaking, SAFEWARE seems to offer the lowest premiums. Although there's no sense paying for protection you don't need, be sure you're covered for all pertinent risks. In other words, take time to investigate each of the following companies and their policies before making a final decision.

— C.F.

ComputerInsurance PLUS
The ComputerInsurance Agency, Inc.
6150 Old Millersport Road NE
Pleasantville, OH 43148
(800) 722-0385

(800) 848-3469
(614) 262-1714 fax
CompuServe: GO SAF
GEnie: SAFEWARE

COMPUTEROWNERS Insurance Program
SAFEWARE:
The Insurance Agency Inc.
2929 North High St.
P.O. Box 02211
Columbus, OH 43202

Personal Computer Insurance
DATA Security Insurance
4800 Riverbend Road
P.O. Box 9003
Boulder, CO 80301
(800) 822-0901
(303) 442-0900 in CO

In addition, Central Point's *Virus Protection Service Plan*, which enables you to guard your Mac against new viruses, is similar to Symantec's.

The Mac access-management program **ultraSECURE**, discussed above, also includes anti-virus capabilities. Not only does its *viruCIDE* utility find and remove "desktop infections," it encapsulates new viruses so that you can send them to the company for analysis.

Like electronic-security issues in general, viruses present less of a threat to Apple II users. According to industry estimates, fewer than a half-dozen known viruses affect Apple IIs and only three of them appear with any degree of regularity: Festering Hate, CyberAIDS, and Lode Runner. Fortunately, three programs on the market zap them all.

Apple.Rx is an inexpensive Apple II product from Glen Bredon; the widely known utility package **ProSel-16**, also by Glen Bredon, contains a demo version of the program. **Salvation-Exorciser**, an authentic GS program with pull-down menus, sports a nifty needle-and-syringe cursor. **VirusMD 2.1**, an Apple II-family program, incorporates *QuickText*, a new interface technology developed by Morgan Davis Group, the vaccine's publisher. Despite the relative infrequency of Apple II virus infections, scanning your hard drive (as well as newly acquired disks) regularly is good preventive medicine.

DIAL 911

October is National Crime Prevention Month. It's the prefect time to put computer-security awareness into action and to begin enjoying one of the few important things money *can* buy — peace of mind. Your best defense is education: Whether your primary concern is equipment theft, data security, computer access, or virus attacks, begin by taking a closer look at the Apple II and Macintosh products we've described here. Listen to the Sarge — let's be *careful* out there. ❑

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PRODUCT INFORMATION

After Dark, $49.95
More After Dark, $39.95
Berkeley Systems
2095 Rose St.
Berkeley, CA 94709
(510) 540-5535

Apple.Rx
Glen Bredon
521 State Rd.
Princeton, NJ 08540
$25

Camouflage, $169
ultraSECURE 1.35, $290
usrEZ Software
13271 Montecito
Tustin, CA 92680
(714) 573-2548

CaseLock
DriveLock
$25.95 each
FolderBolt 1.02c, $129.95
single user
$50/Mac (10 minimum)
educational site license
MacSafe II, $189.95
NightWatch Classic, $129.95
NightWatch II, $159.95
QuickLock, $59.95
Work Group Security Kit
$229.95 includes NightWatch II, FolderBolt
Kent Marsh Ltd.
Kent Marsh Building
3260 Sul Ross
Houston, TX 77098
(713) 522-LOCK

COP (Computer Owners Protection), $49
Identifax Home Protection Kit, $14.95
IDX Technologies, Inc.
14 Research Way
Setauket, NY 11733
(800) 645-5404

Curtis Apple Security Kit, $29.95
Curtis Command Center, $149.95
Curtis Locking 3 1/2 File, $12.95
Touch Me First, $39.95
Curtis Manufacturing Co.
30 Fitzgerald Drive
Jaffrey, NH 03452
(603) 532-4123

Disk Drive Lock, $24.95
MacKablit Security System, $39.95
Secure-It, Inc.
18 Maple Court
East Longmeadow, MA 01028
(413) 525-7039

EasyShare Mac Menu 1.1
$79.95 single user
$395 6-pack
$595 10-pack
$795 building site license
EasyShare IIx
$295 network license
$395 building site license
Learning Performance Corp.
2850 Metro Drive
Suite 413
Minneapolis, MN 55428
(800) 926-EASY
(612) 854-2730

Empower I, $169
Empower II 4.0.8, $296
$540 to $1539
5- and 10-user packs
Empower Remote, $396
Magna
332 Commercial St.
San Jose, CA 95112
(408) 282-0900
(408) 275-9147

FileGuard 2.7.3, $249
5- and 10-packs available
MaccessCard Reader, $349
ASD Software, Inc.
4650 Arrow Highway
E-6
Montclair, CA 91763
(714) 624-2594

Kensington Apple Security System, $49.95
PassProof, $99.95
Security Kit for LaserWriter II, $49.95
Kensington Microware Ltd.
2855 Campus Drive
San Mateo, CA 94403
(800) 535-4242
(415) 572-2700

KidDesk
Edmark Corp.
6727 185th Ave. NE
P.O. Box 3218
Redmond, WA 98073-3218
(206) 861-8200
(800) 426-0856
$39.95 home
$49.95 school

LockOut 2.0
SuperStuff
3382 Sandra Drive
Kalamazoo, MI 49004
$49.95
$24.95 upgrade

MacTools 2.0
Central Point Software
15220 Northwest
Greenbrier Parkway #200
Beaverton, OR 97006
(503) 690-8088
(503) 690-8083 fax
$149
$49 upgrade

PD Vaccines
Diskette Gazette
International Datawares Inc.
2278 Trade Zone Blvd.
San Jose, CA 95131
(800) 222-6032
$5.99

ProSel-16
Charlie's AppleSeeds
9081 Hadley Place
San Diego, CA 92126
(619) 566-1297
$89.95

Pro-Tech MacPad, $90
Pro-Tech Security Pad, $62.50 to $144
call for pricing
Pro-Tech Computer Security Kit, $62.50
Pro-Tech Security Systems
Engineering Synthesis, Inc.
P.O. Box 412
North Kingstown, RI 02852
(401) 295-1433

RightOn Spot Anchor, $8.20 to $17.30
call for pricing
RightOn Spot Link-5, $32.50
SecurTech Co.
5755 Willow Lane
Lake Oswego, OR 97035-5340
(503) 636-6831

Salvation-Exorciser 1.02
Vitesse, Inc.
P.O. Box 929
La Puente, CA 91747-0929
(800) 777-7344
(818) 813-1270
$54.95

Security ID Plate
S.T.O.P.
Security Tracking of Office Property
American Connection Information Systems
56 Ocean Drive East
Stamford, CT 06902
(800) 488-STOP
(203) 359-9361
$25 each
quantity discounts available

Security Stick, $39.95 to $49.95
call for pricing
Security Stick Release Tool, $24.95
Security Stick
P.O. Box 15295
Richmond, VA 23227
(804) 730-8678

Signature GS
Quality Computers
20200 Nine Mile Road
P.O. Box 665
St. Clair Shores, MI 48080
(800) 443-6697
(313) 774-7200
$29.95

Symantec Antivirus for Macintosh
Symantec Corp.
10201 Torre Ave.
Cupertino, CA 95014-2132
(800) 441-7234
(408) 252-3570
$99

Tufnut Applesnap Cable System, $12.95 to $16.95
Tufnut Cable Plate Anchor, $15.95
Tufnut Works
P.O. Box 39
Tesuque, NM 87574
(800) 227-0949
(505) 983-2522

VirusMD 2.1
Morgan Davis Group
10079 Nuerto Lane
Rancho San Diego, CA 91977-7132
(619) 670-0563
$19.95
$10 upgrade

HOME ECONOMICS 2

Will renting conserve your resources? A "what if" spreadsheet can help you make the right decision.

By RUTH K. WITKIN

WHEN LAST WE MET, WE WERE pondering whether "to buy or not to buy" a home. Purchase versus rental is a big decision, no doubt about it, and one of the biggest helps can be a cost comparison. The spreadsheet we started last month, shown here in **Figure 1**, makes that possible. Last month we completed the buy section; this month we'll complete the rent section, wrapping up the entire spreadsheet.

If you missed the first installment of this two-part column, you can request a reprint from the *inCider/A+* editorial department by phoning (603) 924-0262.

COMPARISON SHOP

Let's say you decide to rent. There are fewer variables to consider; rental costs may include an agent's fee, security deposit, monthly rent, painting and improvements, and other charges, such as cable TV, air conditioning, snowplowing, and so on. In addition, there are the inherent moving costs and expenditures for furnishings and interior decoration (true of owning as well).

These costs aren't the only things that should concern you. Landlords often require you to sign a lease that details matters such as the date the rent is due, late charges, duration of the lease, responsibilities for maintenance, notice requirement for terminating a lease, and rules and regulations. Before you sign any agreement, be sure you understand every sentence, so that you aren't socked with unexpected costs.

Now load AppleWorks and bring up the spreadsheet named *HOMEQUEST*. Now finish setting up the rental section of the spreadsheet the way you did the purchase section, as follows:

	A	B	C	D	E
1		HOME PURCHASE VS RENT ANALYSIS			
2					
3	TO BUY?			TO RENT?	
4					
5	Price of Home	102,500.00		Cash Available to Invest	13,407.00 15
6	Down Payment (%)	10		Annual Interest Rate	10.25
7	Down Payment Amount	1 10,250.00		Times Compounded Annually	365
8	Mortgage Loan	2 92,250.00		Amount at End of Year 1	14,853.90 16
9	Annual Interest Rate (%)	13.75		Est Monthly Earnings On:	
10	Term in Years	30		Cash available in E5	120.58 17
11	Monthly Loan Payment	3 1,074.82		Rent security at 5%	6.67 18
12	Annual Loan Payment	4 12,897.80			
13	Total Loan Payment	5 386,933.87			
14					
15	Closing Costs:			Initial Costs:	
16	Lender's charges	4,227.00		Agent's fee (1 month)	800.00 19
17	Title search & fees	825.00		Security (2 months)	1,600.00 20
18	Legal fees	750.00		Painting	245.00
19					
20	Total Closing Costs	6 5,802.00		Total Initial Costs	2,645.00 21
21					
22					
23	YEAR 1			YEAR 1	
24					
25	Fixed Monthly Costs:			Fixed Monthly Costs:	
26	Mortgage payment	7 1,074.82		Rent	800.00
27	Property taxes	155.00		Air conditioner	7.00
28	Homeowner's insurance	25.00		Cable TV	12.00
29					
30	Total Fixed Costs	1,254.82		Total Fixed Costs	819.00
31					
32	Variable Monthly Costs:			Variable Monthly Costs:	
33	Utilities & fuel	167.00		Utilities	75.00
34	Maint-house & grounds	80.00		Parking	22.00
35	Other	75.00		Other	0.00
36					
37	Total Variable Costs	322.00		Total Variable Costs	97.00
38					
39	Basic Monthly Costs	8 1,576.82		Basic Monthly Costs	916.00 22
40					
41					
42	HERE'S THE BOTTOM LINE...			Monthly Gross Income	4,800.00
43					
44	Immediate Cash Outlay	9 16,052.00		Immediate Cash Outlay	2,645.00 23
45	Buy Is More Than Rent:			Rent Is More Than Buy:	
46	Monthly	10 660.82		Monthly	0.00 24
47	Annually	11 7,929.80		Annually	0.00 25
48	Buy as % of Gross Income	12 33%		Rent as % of Gross Income	19% 26
49	Est Tax Savings, Monthly	13 344.35		Estimated Earnings	127.24 27
50	Adjusted Buy, % of Gross	14 26%		Adjusted Rent, % of Gross	16% 28
51					

Figure 1. Completed purchase-versus-rent AppleWorks spreadsheet.

Entries. Referring to **Figure 2**, enter the labels and numbers in the rent section. Indent one space for labels that fall under a general heading (such as *Cash available in E5*, listed in cell D10, under D9's *Est Monthly Earnings On:*). Indent two spaces for totals (such as *Total Initial Costs* in D20 and *Total Variable Costs* in D37). To indent, type quotation marks and press the spacebar the appropriate number of times before typing the label. As you enter each number, it will appear in AppleWorks' standard format — commas with two decimal places.

Short lines. Create the short lines (indicating addition) in the rent section as you did before: In E19, type quotation marks, press the spacebar twice, type nine minus signs, and move the cursor to E29. Again, type quotation marks, press the spacebar twice, and type nine equal signs. Move to E36 and do the same, then end with a Return.

Formats. Override the standard format in E7 (*Times Compounded Annually*) to show commas with no decimal places: Place the cursor on E7, press OA-L (for the *Layout* screen), and press Return twice, to confirm *Entry* and *Value* format. Type **C** and press Return to confirm *0* decimal places.

Other numbers need to be displayed as percentages: In E48 (*Rent as % of Gross Income*), press OA-L and hit Return twice. Type **P** and hit Return again. Do the same in E50 (*Adjusted Rent, % of Gross*). Note that the formula cells showing *ERROR* earlier (B48 and B50) now contain numbers. That's because you entered the monthly gross income in E42.

Now center the label in D3: Place the cursor on D3 and press OA-L. Press Return and type **L** (for *Label* format). Type **C** (for *Center*). Center the label in D23 the same way. Now leave your cursor on D23 and press OA-S to save your work.

FORMULA FOR SUCCESS

Now enter the home-rental formulas in the highlighted cells shown in **Figure 1**.

Place the cursor on the cell receiving the formula, type it, and press Return.

The SUM formulas in E20, E30, and E37 include the blank cells directly above and below the list. Thus, if you insert any rows between these points, AppleWorks will adjust the cell references in the formulas to include them.

FORMULA 15: Cash Available to Invest. Formula 15 adds the down payment (B7) and closing costs (B20) and deducts the initial costs of renting (E20) to give you the amount you could invest (E5), assuming you had this money available and decided to rent a home instead of buy.

Cell location: E5

Formula: +B7+B20–E20

Cell E20 is empty, so Formula 15 produces *16,052.00* (temporarily). Protect this formula as you did the others: Leave the cursor on E5, press OA-L, hit Return, and type **PN** (for *Protection Nothing*). Be sure to protect every other formula as soon as you create it.

FORMULA 16: Amount at End of Year 1. Formula 16 calculates the amount you could have at the end of the first year, assuming you invested the money (E5) instead of applying it toward a home purchase. The formula calculates the investment at an annual interest rate (E6) compounded the number of times per year (E7) and enters the result in E8.

Cell location: E8

Formula: (1+(E6/100/E7))^(E7)*E5

The result is *17,784.35*. This and other formula results will match **Figure 1** as soon as you enter Formula 21. Remember, protect Formula 16 and all other formulas as soon as you create them.

FORMULA 17: Estimated Monthly Earnings on Investment. Formula 17 subtracts the cash available (E5) from its value at the end of one year (E8) and divides the result by 12 to give you the estimated earnings each month (E10) if you invest this money.

Cell location: E10

Formula: (E8–E5)/12

The result is *144.36*.

FORMULA 18: Estimated Monthly Earnings on Rent Security. Formula 18 calculates the interest due you on your security deposit. Many states require landlords to deposit these funds in an interest-bearing account. All interest earned, less administrative costs that go to the landlord, belong to the tenant. Assuming 5 percent interest, Formula 18 takes 5 percent of the security deposit (E17) and divides the result by 12 to produce the estimated monthly earnings in E11.

Cell location: E11

Formula: .05*E17/12

With no number in E17, the formula produces *0.00*.

FORMULA 19: Agent's Fee (1 Month). Assuming an agent's fee of one month's rent, Formula 19 copies the rent amount (E26) to E16.

Cell location: E16

Formula: +E26

FORMULA 20: Security (2 Months). Formula 20 multiplies the monthly rent (E26) by 2, the number of months we assume the landlord requires as a security deposit, and enters the result in E17.

Cell location: E17

Formula: 2*E26

FORMULA 21: Total Initial Costs. Formula 21 adds the agent's fee (E16), security deposit (E17), and painting charge (E18) to give the total initial rental costs in cell E20.

Cell location: E20

Formula: @SUM(E19.E15)

```
     A                    B      C           D              E
 1                    HOME PURCHASE VS RENT ANALYSIS
 2
 3                          |TO RENT?
 4                          |
 5                          |Cash Available to Invest
 6                          |Annual Interest Rate          10.25
 7                          |Times Compounded Annually       365
 8                          |Amount at End of Year 1
 9                          |Est Monthly Earnings On:
10                          | Cash available in E5
11                          | Rent security at 5%
12                          |
13                          |
14                          |
15                          |Initial Costs:
16                          | Agent's fee (1 month)
17                          | Security (2 months)
18                          | Painting                     245
19                          |                          ---------
20                          |  Total Initial Costs
21                          |
22                          |
23                          |YEAR 1
24                          |
25                          |Fixed Monthly Costs:
26                          | Rent                         800
27                          | Air conditioner                7
28                          | Cable TV                      12
29                          |                          ---------
30                          |  Total Fixed Costs
31                          |
32                          |Variable Monthly Costs:
33                          | Utilities                     75
34                          | Parking                       22
35                          | Other                          0
36                          |                          ---------
37                          |  Total Variable Costs
38                          |
39                          |  Basic Monthly Costs
40                          |
41                          |
42                          |Monthly Gross Income          4800
43                          |
44                          |Immediate Cash Outlay
45                          |Rent Is More Than Buy:
46                          | Monthly
47                          | Annually
48                          |Rent as % of Gross Income
49                          |Estimated Earnings
50                          |Adjusted Rent, % of Gross
51
```

Figure 2. Lines, labels, and practice entries in the spreadsheet's rental section.

The formulas in the cells above E20 now calculate the correct results. Protect Formula 21. Next, copy it to a cell where it can add three other items: Press OA-C and hit Return twice to confirm *Within worksheet* and the *source*. Move the cursor to E30, *Total Fixed Monthly Costs*, and hit Return again. Both E19 and E15 are *relative* references, so press **R**. Formula 21 can also add the three items in *Variable Monthly Costs*: Leave your cursor on E20. Press OA-C and hit Return twice. Move the cursor to E37, hit Return again, and press the **R** key.

FORMULA 22: Basic Monthly Costs. Formula 22 adds the total fixed costs (E30) and total variable costs (E37) during the first year to get the basic monthly cost of renting in E39.

Cell location: E39

Formula: +E30+E37

FORMULA 23: Immediate Cash Outlay. Formula 23 copies the total initial costs (E20) to E44 to show the money you need immediately to rent a home (E44).

Cell location: E44

Formula: +E20

FORMULA 24: Rent Is More Than Buy (Monthly). Formula 24 is similar to Formula 10. This time, the *Test* statement subtracts the basic monthly costs of buying (B39) from the basic monthly costs of renting (E39). If the difference is greater than zero (renting costs more than buying), the *Then* statement enters the difference in E46. If the cost of renting is less than or equal to buying, the *Else* statement enters a zero.

Cell location: E46

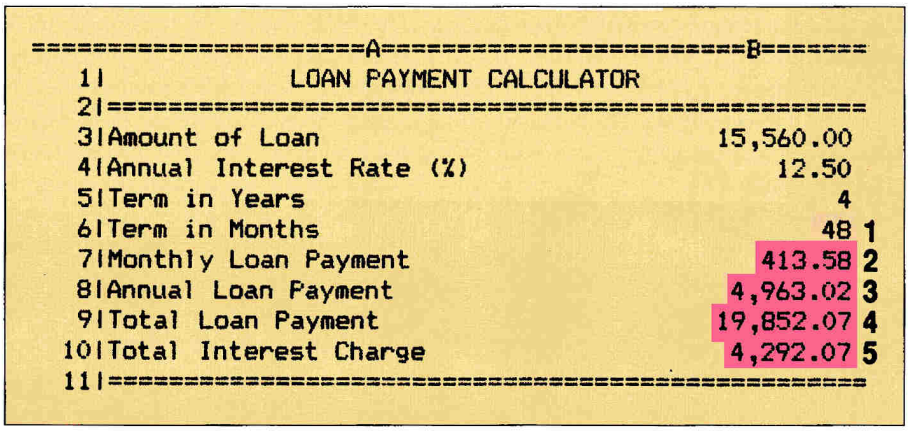
Formula: @IF(E39–B39 >0, E39–B39,0)

FORMULA 25: Rent Is More Than Buy (Annually). Formula 25 multiplies the monthly difference between buying and renting (E46) by 12 to produce the annual difference in E47.

Cell location: E47

Formula: 12*E46

FORMULA 26: Rent as Percent of Gross Income.



	A	B	
1	LOAN PAYMENT CALCULATOR		
2			
3	Amount of Loan	15,560.00	
4	Annual Interest Rate (%)	12.50	
5	Term in Years	4	
6	Term in Months	48	1
7	Monthly Loan Payment	413.58	2
8	Annual Loan Payment	4,963.02	3
9	Total Loan Payment	19,852.07	4
10	Total Interest Charge	4,292.07	5
11			

Figure 3. Home-loan quick-calculator spreadsheet lets you compare parameters and terms.

Formula 26 calculates the percentage of gross income (E42) you'll spend on the basic monthly costs of home rental (E39) and enters the result in E48.

Cell location: E48

Formula: +E39/E42

FORMULA 27: Estimated Earnings. Formula 27 adds the estimated interest earned on the investment and security (E10 and E11) to produce the total interest earned in E49.

Cell location: E49

Formula: +E10+E11

FORMULA 28: Adjusted Rent, Percent of Gross. Formula 28 subtracts the estimated monthly earnings (E49) from the basic monthly costs (E39), divides the result by the monthly gross income (E42), and enters that result in E50 as the adjusted rental as a percentage of gross income.

Cell location: E50

Formula: (E39–E49)/E42

You now have all the formulas to help you decide between buying and renting a home. Your spreadsheet should look like **Figure 1**. Press OA-S to save your work.

Last month's hardcopy settings will work fine this month, so turn on your printer. Now press OA-P and confirm *All*. Confirm the printer (or type a printer number, then Return). Type today's date (or, if you have a computer clock, type @) and hit Return twice. The printer whirs, and there's the completed spreadsheet, ready for your "what if" entries.

LEND A HAND

It pays to shop for all loans (car, personal, and so forth) as carefully as you shop for a mortgage. The savings can be significant. Here are a few pointers to bear in mind as you check things out:

- Finance companies generally charge higher interest rates than banks do, and banks charge higher rates than credit unions do. Also, there may be wide rate variations within each group.
- Monthly payments are lower on a two-year loan than on a one-year loan for the same amount at the same rate — but you'll pay more in interest. With car loans, you're likely to find that the longer the term, the higher the interest rate.
- Loans secured by collateral (something having monetary value) cost less than unsecured loans. Some kinds of collateral are better than others. For instance, you're more likely to get a low rate on a new-car loan than on a used-car loan.
- Be sure to get a statement of all loan costs — interest, service charges, credit-related insurance premiums, appraisal fees — and the annual percentage rate (APR) from each lender you investigate.

CHECK OUT THE NUMBERS

Figure 3 shows a loan-payment calculator that can speed the task of comparing one loan with another. It uses many of the same formulas as the home-purchase/rent spreadsheet. Get it started by creating a new AppleWorks spreadsheet named **QUICKLOAN**. The following setup summary, briefer than usual, is a good way to test the skills you've learned:

Horizontal lines. In A2, type quotation marks and hold down the equal-sign key long enough to fill B2. Move the cursor to A11 and enter another line the same way.

Column width. Use OA-L to increase column A by 26 characters (to 35 characters) and column B by six characters (to 15 characters).

Entries. Enter all labels. Before typing the spreadsheet title in A1, indent it by typing quotation marks and pressing the spacebar 12 times. Enter only the numbers in B3 through B5.

Format. Press OA-V to set a standard value of *Commas* with **2** decimal places. Then press OA-L to format B5 and B6 for *Commas* with *0* decimal places.

In the same way as before, enter the formulas that perform the calculations. Refer to the first part of this column for a detailed explanation. Remember to protect them as you go along.

FORMULA 1: Term in Months

Cell location: B6

Formula: 12*B5

FORMULA 2: Monthly Loan Payment

Cell location: B7

Formula: @PMT(B4/1200,B5*12,–B3)

FORMULA 3: Annual Loan Payment

Cell location: B8

Formula: 12*B7

FORMULA 4: Total Loan Payment

Cell location: B9

Formula: +B8*B5

FORMULA 5: Total Interest Charge

Cell location: B10

Formula: +B9–B3

Our loan-payment calculator spreadsheet is 50 characters wide and prints at ten characters to the inch. Call up *Print Options* (OA-O) and set the left and right margins at **1.5** inches and the top margin at **1** inch. Print (OA-P) and press OA-S to save the spreadsheet.

NEXT MONTH

As the holiday season approaches, we'll create mailing labels to paste on correspondence and gifts. Stay tuned for some tantalizing AppleWorks treats. ❑

CONTRIBUTING EDITOR RUTH K. WITKIN IS THE CREATOR OF THE *SUCCESS WITH APPLEWORKS* TEMPLATE SERIES (A+ PUBLISHING), *RUTH WITKIN'S BEST NEW APPLEWORKS TEMPLATES* (QUALITY COMPUTERS), AND *RUTH WITKIN'S MONEY MANAGER* (A+ PUBLISHING). SHE'S THE AUTHOR OF *THE BEST BOOK OF APPLEWORKS* AND *PERSONAL MONEY MANAGEMENT WITH APPLEWORKS*. WRITE TO HER AT 5 PATRICIA STREET, PLAINVIEW NY 11803. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A REPLY.

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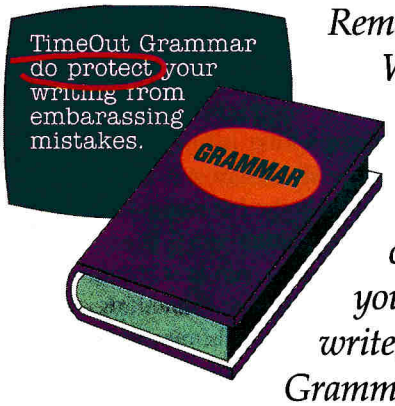

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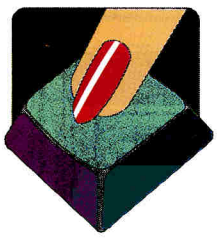

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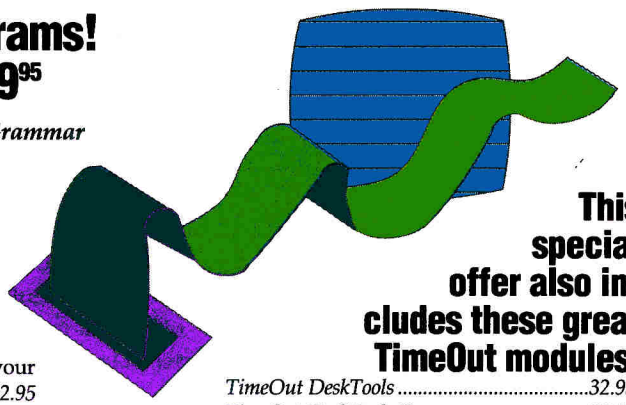

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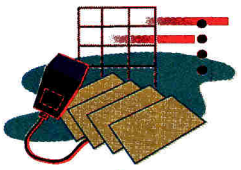

HyperActivity

Who's Who

For organized record keeping, stack the deck with this easy HyperStudio solution.

By DEAN ESMAY

TEAMWORK'S THE HEART OF ANY effective organization — building unity by knowing each member's strengths and basing the group's structure on them. A hypermedia stack is something like that, too. It's a collection of interrelated cards (screens), each with its own particular contribution to make toward the common goal: getting your message out there. (See last month's début HyperActivity column, "Magnificent Obsession," September 1992, p. 46, for a rundown of the fundamental concepts underlying hypermedia and the basic vocabulary you'll need to get along in the world of hypermedia.)

Let's take a look at that idea more closely this month as we start at the very beginning — creating our first stack, using HyperStudio from Roger Wagner Publishing as our example platform.

Our initial project will be a personnel chart for a small organization. Let's say you're involved in a computer club, and you want to create a presentation showing who the officers are; perhaps you'll be showing the stack at a meeting for new members, or passing it out to any interested members so they can keep track of "who's who." Of course, this concept would carry over well to other organizations, too. A business might use such a presentation to help new employees learn about the company's management; a school might use such a stack to show parents who the key teachers and administrators are.

HOME RULE

But let's stick to our example of a computer club for now. Let's say your club, which we'll call Apple Leaf, has seven officers: a president, a vice-president, a secretary, a treasurer, a newsletter editor, and two public-domain-software librarians. Before you start, you'll want to gather the information you want your stack to contain — names and titles, length of service perhaps, maybe areas of expertise or notable accomplishments, and so on. Once you've got that information together, you're ready to start your stack.

Pull down the *File* menu and select *New stack*. (One thing you'll need to know is that whenever you launch most hypermedia applications, something called the "home stack" loads automatically. We'll explore the concept of the home stack in a future column, but for now you'll just want to create a new stack.) At this point you have only one card, and it's blank. You'll want to put something on it, of course — usually, the stack's title, a few words on screen telling the user what it's all about.

To put words on the card, you'll have to create a text "field" first — an area of the screen, usually a square or a rectangle, that will contain that text. In HyperStudio, just pull down the *Objects* menu and select *Add a text item*. The software then asks you to define the shape and location of the text field. You can modify its size by simply pointing with the mouse on a corner and holding down the mouse button; drag the corner around the screen to stretch and

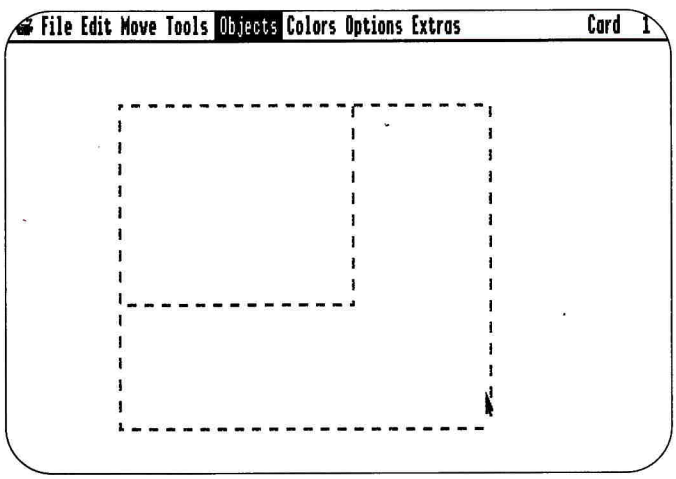

Figure 1. "Rubber-band" a field — press the mouse button, hold, and drag — to give your text all the room it needs.

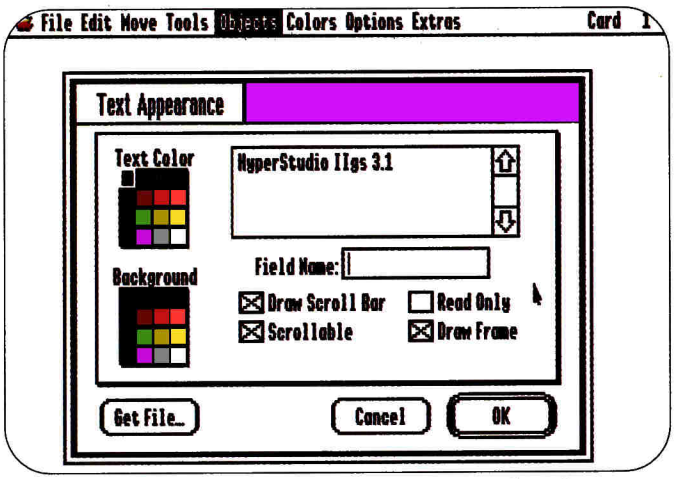

Figure 2. Define text and box colors as you prefer when you begin designing your stack's title card.

shape the box. Make this one a big rectangle (**Figure 1**). Once you've got the size and shape you want, you'll need to place it in an appropriate part of the screen. To do that, just point to the middle of the box, hold down the mouse button, and drag until you get the box where you want it — in this case, right in the middle of the card.

Once you've got the box where you want it, let HyperStudio know you're done by clicking anywhere outside the field. The program will then ask you to set options such as a color and a name for the text field (**Figure 2**). For now just accept the defaults by clicking on *OK*.

Now the text field is ready to accept information: Just click inside it and type whatever you want. Because this is your title card, type **Apple Leaf Computer Club Officers Stack**. Below that you might add who created the stack and what it's for.

It's a good idea at this point to save your work: Pull down the *File* menu and select *Save Stack*. HyperStudio then asks you what you'd like to call the stack; name this one **APPLE.LEAF** and select *Save*. The drive whirs, and your stack is now stored safely on disk. Because you've already named the stack, the next time you tell the program to *Save* it will do so under the proper filename automatically; there's no need to name the stack again. You may want to save periodically so that you don't lose your work-in-progress accidentally (a good idea with any program).

COORDINATION IS KEY

So what's next? This stack is pretty boring with only one card. Well, let's see — you know you have seven officers, and you want to present some information on each one. Why don't you create one card for each officer — one card that will have all of that person's data, which you gathered earlier? That makes seven new cards — sounds good. But an even better idea is to also include a card listing each officer position — a card that can lead the user to each of the individual officers' cards. That way you'll have one card acting as a sort of "coordinator" for the rest of the stack.

So you'll need eight more cards now, one for a coordinator card and one for each of seven officers, for a total of nine, including the title card you've already created. This part's easy. In HyperStudio, just pull down the *Edit* menu and select *New card*. The software creates the new card automatically and moves you there. Because you haven't put anything on this new card yet, you're looking at a blank screen again.

Notice that to the right of the menu bar, HyperStudio tells you which card you're on — at the moment, card #2. Make this your coordinator card. To identify it, create a small text box at the top saying, for now, **Coordinator card**.

Now you're ready to make a card for each officer. Pull down the *Edit* menu again and select *New Card*, and HyperStudio creates the third card. Make this one the president's card. To remember it, create the text field that will contain your information on the president: Make it a tall rectangle filling most of the left side of the card. (Leave the right side empty for now — room to add more items later.) The text field is now ready to accept your input; don't bother entering all that information just yet, but to remind yourself later what this card is for, type **About the President** at the top of the text field.

Create another new card. Make a text field just like the one for the president, and type **About the Vice-President**. Then make a new card with text field for the secretary, another for the treasurer, and so on until you've got one for each officer.

ON THE BUTTON

Now what? You're on your ninth card; you've created all your cards and put text fields into each one to explain what the cards are for. Now how do you make this stack useful? With *buttons* — screen items you click on to bring up sound or graphics or to move to another card.

Since you haven't installed any buttons yet, you'll have to use the items on the *Move* menu to get from card to card. Pulling down the *Move* menu, you find several options — *First Card*, *Previous Card*, *Next Card*, and *Last Card*. Select *First card* to jump back to your title card.

On the title card you'll want a button that will take the user to your coordinator card. To create it, pull down the *Objects* menu and select *Add a Button*. The software then offers another menu, letting you choose the type of button you want and give it a name. Because you're just starting your first stack, leave it set to the default oval button, and name it **Continue** by just typing that word (**Figure 3**).

The software then asks you where you want the button to appear. Just point to the middle of the button, hold down the mouse button, and drag (**Figure 4**). Position this button below the text field. Then

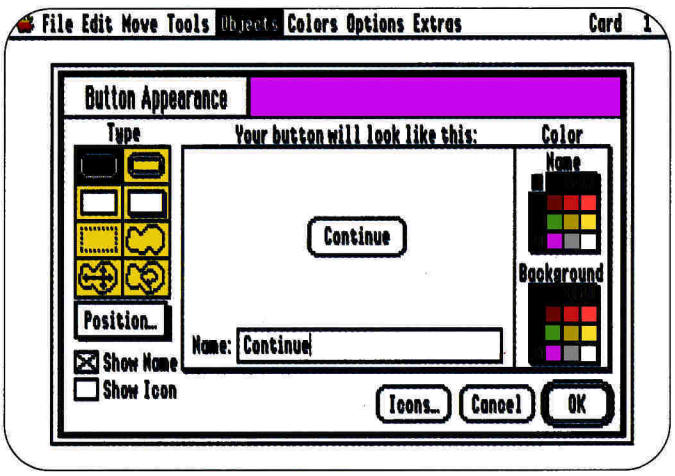

Figure 3. Palettes let you tailor your button's shape and appearance; you can also type in a text name of your choice.

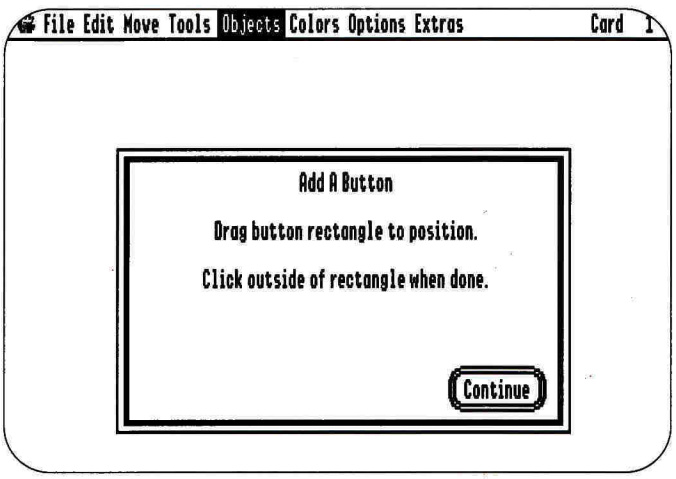

Figure 4. Placing a button for best effect is easy — just drag it into position when HyperStudio prompts you.

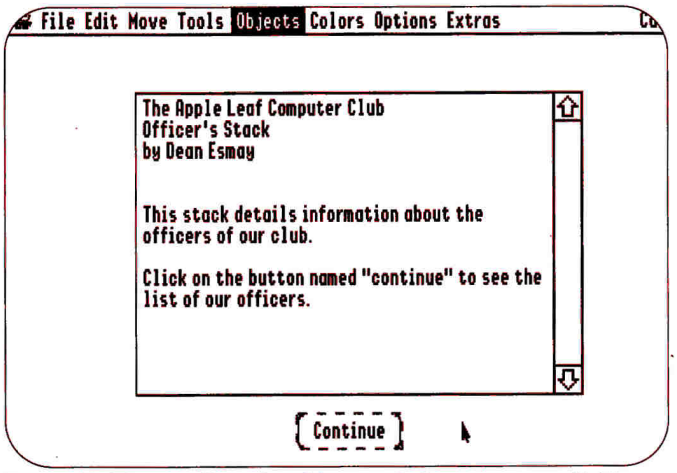

Figure 5. Place a directional button below your text field on the title card to make moving from card to card easy.

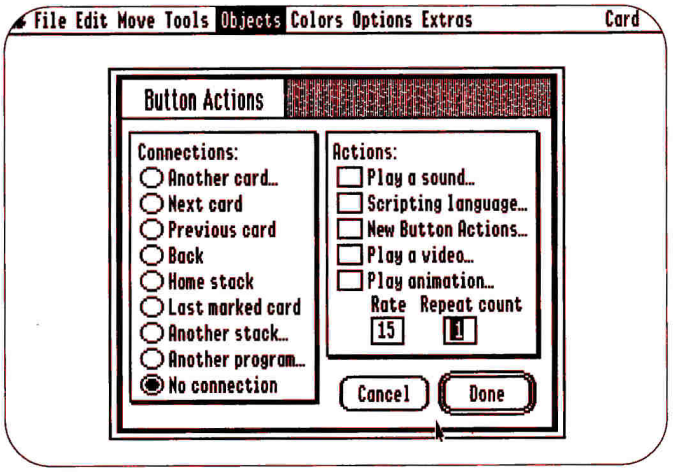

Figure 6. Specify a button's function from the Actions submenu, which includes directions for moving to other cards.

click anywhere outside the button, and voilà — there's a nice oval that says *Continue* (**Figure 5**).

Now HyperStudio needs to know what you want the button to do. That's easy: After you've defined the button's shape, name, and location, the program shows you a menu called *Actions*, which lets you specify the button's function (**Figure 6**). In this case, all you want the button to do is take the user to the coordinator card, the next card you created in the sequence. Here, just click on *Next card*. HyperStudio then asks what "transition" to use. We'll explain more about transitions in an upcoming column, but for now just accept the default, called *Fastest*, by clicking on *OK*. That's it — your button is finished. Click on it and you find yourself at the coordinator card.

MOUSING AROUND

Remember that we said the coordinator card would take the user to each of the individual officers' cards? Okay — start by making a button for the president. Design a new button, just like the one you made for *Continue*, but call this one **President**. Position the button just below and to the left of the text field. From the *Actions* menu, instead of picking *Next card*, this time select *Another card*. That option gives you a box in the middle of the screen that lets the user move, one card at a time, to the next or previous card in the sequence. When you reach the president's card, just click on *OK*. The program asks which transition you want; again, just accept the default *Fastest*.

Now you're back at the coordinator card, with a button that says *President*. Test it by clicking on it. It should take you to the president's card. The final step here is to create a button so that the user can leave the president's card: Just make another button and call it *Go back*. Place it in an appropriate spot on screen — near the bottom is usually best. This time, when HyperStudio asks what option you want, select *Another card* and move back to the coordinator card. Once there, click on *OK* again, and for your transition use the default *Fastest*.

Bang — you're back at the president's card, and it's got your button that says *Go back*. Test it by clicking on it, and HyperStudio takes you immediately back to the coordinator card. Click on *President*, and you're on the president's card. Click on *Go back* and you're back to the coordinator card.

Now it's time to repeat this operation for all the other officers. On the coordinator card make a button called **Vice-President**, and place it next to the president's button. Then use the *Another card* action to go to the vice-president's card. Create a button on the vice-president's card to **Go back** to the coordinator card. Do it again for the secretary, the treasurer, and so on for every officer.

HOMESTRETCH

Now fill in the information on each officer's card. From the coordinator card click on *President*. Then click inside the text field that says *About the President* and type in his information. Click on *Go back* to jump to the coordinator card, then click on the vice-president's button so that you can fill in her information. Repeat for every officer position. You might also want to go to the title and coordinator cards to add some basic instructions, such as **Click on Continue to start** and **Click on the officer you want to see**.

One last step: Every stack should have a button that lets users return automatically to the "home card," the main card that comes up when you run a hypermedia application. So create just one more button on the coordinator card now, and call it **Go home**. Place it near the bottom of the screen. When HyperStudio asks what action you want for this button, select *Home stack* instead of *Another card*. Save again.

You've now finished your stack for this organization. It's pretty bare-bones, but by playing with it when you're done you can get a better feel for how this "hyper" medium works — and anyone who uses the stack can jump around via the buttons to see information on any officer. Next month we'll talk about how to make this stack more colorful and appealing, and we'll explore ways to "fine-tune" a stack to make it more flexible and easier to use. See you then. ❑

Dean Esmay is a contributing editor for *inCider/A+*. He's also the editor of *Studio City*, a bimonthly hypermedia magazine on disk published by Resource Central, and serves as chief sysop of GEnie's Apple II roundtables. Write to him c/o *inCider/A+*, 80 Elm Street, Peterborough, NH 03458. Enclose an SASE if you'd like a reply.

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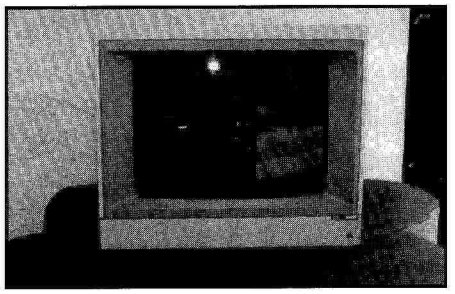

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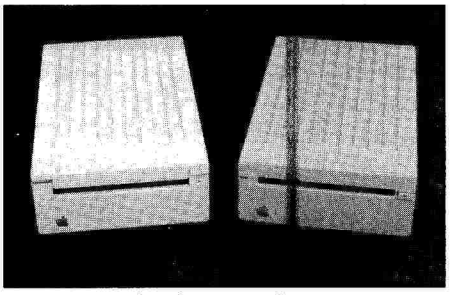

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Continued from p. 30

problem text and shows the equations that solve the problem. Spencer sometimes found that the steps didn't explain the solution to his satisfaction.

When the student finishes a session, he or she can print problems for later use. Enter Control-Z to see a report on completed problems, the highest skill level achieved, number of problems attempted and completed correctly, and a percentage "score."

Fractions and Decimals doesn't distinguish between "practice" and "test" modes; it can be disconcerting for students to always be scored.

TEACHER'S PATHFINDER

Fractions and Decimals can store information on 40 different students. Three options let the parent or teacher individualize each student's work, report on how students are using the program, and create custom problems.

For each of the 40 students, Fractions and Decimals can individualize starting level, number of "tries," whether fractions and decimals are included, number of times problems are repeated, and whether the student can use the printer. You can also require that all fractional answers be expressed with the least common denominator. You can add up to 25 of your own problems, containing either decimals or fractions.

The program can also report on an individual student's progress — the same information each student gets at the end of his or her session. There's no option for a complete summary report on all students.

Fractions and Decimals comes with a 16-page manual covering the program's basic and advanced features, but it doesn't provide an educational context for the program: when and how you should use it, which students might benefit from it, and so on. Such information would be helpful for parents concerned about upgrading their child's math skills.

The program disk is copy protected; send in your registration card and $10 to order a backup.

THE OTHER SIDE OF THE MOUNTAIN

Spencer, my official "kid tester," earns good marks in math. He liked this program, because he enjoys the challenge of doing math problems. Fractions and Decimals probably doesn't have enough appeal to hold the attention of children who aren't already similarly motivated. It offers reinforcement of skills developed through other teaching methods and educational software, but it isn't the best guide through the range of fraction and decimal concepts a student will encounter during their elementary- and middle-school years.

Ron Berntson
Saskatoon, Saskatchewan
Canada

★ ★ ★ ½ ★

THE TREEHOUSE

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Most of the time apples grow on trees, but now you can invite your kids to spend some time in a Treehouse inside an Apple. Broderbund's Treehouse is a discovery-learning package featuring a number of entertaining games that teach music, math, and science.

Visitors explore what the program has to offer by selecting interesting objects in a treehouse setting, guided by a friendly possum host. Designed for children aged 6 through 10, it's equally well suited for curious adults.

A WORLD OF ITS OWN

The Treehouse is an active partner, responding with entertaining sounds and colorful animated graphics when children choose items on screen. For example, give the possum a teddy bear, and he'll take it with him when he heads for a nap. Click on the nut bag and a peanut falls to the ground outside.

Kids can even feed their possum playmate by selecting a bowl of fruit resting on a table. And a blackboard, complete with colored chalk and eraser, invites visitors to practice writing and drawing.

Outside the treehouse, the scenery is just as inviting. Clouds hovering in the sky change shape when you select them. A big golden sun winks, a frog emerges from the pond to catch a fly, and frisky squirrels leave their nest to gather the nuts that fell to the ground from the treehouse above.

SECRET HIDEAWAYS

Beyond the immediate action, several screen objects serve as gateways to fun-filled educational activities. For example, children become amateur naturalists when they select the *Guess My Animal* icon on the bookshelf. This activity invites visitors to gather clues to the identity of a mystery critter. During play, youngsters learn important facts about several animals found in backyards throughout the United States.

In *Road Rally*, players practice counting, following directions, and simple addition and subtraction at three levels of difficulty as they work with various coin denominations. The object of the game is to drive a car through a maze, collecting or paying money as you travel.

Musical Keys, accessed from the Treehouse keyboard, offers kids a chance to hear and play 20 familiar songs, including *London Bridge*, *Clementine*, *Camptown Races*, *Itsy-Bitsy Spider*, and *Pop Goes the Weasel*. Kids select a song by clicking on its icon or its title.

Each song has a short and a long version, which you can play either fast or slowly. Kids instruct the computer to play a song only once or to repeat the melody until they stop it.

This module also has a "songwriting" mode, letting children compose their own melodies or alter any song already on disk. Composers write original tunes with an on-screen keyboard (any note you play appears automatically on the songbook page) or move notes from a palette to a

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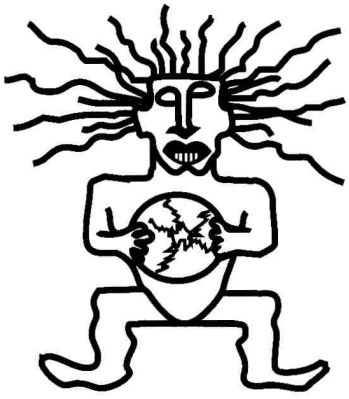

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musical staff. You can save melodies to disk and call them up at a later time. The program has room for 20 long and 20 short songs.

In *Musical Maze*, children listen to the computer play a range of notes, then choose one of four icons containing notes that match the melody they've heard. Each correct guess advances them through the maze and earns a clue. When players have enough clues to guess the identity of a mystery song, or when they've collected all notes in a song, they win the game.

MINOR ODDITIES

Broderbund's Treehouse is a delightful, open-ended program that stimulates curiosity and motivates learning. The Apple II edition isn't as robust as its Mac and PC cousins, but has a lot to offer. It has a few quirks, too. The most annoying is that once you switch from mouse to either keyboard (Open apple-K) or joystick (Open apple-J), nothing short of a reboot will get you back into mouse mode.

While Broderbund claims The Treehouse is designed for children aged 6 to 10, older kids may not be sufficiently motivated to return to the program once they've gone through it. *Musical Keys* and *Backyard Zoo* are the only activities older children will enjoy repeating. *Calendar Screen*, which clearly targets youngsters with more-developed reading skills, offers limited interaction. It's too dry to promote prolonged interest.

BACKYARD BONANZA

Support materials include an audio tape with Treehouse theme song and *Orchestra Rap*; a *Kids Guide and Songbook* with suggested off-line activities and lyrics; plus a well-written *Program Guide* with playing instructions. Special-education teachers will appreciate being able to use the product with an Adaptive Firmware Card and the Unicorn keyboard, too.

Interface and minor problems notwithstanding, Broderbund's Treehouse is a worthy sequel to the company's groundbreaking Playroom. It features lots of surprises and provides plenty of entertaining educational adventures for youngsters — and the young at heart. ❑

Carol S. Holzberg, Ph.D.
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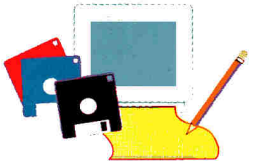

MATTER OF OPINION

STANDARD TIME

We shouldn't play tricks with educational software — a consistent interface is crucial to helping kids learn.

By MATT DEATHERAGE

YOU PROBABLY DON'T THINK about "standards" in relation to your computer very often. If you do, you probably picture some assortment of SCSI (*small-computer-systems interface*) cables. Software standards are less tangible, but just as crucial to the way you use a computer. Software standards in user interfaces, in particular, guarantee that you can move easily among different programs from different companies. When it comes to educational software, user interface guidelines ensure that kids can focus on the fun of learning and not on the frustration of trying to make the computer do what they want it to do.

Still, many programmers shun standards. They see them as restrictions that force new, innovative programs to fit older, less-creative models. On top of that, supporting a standard requires a lot of programming code. Educational computing is supposed to be creative, freely associative, and stimulating. "Standards are for data processors," some argue. Who's right? How important is a standard user interface?

TOOLS FOR TOTS

A computer is a tool, like any other classroom aid — a book, art supplies, or a student's desk. And, as with other classroom tools, kids have to learn how to use computers before they can benefit from them. Learning to use most tools is relatively straightforward. For example, using a book requires only opening it and looking at what's inside. The rules for maintaining it are simple as well: "Don't get the book wet, don't mark it, don't tear out the pages, don't eat it."

Apple II and Mac educational software that follows Apple's Human Interface Guidelines benefits automatically from one of the ten fundamental principles behind the interface — *consistency*. The document/desktop metaphor may not be as meaningful to small children as it is to adults, but the consistency behind the interface is crucial. Menus always pull down the same way. Windows always move the same way. Icons represent objects you can do things with — just point and tell the computer what you want to do. You don't have to remember and type a command to "draw a squiggly line here." You just point to a pencil and draw it yourself. But sometimes publishers forgo this consistency with the good intention of making the software easier for students to use.

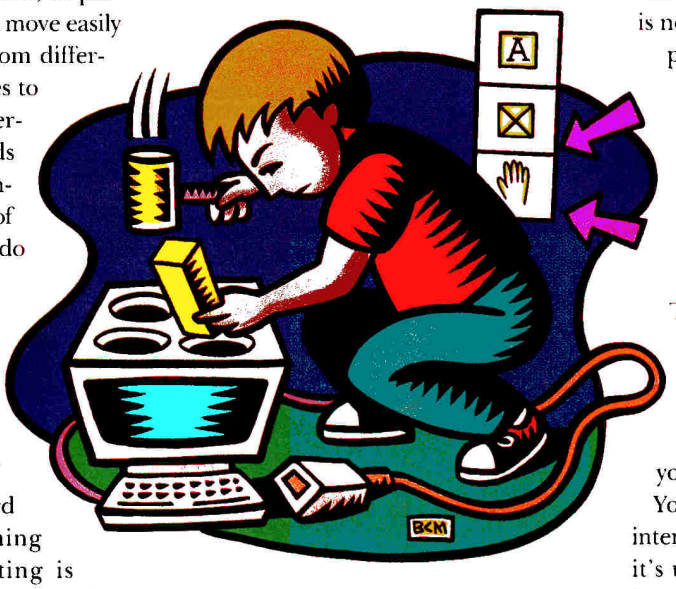

Illustration * Burton Morris

Two programs that are often used in the classroom, but represent different approaches to user interfaces, are **The Print Shop IIGS** from Broderbund Software and **HyperStudio** from Roger Wagner Publishing. HyperStudio adheres closely to Apple Human Interface Guidelines. The Print Shop, on the other hand, is easy to operate yet doesn't use the desktop interface. It sports large iconic buttons to represent actions, and it has no menus.

So if The Print Shop is easy to use, why is not employing the desktop interface a problem? Suppose you've used a graphic or a font in HyperStudio and you want to use it in The Print Shop as well. You can't. You can't cut or paste work you did elsewhere. And if you find some new desk accessory ideally suited to your purposes, you can use it in HyperStudio, but not in The Print Shop. The Print Shop's interface is easy to use, intuitive, and capable — but because it doesn't employ standard components, you can't use it as one part of a more-powerful system. All your work in The Print Shop stays there.

You can find this kind of simplified interface in other applications as well, and it's usually decided upon with the best intentions. "Kids may not be coordinated enough to select a menu item if they have to hold the button down" is a common explanation for excluding pull-down menus in educational software.

Human-interface research suggests, however, that school-aged children have no trouble learning or manipulating pull-down menus and other similar elements, although they may need a little more instruction than adults do.

The extra instruction is worth it. While HyperStudio may take a little longer to learn, once you get the hang of it you know how to operate every desktop application. That's what consistency and user interface standards do for you. It's like a book — if you can open one, you can open them all. Although one particular program's custom interface may be just as easy to learn, no two software publishers implement these "non-standard" interfaces the same way.

A child who knows how to use pull-down menus may not know how to use "fall-down menus," for example, which open automatically when you move the cursor over them and stay that way until you click on a menu choice. Worse yet, if the fall-down menus look like pull-down menus, kids don't know the difference until they try to use what they've already learned and it doesn't work. Then they become confused and frustrated.

We wouldn't give our children books in English and tell them, "Now pay attention, because in this book only, all the words read from right to left." We shouldn't play similar tricks with our computer software, which is also a tool to help them learn.

Mac and Apple IIGS system-software components are full of ways to help developers make their software easier and more fun for kids to use without making it inconsistent or confusing. Both machines support full-color windows and icons in most incarnations, but those windows and icons act the same, no matter what the colors are. Menus can be bigger or smaller and can have pictures or icons in them, but they always behave like pull-down menus. Buttons always push, moving the mouse moves the pointer (which you color or enlarge), and pressing the mouse button does something with the object to which you're pointing.

The rules aren't intuitive in the sense that every child is born knowing how to use an Apple IIGS or a Macintosh, but once they learn a few rules, most kids can use the personal computer as it should be used — as a tool.

WHAT CAN YOU DO?

"I just buy software," you're thinking, "I don't program it." So how can you affect the way user interfaces are implemented? If you see educational software that's particularly effective or ineffective, contact the publisher and tell the company's representatives what you think and why. If they use non-standard interfaces that keep your students from making the most of their software, tell them about it. Ask other educators and parents about the programs they've purchased, and keep in mind that software works best when it works with other software.

Educational-software publishers want what you want — to make the classroom personal computer a tool as common and as easy to use as a book or edible paste. Giving children the tools to discover our world — and themselves — is what education is all about. ❑

MATT DEATHERAGE IS THE LEAD ENGINEER IN APPLE'S DEVELOPER TECHNICAL SUPPORT GROUP FOR THE APPLE II FAMILY OF COMPUTERS. WRITE TO HIM C/O *INCIDER/A+*, 80 ELM STREET, PETERBOROUGH, NH 03458. MR. DEATHERAGE'S OPINIONS DO NOT REPRESENT THE OFFICIAL VIEWS OR POLICIES OF APPLE COMPUTER, INC.

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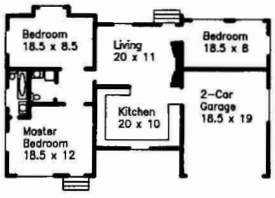

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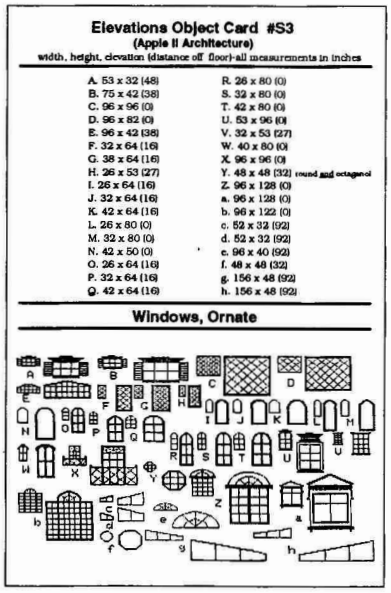

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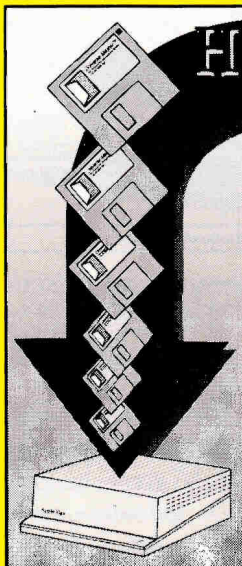

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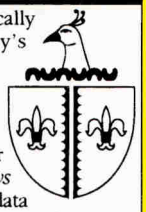

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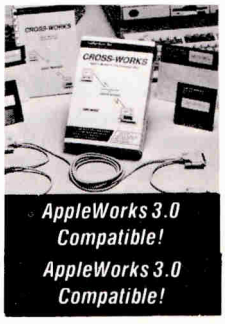

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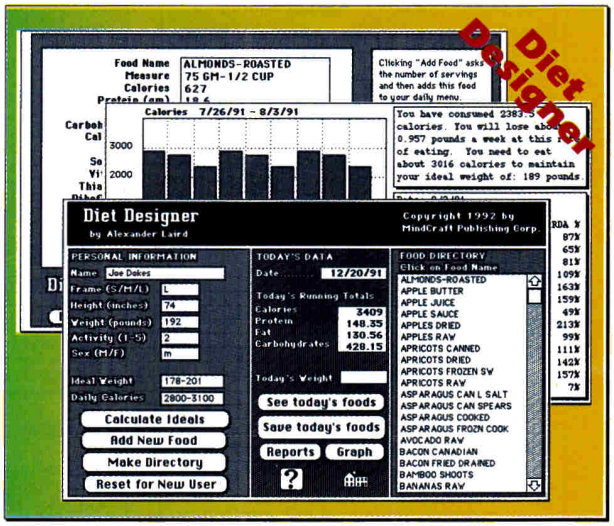

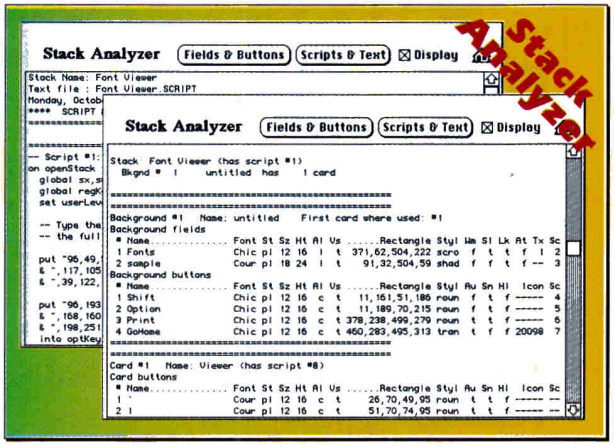

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LEARNING CURVE

Continued from p. 64

tecture from the 1970s when similarly priced MS-DOS clones outsell Apple IIs.

But the Apple IIs in that classroom weren't the subjects of rational thought; they touched a deeper chord in their users. Just as some of us are reluctant to throw out that old pair of jeans, or to get a new wallet even though the old one is falling apart, we relinquish the treasures of our life begrudgingly. And the Apple II has been a treasure, no matter what the company wants us to think.

LOOKING AHEAD

What about next year? Yes, there's a lot of great stuff for the Macintosh, and Macs are sure easy to use. Kids can learn a lot from multimedia titles running on fast computers with megabytes of RAM. Should we scrap the IIs?

I think about the enthusiasm I saw in the children's faces as I watched them work. Sitting next to walls filled with the kids' artwork and poetry, those computers just blended into the place. For all our talk about technology integration, we sometimes overlook the most important aspect of the issue: the extent to which computers have become integrated into the learning portion of our children's lives.

The computer's not the focal point. It's more like that old stuffed bunny you had as a child — the one you carried by the ears until one of them fell off, the one you took to bed each night and shared your secrets with.

I still haven't decided what to do with the Apple IIs. Maybe by the time you read this article, I will have made up my mind. Meanwhile, I left one of them just the way it was when I picked it up — with little fingerprints of playground mud, animal stickers, and all the signs of love that show just how much these tools mean in the hands of our children. Maybe that was the lesson *I* was supposed to learn. ❑

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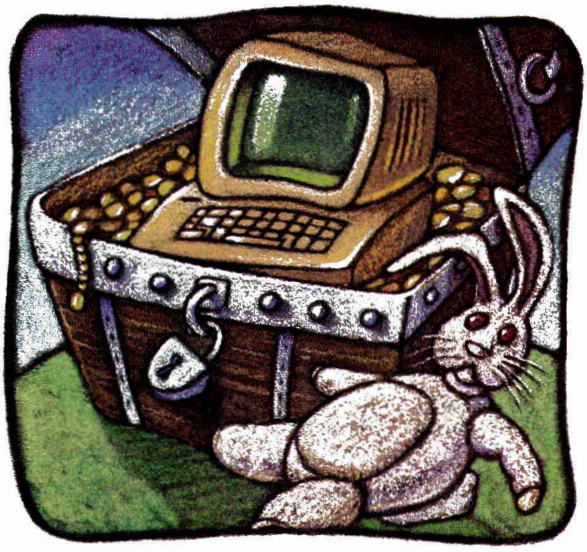
THE VELVETEEN APPLE

Sure, the Mac is great, but the II is one of the treasures of our children's lives.

Every June, I go to my wife's classroom to move our computers to the office for the summer. Her district is financially strapped, so the Thornburg Center helps out by putting a few Apple IIes and IIcs in her room. Before moving them back to school each fall, we clean and fine-tune them in preparation for ten months of heavy use. This time, as I loaded the computers into my car, I took a close look at the keyboards and cabinets. Beneath the inevitable patina of chalk dust was a layer of dirt, prints, and felt-pen markings. Some of the keys had been pressed so much that the kids' fingers had left their little marks on the worn keytops. Traces of peanut butter, old stickers, and other signs of enthusiastic use were scattered all over the cases. None of this was a result of abuse — on the contrary, the children loved working with these computers. The grime was a consequence of daily contact with a class of 31 active third-graders who clearly enjoyed every minute spent with the machines.



By DAVID D. THORNBURG, Ph.D.

As I looked at those old computers, I was reminded of the children's classic *The Velveteen Rabbit*, by Margery Williams. As you may recall, this lovely story tells of a toy rabbit, a gift to a little boy. As the new toy spent time in the nursery, he asked what it took to become Real.

The Skin Horse (who was so old that his brown coat was bald in patches and showed the seams underneath) explained that Real isn't how you're made: "When a child loves you for a long, long time, not just to play with, but *really* loves you, then you become Real . . . . Generally by the time you are Real, most of your hair has been loved off, and your eyes drop out and you get loose in the joints and very shabby. But these things don't matter at all, because once you are Real you can't be ugly, except to people who don't understand."

THE LANGUAGE OF LOVE

It's easy, I guess, for those of us with access to fancy equipment to always want more. From the Mac SE we want to move to the Mac IIci. From there we want a Quadra — and on it goes. In our quest for faster, ever more-powerful machines, we tend to disregard the Apple II.

Looking at those old computers, I realized that the absence of QuickTime capability or System 7 meant nothing to the children who used those Apple IIs as magic carpets for the mind. If the machines were slow, with limited graphics capability, poor-quality sound, and no consistent user interface, it didn't matter. They were loved, and that made all the difference in the world.

The children who had used the computers came from many lands. Many of them spoke little or no English when they entered the classroom, but they quickly learned the language of love — especially love of learning.

The computers were located along a back wall, between the fish tank and the collection of stuffed animals the children held during storytelling time. If you told these kids they shouldn't be happy with anything less than a Mac LC, they'd have sent you out of the room. To them, those computers were providing opportunities to develop problem-solving skills.

Whatever programs these kids were exploring, computers were a natural part of their day. To these children, the machines were just another tool. The Apple IIs, the books, the pattern blocks, and the other classroom equipment all showed the same signs of loving use.

It's sad that many great software titles are being discontinued as Apple continues to treat the II line with benign neglect. One developer after another has stopped marketing Apple II products.

Yes, I know that we need to move to new platforms. It doesn't make sense to perpetuate a product based on a machine archi-

Continued on p. 63

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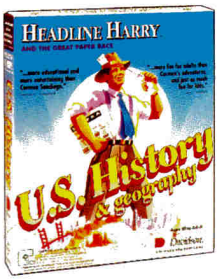

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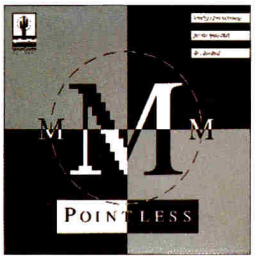

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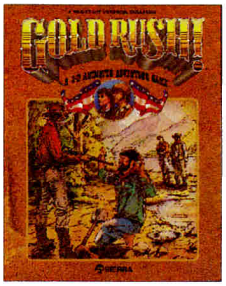

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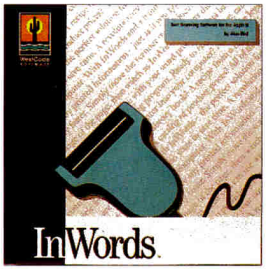

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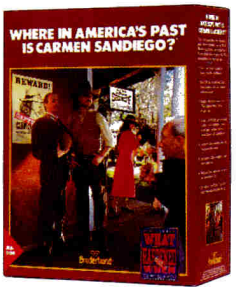

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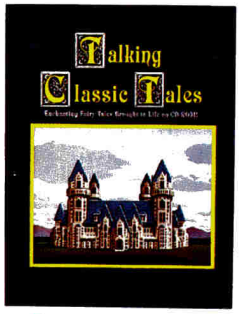

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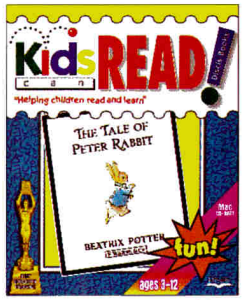

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