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The #1 Apple II Magazine

IIGS SURVIVAL GUIDE

Special Issue!

Computer Learning Month

BEST FOR YOUR KIDS
Choosing the Best Educational Software

CREATING TESTS
13 Test-Generation Programs Reviewed

GREAT DEBATE
Thornburg and Davidson Debate Drill and Practice

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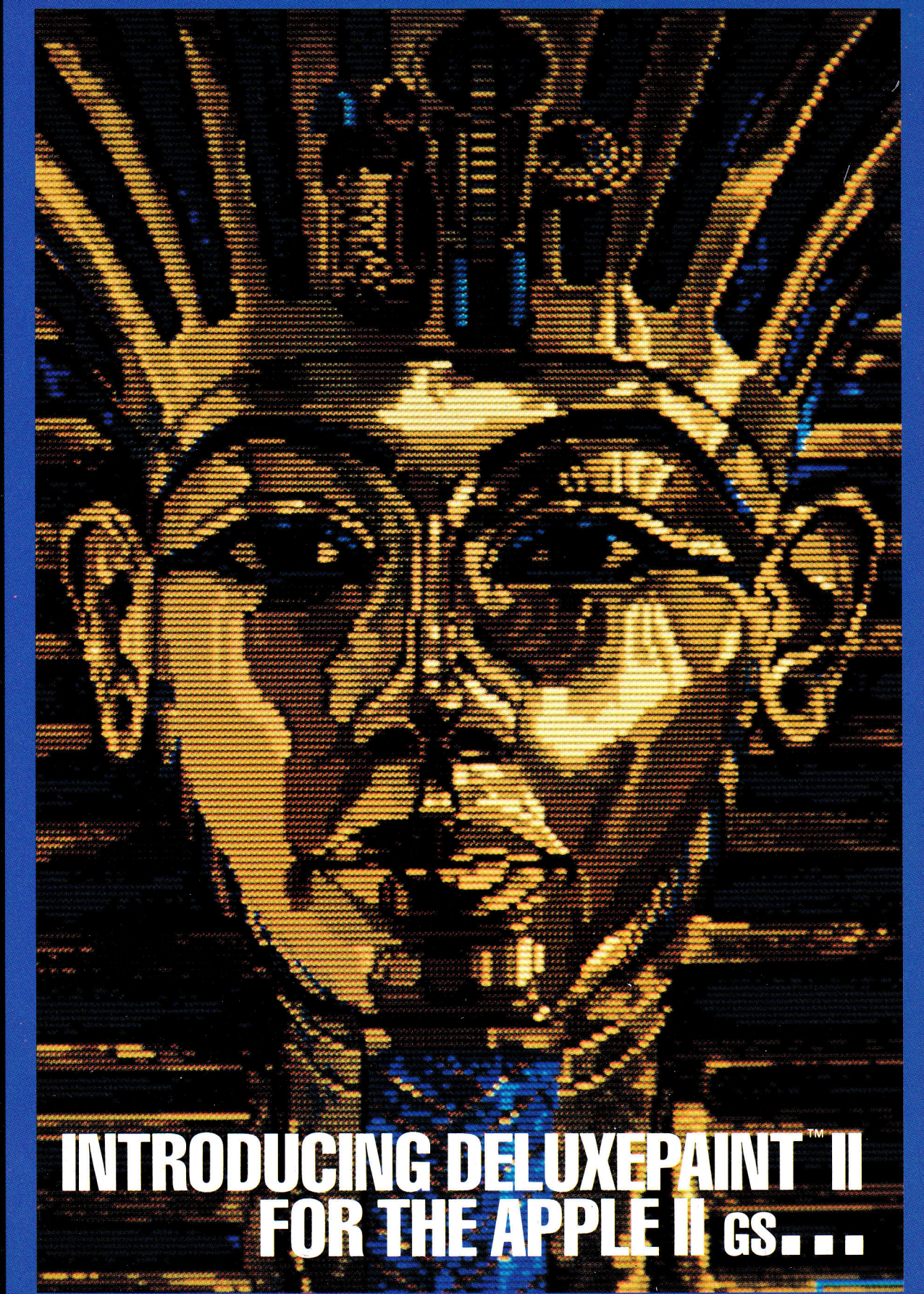
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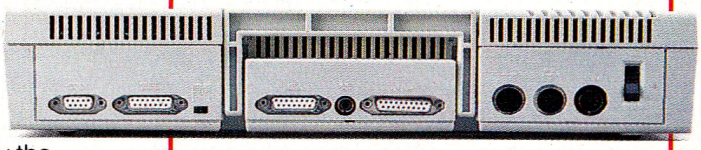

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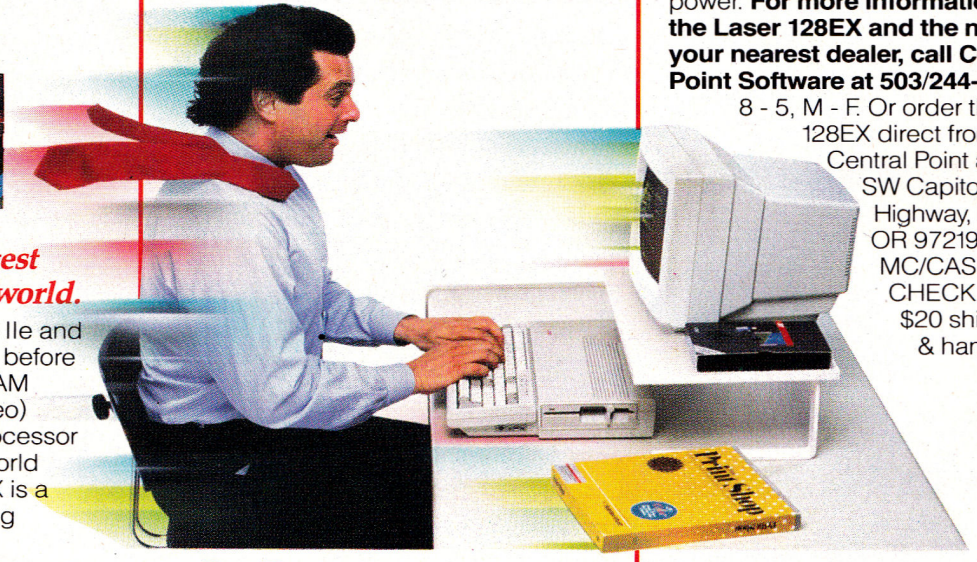

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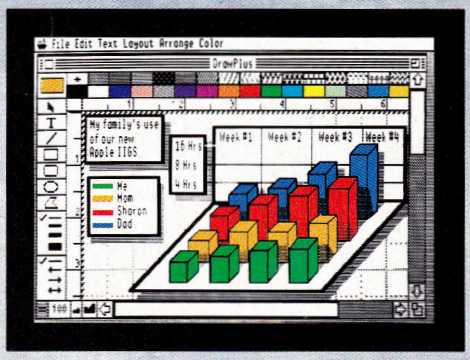

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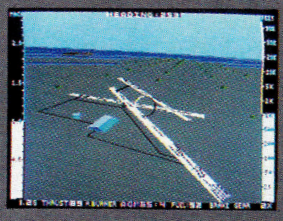

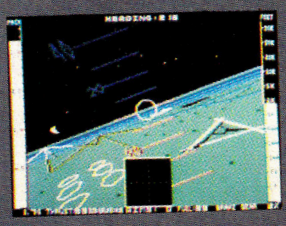

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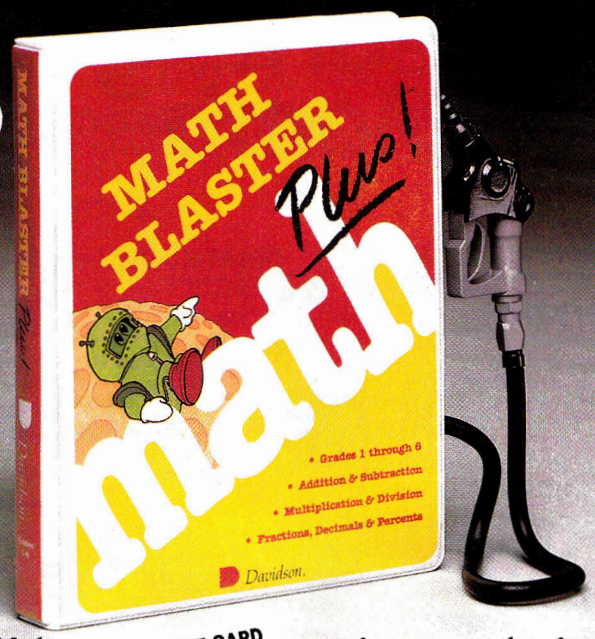

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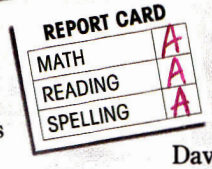

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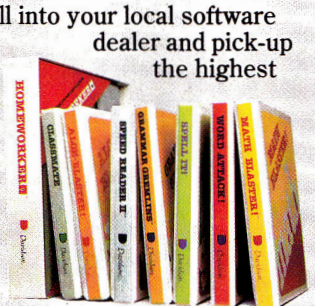

Davidson Celebrates Computer Learning Month October 1987

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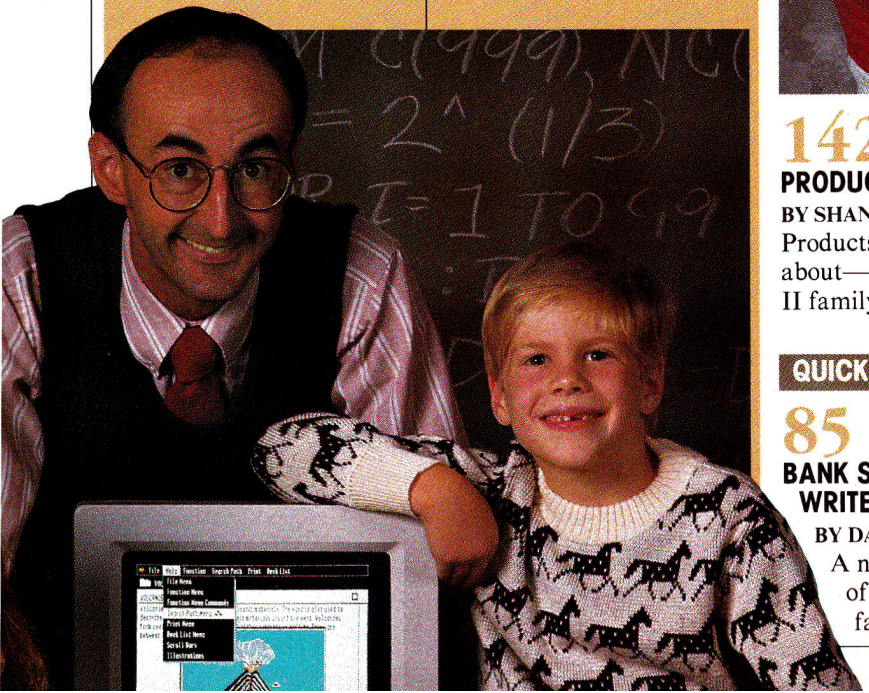

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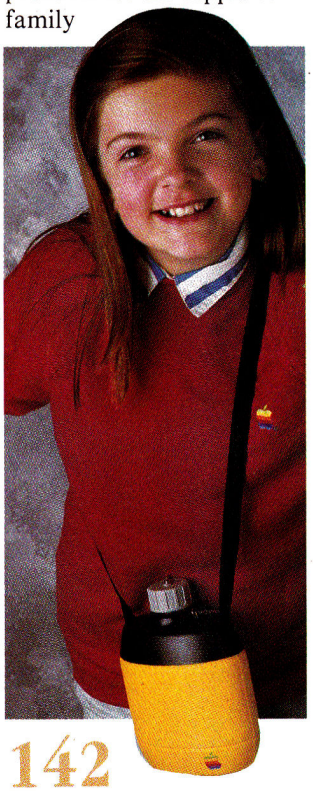

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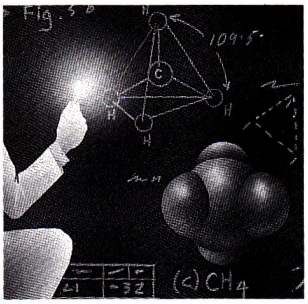

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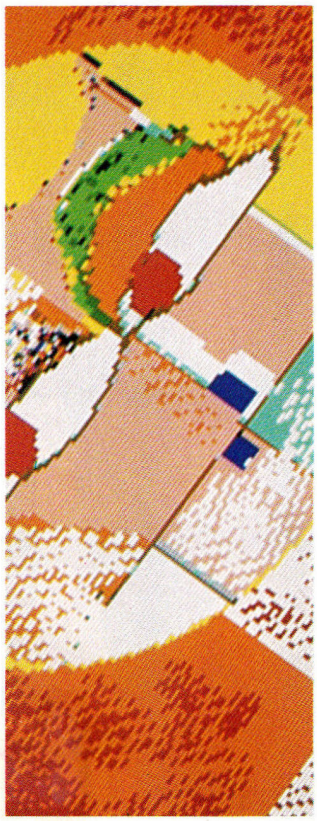

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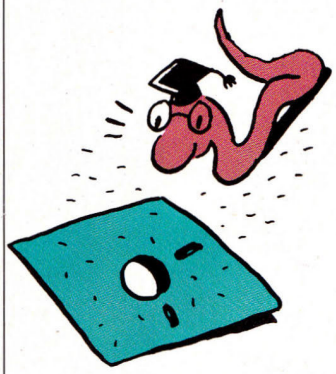

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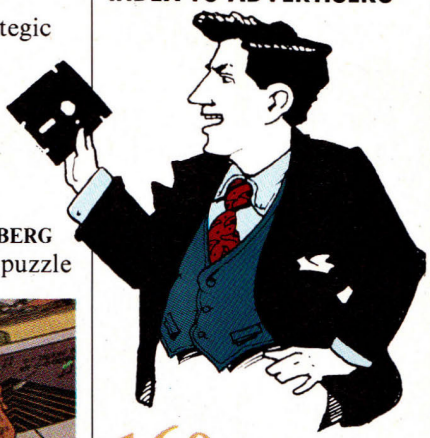

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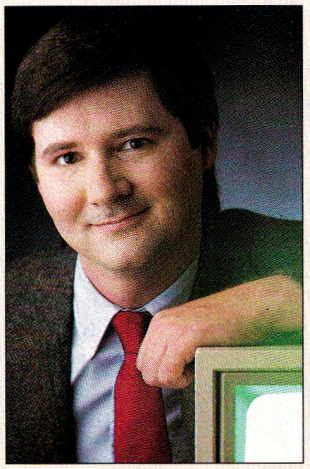

EDITOR'S PAGE

COMPUTER LEARNING MONTH

October has been designated as Computer Learning Month by a coalition of organizations that includes the Software Publishers Association, Apple Computer, and *A+*. One of the primary goals of Computer Learning Month is to increase awareness of the important role that computers can play in education, both in the classroom and at home.

In this special education issue, we have devoted several feature articles to the theme of education and have additionally focused "Product Spotlight," "That's Entertainment," "The Learning Curve," "Speaking of Graphics," and "AppleWorks Report" on software and hardware related to education. In the months to come, we will continue to report on some of the exciting new developments that are shaping up in the field of educational computing, such as low-cost local-area networks for schools using Apple IIs. We'll also be presenting articles for parents that explain how to get the most educational benefit from computers for their kids.

How Should Computers Be Used?

Although most people agree that computers have tremendous potential in an educational setting, exactly how schools and families should use this powerful new tool has become a matter of much debate. Some parents and teachers feel that "computer literacy" is a necessary skill in today's world. Others are afraid that computers take the personal contact out of teaching or fear that, worse yet, students who use computers may become antisocial.

I think all these views are a bit extreme, and I believe they miss the point. The computer's primary role in education should be as an instructional medium and as a creativity tool, rather than as something to study for its own sake. Studying computers is a great adjunct to delving into mathematics and electrical engineering, but learning about the computer itself should probably be limited to computer, mathematics, and science classes. Although most of us learned a lot in school from what we read on the blackboard, we never had classes on chalk and blackboard literacy. Using the computer as a new instructional medium or a creativity tool has important implications in education. Both parents and teachers can use computers in these ways to great advantage.

Students can have one-on-one time with their teachers' knowledge as embodied by computers.

Teachers can use the computer as an animated blackboard that can convey information more clearly than can chalk and slate. Animated presentations with color graphics and sound effects do a better job of capturing students' attention than does the blackboard in today's world of video and flashy media. The computer can also serve as an authoring system to create multimedia presentations, courses, and databases. With the proper software and hardware, the computer can facilitate the communication of knowledge and ideas.

A teacher may not have much time to interact with each student individually, but if teachers can use a computer to represent and "amplify" their expertise, students can have one-on-one time with their teachers' knowledge as embodied by the computer. Also, computers are more patient than a human and can be programmed

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Designed expressly for the IIGS, *Music Construction Set* makes it easy to compose and edit music. You can write 15-voice music using professional notation found in no other Apple IIGS software, then play your work on over two dozen new digitized instruments that sound sensationally real. When your work is done, print out high-quality sheet music.

Great Wave's *KidsTime*™ *II*

Created for children aged three to ten, *KidsTime II* has two educational programs emphasizing creativity, exploration and skill development. *KidsNotes* allows children to explore many aspects of music and create their own songs on a piano screen keyboard. *ABKey*, a fun letter recognition/keyboard skill program, contains many levels of challenge.

MDIdeas' *SuperSonic*™ Stereo Card

Hear your Apple IIGS in true stereo! *SuperSonic* taps the powerful new Ensoniq™ sound chip of the IIGS so you can hear the exciting stereo sounds of popular music software, like the three mentioned above, in real stereo. Advanced circuitry and multi-stage filters assure distortion-free audio.

Act now.

Go to your authorized Apple® dealer and audition the IIGS paired with the Bose RoomMate system. Or order a RoomMate system by calling (301) 796-3980. But hurry. This Free offer expires December 19, 1987.





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Better sound through research.

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SuperSonic is a trademark of MDIdeas.

Software: *The Music Studio* by Activision.

CIRCLE 313 ON READER SERVICE CARD

EDITOR'S PAGE

Another important role of the computer in education is as a creativity tool.

to move through a subject at a speed geared to each student.

Parents can use the computer as a live-in tutor for their kids and as an alternative to television that interacts with kids and encourages them to think. Parents can also use the computer with their kids as a creativity tool for such activities as writing and illustrating made-up stories, creating greeting cards, and playing music.

Creativity Tools

Another important role of the computer in education is as a creativity tool. Artists, musicians, writers, and others have found that the computer is a powerful and flexible assistant in their creative endeavors. Software for graphics, music, and writing are widely available for the Apple II and are regularly covered in *A+*. Although this type of software is not usually thought of as educational, it can play an important role in education.

The potential of computers in education is enormous, but there are obstacles on the road to realizing that potential. Many parents and teachers have doubts and fears about computers. Current educational software is uneven in quality; some products are very good, but others are pretty bad. A lack of adequate funds in school budgets for hardware and software purchases has created a shortage of computers for student use and has led to rampant software piracy in schools. *A+* will be addressing these and other important issues in the months ahead as part of our commitment to the area of computer education. +

FRED

FREDERIC E. DAVIS/**EDITOR IN CHIEF**

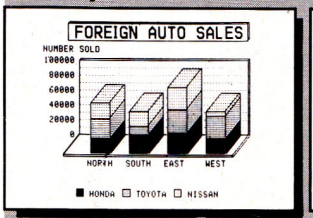
SPECTRAL GRAPHICS SOFTWARE

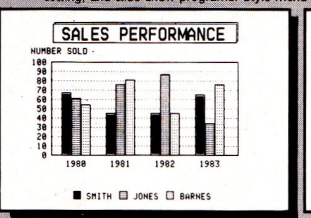
QUALITY GRAPHICS SINCE 1983

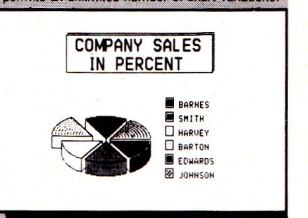
Apple II+, IIe, IIc, IIgs
Laser 128, Franklin

AlphaChart $29.95

Create beautiful vertical bar charts in two or three dimensions, stacked or side-by-side. 2D/3D pie charts with exploded slice and floating label capability. Terrific extras include drawing, typesetting, and slide show programs. Style menu permits an unlimited number of chart variations.

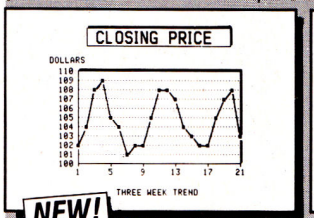


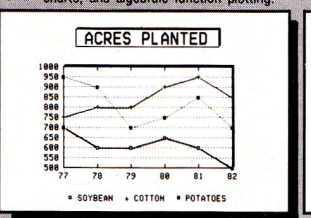


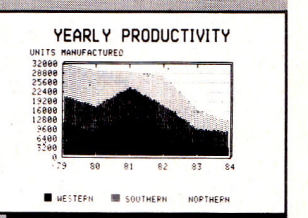


CurvePlotter $29.95

This progam creates standard, connect-the-points, charts, with up to three curves per chart. Also included are area charts (stacked curves with shaded areas), best-fit straight line trend charts, and algebraic function plotting.



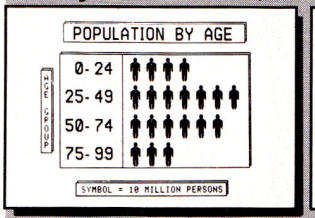


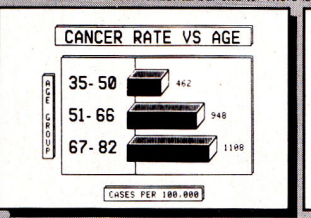


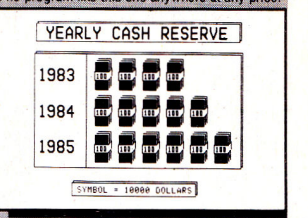
NEW!

SymbolChart $29.95

Transform your data into an eye-catching row of symbols or icons. Pick from a library of 84 pre-drawn symbols or icons, or add to the library by drawing your own. Also, use your data to create 2D/3D horizontal bar charts. There is no program like this one anywhere at any price.





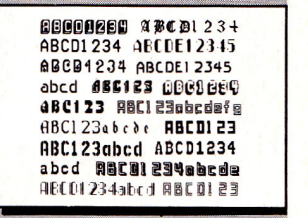


Text-Art $29.95

Provides the freedom to add special notes or comments to your charts, anywhere you want. In 24 different lettering styles. Also great for making presentation quality viewgraphs, certificates, signs, ads, flyers, invitations, report covers.

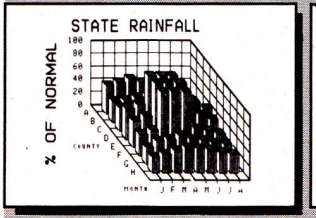


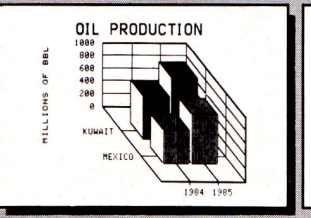


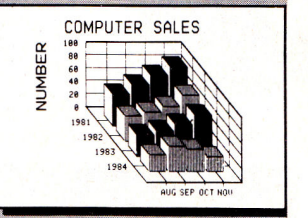


3DChart $29.95

Users enter up to 144 numbers on a two-dimensional, 12x12 grid. Each entered number corresponds to any two labels the user desires. (For example, month and year, or age group and sex). Numbers are displayed as three dimensional rectangular or square vertical bars.







- **Buy any two disks for $39.95.**
- **Choose three disks for $49.95**
- **Choose four disks for $59.95**
- **Get all five disks for $69.95**
- **Great demo disk is just $5.00**

Other Features!

All disks include the following: ***Chart printing*** . . in black & white, any size, on any one of the 63 most popular printers. No special hardware needed. Horizontal or vertical magnification. Charts may be screen-drawn in either b&w or color, but color printing requires additional software (described in manual). ***Simple data entry*** . . external data files or spreadsheets are not used. All data may be saved to disk and later changed or added to. ***Ease of use*** . . all of these programs are simple enough for use by a child, but sophisticated enough to meet the demands of the professional. Go from data entry to printer within 3-5 minutes, the very first time, even without reading the manual. ***Ninety day guarantee*** . . A no nonsense, no wait, no questions, full money-back guarantee if you're not satisfied.

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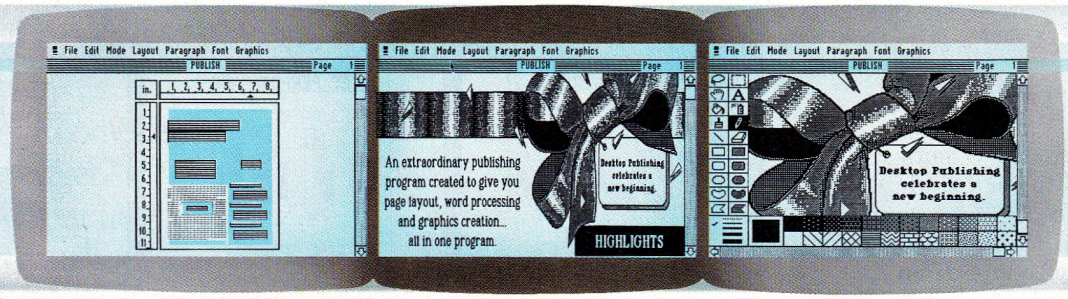
Finally. Mac-like desktop publishing that puts it all together.



Page Mode. Text Mode. Graphics Mode.

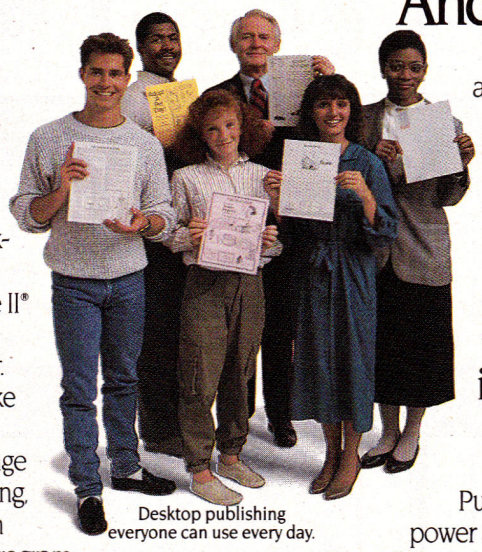
Page layout. Word processing. Graphics creation. And you.

Welcome to Springboard Publisher.™

Springboard Publisher is the breakthrough in desktop publishing that Apple II® and IBM® PC owners have been waiting for.

It is the first Mac-like desktop publisher to combine powerful page layout, word processing, and graphics creation together in a single program.

There's nothing else like it.



Desktop publishing everyone can use every day.



Mac-like interface for Apple II.



Microsoft Windows interface for IBM PC.

One integrated program instead of three separate programs.

Many desktop publishers make you juggle three different programs every time you want to create a page.

But with Springboard Publisher, everything you need is tied together into a seamless, integrated environment, so you can move between the page, text, and graphics modes without ever having to juggle programs or leave your page. What could be more natural?

You'll be publishing in minutes, not days.

Springboard Publisher puts its power at your fingertips. Mac-like pull down menus give you instant access to all features with the touch of a key or the click of a mouse.

To add, edit, or rearrange text or graphics anywhere on your page, you just move your cursor to that area, click, and you're there. Automatically switched to the page, text, or graphics mode, so you're ready to work.

It's really that simple.

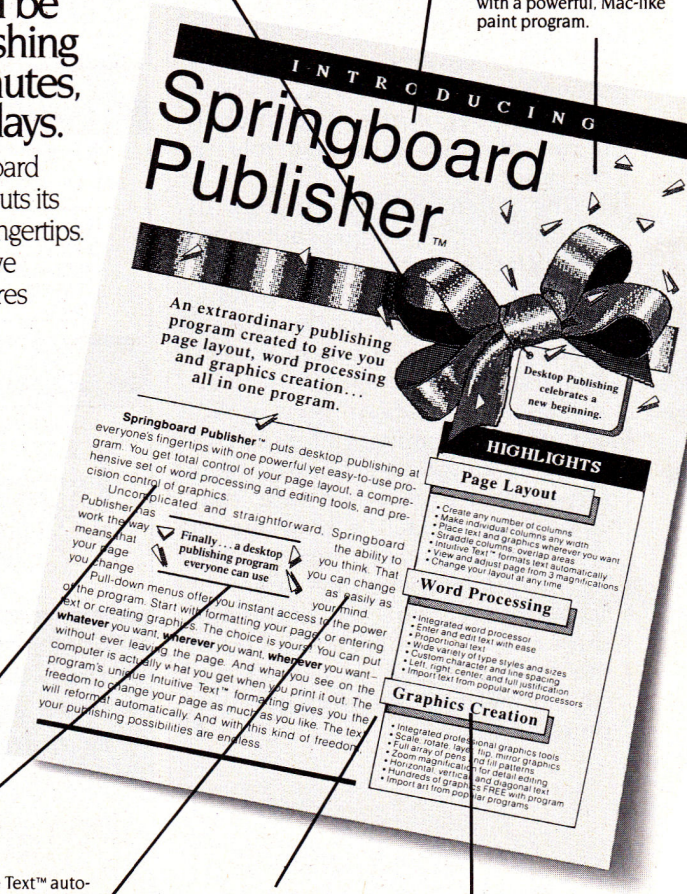
Never leave your page.

With Springboard Publisher, you work right on your page, so what you see is what you get.

Import professionally drawn art from popular graphics programs.

Customize character and line spacing.

Draw right on your page with a powerful, Mac-like paint program.



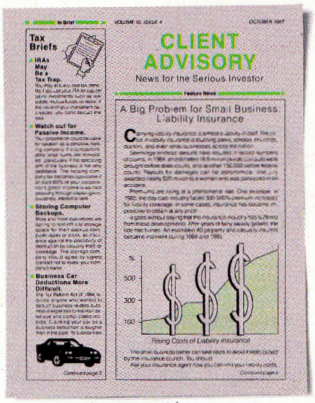
Write and edit with full featured, built-in word processor, or import text from popular word processing programs.

Overlap text or graphics anywhere; resize, reshape, or reposition them anytime.

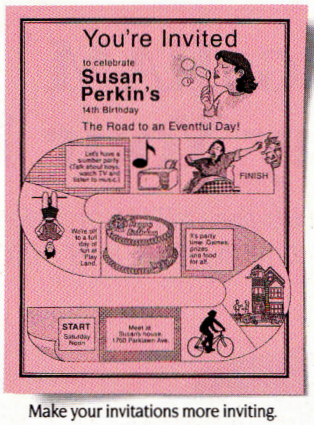
Intuitive Text™ automatically rewraps around graphics whenever you change your layout.

Select up to nine individually sized columns; customize gutter width.

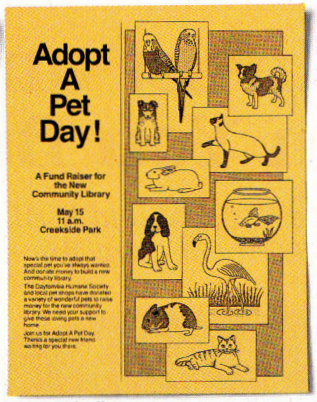
Add text to graphics—even diagonally.



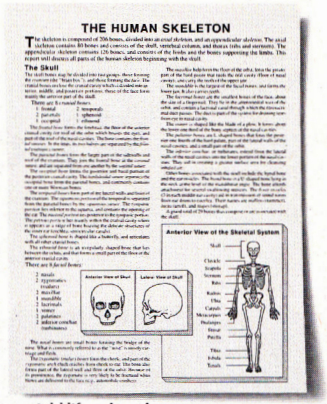
Communicate with customers.



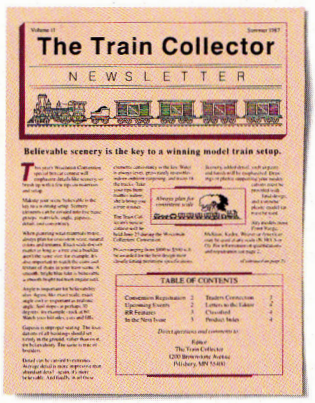
Make your invitations more inviting.



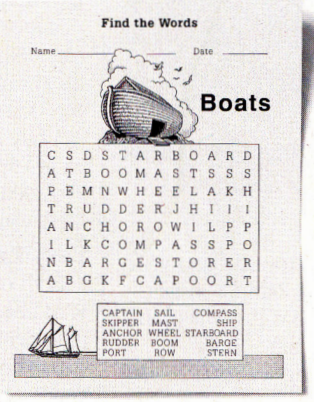
Kick off a community campaign.



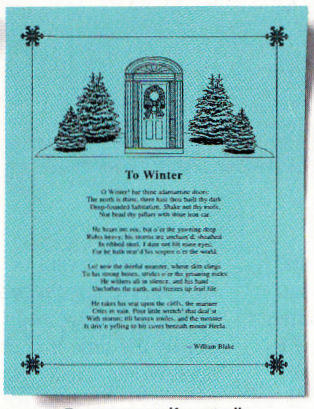
Add life to bare bones term papers.



Keep your club on the right track.



Create worksheets that really work.



Express yourself poetically.



Get down to business.

You can size your columns individually, then add inset text and graphics frames anywhere on your page—even overlapping each other and straddling columns.

You can enter and edit text with the integrated, full featured word processor. Or you can import text from popular word processing programs.

Either way, you're free to mix type fonts, styles, and sizes (9 to 72 pt.) in any combination, and change them at any time.

You can also draw right on your page, choosing from a richer palette of automatic drawing tools and special effects than most paint programs offer.

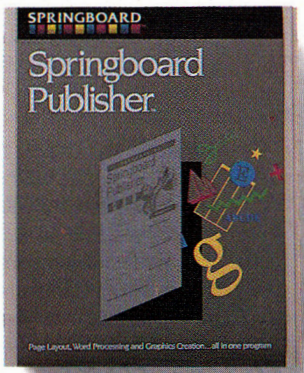
Or you can import pre-drawn art from Springboard's Works of Art™ series and Clip Art Collections,™ or other popular graphics programs.

Change your mind, experiment with ideas.

Springboard Publisher gives you the freedom to put whatever you want, wherever you want, whenever you want.

You can resize individual columns at any time. And when you resize, reshape, or reposition your inset text and graphics frames, Springboard Publisher's Intuitive Text™ automatically reformats itself around them, even in multi-page documents.

Springboard Publisher makes changing your page almost as easy as changing your mind. So, for the first time, you're really free to experiment with ideas.



The only three-in-one program.

Laser power and more!

Springboard Publisher supports quality printing on dot matrix printers, including 24 pin printers. Add the *Springboard Publisher™ Laser Driver* and you get Adobe PostScript™ support for near typeset quality output.

Need ideas? Add *Springboard Publisher™ Style Sheets-Newsletters*, and get dozens of professionally designed newsletter page layouts to which you can easily add your own text and graphics.

No time to draw? Add *Works of Art,™* a new family of art packages designed to work with Springboard Publisher.

Choose the Assortment, Education, or Holiday Series. Each volume contains over 500 works of art.

FREE Works of Art™ Our way of saying "Welcome to Springboard Publisher."

Buy Springboard Publisher, and get the Works of Art™ volume of your choice—a $39.95 retail value—FREE from Springboard.

Start putting it all together today. Call 1-800-992-2619, ext. 101 for a FREE Springboard Publisher brochure. Or see your Springboard dealer for details.

SPRINGBOARD™

Springboard Software, Inc.,
7808 Creekridge Circle,
Minneapolis, MN 55435

Suggested Retail Prices:	Apple II
Springboard Publisher™	$139.95
Springboard Publisher™ Laser Driver	$39.95
Springboard Publisher™ Style Sheets	$29.95
Works of Art™ from Springboard	$39.95 ea.

IBM pricing to be announced.

CIRCLE 261 ON READER SERVICE CARD

In Canada call 612-944-3915

Requirements: Apple IIe, IIc, IIGS: 128K. IBM-compatibles: 512K. MS-DOS 2.1 or newer. Microsoft Windows. 5¼ or 3½" disks available for both.

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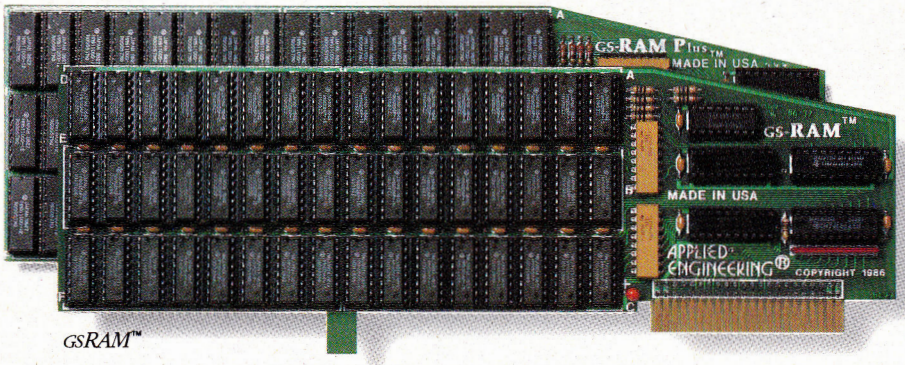
Now the Fastest Memory Card for IIGS with New Disk-Caching Feature

Insist on GSRAM™ When You Buy Your IIGS™

Expand the IIGS RAM and ROM with the GSRAM or GSRAM Plus with ROM Pak. Available now with 256K to 8 MEG!

GSRAM Plus™



GSRAM™

Remember the 16K cards for the II+ and the 64K cards for the IIe? At the time, that much memory seemed like a lot. But when the owners of these memory cards came to us for more memory, many had to throw away their smaller Apple memory cards or try to sell them. Most of our customers told us that had they known about Applied Engineering's larger memory cards when they bought their Apple, they would have purchased them at the same time.

GSRAM and GSRAM Plus are available now, allowing up to 8 MEG of memory expansion. That's 8 times the memory capacity of Apple's card and just look at the benefits that only GSRAM and GSRAM Plus have over Apple's card:

- Lower cost
- Has 6 RAM banks (Apple's card has 4)
- Has memory expansion port
- Has ROM expansion port
- No configuration blocks to set
- No soldered in RAM chips
- Expandable to 8 MEG
- Expands AppleWorks internal limits
- Built-in Hi-Res self-diagnostic software
- 5 year hassle free warranty (Apple has a 90 day warranty)
- Made in USA

GSRAM for More AppleWorks Power

Only GSRAM and GSRAM Plus eliminate AppleWorks internal memory limits, increasing the maximum number of records available from 6,000 to over 25,000 and only GSRAM and GSRAM Plus increase the number of lines permitted in the word processing mode from 6,000 to over 15,000. And only GSRAM and GSRAM Plus offer a built-in printer buffer so you can continue using Appleworks while your printer is printing. GSRAM and GSRAM Plus even expand the number of lines in the clipboard from 255 to 2047 and will auto segment large files so they can be saved on two or more disks. You can even have Pinpoint or Macroworks and your favorite spelling checker in RAM for instant response. GSRAM and GSRAM Plus will even display the time and date right on the AppleWorks screen. Nothing comes close to enhancing AppleWorks so much.

Turn Your IIGS into a Giant

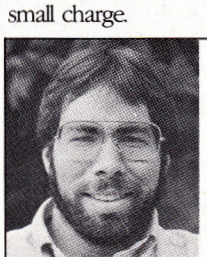
Simply plug GSRAM into the IIGS memory expansion slot and you've got up to *8 megabytes* of RAM at your fingertips—all of it instantly and automatically recognized by the IIGS. GSRAM is compatible with all IIGS software, including AppleWorks, as well as BASIC®, ProDos, DOS 3.3, PASCAL®, "C" and CP/M®.

Grow by Bytes or Megabytes

We offer GSRAM in two configurations so you can increase your memory 256K at a time (GSRAM) or a megabyte at a time (GSRAM Plus). Both offer full compatibility, lower cost than other boards, and easy expandability. And both are extremely low in power consumption. A fully expanded GSRAM operates at only 375 ma, and GSRAM Plus at only 270 ma (even with 6 megabytes on board!)

GSRAM—for Normal Memory Requirements

GSRAM is available with 256K, 512K, 1 MEG or 1.5 MEG of memory already on board. If you don't need the full 1.5 MEG now, you can choose a GSRAM with less memory and expand it up to 1.5 MEG in the future—or upgrade to GSRAM Plus for a small charge.



"In quality, performance, compatibility, expandability and support, Applied Engineering's GSRAM and GSRAM Plus are number one."

Steve Wozniak, the creator of Apple Computer

With an optional piggyback card, you can expand GSRAM even higher than 1.5 MEG! (Other cards are only expandable to 1 MEG.)

GSRAM Plus—for Growing by Leaps and Bounds

GSRAM Plus is the first Apple memory card to use 1 MEG RAM chips on the main board. It's available with 1 to 6 MEG on board. If you don't need the whole 6 MEG now, you can buy a GSRAM Plus with less memory and easily expand it in the future.

GSRAM Plus can be expanded up to 8 MEG with an optional piggyback card.

Easy Expansion

Both GSRAM and GSRAM Plus use standard RAM chips that are readily available and just plug right in. So unlike other cards, you'll find expanding your GSRAM or GSRAM Plus easy, convenient and very economical. And with our optional ROM expansion module you can even increase the IIGS's ROM space and all in just one slot.

Quality and Support of the Industry Leader

Applied Engineering is the largest supplier of Apple peripherals in the world. We *invented* the first large RAM cards for the Apple. With a 5-year "no-hassle" warranty and outstanding technical support, you can be sure GSRAM and GSRAM Plus will deliver the performance you're looking for—or return them within 15 days for a full refund.

GSRAM with 256K	$169
GSRAM with 512K	$219
GSRAM with 1 MEG	$299
GSRAM with 1.5 MEG	$379
GSRAM with 2-8 MEG	CALL
GSRAM PLUS with 1 MEG	$459
GSRAM PLUS with 2 MEG	$759
GSRAM PLUS with 3-8 MEG	CALL

Order today!

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LETTERS TO THE EDITOR

SEEKING DEFINITIONS

Dear A+: What is the difference between public-domain software and shareware?

G. SHEPHERD
BRONX, NY

Public-domain software is generally available through users' groups, bulletin boards, and special sections of commercial on-line services. It is free, and the public has the right to use it, copy it, and distribute it to anyone else without any restriction.

Shareware is available in many of the same places and is also meant to be passed around. It's not really free, however. The authors of shareware programs trust you to pay them for the software if, after giving it a trial run, you decide to use it regularly. You find the payment instructions when you use the program.

NEGLECTED MODELS

Dear A+: For years I have read your magazine with great enjoyment. The insight, reviews, and previews about the Apple II family were to be commended. The title "The #1 Apple II Magazine" was certainly deserved. But now, I think the title should be "The #1 Apple IIe/IIGS Magazine." It seems that that is all that your magazine deals with these days. What happened to the Apple II Plus? What happened to the Apple IIc? They are alive and thriving, I hope you realize.

I know a lot of people who have those computers (more than have the IIe or the IIGS), and they seem to think that they have been cheated by Apple Computer, Inc., and the third-party developers who make so many hardware appliances for the Apple. I know that this protest won't cause anyone to start production on new pieces of equipment for these underrated computers (and believe me, they are underrated), but I want to have it known that we are upset by the treatment we II Plus and IIc owners are receiving. Just think how many times a hardware review has contained the phrase "Apple IIe and IIGS only." Did the II Plus or IIc ever get a "II Plus/IIc Update" section? Please address this problem, which I know other people have also asked about.

E. G. STRUPP
SUMMIT, NJ

A+ instructs all its contributors to find out if the products under review work with the II Plus and IIc, as well as the IIe and IIGS. Wherever you find "Vital Statistics" at the end of an A+ review or roundup, you'll be able to see if products work with the II Plus or IIc. If they are not listed under "CPU," the product does not work with the II Plus or IIc.

DRIVE SPEED ADJUSTMENT

Dear A+: I would like to offer an adjustment to some information about non-Apple disk drives that appeared in a recent (June 1987) letter to the editor. Cheryl Berthelsen indicated that the Laser disk drive has a fixed, inalterable rotation speed. Actually, the drive speed is easy to change; it's just difficult to find the "adjustment hole." On the Laser FD-100c drive, simply pry off the front right foot (the foot directly beneath the drive light) to expose the adjustment hole. You can then readily change the drive speed with a small Phillips screwdriver and drive-verification software such as Copy II Plus.

LARRY REINKING
MILLERSVILLE, PA

HAPPY CUSTOMER

Dear A+: I am writing to compliment a company that not only makes a superb product but also has the kind of user-service attitude that deserves praise. I am speaking of Roger Wagner Publishing, Inc., and its machine-language assembler Merlin Pro. The documentation that I received with the program was excellent and easy to understand, even for a machine-language neophyte like me. The program runs without any problems or obvious "patches" and seems to have been well thought out and executed.

As a beginner, I did have a technical question, which I sent in along with my product-registration card. I sent the letter on May 25. A courteous personal answer was postmarked May 29. It explained the solution, and I was able to implement it without the need for an update disk or any other cumbersome methods.

The company's user support is excellent and free—alone worth the price of the program.

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LETTERS

CLOCK RESERVATIONS

Dear *A+*: Your July 1987 issue has a rather glowing article on the No-Slot Clock. No one expects you to test every article published in your magazine, but I assume that fairness in publishing requires that the editors would inquire whether the described product performs as advertised. Unfortunately, that is not the case with the No-Slot-Clock.

Last winter I purchased one of these chips, installed it as directed in my Apple IIe, and found that it made some of my programs unusable—especially the very fine Tax Preparer program by HowardSoft. The only cure was to remove the chip. Correspondence with the manufacturer conceded that the chip could in fact interfere with some programs.

So let's be fair: The chip may be fine in some applications, but since it piggybacks on another chip location, which performs other functions, it is bound to cause havoc on occasion.

DIETRICH F. LOEPER
CAREFREE, AZ

A LAWYER QUESTIONS WILLWRITER USE

Dear *A+*: I fear that writing wills for a fee requires more than "a little ingenuity and the right products" ("How to Make Money with Your Apple II," *A+*, June 1987.)

In Texas and, I would think, in every state, you also have to have a license to practice law. The reason for this restriction is simple and meritorious: The probate laws are among the most complicated of all the areas of legal practice. Although many lawyers use form, or template, wills as the framework on which to build, I know of no form that does, or could, anticipate all the various permutations of probate law. The lawyer's fee that you might "save" by having a "will" drawn up by someone without legal training, or by using a "fill in the blanks form," may prove to be the most expensive savings you've ever effected.

One would hope that the lady interviewed for your article will either get a law degree or get out of the practice of law.

JAMES C. MCBRIDE
HOUSTON, TX

Response from Stephen Elias, a San Francisco attorney and coauthor of WillWriter:

Lawyer McBride's attack on the use of computer-prepared wills is wrong on two counts. First, few wills need to be drafted by lawyers. Most people's needs and property situation are not highly complex; their wills can safely be made without expert assistance. WillWriter, a computer will-drafting package favorably reviewed for the American Bar Association Journal *by attorney Larry Johnson (November 1985) easily handles routine will-drafting chores. In addition, it flags the situations when an attorney's advice is advisable.*

McBride's second error is to equate Glynda Mathewson's WillWriter activities with the practice of law. Producing self-help law resources and helping people use them are both activities that are protected by the First Amendment to the U.S. Constitution. They are not, therefore, within the legal profession's monopoly over the delivery of all legal services.

LETTERS

MISFORTUNES WITH SHANGHAI FOR THE IIGS

Dear *A+*: As a result of the review you published in your magazine, I recently purchased a copy of the game Shanghai from Activision for the Apple IIGS. My experience with the program and with the response from Activision have been very unsatisfactory to date.

The first copy of Shanghai I purchased was subject to several program bugs that I feel are inexcusable in a "finished" product. These included exiting from the program without warning, locking of the keyboard, inability to load and run the standard games provided on the disk, and many visual defects such as failing to remove completely the tiles and help screens during the game.

After calling Activision, I returned the product to my dealer. The second version I received helped some of the difficulties but left most of them uncorrected.

On June 6, 1987, I wrote a letter to Activision requesting assistance. To date, I have received no reply. It is my feeling that your magazine should be more careful in evaluating a product before recommending it.

Julian A. Jones Jr.
San Jose, CA

EDITING ADS

Dear *A+*: The *A+* Magazine staff has done an excellent job of truly making *A+* "The #1 Apple II Magazine." Keep up the achievement!

Was the July 1, 1987, date for the Computer Learning Month advertisement (August 1987, page 108) correct or a typographical error? (I received the magazine on the 6th.) If correct, *A+* has either slipped from being up to date or has slack copy editors.

Mark N. Yuhl
Bremerton, WA

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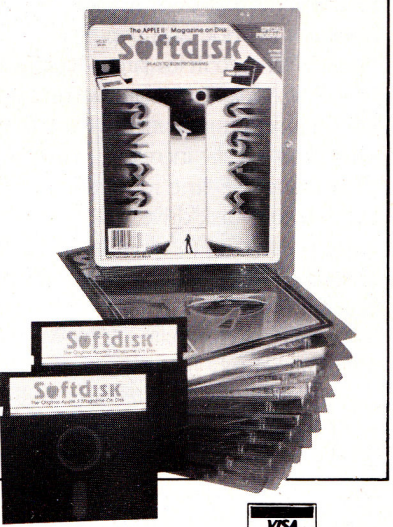

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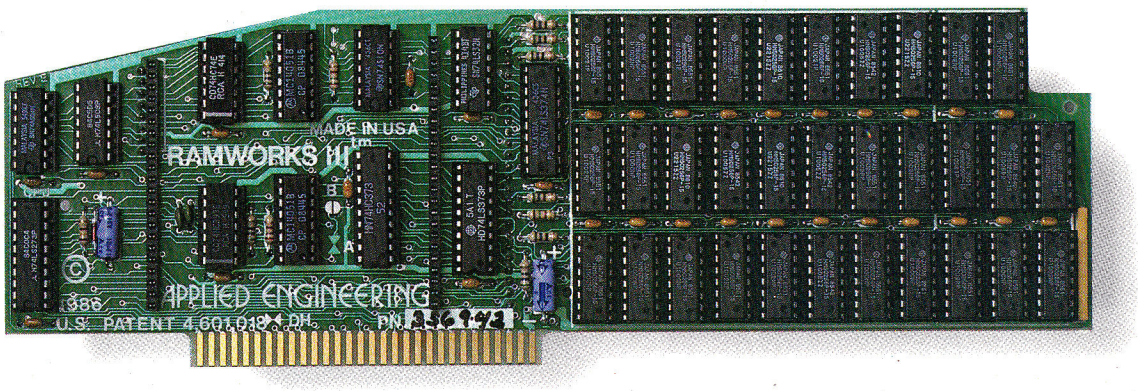

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RamWorks, nothing comes close to enhancing AppleWorks so much.

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Using RamWorks III couldn't be easier because it's compatible with more off-the-shelf software than any other RAM card. Popular programs like AppleWorks, Pinpoint, Catalyst, MouseDesk, Howard-Soft, FlashCalc, Pro-FILER, Managing Your Money, SuperCalc 3a and VIP Professional to name a few (and most hardware add on's like ProFile and Sider hard disks). RamWorks is even compatible with software written for Apple cards. But unlike other cards, RamWorks plugs into the IIe auxiliary slot providing our super sharp 80 column text (U.S. Patent #4601018) in a completely integrated system while leaving expansion slots 1 through 7 available for other peripheral cards.

RamWorks III is compatible with all Apple IIe's, enhanced, unenhanced, American or European versions.

Highest Memory Expansion.

Applied Engineering has always offered the largest memory for the IIe and RamWorks III continues that tradition by expanding to 1 full MEG on the main card using standard RAMs, more than most will ever need (1 MEG is about 500 pages of text)...but if you do ever need more than 1 MEG, RamWorks III has the widest selection of expander cards available. Additional 512K, 1 MEG, or 2 MEG cards just snap directly onto RamWorks III by plugging into the industry's only low profile (no slot 1 interference) fully decoded memory expansion connector.

It Even Corrects Mistakes.

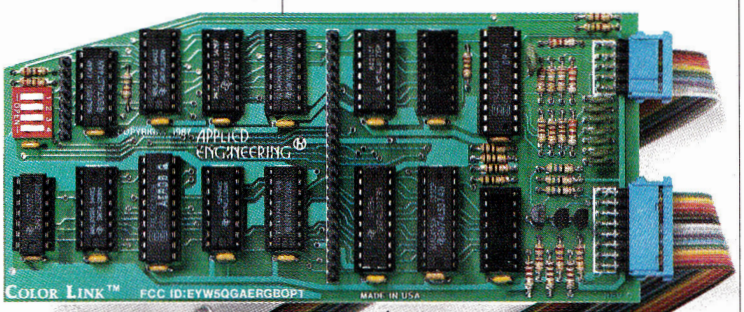
If you've got some other RAM card that's not being recognized by your programs, and you want RamWorks III, you're in luck. Because all you have to do is plug the memory chips from your current card into the expansion sockets on RamWorks to recapture most of your investment!

The Ultimate in RGB Color.

RGB color is an option on RamWorks and with good reason. Some others combine RGB color output with their memory cards, but that's unfair for those who don't need RGB *and* for those that do. Because if you don't need RGB Applied Engineering doesn't make you buy it, but if you want RGB output you're in for a nice surprise because the RamWorks RGB option offers better color graphics plus a more readable 80 column text (that blows away any

composite color monitor). For only $129 it can be added to RamWorks giving you a razor sharp, vivid brilliance that most claim is the best they have ever seen. You'll also appreciate the multiple text colors (others only have green) that come standard. But the RamWorks RGB option is more than just the ultimate in color output because unlike others, it's fully compatible with all the Apple standards for RGB output control, making it more compatible with off-the-shelf software. With its FCC certified design, you can use almost any RGB monitor because only the new RamWorks RGB option provides both the new Apple standard analog and the IBM standard digital RGB outputs (cables included). The RGB option plugs into the back of RamWorks with no slot 1 interference and remember you can order the RGB option with your RamWorks or add it on at a later date.

ColorLink™ RGB Option



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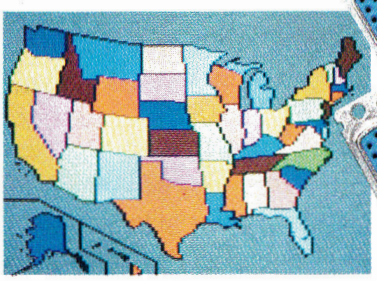

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A+ magazine said "Applied Engineering's RamWorks is a boon to those who must use large files with AppleWorks...I like the product so much that I am buying one for my own system." inCider magazine said "RamWorks is the most powerful auxiliary slot memory card available for your IIe, and I rate it four stars...For my money, Applied Engineering's RamWorks is king of the hill."



"I wanted a memory card for my Apple that was fast, easy to use, and very compatible; so I bought RamWorks."

Steve Wozniak, the creator of Apple Computer

Apple experts everywhere are impressed by RamWorks' expandability, versatility, ease of use, and the sheer power and speed that it adds to any IIe. With a RamWorks in your Apple, you'll make IBM PC's and AT's look like slowpokes.

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NEWSPLUS

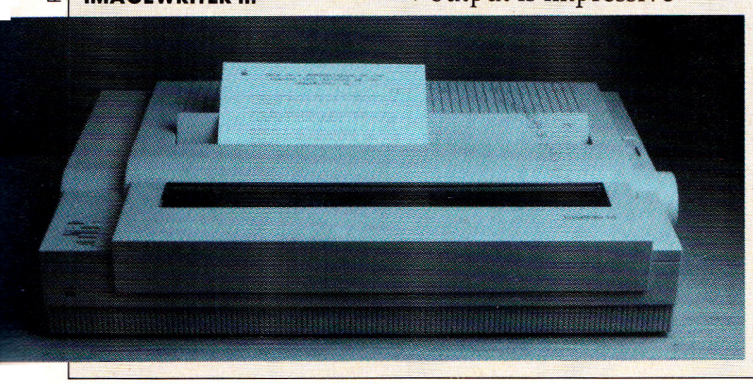
With the new ImageWriter LQ, Apple's lowly ImageWriter finally gets a chance to share the glory of its stunning sibling, the LaserWriter.

IMPROVED IMAGEWRITER

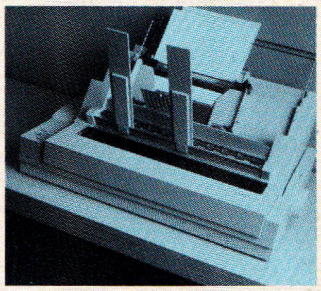
For the last few years, the lowly ImageWriter has stood in the shadow of its stunning sibling, the LaserWriter. Now the ImageWriter gets a chance to share the glory. A new version of this venerable printer—called the ImageWriter LQ (for *letter-quality*)—produces output that has double the dot density of its predecessor, the ImageWriter II, and has a 15-inch carriage and a 27-pin printhead. At 216 × 216 dots per inch, the LQ's dot resolution doesn't exactly compete with the LaserWriter's 300 x 300 dots per inch. But its ability to handle multiple fonts and create sharp output is impressive nonetheless, particularly to those of us used to the characteristic jaggedness of ImageWriter printing. And the LQ can perform one trick the LaserWriter can't (without the help of special paper)—it can print in color.

APPLE'S NEW IMAGEWRITER LQ PRODUCES OUTPUT THAT HAS DOUBLE THE DOT DENSITY OF THE IMAGEWRITER II.

PHOTOS COURTESY APPLE COMPUTER, INC.



THE IMAGEWRITER LQ WITH SHEETFEEDER



Not only is the LQ capable of professional output, but it can also be shared on the AppleTalk network. Special paper-handling features enable as many as three bins of paper to feed into the LQ unattended. Since Apple is promoting the LQ as a peripheral for both the Macintosh and Apple II families, perhaps this development means the long-awaited AppleTalk card for the Apple II is in the wings. (AppleTalk is a built-in capability of the Apple IIGS but not of the other members of the Apple II family.)

Although Apple's stated policy is to announce no products before their time, this printer (like the Macintosh II) is an exception. Announced in August, the ImageWriter LQ isn't expected to be available until the fourth quarter, which means it will probably be in limited supply until early next year. At press time, Apple could give only an estimated price range for the LQ, saying that it would be priced somewhere between $1300 and $1500. Not cheap, but still a lot of performance for the money.



THESE LQ SAMPLES CAME FROM A MAC; SOON THE IIGS WILL ALSO GENERATE MULTIPLE FONTS.

A LOT OF (APPLE) TALK

For amost two years, Apple Computer has talked up the possibility of the AppleTalk network for the Apple II. So we're a little suspicious of rumored announcement dates of the Apple II AppleTalk Card, having heard of many such dates in the past. With that in mind, here's the latest rumor—watch for the AppleTalk announcement at AppleFest in September, shortly after this issue hits the stands.

NEWSPLUS



MAX SEABAUGH

ARTISTS, GET YOUR PIXELS POISED

If you receive this October issue in mid-September, you may have enough time to prepare your computer-generated masterpiece for the Computer Art Competition and Juried Show, the deadline for which is October 1. Submissions must be from artists in California, Washington, Nevada, Utah, Colorado, and New Mexico and must be sent on a floppy disk or 35-millimeter slide. The entry fee is $5 for each submission. Entries should be sent to Computer Products Unlimited, 4111 Cameron Park Drive, Cameron Park, CA 95682. Plaques await the winners—if you're in it for the glory and not for the cash, you're in the right place.

Computer Products Unlimited is a retail store that plans to use this competition as a way to launch a permanent computer-art gallery. Contest entrants will become likely candidates to have one-person shows at the store in the future.

COMPUTER LEARNING MONTH CONTESTS

Computer Learning Month is upon us, and that means lots of contests for kids and teachers. You will have to hustle, however, if you are not already preparing to participate in one of the five official Computer Learning Month contests.

The categories are:

- computer-generated art from students
- noncomputer art from students that has a computers-in-education theme
- student essays
- teacher lesson ideas, and
- group projects involving four or more students and a teacher. Each of these categories will involve prizes at primary, middle, and secondary levels; first-place prizewinners in each category and at each level will receive two Apple IIGS systems.

To obtain an entry form and further details, write to Computer Learning Month, P.O. Box 19763, Washington, DC 20036.

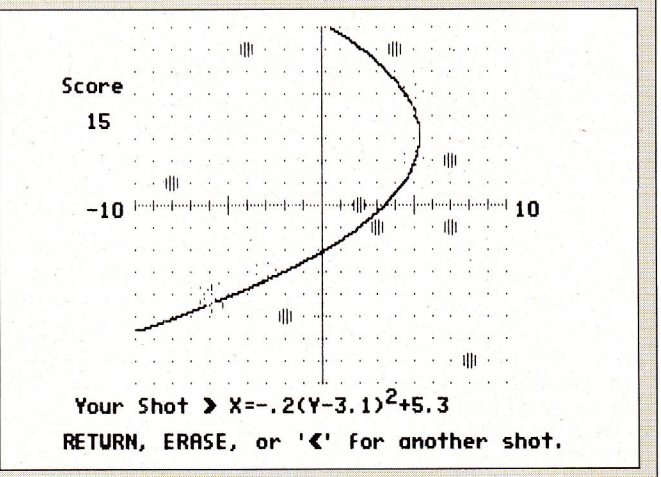
The deadline is October 20; the contest entries will be judged at the National School Boards Association Conference in Dallas, Texas, in November.

GREEN GLOBS GETS GOOD GRADES

A math program with the unlikely name of Green Globs and Graphing Equations has received the highest marks from educational-evaluation services across the country in the past year, according to Education News Service. Education News Service publishes *Only the Best, The Discriminating Software Guide for Preschool–Grade 12*. To qualify for inclusion in *Only the Best*, a program must receive consistently superior marks from 30 evaluation organizations across the country. The 1987–88 issue of *Only the Best*, released last summer, describes 146 programs that made the grade, 145 of which run on the Apple II. Green Globs, published by Sunburst for high-school and college mathematics students, received the highest grades of all. Sunburst also had an additional 19 titles appear in this year's directory. Mindscape was the runner-up with 16, followed by MECC with 13 titles.

You'll have to hustle if you aren't already preparing to participate in one of the five Learning Month contests.

Education News Service claims that 11,000 educational-software titles are on the market, but only 427 titles, or 4%, have made it into the three issues of *Only the Best* published thus far. The newest edition is available for $21.95 from Education News Service, P.O. Box 1789, Carmichael, CA 95609.



IN GREEN GLOBS, YOU MUST PLOT YOUR ARC TO WIPE OUT AS MANY GLOBS AS POSSIBLE.

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CIRCLE 219 ON READER SERVICE CARD

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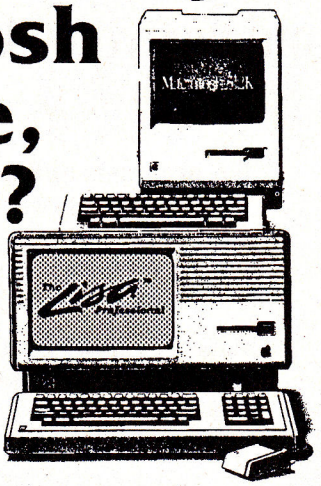

Buy a qualifying Lisa system and we'll buy the software... FREE up to $425 worth!!

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CIRCLE 103 ON READER SERVICE CARD

NEWSPLUS

HALL OF FAME

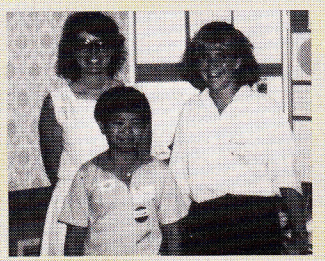
Apple Computer Clubs International recently announced the first inductees into its Hall of Fame. They are Merle Marsh of Berlin, Maryland, and Mim Bizic of Sewickley, Pennsylvania, who were chosen on the basis of their "untiring . . . efforts



MIM BIZIK (RIGHT)

to encourage student excellence in computing and computer applications," said ACCI director John Marvelle. Marsh is an adviser to the Country Apple Computer Club and the Academic Dean at the Worcester Country School in Berlin. She also serves on several educational boards. Bizic is an adviser to the Edgeworth Elementary School's Apple club and has won first place for the last three years in ACCI's Merit Competition.

Speaking of the Merit Competition, the 1987 winners were announced at the same time that the Hall of Famers were introduced at a dinner in Washington, D.C., at the end of June. The grand-prize winners in the student category were Susanna Gonzalez, age 10, and Maria Hernandez, age 9. Both girls attend Tijerina Elementary School in Houston, Texas, and together wrote a program that teaches English to Spanish-speaking students. In the teacher category, the winner was Annice McLean of Nixa, Missouri. McLean is an advisor to Nixa Junior High School's computer club and created a personalized emergency phone directory for senior citizens.



MERLE MARSH (LEFT)

ENTREPRENEUR OF THE YEAR

Jan Davidson, whom you'll find engaged in a debate with *A+* columnist David Thornburg in this issue, has received an award from Arthur Young and *Venture* Magazine. Davidson, president of software maker Davidson & Associates, received the title Entrepreneur of the Year in the "Entrepreneurial Success of a Business Owned and Founded by a Woman in Southern California" category.

PHOTOS COURTESY APPLE COMPUTER, INC.

"Without realistic images, my newsletter was an endangered species."

The copy was vivid, but the images weren't exactly flying off the page. I needed a way to make my birds look realistic.

Then, at my local Apple® dealer,



I spied the AST-VisionPlus,™ a board that could transfer live black and white or color images from a video camera or VCR onto my IIGS™ screen. I bought it immediately.

When I got back home, I plugged the board into my IIGS and connected my video camera to the AST-VisionPlus. Then came the moment of truth.

I posed the camera in full view of my birdfeeder, patiently hoping against hope for the return of the blue-capped flycatching warbler. He did, by jove. And with a quick click of the mouse, I had it on camera. On computer. And on the front page of my newsletter.

Another idea burst into my head. I popped my video cassette "Mating Habits of the Paradise Whidah" into the VCR and spent the better part of the night in

Now, everyone flocks around my ImageWriter® to witness my latest AST-VisionPlus output.



a rapturous flurry, capturing images for Christmas cards, T-shirts, flyers, personal stationery and invitations.

And in the midst of so much stretching, scrunching, recoloring and rearranging the



My Asiatic water parrot looked more like a common ostrich. I wanted to bury my head in the sand.

composition of my AST-VisionPlus images, I discovered my own set of wings. In my mind, I was free as a, well, you know.

Let your visions soar with the AST-VisionPlus. To find the nearest AST-authorized Apple dealer, call us at **714-553-0340.** BBS: (714) 660-9175. FAX: (714) 660-8063.

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CIRCLE 240 ON READER SERVICE CARD



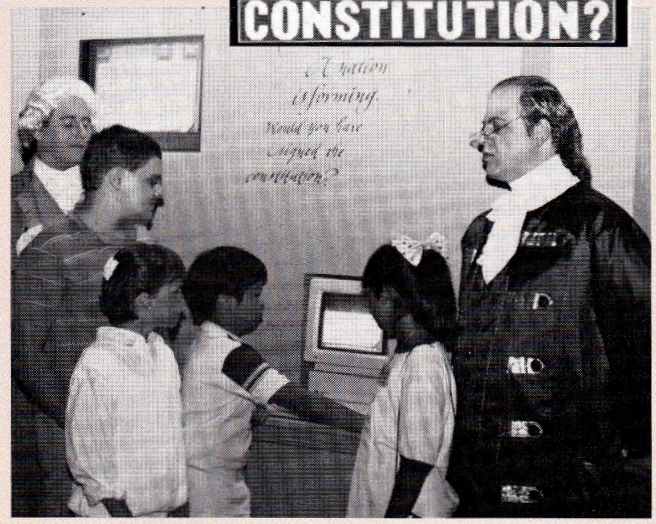
NEWSPLUS UPDATE

WOULD YOU HAVE SIGNED THIS DOCUMENT?

Would you have signed the Constitution? The IIGS may help you decide.

If you take a trip to Washington, D.C., to get a look at the U.S. Constitution in this bicentennial year, you'll find an Apple IIGS parked next to the original document in the National Archives Museum. Apple Computer, Inc., provided

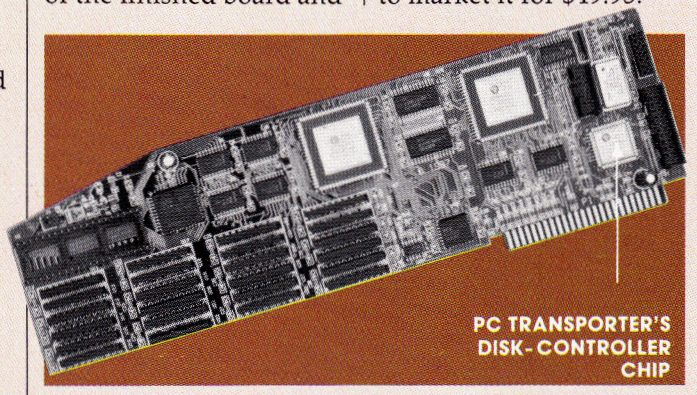




THE IIGS IN USE AT THE NATIONAL ARCHIVES MUSEUM

the IIGS on which a program called Would You Have Signed the Constitution? is installed. This program is a Scholastic, Inc., product that is also commercially available under the same name. It leads you through five questions about issues raised at the Constitutional Convention and asks for "yes" or "no" answers. Each answer brings up a text screen that explains the pros and cons of each issue. At the end of the program, participants decide if they would have signed the Constitution. At the National Archives, they can scrawl their names, using the mouse, and see a tally of the number of visitors who have chosen to sign and how many have not. The display opened last July 1 and runs through the end of 1988.

In our September cover story about PC Transporter, an MS-DOS board from Applied Engineering, we mislabeled a photograph of the finished board and its custom chips. In our effort to show you the pint-sized disk-controller chip on the finished board, our artists pointed an arrow at a nearby connector rather than the chip itself. So here, for your edification, is a correctly labeled photograph that shows the chip that packs an amazing degree of versatility into a minuscule package.



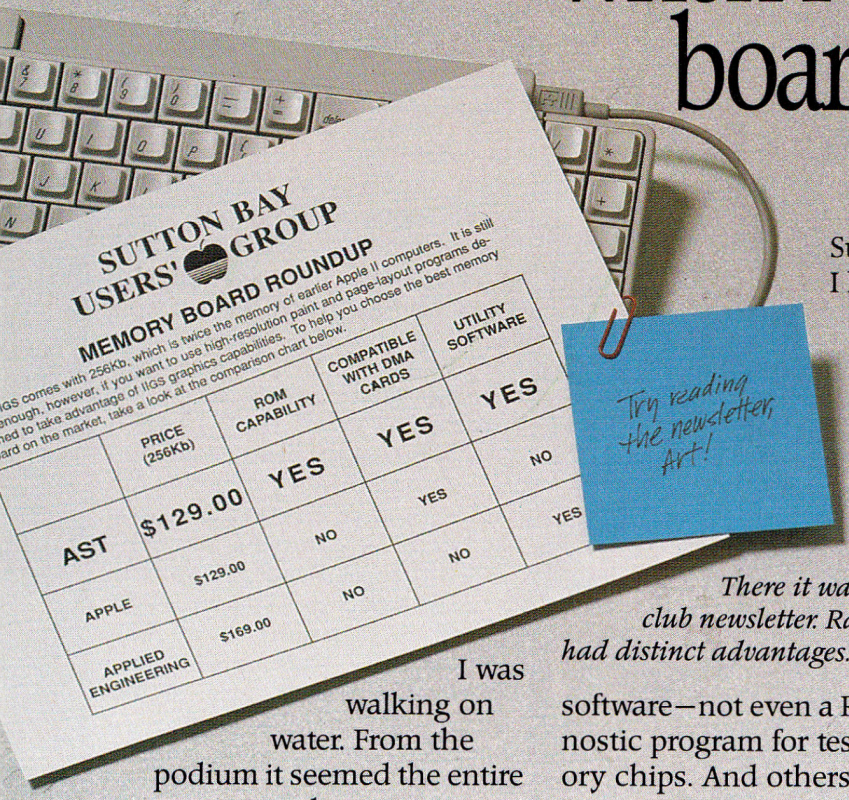
PC TRANSPORTER'S DISK-CONTROLLER CHIP

Davidson & Associates has introduced a new and improved version of its classic Math Blaster program called Math Blaster Plus. The new release lists at $49.95 and was designed with the graphics and sound of the IIGS in mind (but it also works on the IIc and IIe with an 80-column card). It also features a greater emphasis on problem-solving skills than did its predecessor. This new version doesn't mean the discontinuation of the original Math Blaster, however. Davidson will continue to market it for $49.95.

Let's attempt to clear up any confusion about the newest version of ProDOS for the IIGS. In July's "NewsPlus," I reported that Apple had claimed that Version 2.0 of the ProDOS operating system would be released in early summer. Actually, what Apple had said was that Version 2.0 of the *system disk* would be coming out, and we erroneously assumed that that meant Version 2.0 of the operating system would be on it. Oops!

Instead, Version 2.0 of the system disk contains Version 1.2 of ProDOS 16; it also contains new printer drivers, tool sets, and fonts. If developments are still going according to schedule, ProDOS 16, Version 2.0, and a Macintosh-like Finder should be out this winter. +

"Everyone gasped when I said all memory boards were alike."



There it was in the club newsletter. RamStakPlus had distinct advantages.

I was walking on water. From the podium it seemed the entire user group was hanging on to my every word. And then out of nowhere, this guy from the back row asks, "Which memory card would you recommend for my IIGS™?"

The rest is history. And it looks like I am too. Who would have thought the differences in memory boards made a difference?

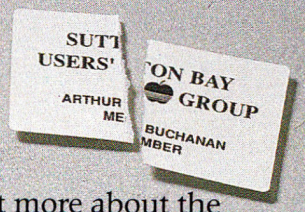
CIRCLE 245 ON READER SERVICE CARD

Sure enough, I learned that some memory cards are price competitive, but include no software—not even a RAM diagnostic program for testing memory chips. And others are too expensive to even consider.

For the best combination of features at a really unbeatable price, the choice is clearly RamStakPlus.™ It's the only memory card that contains ROM sockets for EEPROMs or EPROMs. Which means you can store your favorite program in ROM memory and it won't disappear when you turn the power off. Plus, the RAM space you conserve can be used to create bigger spreadsheets, database files or reports.

Well, you live and learn. And if you're lucky, you get even. I'm brushing up on my facts for tonight's meeting. You'll never guess who's speaking. The guy from the back row.

Overlooking the basics could have been a costly mistake.



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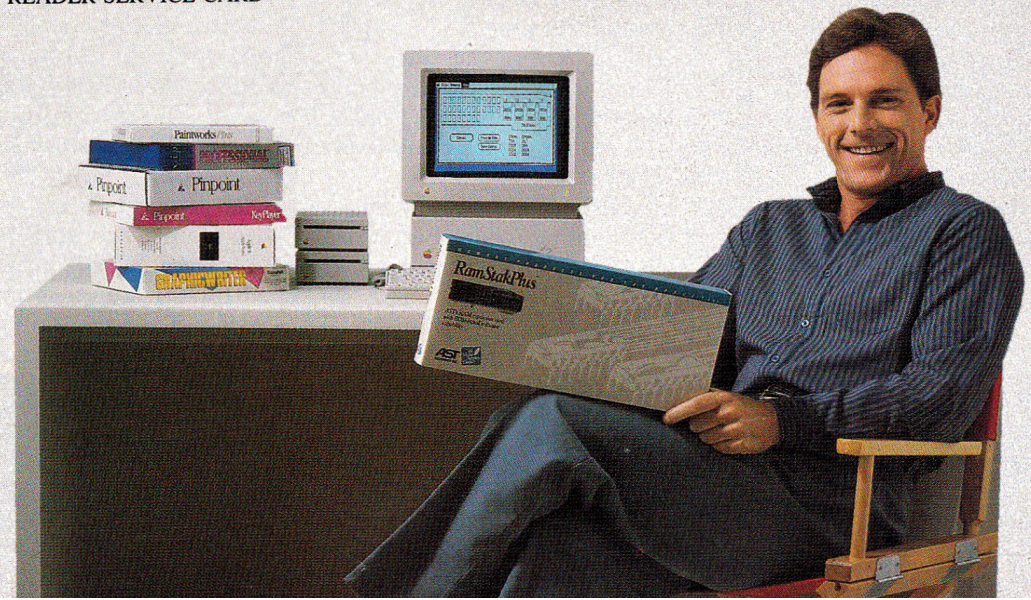


Computer Learning Month

EDUCATION *BY ANITA MALNIG*

CHOOSING THE RIGHT SOFTWARE

There's a distinction between educational software for the home and school. Our first of four Computer Learning Month articles suggests how to select the best software for your kids.

Dora and Yvette sit together at a classroom computer trying out a vocabulary-building software program. It's not in color, and it doesn't have any dancing bears or frogs. Just words. They're supposed to remember what the words mean and how to use them. They seem to love it and get involved.

Jesse and Kenly face the computer on a Saturday afternoon, an array of software next to them. Their parents may suggest Algebra Arcade, an intriguing program in which you plot equations on a graph and try to hit little Algebroids in the process. Unless that disk is in the drive, however, they may ignore even Temple of Apshai, an educational graphics/text adventure, preferring the zap and pow of games such as Captain Goodnight, Lode Runner, or Zorro.

To parents who've bought educationally sound software, it may be abundantly clear that what works at school won't necessarily cut the mustard at home. Many have discovered that there are basically two kinds of educational software: software developed with classroom use strictly in mind and software geared for children to use at home. As with any generalization, some items won't neatly fit either description. But as a rule, classroom software

- closely follows the course of study in a particular area
- uses more text than graphics
- often includes scoring and testing options
- comes with ancillary print matter, such as worksheets, that closely matches other noncomputer classroom materials
- is not designed with a "play" element in mind.

Home educational software, on the other hand

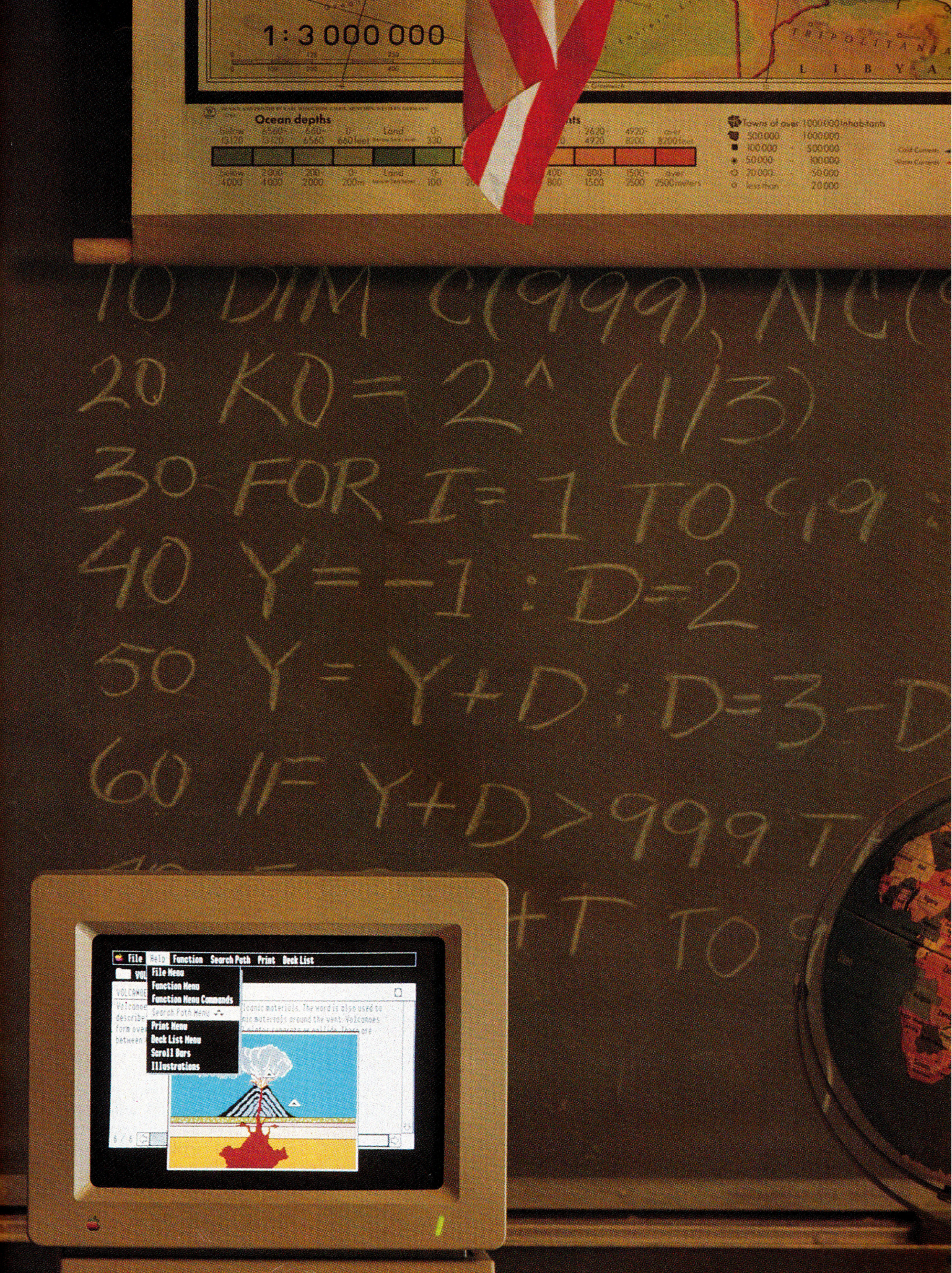
- uses bolder, more animated graphics and more color
- makes more creative use of sound
- may not be as direct about what it's teaching and may stress the game aspect of the program
- not only lacks ancillary materials but may also provide only scant documentation.

To be sure, you can get software that is appropriate for both environments, such as programs from The Learning Company, publisher of such titles as Reader Rabbit and Gertrude's Secrets. This crossover concept is becoming more of a trend. Patricia Walkington, director of educational sales at The Learning Company, says she sees no reason why software used in schools shouldn't be as colorful, well-designed, and fun as software for home use. The companies that do produce both home and school versions of their products often keep the software the same and just include additional print materials in the school versions.

What's Happening in School?

Most computer educators are striving to work computer software into the curriculum. The key word is *curriculum*, the specific course of study at any given point in one's educational career, be it the alphabet in kindergarten or trigonometry in the junior year of high school. This trend toward emphasizing the curriculum veers from the early days of computers in classrooms, when the emphasis was on explaining the innards of the computer and teaching programming. (Of course, students still learn to program—primarily in BASIC and Logo.)

Today, teachers use curriculum-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Ocean depths
Towns of over 1000000 inhabitants
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20 KO=2^(1/3)
30 FOR I=1 TO 99
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Function
Search Path
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Deck List
File Menu
Function Menu
Function Menu Commands
Search Path Menu
Print Menu
Deck List Menu
Scroll Bars
Illustrations

based software to meet two major curricular goals: to present specific subject-matter information and to facilitate the development of higher-level thinking skills and problem-solving abilities. Two popular instructional formats for curriculum-based software are drill and practice, and simulation.

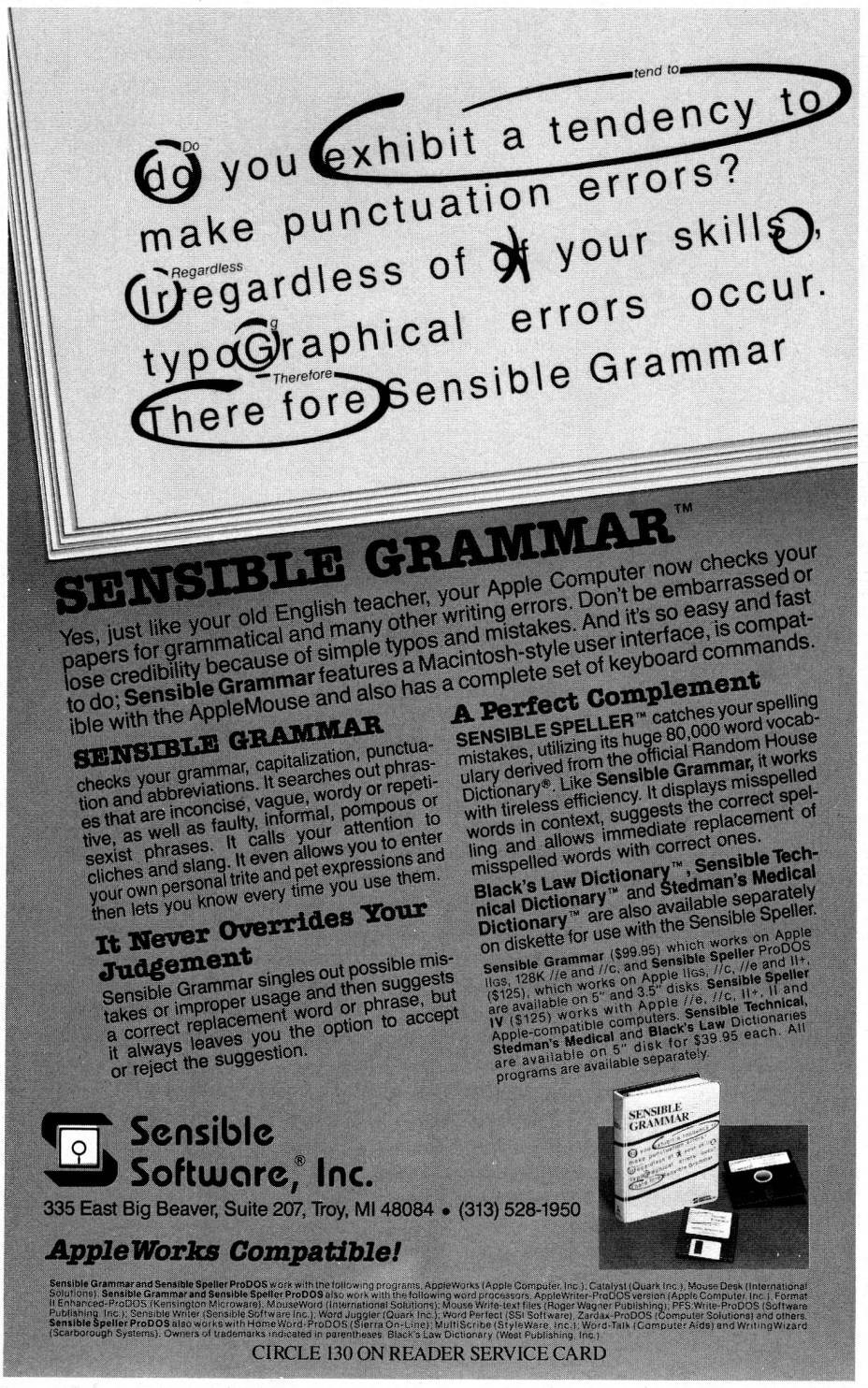
When a child must practice multiplication tables, learn historical dates, or memorize spelling words, constant practice often works. With a "drill-and-practice" program, the computer is more patient than any teacher could be. It repeats, moves on to the next step, corrects when the child errs. Examples of good drill-and-practice software are Word Attack and Fay, That Math Woman.

The drill-and-practice approach does not directly lead to the development of analytical skills. Programs that involve users in a computer-simulated problem situation are more appropriate for teaching higher-level thinking skills and problem solving. In general, they require critical and logical thinking for successful completion and are stimulating and entertaining. Here are a few examples of programs that foster problem-solving skills.

- MECC's Oregon Trail is a simulation that encourages problem solving. You assume the position of a person in 1848 blazing a trail across the U.S. and have to figure out what to bring and how to handle intense difficulties and navigate the trail. No memorization here!
- The Learning Company made a name for itself with programs that taught thinking skills, such as Moptown Parade, Gertrude's Secrets, and Rocky's Boots. Geared for younger children, TLC's programs use impressive graphics and happy music and, best, pose inviting problems to solve. In Moptown Parade, for instance, children must distinguish between characters called Bibbits and Gribbits. Not only do the students state what is different about the colorful robotic-looking creatures, but they must also figure out the pattern in which the characters appear and insert the next creature according to that pattern.
- Sunburst has a program called The Pond in which a frog pounces from lily pad to lily pad in a certain pattern. Then children get to make the frog jump, duplicating the pattern. The pattern changes, and the children must determine what to do. The animation draws children in, compelling them to go on. It's fun and requires logical thinking and problem solving.

Word Processing

In addition to drill-and-practice and simulation software, word-processing programs are fast becoming a valuable teaching tool. Many educators realize how word processing boosts the writing process, and those of us who write know we must think critically to write well. Because word-processing programs facilitate the mechanics of writing, teachers can help children focus on thinking about what's going on. "Critical thinking is so important," said educator Jenny Better at the Com-



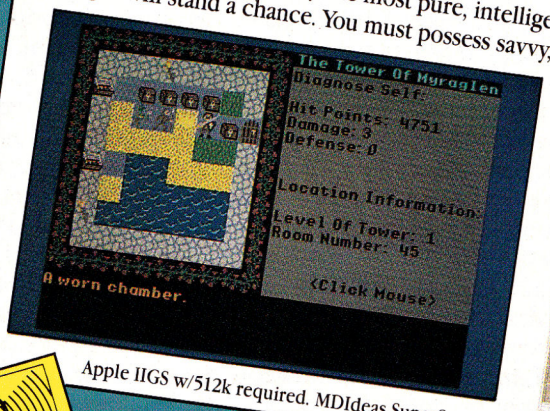
Tower of Myraglen™

New

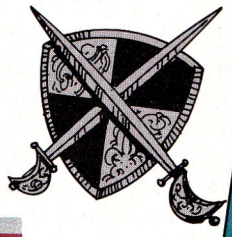
The Tower of Myraglen is an arcade adventure fantasy game exclusively for the IIGS. It combines great GS graphics and digitized stereo sound (use MDIdeas SuperSonic card for true stereo). Imagine being in the age of darkness, you are the last remaining Knight of Justice and the King of Myraglen has summoned you to help save the Kingdom. You must solve the mysteries of the Tower of Myraglen and retrieve the all powerful Medallion of Soul Stealing.

Sounds easy eh?? Only the most pure, intelligent Knight will stand a chance. You must possess savvy, smarts, fast reflexes, and just plain luck to figure out the clues and find the secret passages, doors and portals which lead you to each successive level. Say the wrong thing to Mendalick, the Arch Mage, and you're dust. Scores of monsters and warriors oppose your quest. Treasures, weapons, spells, armor, and potions aid in your journey.

This is the ULTIMATE adventure game. Are you up to the task?







Apple IIGS w/512k required. MDIdeas SuperSonic stereo card recommended.

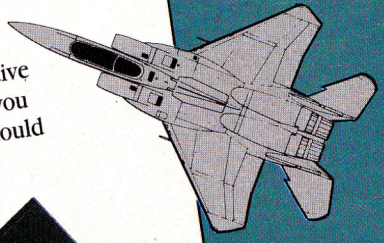
$54.95

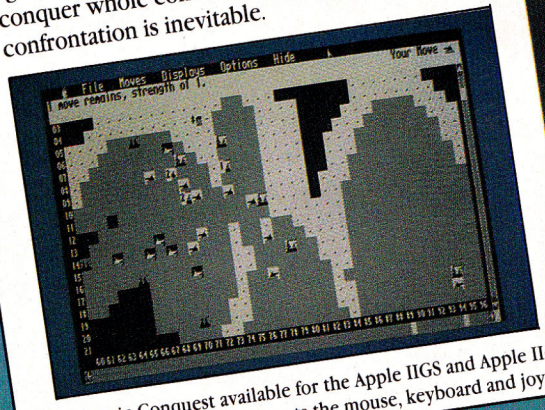
STEREO
Supports MDIdeas SuperSonic Card

Strategic Conquest™ II

"General, the Computer surrenders, the world is yours." These are the words you want to hear when playing the most challenging strategy wargame in Apple's history. With over TWO BILLION different world maps and 15 levels of play, games are never repeated – always new, always addictive. Each game begins in an unknown world pitting you against the computer, each must explore and conquer whole continents knowing that confrontation is inevitable.

By using tactics and strategy, you capture and take over new cities, from which you can produce and deploy more forces. Weapons of war include armies, fighters, bombers, battleships, destroyers, aircraft carriers, submarines, and transports. All administrative details are handled automatically leaving you free to do what a supreme commander should do – plotting, planning, and directing.







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Strategic Conquest available for the Apple IIGS and Apple IIe and IIc. Please specify 3.5" or 5¼" when ordering. SC II supports the mouse, keyboard and joystick.

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Coming Soon: *Cavern Cobra™ and Sea Strike™, two action arcade games for the IIGS. Complete with superb graphics and digitized stereo sound.*

puters and Reading/Learning Difficulties Conference that was held in San Francisco last winter. "You can look at different things in different ways and come up with new solutions."

What Doesn't Happen at School?

There's another factor to consider when choosing home educational software: Do you want to fill in the gaps? Even today, ten years into the personal-computer revolution, children in most schools just don't get to spend much time at a computer. But this lack in school gives you, the parent, an open opportunity.

Throughout the United States, the ratio of students to computers is higher than what educators want. Alaska has the lowest student-to-computer ratio of 17 to 1. California and New York have high ratios; both are 60 to 1. In educational circles, these figures create controversy. With a child's time on the computer perhaps 20 minutes per week, what good can computers do?

Obviously, with a computer in the home, you can provide an extended one-on-one computer experience, supplementing what is going on in school. Ask yourself a few questions, though, about whether you want to *supplement* or *complement* your child's experience with computers in the classroom. Your answers will help you decide on the best type of educational software to buy.

Something Completely Different?

Imagine a parent who's just purchased an Apple computer. Her three sons, ages 9 to 12, bugged her to buy a computer, but she waited a while before making a decision. Not another expensive toy, she thought. She waited some more. Which hardware company will make it through the shakeout? Finally, seeing the boys' activity with Apple computers at school, she decided it was the computer to buy, but she didn't quite know whether to supplement or complement the school's computer activities or whether to try something completely different.

If this description sounds like your situation, find out, first of all, just how your children are using computers at school: What software are they using? How much time do they spend on the computer? From there, you have nearly unlimited choices regarding their at-home computer activity.

Here are some questions and answers to consider:

Are there reasons why I would want to buy the same software that my child uses at school?

It's not necessary, but you may have particular reasons for wanting to do so. For instance, you may want to give your prereading children an opportunity to practice letters and numbers. If your children need practice in a certain subject, the best thing may be to try the software they're using at school. You and your children may have some specific academic goals in mind. Suppose your daughter is captivated with math. She is bored in class and clearly needs extra stimulation. Speak with the math and computer teachers and ask them to show you some software catalogs from classroom-oriented software publishers.

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Apple® IIc/IIgs Cable installed – $12 extra.
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Also, you may want to try a product because it sounds like fun. Brøderbund's Science Toolkit, for instance, actually lets you set up a science lab. In many homes for many years, science kits have been a great parent/child activity. In addition, "Something geared for school may work at home for totally different reasons than why it works at school," says Sara Armstrong, who teaches Software in the Curriculum at the University of California at Berkeley. Mindscape's Understanding the Constitution (a completely text-based question-and-answer program) fits perfectly into a civics lesson, but could also, under the right home circumstances, be an after-dinner parlor game.

Does "home" educational software teach anything?

Certainly, although—as with anything else—you'll run into hype. Test and try out. "Home" software will emphasize entertainment, but the good programs will teach too, whether it's specific facts or higher-level thinking skills. You'll want programs that are easy to use and visually exciting and that offer rewards for a job well done. Look for software from the following companies: The Learning Company, Mindscape, Scholastic, Weekly Reader, and Brøderbund. Their products spill over with color, move and jump, and are geared to a home audience.

Are you worried about "too many games"?

Not to worry. Many games on the market now—some text-based, others text- and graphic-based—are richly complex and challenge, tease, and promote thinking. The Temple of Apshai trilogy, for instance, invites you into a fantasy of monsters, magic, and mazes. You must create characters, plan strategies, think shrewdly, and go forth boldly.

Educational software that uses a game as its hook can be very motivating—at home and at school.

Does your child need remedial help or have learning disabilities?

If so, work even more closely with your child's instructor, read educational-computing magazines (generally a main branch or university library will carry them if you can't find them on newsstands), and maybe even attend an educational-computing conference. Discover advances in technology that can work to your advantage. For example, software that uses speech synthesizers to let computers talk can yield positive results with learning-disabled kids.

What do *you* enjoy about your computer?

Do you use your computer for your writing? If so, let your child do that too.

Not only can you work on writing skills, but you can also get those thank-you letters written. Are you a fact freak? Keep a database of whatever information you want and encourage your child to do the same, whether it's about U.S. presidents or baseball players. If you write a newsletter for an organization, encourage your child to do the same for a school club or neighborhood group. Garden-variety productivity software can provide educational value.

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If you've ever been trapped in a telecommunications maze, then you'll appreciate a little help from a quiet expert.

Introducing ASCII Express MouseTalk! A flexible and powerful mouse-based telecommunications program that is easy to learn and simple to use. With the click of a button discover the simplicity of MouseTalk's Macintosh-like user interface with pull down windows. Making every movement through the program effortless.

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When telecommunications becomes a maze it's nice to know you can hire an expert to show you around.

Other features include:

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For a demonstration disk or more information on MouseTalk, the latest telecommunications program from the award-winning ASCII Express family, call 800-332-7244 or visit your local computer dealer.



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Dealers' inquiries welcome.

How will you know what your child will like, and can you afford it?

You've been choosing your children's books for years and have learned which ones work. The same can hold true for software. The B. Dalton bookstore chain now has a software division with a varied collection of products. Best of all, the stores let you try out whatever you want. Something noisy and flashy may or may not work for your child. Davidson's drill-and-practice academic software can work well at home in the right situation. You be the judge. As far as price is concerned, most educational programs cost less than $40 at discount stores.

How involved do you want to get?

This is no small question. With three- to five-year-olds, you'll need to be involved with nearly anything they do on the computer, and if you want to do projects with older children, you'll have to be there for a while too. If you buy software designed for the classroom, your involvement will be more necessary than it will be if you select home software that has built-in graphics and sound hooks to keep children involved.

Wrapping Up

As with any other kind of software, think about what your objectives are before you begin your research. Try, at a parents' night, to see some examples of the classroom software in action. Find out if your child likes it, and then go from there. The more informed you are, the more creatively you'll use the computer. ✚

Anita Malnig covered the computer-education market extensively as editor of II Computing. *She now writes children's books and is managing editor of a hobby magazine.*

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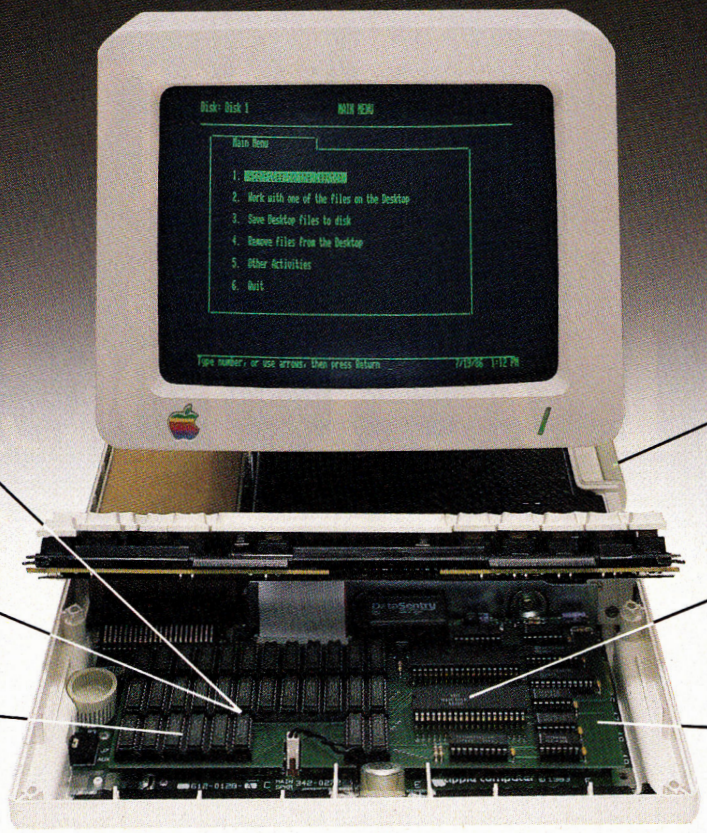
Computer Learning Month

Other Ways To Get Involved

Apple Computer Clubs International, sponsored by Apple Computer, Inc., offers an active extracurricular extension to computers in the classroom. The organization sets a teacher or any interested adult (parents are welcome to set up a club) up with a starter pack of information, runs contests, and publishes a newsletter packed with ideas. Contact Apple Computer Clubs International, 175 Middlesex Turnpike, Bedford, MA 01730.

The Software Publishers Association is sponsoring "Computer Learning Month—October 1987" and will be offering special materials and information to teachers and parents. Through computer and software dealers, the association sponsors events and activities. Check a local software or computer store for further information or write to Computer Learning Month, P.O. Box 19763, Washington, DC 20036-0763, to inquire about the contests and activities taking place in October (see "NewsPlus" in this issue for more details).



Multiply memory — Add up to 1 MEG with Z-RAM Ultra.

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Imagine multiplying your AppleWorks word processor capacity over threefold to 22,600 lines from its present 7,250.

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You can do all of that and more with the Z-RAM Ultra expansion board for Apple IIc's.

Z-RAM Ultra completely loads programs into RAM, then runs them up to 30 times faster. And the included RAM disk is compatible with Applesoft, PRO-DOS, DOS 3.3, PASCAL and CP/M®.

Z-RAM Ultra even expands the clipboard and autosegments large files so they can be saved on two or more disks. Nothing else even comes close to enhancing AppleWorks like this!

There's lots more.

Memory and speed just begin the story. Z-RAM Ultra 3 has a built-in Z-80B microprocessor so it can run CP/M programs. That's the largest body of software in existence and includes WordStar, dBase II, Turbo PASCAL, Microsoft BASIC and more.

With Ultra 2 & 3, there's a PRO-DOS compatible, battery-backed up clock that displays time and date on AppleWorks screens *and* time and date stamps any PRO-DOS file.

There's an AppleWorks printer buffer so you keep working while files are printed.

With its patented technology and computer aided design, Z-RAM Ultra runs with less than half the power drain of other memory cards.

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A complete package.

Z-RAM Ultra comes with simple, easy-to-follow instructions, RAM disk software, Z-80 operating system, CP/M manual, a five-year "hassle-free" warranty, and all the AppleWorks enhancements we're famous for.

See your dealer or call today.

For more information or to order your Z-RAM Ultra, see your dealer or call 214-241-6060 between 9 am and 11 pm, 7 days. Or send check or money order to Applied Engineering.

Prices

Z-RAM Ultra 3 (with memory, clock and CP/M)
265K — $329.00 512K — $379.00
1 MEG — $459.00

Z-RAM Ultra 2 (with memory and clock)
256K — $269.00 512K — $319.00
1 MEG — $399.00

Z-RAM Ultra 1 (Memory only — expandable to 512K)
256K — $199.00 512K — $249.00

Pinpoint with RAM enhancement software $79.00
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16-bit 65C816 Upgrade $79.00

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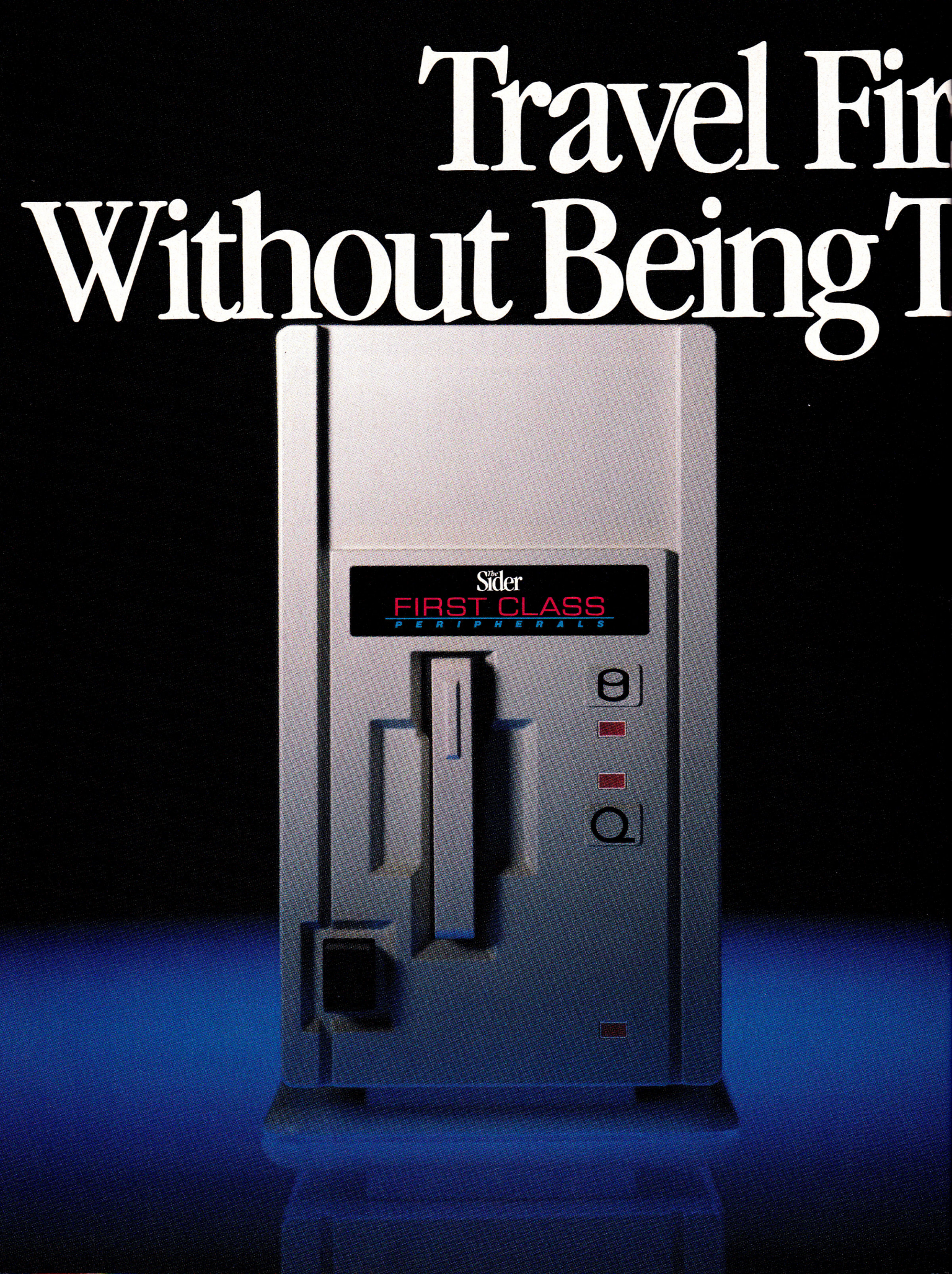

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Introducing Our Latest Sider,™ Model C46. 40 Megs Primary Storage. 40 Megs Integral Tape Backup. $1995.00 Total.



First, The Problem.
No matter whether you are working with the Apple II computer series or the powerful new Macintoshes, and no matter whether your applications are educational or corporate, the ability to get down to business these days often has as much to do with the peripherals you attach as it does to the computer itself.

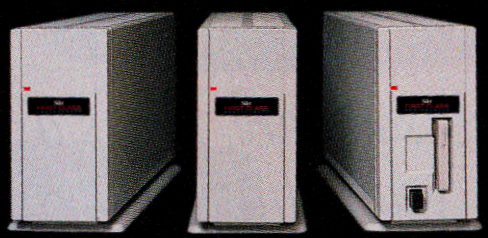
This is particularly true with mass storage, where serious users are often looking for nothing less than 40 megabytes of primary storage, at least an equal amount of backup storage — and ideally, both in the same subsystem package.

A few packages do exist with those specifications. But the price tags are absolutely stratospheric — which for many schools and companies anxious to get down to business can be downright catastrophic.

First Class, The Solution.
The Sider C46 changes all of that. Sure, you get capacity, speed, performance, reliability, backup and restore. You get a slim, smart-looking, easy-to-install unit that is compatible with the Apple II+, IIe and IIgs — and the Macintosh Plus, SE and II as well. With our 40 meg tape, you get data you can back up and lock up for security. And thanks to total Sider cartridge interchangeability, you get data you can pack up and take anywhere.

But what you get that really astounds is a price tag the others can only envy. It reads $1995.

It also reads First Class Peripherals, for those of you wondering how that price could possibly be attached to this product. For years, the names "Sider" and "First Class" have been synonymous with truly affordable, zero defect mass storage among Apple II users.



The expansion of that standard to encompass the Macintosh world has been accompanied by a parallel expansion of The Sider Series itself. Besides the Sider C46, the family now includes both a 20- and 40-megabyte hard disk Sider subsystem and a Sider 60-megabyte tape backup subsystem.

Call us toll free for the name of the First Class Peripherals dealer nearest you. And find out for yourself how easy it is to get down the price of getting down to business.

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Computer Learning Month

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Now that you've schooled yourself in the basics of selecting home educational software, here's a sampling of titles that are suitable for use at home and school.

In addition to being of sound educational value, these programs will challenge and entertain your children.

READING AND LANGUAGE ARTS

Richard Scarry's Best Electronic Word Book Ever
Scarry's storybook characters present basic reading skills.
Grade Level: 1–6
List Price: $29.95
Mindscape, Inc.
3444 Dundee Road
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(312) 480-7667
CIRCLE 460 ON READER SERVICE CARD

Grammar Gremlins
Children learn basic rules of grammar as they take a trip through a haunted house.
Grade Level: 3–6
List Price: $49.95
Davidson & Associates
3135 Kashiwa Street
Torrance, CA 90505
(213) 543-4070
CIRCLE 461 ON READER SERVICE CARD

Word Attack
Arcade-game instructional format introduces new words and their meanings. Program has 675 words, 9 levels of difficulty, and an SAT preparation section.
Grade Level: 4–12
List Price: $49.95
Davidson & Associates
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CIRCLE 462 ON READER SERVICE CARD

Writer Rabbit
Children learn basic sentence and paragraph structure while playing a six-game sequence. Program allows children to write and print silly stories of their own.
Grade Level: 2–4
List Price: $49.95
The Learning Company
545 Middlefield Road, Suite 170
Menlo Park, CA 94026
(415) 328-5410
CIRCLE 463 ON READER SERVICE CARD

Grammar Examiner
Children learn the ins and outs of English grammar and the news industry. To climb your way to the top, you must learn to edit, watch your grammar, and meet deadlines.
Grade Level: 7 and up
List Price: $44.95
DesignWare
185 Berry Street
San Francisco, CA 94107
(415) 546-1866
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Wordmaze
Players look for secret words hidden in a maze of scrambled letters.
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List Price: $49.95
Mindscape, Inc.
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Northbrook, IL 60062
(312) 480-7667
CIRCLE 465 ON READER SERVICE CARD

Snoopy Writer
This program for beginning writers allows expression of ideas with the help of Snoopy and his friends. Children can write, edit, and print.
Grade Level: 1–6
List Price: $39.95
Random House Media
210 East 50th Street
New York, NY 10022
(212) 572-2553
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Microzine
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730 Broadway
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(212) 505-3020
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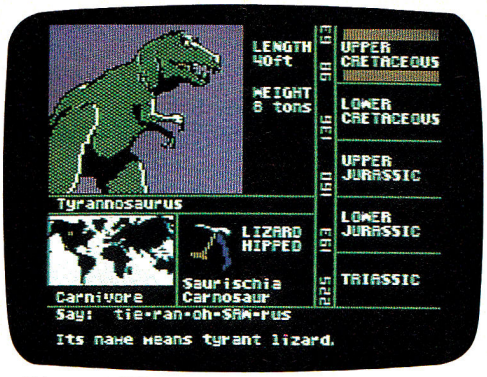
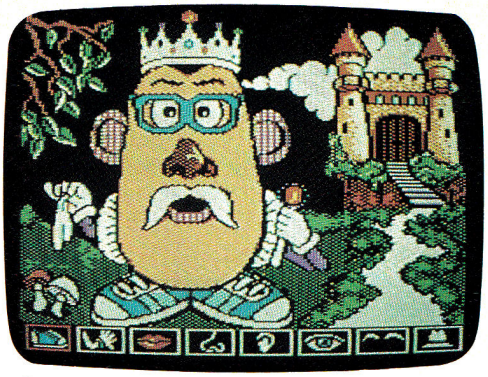
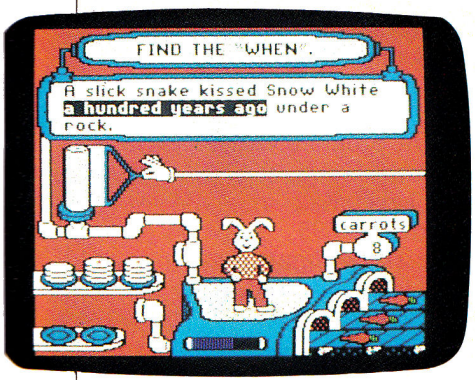


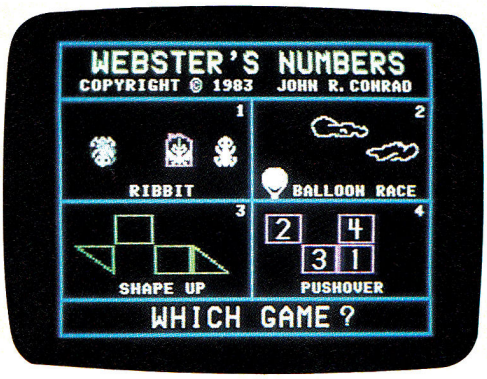
Dinosaur Dig



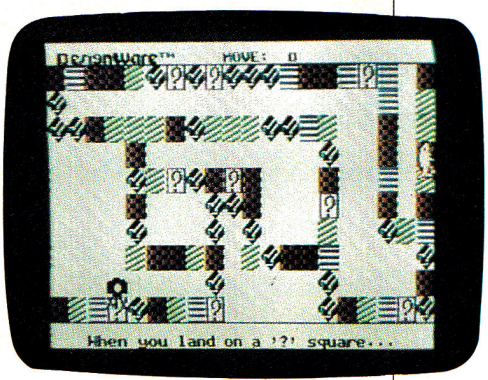
Mr. & Mrs. Potato Head



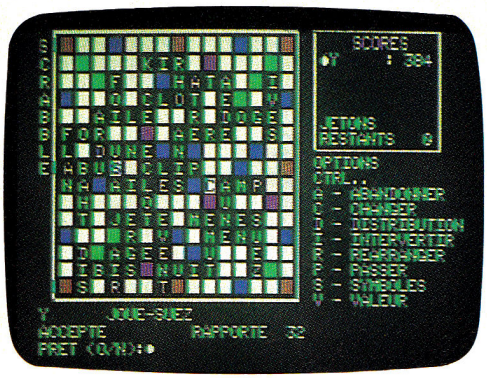
Writer Rabbit



Webster's Numbers



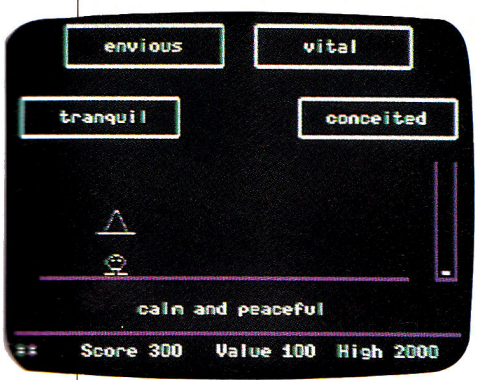
Grammar Examiner



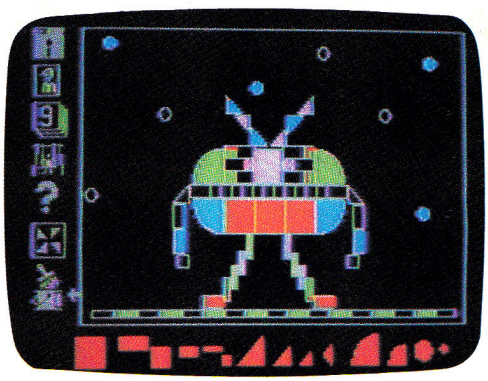
French Micro Scrabble



Crosscountry USA



Word Attack



Stickers



The Secret of Science Island

Computer Learning Month

MATH

Snake-o-nyms & Word Flip
A word game that uses synonyms and antonyms and increases in speed as scores get higher.
Grade Level: 2 and up
List Price: $34.95
Milliken Publishing
1100 Research Blvd.
P.O. Box 21579
St. Louis, MO 63132
(314) 991-4220
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Alien Addition
Children can practice basic addition while they roam through space.
Grade Level: 1–5
List Price: $46
DLM Teaching Resources
One DLM Park
Allen, TX 75002
(800) 527-5030
CIRCLE 469 ON READER SERVICE CARD

Quations
Players build math skills as they create equations on a Scrabble-like screen. Up to three can play.
Grade Level: 4 and up
List Price: $49.95
Scholastic Software
730 Broadway
New York, NY 10003
(212) 505-3020
CIRCLE 470 ON READER SERVICE CARD

Math Rabbit
Children develop counting, addition, subtraction, and multiplication concepts and number-recognition skills as they play circus games. Math Rabbit in a clown costume, number trains pulled by elephants, and music make the program visually exciting and fun.
Grade Level: K–2
List Price: $39.95
The Learning Company
545 Middlefield Road, Suite 170
Menlo Park, CA 94026
(415) 328-5410
CIRCLE 471 ON READER SERVICE CARD

Islands of Beta
You are drifting over a chain of islands in a hot-air balloon and must decide where to land. To avoid being stranded, you must solve math and logic problems.
Grade Level: 6 and up
List Price: $34.95
Milliken Publishing
1100 Research Blvd.
P.O. Box 21579
St. Louis, MO 63132
(314) 991-4220
CIRCLE 472 ON READER SERVICE CARD

Webster's Numbers
This program teaches the basics of counting to the very young. Concepts are presented in a magical place where children race balloons, play with mosquitoes in mazes, and build with shapes.
Grade Level: Preschool–2
List Price: $39.95
EduWare Services
185 Berry Street
San Francisco, CA 94107
(415) 546-1866
CIRCLE 473 ON READER SERVICE CARD

YOUR LOWEST PRICE SOURCE FOR APPLE COMPATIBLE COMPUTERS



LASER 128 PERSONAL COMPUTER APPLE IIE/IIC COMPATIBLE
$395
(Includes 10 free software programs)

The Laser 128 is the most affordable Apple-Compatible computer on the marketplace. It's a great little machine with more features than an Apple for about half the price. The Laser 128 runs Apple IIe/IIc software, and we give you ten programs – free! It has a built-in disk drive and features parallel, serial, modem and mouse interfaces. It even has an expansion slot to add more capabilities to your computer. The Laser 128 is a very popular machine because it's Apple compatible and it's a great deal at the low price of: **$395**

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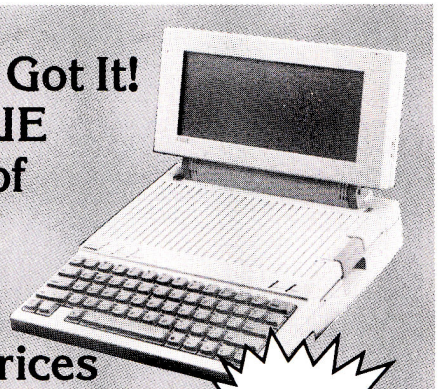

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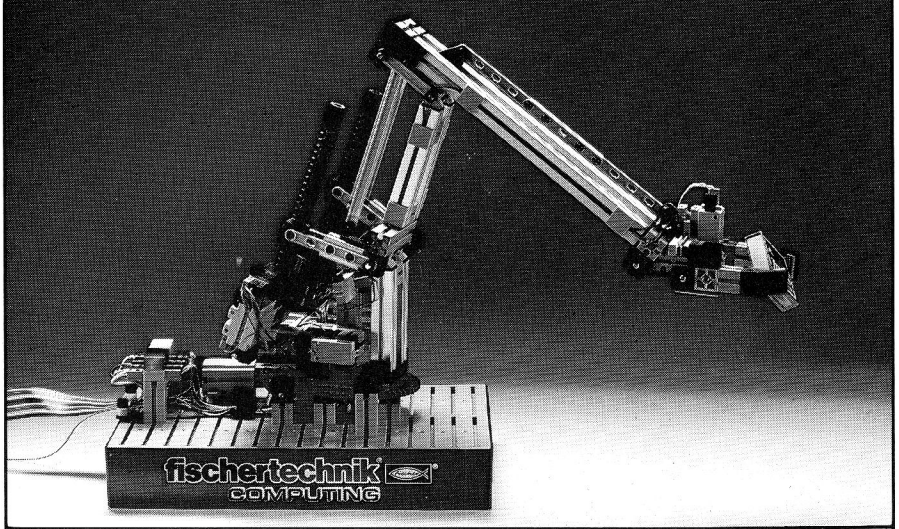

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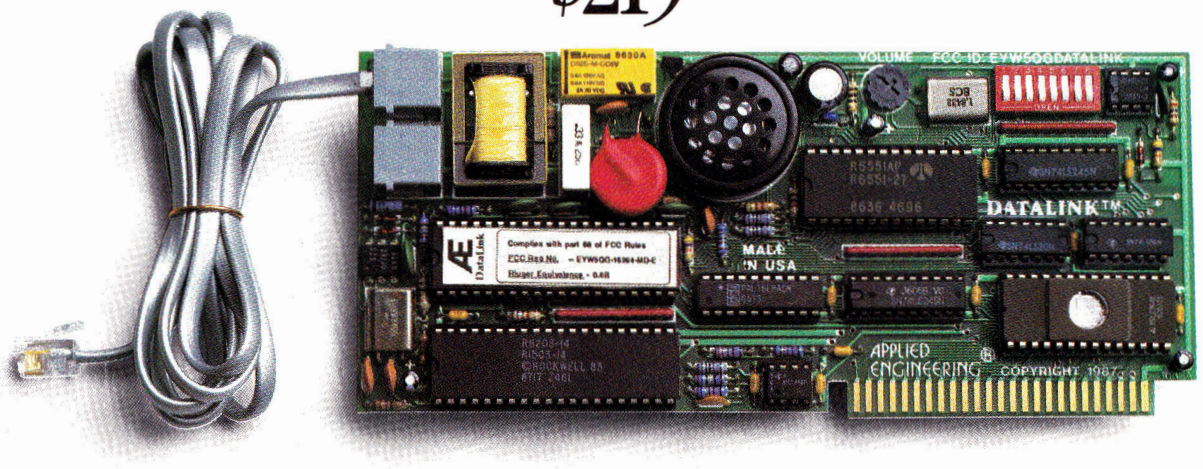

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Computer Learning Month

EDUCATION *BY DAVID D. THORNBURG AND JAN DAVIDSON*

DEBATING DRILL

Two leading educators discuss computers,

A+ columnist David Thornburg has been known to take a few jabs at "drill-and-practice" software, a genre of educational software that helps with the memorization of facts and concepts. Jan Davidson, president of Davidson & Associates, takes issue with Thornburg, having built a company on the development and sales of drill-and-practice programs such as Math Blaster and Word Attack.

*To give A+ readers a glimpse at the many sides of this issue, we taped a discussion between Thornburg (***David***) and Davidson (***Jan***), moderated by A+ Senior Editor Lisa Raleigh, on this topic. Here are the highlights of that encounter. As you'll see, Davidson and Thornburg are both concerned with creativity in the classroom and really disagree only in terms of how computers should be used to foster creativity.*

A+: How would you define drill and practice?

Jan: Drill-and-practice software generally has a particular set of materials toward which the software directs itself. It has specific objectives and specific material that needs to be mastered.

A+: David, what do you consider to be some of the limitations of that approach?

David: If you take a look at the ways computers can be used in the classroom, the way that is the least threatening to the teacher—the way that requires the least amount of thinking on the part of the teacher—is the use of drill-and-practice material. My concern on one level is that it [uses] technology to do things that have already been done with workbooks and other media, but now it's just changing the medium. It isn't changing education in some fundamental way, in the way that, for example, a simulation or other types of computer activities can do things that you cannot do with other tools. For instance, you can't do animation with workbooks.

I don't believe I have ever said—and if I have I certainly want to retract it right now—that it's a bad idea for children to know how to add, subtract, multiply, and divide. I think, given that the computer is a really scarce resource, that teachers should be encouraged to do things that are maybe a little riskier and a lot more exciting and potentially a lot more beneficial to the students in the long haul.

Jan: My approach has been as a teacher—wanting to do the creative things with the students. I think when I was a classroom teacher I was very creative, so what I wanted to have was a tool for the more noncreative work that had to be done for my students, and that's how I got involved with drill-and-practice software. I was a teacher—I wasn't good at that part. The computer could do something I wasn't good at. And that's why I saw drill and practice as a logical thing for computers to do in the classroom. I think about how businessmen use computers—they use computers as tools, not to design business, create business ideas, or to think up new businesses. They use them as tools for word processing, and for keeping track of information. I think computers are good for doing things we as people don't do that well and then let us as people do the creative things.

David: I've spent a lot of time in the business world—not only on my own but also as a consultant to business—and as I take a look at the way computers are being used in business, sitting on executives' desks, the only applications I see are the creative applications. The one program that legitimized the



personal computer in business was VisiCalc. VisiCalc's utility was not that it functioned as a spreadsheet program—spreadsheets have been around for ages—but its utility came because it allowed people to say "What if?", to be creative, to say "Gee, what if we could get 10% better return on our product?" So I respectfully disagree with you, and I would argue that the major use of computers in business today by businesspeople—by executives, not by the clerical staff—is as tools to enhance their creativity.

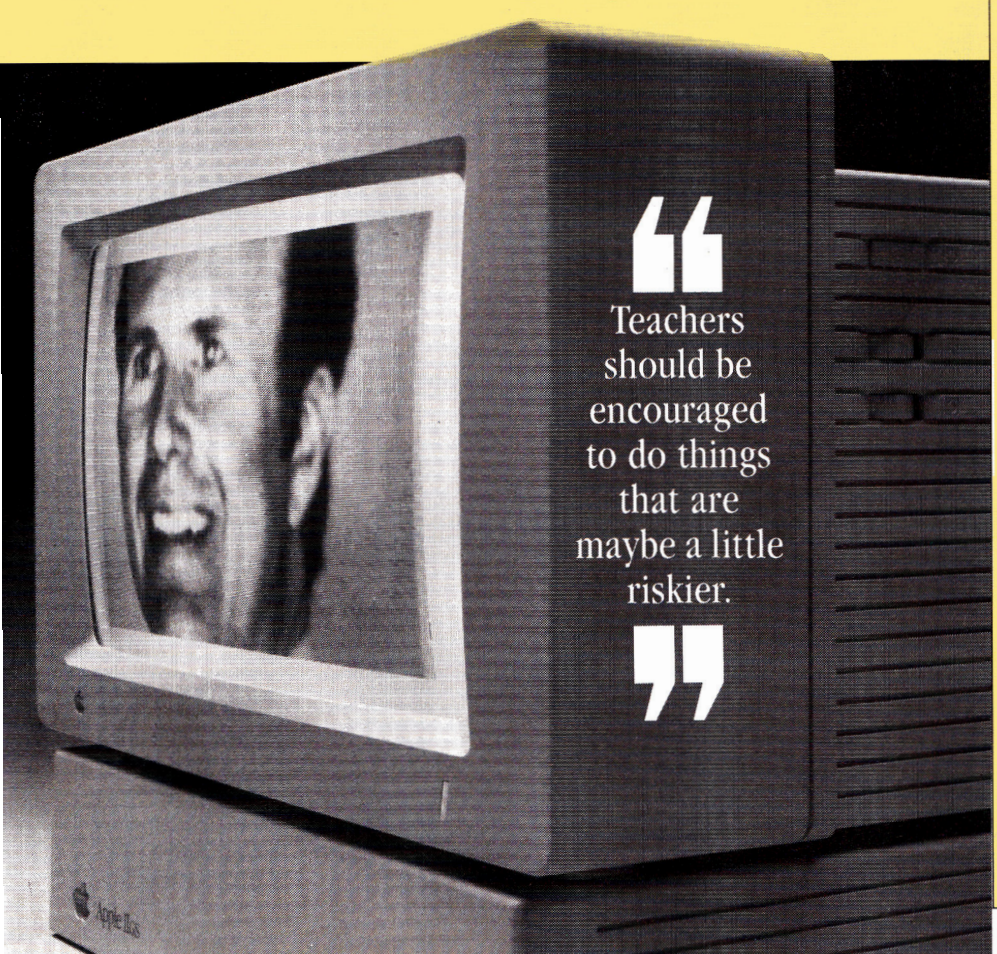
Jan: But what makes a spreadsheet creative is that it does the calculations for you. It is a tool that gives you more time to think up the what-if projections because it calculates them for you faster.

David: Another aspect to a lot of the drill-and-practice software concerns me and I just want to bring it up as an issue.

If a child comes to you with a worksheet, and a whole bunch of problems are wrong, as you take a look at that yourself, you may notice a trend. You may say, "Oh, gee, you know these problems are all wrong in the same way." Very few of the programs that are out are sensitive to that issue. For example, did the child add two numbers instead of multiply them? There have been a lot of advances in that area recently, and I applaud those. But the things that are so obvious to a human teacher are very hard in an analysis aspect for a computer program to do.

AND PRACTICE

classrooms, and creativity.



> "Teachers should be encouraged to do things that are maybe a little riskier."

Also, I have seen students who can consistently give the right answer to the question whether they believe it or not—these children do not understand underlying mathematical ideas, but they can answer the questions properly because they've had this wonderful operant conditioning. To me, the best way to use the computer and to help children develop an understanding of the underlying concepts is to provide them with an opportunity for failure in the most wonderful sense of that word, where it's a creative environment—they can tinker, they can explore different things. The computations they do should have a context and a reason for wanting to do them that is associated with a larger problem, not with an abstraction of achieving a certain score or for something of that sort. It's just a matter of preference, and I prefer using computers that way.

Jan: I think good drill and practice can incorporate some of the things you just mentioned. I don't think that drill-and-practice software should allow students to just put down answers that they don't understand. The focus we have is often on very basic things that children need to know in order to do some of the more creative things, and that seems to be an appropriate arena for drill-and-practice software. It's not in higher-level problem solving—in math, for example. That's not where you find drill-and-practice software.

Our most successful product has been Math Blaster, which is basic math facts that children need to know. They need to know that $2 + 2$ equals 4, 3×3 equals 9, and so on. It lets them fail and be told so and experiment and go on until they get the right answer. This process, of course, can be accomplished by other means, just as many other creative things we're doing with computers can be accomplished in other ways. But the computer can make it more fun for them, make their day brighter, make learning a more positive experience for them. I just find it helps kids develop a very positive self-image, which is very impor-

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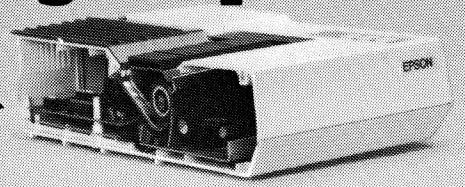

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tant in the whole creative process.

So I'm saying that computers can be used for all sorts of things in the classroom. They can be used as tools, for word processing and databases and simulations—all sorts of creative things that David has thought of. But drill still has to be done in the classroom, and that's also an appropriate way for a computer to be used because it makes what may be boring, tedious, and difficult more fun, more exciting, and allows children to see their success.

I don't disagree with too many of the things you say, except that in one article you made reference to drill and practice as "drill and kill," assigning an emotional name to something that has gotten some very valid results. I've seen that in my work as a teacher, and that's why I developed the software—because I needed a tool.

David: My concern is when I see drill and practice being used as a vehicle for teachers to avoid the freedom and the excitement, the anarchy if you will, that can come when children are allowed to be creative. A characteristic of the kinds of software that you produce is that it fits into a teacher-centered model of education that has very clearly delimited goals and objectives. It allows personalization to the extent that students go at their own pace through the material.

To that extent, this type of software can be applauded, but, you see, my issue isn't even the specific pieces of software. In fact, my own wife, Pam, uses your materials all the time with her students, and so that's fine. Of all the programs I've seen, yours are the ones I like the best. But what I'm trying to do is step back a little bit and say, "What is it that we're really doing in our classrooms today? What is it that we should be doing?"

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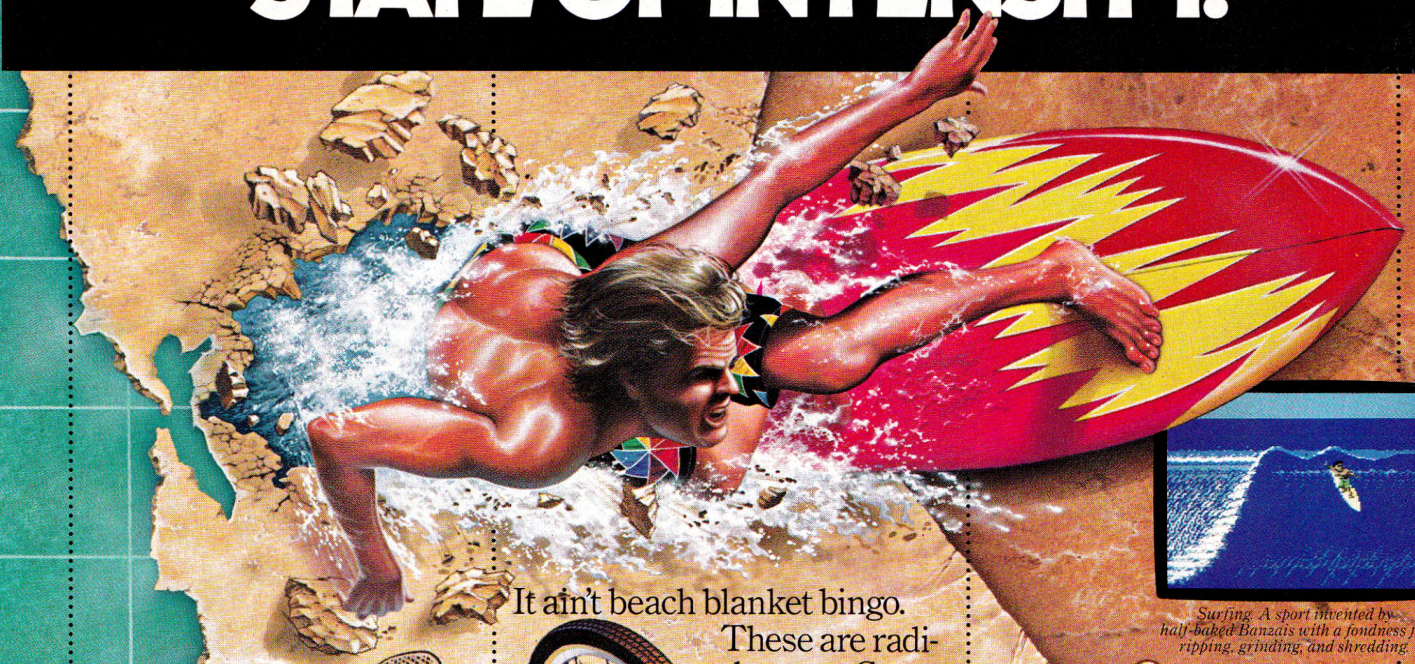

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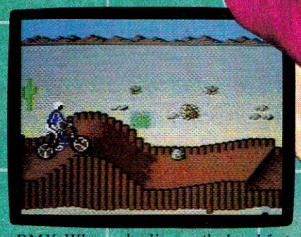

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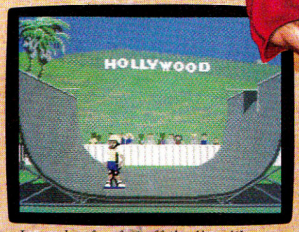

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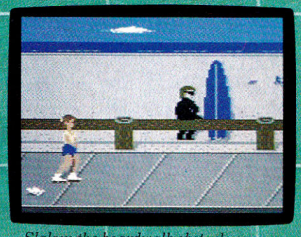

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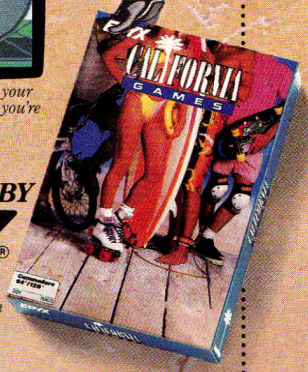

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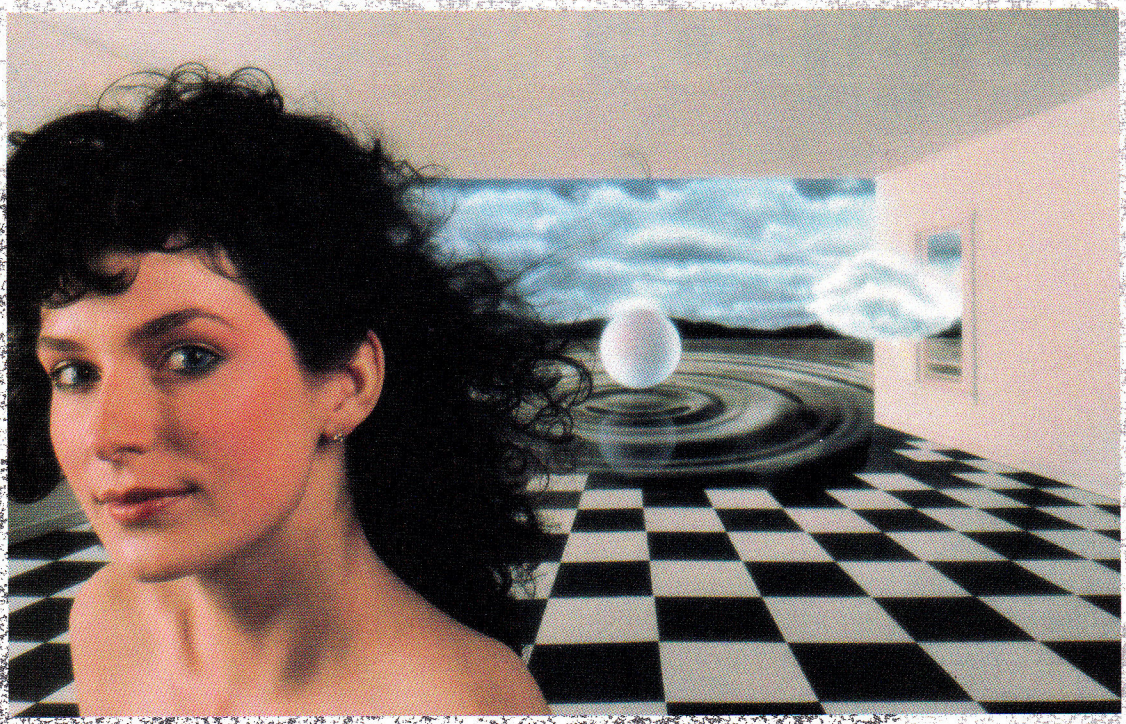

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with the result. It's easy to do. About two years ago, I stepped back from it and said, "Wait a minute. The reason that Logo has failed is not because of any inherent defects with it as a programming environment or as a vehicle for exploration with children. It's because the environment in which the children are exposed to Logo is not one that has been supportive of creativity, of discovery, of the freedom to fail, of understanding a failure as a vehicle for making a discovery." It isn't even because teachers don't want to do that, it's because that model of education isn't something that they've been able to practice in the classroom.

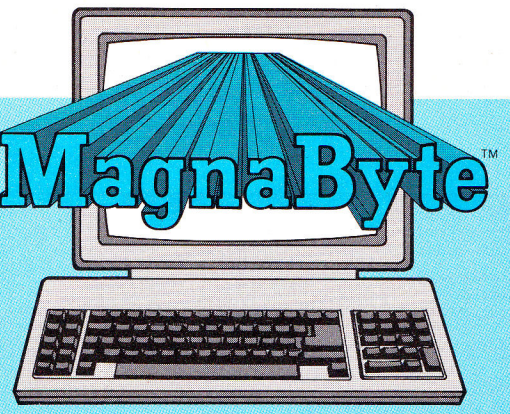
There's a quote from Plutarch that says, "The mind is a fire to be kindled, not a vessel to be filled." Now that is an attitude, a concept of education, and if a teacher has that as an underlying model of what's going on in the classroom, then that teacher is going to do different things than a teacher who doesn't have that model.

Jan: But children still need to master basic skills. As that fire is being kindled, it has to be kindled with words and the basic understanding of math. There are basic things that have to be mastered.

David: It all has to happen, and I agree with that. But you see, in a way you've done too good a job, because what's happened is that you've provided a very easy out for a lot of teachers who have decided that they're using computers very effectively in the classroom, and they don't need to be interested in any of these other approaches because their computers are being used very effectively, their kids are doing very well on standardized tests, etc., etc. You're taking a very, very practical—and also commercially safe—approach, which is great because you're in the business, as I am, of making money, and I applaud you for that because you've been very successful.

Jan: But I believe in what I'm doing. I don't just do it for money. I believe that I am positively affecting all sorts of children.

David: You are, but you're positively affecting the left hemi-



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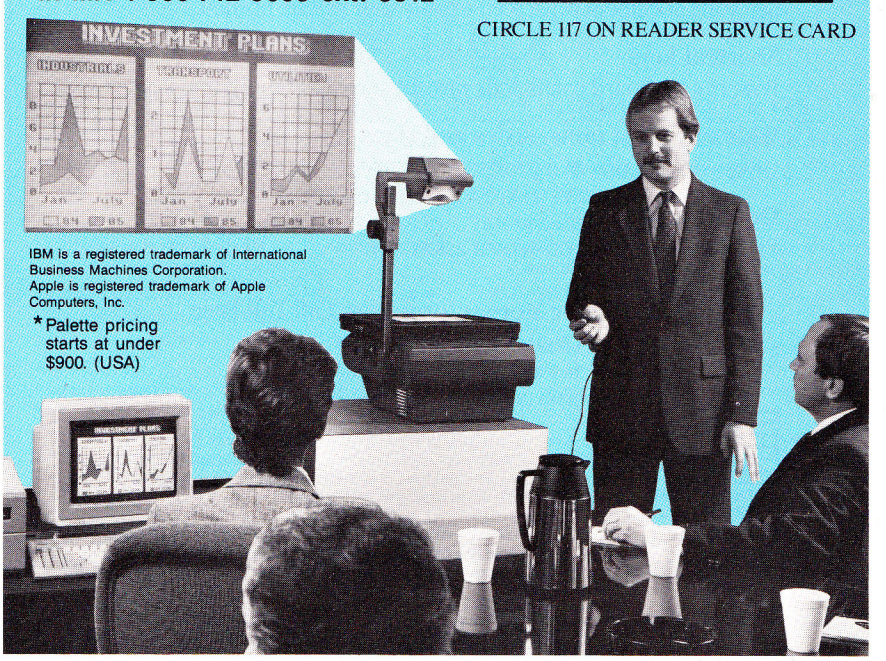

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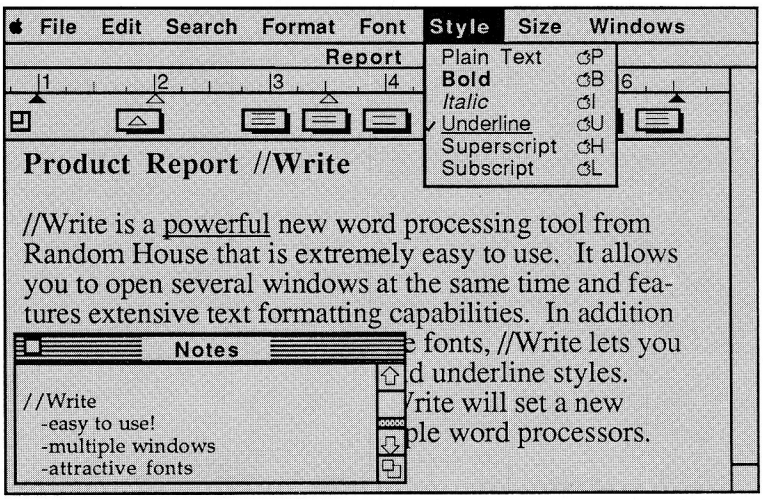

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sphere, if we go back to that thing—it's a shame we don't believe in hemispheres any more—but I'm trying to affect their right hemisphere.

Jan: I agree with you, that we need to stimulate creativity, but that doesn't mean we should abandon drill-and-practice software.

David: I'm just saying that you and I are fighting for scarce resources.

A+: It really seems to come down to resources. On your side, David, you're talking about the computer being a scarce resource, but Jan talks about its freeing up her time as a teacher and how the teacher is a creative resource.

Jan: The teacher is the scarce resource. I think that people are more important than machines.

David: Oh, I agree.

Jan: People can be more creative than machines.

David: Well, machines can't be creative at all.

Jan: That's right, so my statement's still accurate. So the computer's freeing up the teacher's time. I found, back when I was first introducing my products to teachers, that they didn't know what to do with this computer, and if I showed them Math Blaster and Word Attack, they could understand that.

David: You bet. That's right.

Jan: And those teachers are still using our software, but they're doing a lot of the things with that machine now that you want them to do, so maybe I've done a service to creative software in the sense that I've done a lot to break the ice. The software we have is so simple for teachers to use, to understand the result that it's getting, that it makes them feel more confident, more comfortable with the computer as a valuable tool. And then we can get things in the classroom such as The Print Shop or Dazzle Draw or Fantavision, or whatever.

A+: David, you've said that teachers might get stuck on drill and practice.

David: I've seen a lot of teachers who are stuck at that point .

Jan: But I've seen a lot who aren't. There are uncreative teachers and very creative teachers in general,

and the very creative teachers are going to use computers in a variety of ways.

A+: David mentioned what some of the limitations were in terms of how drill-and-practice software can or cannot flag certain patterns. Is this a direction in which this type of product is going? Are there other directions drill and practice might take?

Jan: What we've tried to do very early—and we've improved—is record keeping. In the very first product, there was a way of identifying and redoing missed words, which is a way of identifying weak areas. Now that the programs have become more sophisticated, we're printing things out. We're creating a new product that will have a test generator so you can print out the things you've missed and put them in test form.

David: What I was thinking about was more along the lines of flagging when somebody has added two numbers in a multiplication problem rather than multiplying.

Jan: Well, see, I don't get into that kind of problem. The software, Math Blaster, is just the basic facts you need to know in double-digit multiplication.

David: But if students get the problem 3×9 and they type in 12, there's a valuable piece of information there. And you, as a human teacher, when you scan the list, will look at that, and you'll say, "These children added instead of multiplied. They're mixing up their operators." So that's something you need to talk to them about. And if the children don't have that kind of feedback, it's going to take a long time for them to figure that out. Programs are starting to come out that look for certain kinds of errors and not only flag them but even tell students, "It looks like you tried to add these numbers, and what's called for here is multiplication." And I find that at that point, you've got a tool that a teacher can feel fairly safe in leaving students alone with, because when they get a wrong answer, the computer is able to provide some coaching to help them get the right answer.

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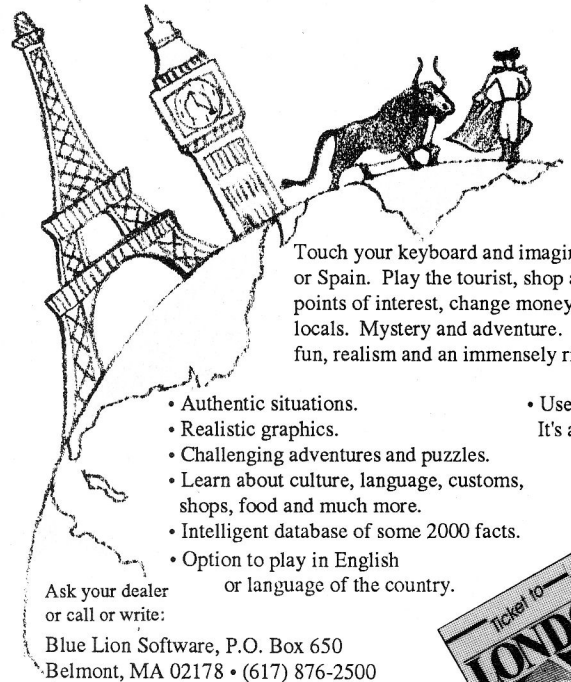

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Jan: But the software is, as you say, being written to improve and identify those things. And it's still drill-and-practice software.

David: Yes, but it's not the kind of drill-and-practice software that's out today.

Jan: We're constantly seeking—and we have to as competitors—a way to present it more effectively, to do it better. I know our company listens very carefully to every input, every comment. Every suggestion is written down and reviewed as the product is updated and as new products come into being.

A+: What sort of suggestions do you get?

Jan: The test maker was one of the suggestions that we've gotten from people. In the early days, the idea of being able to edit the software and add your own material came from teachers and parents. Record keeping has been a suggestion from parents. As I use the software with people, I see things myself.

A+: Is there anything else on your wish list for the future of this kind of software?

David: I think that a lot of my concerns about it have to do not with what's happening in the machines' environment but what's happening in the kids' head. If we are going to entrust the acquisition of basic math skills, for example, to a machine, or the reinforcement of skills that are quite often not covered well in the first place, then the more intelligence we can put into those programs, the better they will be.

Jan: I think that's a really important point that we need to distinguish here. The documentation of each of our software packages stresses that the software is *not* a way of acquiring these math skills; it's a way of reinforcing. We are assuming—and we make it very clear—that teachers need to explain the process of addition or that it has to be imparted in other ways. This Math Blaster program, for example, is only to reinforce, to drill a concept that has already been taught, which we like to have taught by a human, not a machine.

David: The model that's implied here is one that says that there's learning and then there's reinforcement, as though those were somehow separable. That doesn't feel really comfortable to me because I think a lot of learning can come during that reinforcing process. I don't mean learning in the sense of just embedding these things deeper and deeper into your subconscious mind but a learning that comes when you think you understand a concept and you discover during that drill period that you really didn't understand it. And that's the point where a human being has to be alerted somehow. The program has to be smart enough to be able to say, "Oops, something didn't take, so we need to go back and go over this again." This ability is something that's still a good distance off.

My cheap shots, which I'm famous for, are not directed at any company or toward a particular class of software as much as they're directed at an attitude toward the educational use of computers. I just say things in an outrageous way to elicit responses from people.

Jan: I knew that one. +



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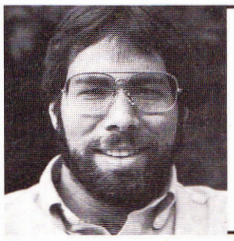

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The Body Transparent 29.
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Perfect Score SAT 45.
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Weekly Reader
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Accelerators/Ramcards/Z-80/80 Column Cards

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Microline 182P *(120cps Dot Matrix 10")* 249.
Microline 192*Plus (200cps Dot Matrix 10")* 339.
Microline 193*Plus (200cps Dot Matrix 15")* 489.
Microline 292P *(240cps Dot Matrix 10")* 539.
Microline 293P *(240cps Dot Matrix 15")* 639.
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KXP-1080AP *(100 cps) ImageWriter Compatible* 199.
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Computer Learning Month

EDUCATION *BY DAVID STANTON*

TESTING THE TEST MAKERS

Thirteen test-generation software programs reviewed

Few of us enjoy taking tests, nor is writing tests anyone's favorite way to spend a leisurely evening at home. Questions must be worded carefully to avoid misunderstandings. Tests must be thorough but fair, challenging but not overwhelming.

Teachers know that nothing but grammatical perfection will survive the scrutiny of students determined to excuse their own deficiencies by gleefully flagging every minor typo.

Tests are no fun for anyone, but test-generating software can make life a little more tolerable for test takers and test writers alike. By combining the editing and printing capabilities of word-processing programs with the data-manipulation capabilities of database systems, test generators speed the writing process and assure high-quality output. In the right hands, this chameleon of application software can significantly improve the way teachers and students feel about quizzes and tests.

How They Work

The heart of every test generator is a text editor much like that of word-processing programs. Most of these programs have easily understandable menus to guide you to a question-writing routine that permits development of questions and answers about any subject. When you're finished, you save the new question set to a disk file for later use.

Similarly, menus assist in the reloading of previously written question sets for additions, corrections, or deletions. Thus, test writers use their time more effectively from year to year, as they improve each question set without the tedium of needless retyping.

Most programs can handle several question formats, including the favorites: true/false, multiple choice, matching, and short answer. A few permit essay items and customized question types. Some allow teachers to write their own directions, add useful diagrams, and/or insert comments and suggestions into the final text.

When you're selecting questions for presentation, test generators function somewhat like database systems. Teachers specify how many of each type of question they want in the test, as well as criteria for choosing those questions. Then they opt to choose the questions manually or to allow the program's randomizing feature to do the selection. For instance, you can set up a test to include, say, ten true/false questions and then either pick them yourself or have the program do so.

Teachers will find both selection modes useful for specific purposes. The manual mode simplifies the creation of daily quizzes and custom-made tests by allowing them to choose appropriate items from any particular unit's question set. Using the random-selection mode assures that each test produced will be unique. This feature can protect the integrity of makeup tests and accommodates instructors who want to give separate versions of the test within one class or in different sections of the same course.

Several additional enhancements further ease the pain of test writing. Some products offer single- or double-spacing, enhanced print for a more finished look, automatic page numbering, and labeling of questions by difficulty level. Naturally, final output includes an answer sheet to make correcting fast and efficient.

So what exactly is a test generator, then?

In its simplest form, it's a software package that aids in the creation of question sets and the production of printed tests, quizzes, and study sheets. Several programs promise to generate printed study materials for specific subjects, but true test generators let you develop your own question sets on any subject. Although many shell programs let you add your own questions for on-screen drill-and-practice exercises, test generators are supposed to produce neatly designed, reproducible hard-copy output.

At the upper end of the spectrum are test generators for on-screen testing, complete with feedback for correct and incorrect responses, automatic scoring, and student record keeping. Unlike

"courseware"-authoring systems, however, these programs are not designed to assist in the creation of on-screen tutorials complete with instructional text and branching for remedial instruction and practice. For the purpose of this article, we'll look at products in the less-than-$100 price range, because you start to get into more sophisticated authoring software—and away from test making per se—when you look at software more expensive than that.

Some test makers, though, can present items on-screen, which adds a valuable new dimension to test-generating software. Teachers with access to large labs can administer on-computer tests, thereby giving each student a different question set and gaining the advantages of automatic scoring as a bonus.

The Human Connection

Test generators can help students overcome the symptoms of test-day blues, too.

What students do not suffer from a nagging feeling that they will study the wrong material? Studying might not be so bad if its rewards were more certain. No one wants to waste time on a seemingly futile endeavor. When studying really pays off, it justifies a bit of sacrifice.

By using test creators to develop a comprehensive set of fact-based questions for each unit of study, teachers can generate worksheets and encourage on-computer practice with the subject matter, if the product allows on-screen quizzes. Where the memorization of facts is paramount, you can let students work with the question file as often as they want, knowing that the unit test will be confined entirely to the items available for study. Since the final test consists of randomly selected items from the comprehensive set, teachers can rest assured that students who do well have learned the material.

Occasionally, teachers offer students repeated opportunities to earn acceptable grades. Where mastery of an established list of facts is the goal (as with vocabulary work, for example), what difference does it make how many tries are necesssary? Failure can become a temporary setback rather than a permanent condition. Think, too, about the inevitable test-day absentees. What a great way to deal with those makeup tests that so often get overlooked because of the headaches they involve!

If you suffer from test-day blues, one of the following software programs may be just the prescription for you.

CLAS

CLAS is an acronym for Computerized Lesson Authoring System. Its true character lies somewhere in the hazy area between test generators with on-screen capabilities and the more sophisticated courseware-authoring systems I mentioned earlier.

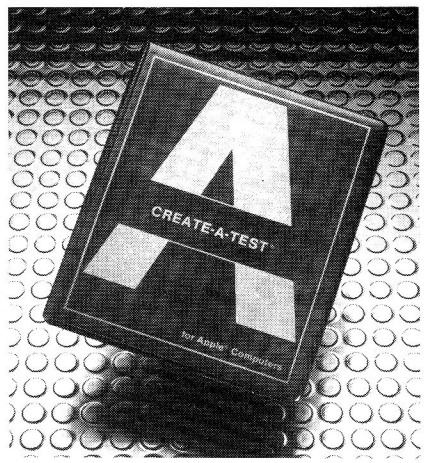
It assists teachers in the creation



of computer-presented tutorial lessons. After students have studied the text material presented, they get related questions to check their understanding. This version does not handle branching, random question selection, or record keeping, but a newer and more expensive version does. CLAS is primarily intended not to produce hard copies but to generate on-screen tests and lessons.

Create-A-Test

Those who hate writing questions will love Create-A-Test from Cross Educational Software, Inc. To supplement this test generator, Cross sells more than 40 question-bank disks. Subjects include biology, physics, physical sciences, social studies, and chemistry. Each $49.95 data disk contains 400–450 carefully worded questions in multiple-choice, true/false, short-answer, and other formats.



A complete, clear manual explains how to write your own tests and produce final printouts. Built-in printer drivers give you superscripts, subscripts, condensed and expanded fonts, and more. After you've printed a test, you can save it to disk for reuse.

The company plans a new version that will add random selection of questions, an 80-column screen display, and other improvements to speed up and simplify the process of test creation.

Easy Quiz Maker and Test Generator

Easy Quiz Maker and Test Generator, both from COMPress, can produce printed tests or on-screen quizzes. Of the two, Easy Quiz Maker is the newer and better. It makes writing and editing questions quite simple with minimal disk swapping when you're using a single disk drive. Test Generator is an older product that's not nearly as easy to use, so I'll focus on Easy Quiz Maker.

The Easy Quiz Maker package includes a Maker disk for writing tests and a Player disk for presenting computer quizzes. The manual is understandable and complete,



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RamWorks III™ If you have a IIe this card is perfect and if you use AppleWorks, it's an absolute must! Applied Engineering was the first company to expand AppleWorks and they're always 6-12 months ahead of the competition. And you can stay current with our FREE SOFTWARE UPGRADES. Why settle for a partial compatible when you can have a real RamWorks at a discount price.

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65C816 16 Bit Card Requires RamWorks II or III and Apple IIe. **$149**

RamWorks RGB Option Even if you bought a RamWorks just to use the RGB option, it would be worth it. Runs both Apple and IBM RGB monitors, and is compatible with Apple's standard for RGB, includes cables. **$99**
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Z-80 Plus™ Runs all CP/M® software. Includes operating system and manual, a great value. **$109**

Timemaster H.O.™ Timemaster H.O. has the most features and is the easiest to use. It comes with more software than any other clock card. It even adds 15 new commands to BASIC! **$79**

Phasor Simply the best sound and speech synthesizer for the II+, IIe, or IIGS. **$139**

SerialPro A powerful multifunction card with serial ports and clock/calendar **$129**

Viewmaster 80™ Super resolution 80 column card. Total software compatibility and everything you need to run AppleWorks on a II+ or Franklin. **$109**

RamFactor™ If you have a II+ or would rather use slots 1-7 in your IIe or IIGS, RamFactor is for you. It is fully compatible with Apple's memory card, runs AppleWorks on a IIe, II+ or IIGS and has a battery back-up option.

RamFactor 256K **$189**
RamFactor 512K **$224**
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GSRAM & GSRAM Plus These cards offer much greater performance and expansion capabilities than Apple's memory card and unlike most others, GSRAM and GSRAM Plus use standard RAM's so further expansion is easy and economical. Only GSRAM and GSRAM Plus can expand AppleWorks 2.0 internal limits and include a built-in printer buffer.

GSRAM 256K **$139**
GSRAM 512K **$179**
GSRAM 1 MEG **$249**
GSRAM 1.5 MEG **$319**
GSRAM Plus 1 MEG **$379**
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	512K	**$209**
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	512K	**$249**
	1 MEG	**$319**
Ultra 3: Memory, Clock & CP/M	256K	**$259**
	512K	**$299**
	1 MEG	**$369**

Internal 1200 Baud Modem DataLink for Apple IIe, II+, and IIGS. Compact design, fits any slot (except 3 of IIe and IIGS) including 1 and 2 of the IIGS even with fan. Hayes AT compatible. Auto-dial, auto-answer and built-in speaker. Powerful communications software in ROM and on disk. Totally complete with phone cable and manual. **$169**

More Quality Products

Ultra Hi-Res RGB Monitor/TV This Sony RGB monitor uses a 13" ultra hi-res CRT for super sharp 80 column text and great graphics. Works with the IIe and IIGS. But in addition to being the best RGB monitor available this unit is also a 180 channel cable-ready television set with remote control. Try it. You WILL like it. Only **$489**

IIe RGB Cable $19 w/Sony ($29 Sep.)
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5-1/4" Disk Drive Super quiet direct drive compatible with all Apple software and Apple controller card. A top quality unit with 1 year warranty. Add $20.00 for IIc/IIGS Cable. Only **$119**

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Kensington System Saver Fan with 2 power outlets and surge protector. **$69**

Pinpoint's AppleWorks Accessories The best available and they are written to fully utilize Applied Engineering's RAM cards. (Includes RAM enhancement software.) Together a $118 value. Only **$59**

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MacroWorks and Super MacroWorks ". . . the best single AppleWorks add-on available today." A+ Magazine. Add new word processing power, create your own Macros and save lots of keystrokes. Use mouse with AppleWorks. No more pathnames! Just select from a menu. Buy MacroWorks for AppleWorks versions 1.0 - 1.3. Buy Super MacroWorks for AppleWorks version 2.0.

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For IIGS (List $299) **$199**

RamWorks™ That's right, RamWorks not RamWorks II. RamWorks is the memory card that started the revolution. RamWorks can expand to 512K on the main board and up to 1 meg with an optional 512K piggyback and can accept Applied Engineering's new RGB option. A 512K RamWorks gives AppleWorks a 360K desktop. Comes with Applied Engineering's newest software. With 512K **$139**

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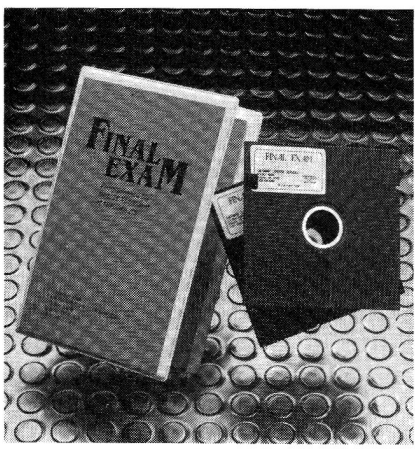
and the built-in menus often provide sufficient guidance.

Several additional features distinguish it from the pack. Teachers can opt to permit as many as three tries for questions presented on the computer, and they can enter appropriate feedback. When students finish, you can save their scores to a disk file for later evaluation. You can even print blank answer sheets if you want.

Final Exam

Final Exam by Earthware Computer Services proves that quality need not be expensive. Like many modern test generators, this one provides printed and on-screen presentations. Additionally, it offers a feature not readily available in similar programs: graphics.

In many disciplines, you have



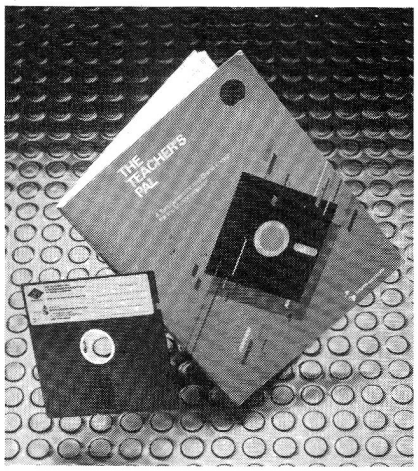
to include diagrams and other artwork to supplement questions. With Final Exam, a science teacher can include a picture of a human eye with numbered items for identification. Maps can be added to history tests. A built-in graphics editor lets you draw whatever you wish, and the result can appear both on-screen and in print.

Overall, this program is easy to become familiar with and flexible enough for most applications. You get more than you pay for.

Teacher's Pal

Attractively designed screens, icon-based menus, and business-like 80-column displays highlight South-Western Publishing's Teacher's Pal. The program has the look and feel of quality. Its attention to detail reassures the novice while satisfying the more demanding computer user.

Password protection prevents unauthorized tampering with data banks when students take the pro-



gram's on-screen quizzes.

Teacher's Pal offers users many extra convenience features, including the ability to permit quiz retakes, to record or not record student scores, and to handle a variety of paper lengths.

Included on the same disk is a grade-book program, which contributes an entirely new dimension not normally associated with this type of software.

Test It!

EduSoft's Test It! requires a little more time and patience to learn than do some of the others,

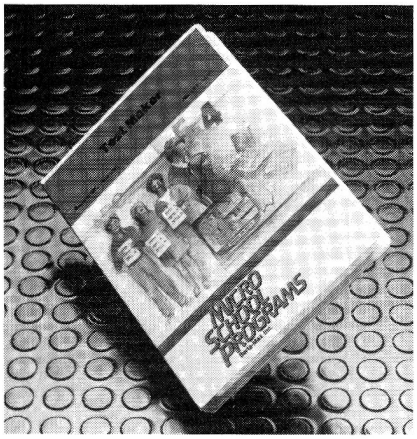


but that time will be well spent for those who want to write multiple-choice questions that require the selection of several answers together. Because this program lets you define each question's difficulty level, it can also produce easy, medium, or hard tests as requested.

Test It! is especially good for administering on-screen practices because of its record-keeping ability and its flexible feedback options for handling incorrect responses. Furthermore, the publisher grants original purchasers the right to make unlimited Question Bank and Student Disks.

Test Maker

Test Maker from Berta-Max gives you an attractive printed test, complete with the near-letter-quality print available on most modern printers. Its true/false,

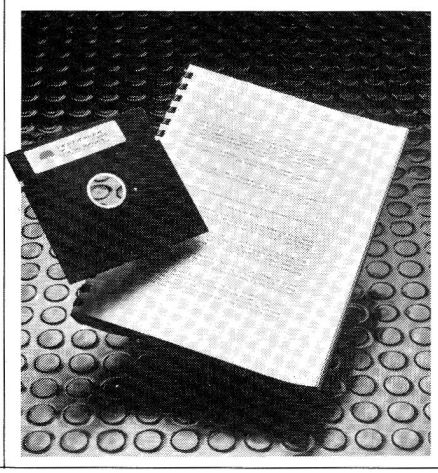


multiple-choice, matching, and short-answer sections are printed in separate groups that can appear in various relative positions on the printout.

For those times when questions need editing, Test Maker handles the job with ease. Although it does not offer on-screen quizzes, it does significantly reduce the headaches associated with writing good tests.

Testmaker Version 2.1

Fans of Apple Writer will appreciate Live Oak Software's Testmaker. Written in Apple Writer's own WPL language, it harnesses all the power of this popular word-processing program. The disk includes both a DOS 3.3 version and a ProDOS version of Testmaker. All documentation is on the disk for users to print.



RAMUP™

RAMUP / ŕam-əp / noun: The latest RAM utility memory expansion software that lets RamCard owners easily load and manage several software applications at one time.

In plain English, RAMUP means you can get all your favorite programs to team up and work together.

In even plainer English, RAMUP means you're the boss. With RAMUP, you'll never hear your computer say "Just a minute" to you. With RAMUP, it's either "Right now" or "You got it."

INSTANT ACCESS

You can stop disk swapping. RAMUP can turn Control-Open-Apple-Reset into Control-Open-Apple-ACCESS. RAMUP lets you boot from your RamCard and it allows you to flip — at will — from one program to another. In a flash.

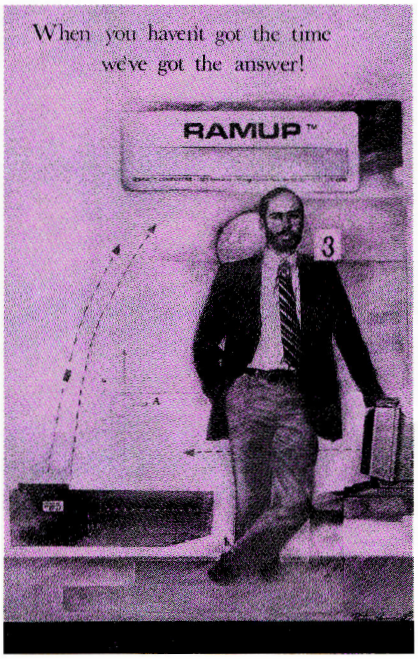
COMPATIBLE WITH YOU

Talk about friendly! You don't need to know about programming or even about pathnames to use RamCards. These powerful accessories pay the returns on your RAM hardware investment.

COMPATIBLE WITH YOUR HARDWARE

RAMUP automatically configures itself to run on an Apple IIe, IIc, IIGS and Laser computers. It will load just about any ProDOS software, and it lets you boot other software then instantly return to programs on your RamCard. We're talking about these major advantages:

- Elimination of disk access
- End of the floppy shuffle
- Increases productivity
- Moving from program to program — at will
- Simplicity
- Speed
- INSTANT ACCESS!



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RamFactor	Ramcharger
GSRam	TransWarp
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APPLEFEST

CIRCLE 104 ON READER SERVICE CARD

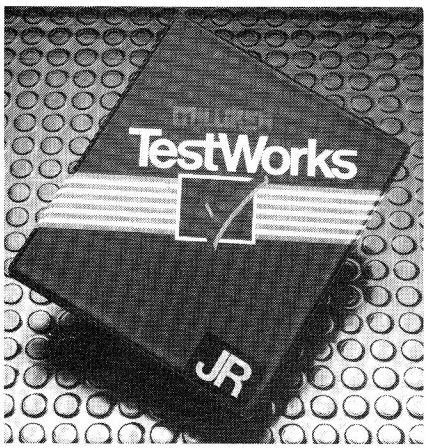
Because of its unique approach, Testmaker requires extra patience to prepare. You have to copy a few files from the program disk onto an Apple Writer backup disk. Then you boot Apple Writer and load Testmaker into it. Once loaded, however, Testmaker proves versatile.

A written tutorial guides you through the process of designing a test framework, complete with directions for each question set. Then you select questions to fill that framework from previously created text files.

Although questions must be short and question files must be constructed exactly according to instructions, becoming comfortable with Testmaker requires only a few hours.

TestWorks Jr.

Milliken's excellent reputation in the educational-software market is undisputed. TestWorks Jr. upholds that tradition by providing an easy-to-use aid for the creation of printed tests, quizzes, and study guides.



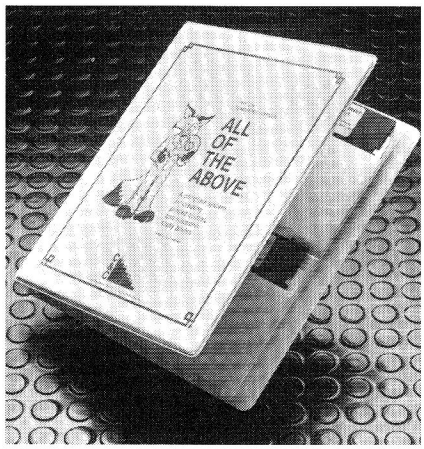
The menu-driven program is so intuitive that few will need to read the manual, except to determine the password necessary for entering the test-creation mode. Each menu offers a Help option for those who need additional information, and the program's question editor (called an idea processor) makes writing and modifying questions trouble-free.

Among the program's other useful features is one worth special note: Test writers can indicate a difficulty level for each question. Then the program's random question-selection mode can generate several different tests with the same mean difficulty level. This feature lets you generate similar but different tests for student makeup exams or for multiple sections of the same class.

Testworks Jr. printouts look especially professional, and an item code on the answer sheet simplifies the chore of spotting common deficiencies.

All of the Above

Those who want to push test-generating software to its limits will appreciate All of the Above.



Its full-featured editor rivals those of some very good word-processing programs. It performs additions, deletions, and insertions with equal ease. Meticulous users can add boldface, underlining, and italics to their printouts by inserting print commands into the text.

No other package I tested offered greater overall flexibility. It combines questions from several quizzes into one unit test, randomizes choices in multiple-choice questions, administers tests on-screen, and maintains a record of results.

Unfortunately, with flexibility often comes a bit more complexity. Mastering All of the Above takes a few hours of concentration, but those willing to spend the extra time will find it a versatile tool.

The Quiz System

The Quiz System includes six main utilities for quiz writing, on-screen presentation, printing, and record keeping. Questions may be keyed to a particular book, chapter, and learning objective. Each student's results include test scores and analyses of objectives that require additional study. One utility can even analyze the results of an entire class to help teachers recognize areas that might require more instruction.



Overall, the program offers many worthwhile features. Unfortunately, the 1982-83 copyright makes this the oldest test generator I tested. As such, the program suffers from the infirmities that characterized programming in the early 80s, most notably a lack of convenience. When you follow directions exactly, things usually progress as expected, but any user-input error is likely to cause a crash. Such unpredictable crashes were frustrating then. Today they are unforgivable.

TestWriter

Writing tests with TestWriter is a pleasure. The program boots to an attractive 80-column screen. In the pre-release version I reviewed, easily understandable menus guide you through the process of creating, saving, and printing tests. Two separate disks that come in the package allow presentation of quizzes on-screen, with or without feedback for students.

In every respect, TestWriter is a quality product. Easy-to-use editing capabilities and careful program design assure that most teachers will be using it within minutes without consulting the manual. You can even load test fields into Apple Writer or AppleWorks to achieve additional word-processing support. Since MicroMedia has a 30-day satisfaction guarantee, you can't go wrong with this one. It is certainly worth a look. ✚

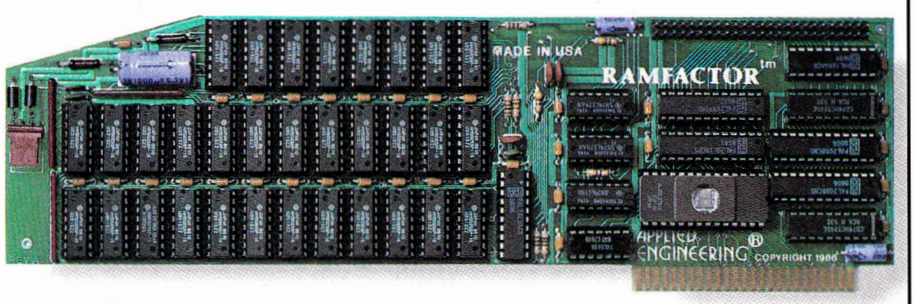
David Stanton is the computer coordinator at Bolivar (New York) Central School and a free-lance writer for several computer magazines.

RamFactor™

Boot any II+, IIe, or IIGS and be up and running your favorite software in less than 1 second.

Now anyone with an Apple II+, Franklin, Laser 128, Apple IIe or IIgs preferring to use slots 1 through 7 can now enjoy the speed and performance that they've been waiting for.

With RamFactor, you'll be able to instantly add another 256K, 512K, or a full 1 MEG on the main board and an expansion connector can address an additional 16 MEG of memory for possible future expansion. Since virtually all software is automatically compatible with RamFactor, you'll immediately be able to load programs into RamFactor for instantaneous access to information. You'll also be able to store more data for larger word processing documents, bigger data bases, and expanded spreadsheets. And with the battery back-up option, you can switch on your Apple and your favorite software will be up and running in less than 1 second!



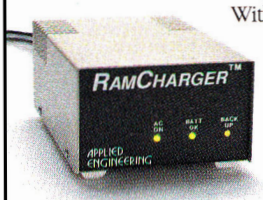
Very Compatible

All the leading software is already compatible with RamFactor. Programs like AppleWorks, Pinpoint, BPI, Managing Your Money, Dollars and Sense, SuperCalc 3A, PFS, MouseWrite, MouseDesk, MouseCalc, Sensible Speller, Applewriter IIe, Business Works, ReportWorks, Catalyst 3.0 and more. And RamFactor is fully ProDos, DOS 3.3, Pascal 1.3 and CP/M compatible. In fact, no other slot 1-7 memory card is more compatible with commercial software.

AppleWorks Power

There are other slot 1-7 cards that give AppleWorks a larger desktop, but that's the end of their story. But RamFactor is the only slot 1-7 card that increases AppleWorks internal memory limits, increasing the maximum number of records in the database and lines permitted in the word processor, and RamFactor is the only standard slot card that will automatically load all of AppleWorks into RAM dramatically increasing speed and eliminating the time required to access the program disk, it will even display the time and date on the AppleWorks screen with any ProDos clock. RamFactor will automatically segment large files so they can be saved on 5¼", 3½", and hard disks. All this performance is available on the Apple II+, IIe, Franklin, or Laser 128 when used with an 80 column display. RamFactor, no other standard slot card comes close to enhancing AppleWorks so much.

The "Instant On" Apple.



With the RamCharger battery backup option, RamFactor will retain programs and data during power failures or even when you turn your computer off. And because RamFactor plugs into slots 1-7, it's the only memory card that can cold boot an Apple without using slow floppy or hard disks. An available "Y" cable allows one RamCharger to power two RamFactors.

Powerful Program Switcher

With RamFactor, you can organize memory into multiple work areas and switch between them. Each work area can contain different programs and even different operating systems. Now you can switch from one program to another or even switch from AppleWorks to DOS 3.3 to CP/M to Pascal to ProDos in under a second. And with our battery back-up option, you can have permanent storage for up to 20 years.

Features:

- 256K to 1 MEG on main board. Expansion connector for possible further expansion to 16 MEG.
- Fully Apple II Memory Expansion compatible
- Compatible with Apple IIe, II+, IIgs, Franklin and Laser 128
- Battery back-up option allows you to turn on your Apple and run your favorite programs in less than 1 second!
- Automatically recognized by ProDos, DOS 3.3, Pascal, and standard CP/M
- Built-in RamDrive™ software (a true RAM disk not disk caching)
- Systems are directly bootable from RamFactor if desired
- Built-in self diagnostic software
- Automatic expansion with AppleWorks 1.3 or 2.0
- Allows Apple II+ and IIe to run your AppleWorks without buying any additional software
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- Displays time and date on the AppleWorks screen with any ProDos clock
- Fits any I/O slot except slot 3
- Fully socketed and user upgradeable
- Much, much more

RamFactor with 256K	**$239**
RamFactor with 512K	**$289**
RamFactor with 1 MEG	**$369**
RamFactor with 2-16 MEG	**CALL**
RamCharger backup option	**$179**
"Y" cable	**$24**

(Allows one RamCharger to power two RamFactors.)

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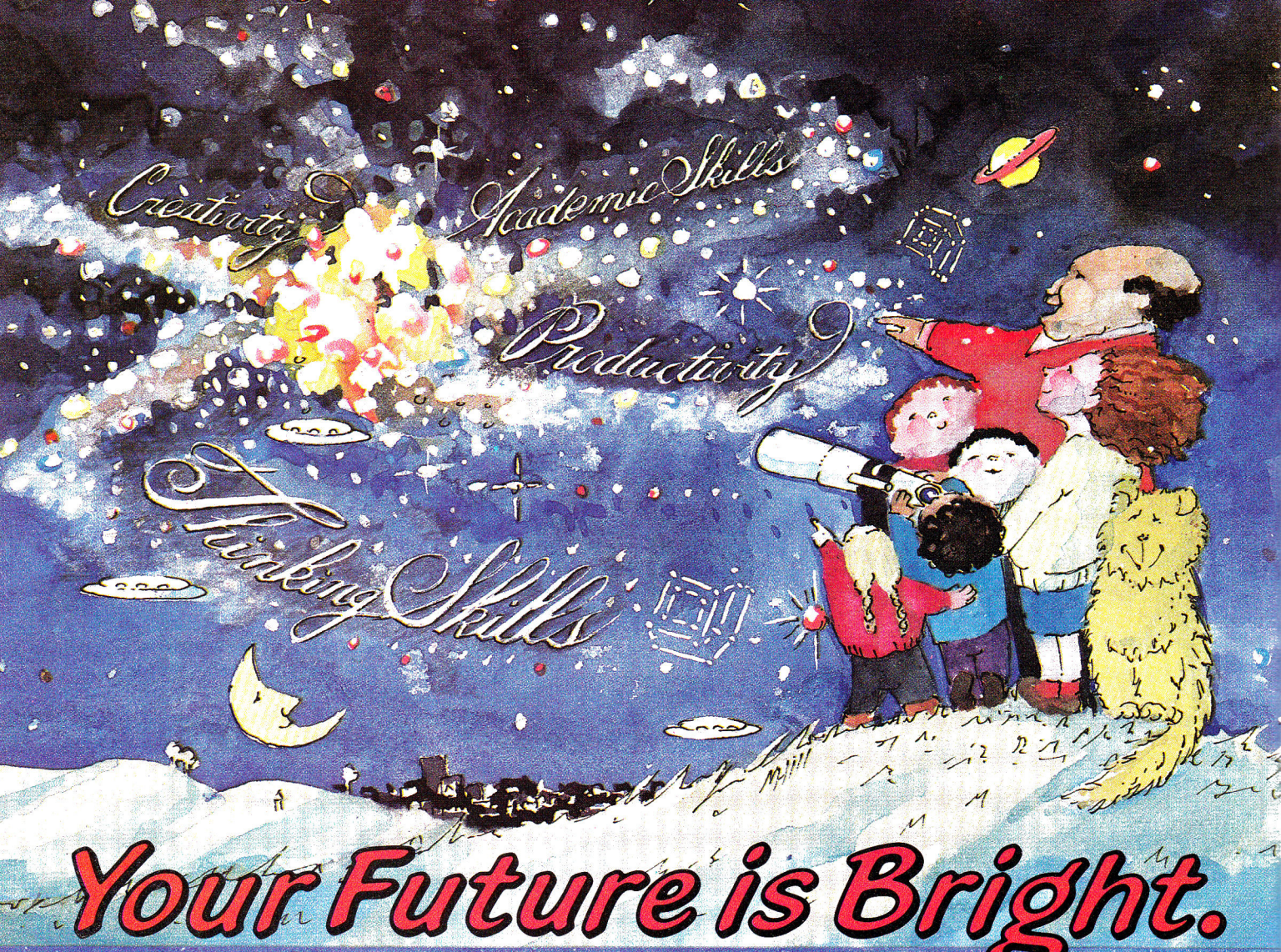

Your Future is Bright.

Imagine learning that can take place nearly anywhere. Learning that's fun for all ages. Books and tests that are never too easy or too hard. Plus the ability to create, demonstrate and experiment with art, music, science and a galaxy of other subjects.

That's just a glimpse of the bright world of computer learning. And it's here now. It's learning that actually promotes creativity, that's more involving and rewarding than ever before.

This October is a time to expand your horizons. Teachers, students and parents are joining with schools, libraries, museums and retailers across the nation with computer fairs, special programs, contests and prizes (including free software and complete computer workstations for both winners and their schools!)

Share in the excitement.

There are events for everyone, even if you don't know anything about computers. Ask for your free booklet, *Everything you need to know (but were afraid to ask your kids) about computer learning.** And ask your school how they're celebrating Computer Learning Month.

COMPUTER LEARNING MONTH

OCTOBER '87

Computers and Education: Giving America's Youth the Winning Edge

*Free booklet available at Britannica Learning Centers, The Reading Game, B. Dalton Software, etc., Waldenbooks and many computer and software stores.

Join these companies celebrating Computer Learning Month:

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Computer Learning Month, P.O. Box 19763, Washington, D.C. 20036-0763

CIRCLE 218 ON READER SERVICE CARD

THE NO. 1 MAGAZINE FOR ALL



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COMPUTER PRESS ASSOCIATION A+ WINNER BEST COMPUTER MAGAZINE 1986

A+ The #1 Apple II Magazine

8Z334

Computer Learning Month

TEST-GENERATION COMPARISON

The information on this chart is based on manufacturers' claims.

		List Price	True & False	Multiple Choice	Matching	Short Answer	Essay	Backup Disk
All of the Above	C&C Software	$90.00	●	❶	●	●	●	INCLUDED
CLAS	Touch Technologies	$89.95	●	●	●	●		$9.95
Create-A-Test	Cross Educational Software	$89.95	●	●	●	●	●	INCLUDED
Easy Quiz Maker	COMPress	$75.00	●	●		●	●	INCLUDED
Final Exam	Earthware Computer Services	$29.95	●	●	●	●	●	INCLUDED
The Quiz System	Diversified Educational Enterprises	$139.95	●	●	●	●		USER-MADE
Teacher's Pal	South-Western Publishing Co.	$59.50	●	●	●	●	●	INCLUDED
Test Generator	COMPress	$60.00	●	●	●	●	●	INCLUDED
Test It!	EduSoft	$49.95	●	●		●	●	USER-MADE
Test Maker	Berta-Max, Inc.	$39.95	●	●	●	●	●	$10
Testmaker V. 2.1[4]	Live Oak Software	$25.00	●	●	●	●	●	USER-MADE
TestWorks Jr.	Milliken Publishing Co.	$75.00	●	●				INCLUDED
Testwriter[6]	K-12 MicroMedia Publishing	$39.95	●	●	●	●	●	USER-MADE

❶ Randomizes answers. ❷ Depends on available RAM. ❸ Printed tests may include multiple-choice questions only.

VITAL STATISTICS

All of the Above Version 2
C & C Software
5713 Kentford Circle
Wichita, KS 67220
(316) 683-6056
List Price: $90
Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive; printer recommended. DOS 3.3; copy-protected.
CIRCLE 388 ON READER SERVICE CARD

CLAS
Touch Technologies
9990 Mesa Rim Road
Suite 220
San Diego, CA 92121
(800) 525-CLAS
(619) 455-7404
List Price: $89.95
Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive. DOS 3.3; not copy-protected.
CIRCLE 389 ON READER SERVICE CARD

Create-A-Test
Cross Educational Software
1802 North Trenton Street
P.O. Box 1536
Ruston, LA 71270
(318) 255-8921
List Price: $89.95
Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive; printer. DOS 3.3; copy-protected (except for question disks)
CIRCLE 390 ON READER SERVICE CARD

Easy Quiz Maker-Version 2.0 and **Test Generator Version 3.22**
COMPress
P.O. Box 102
Wentworth, NH 03282
(603) 764-5831
List Price: Easy Quiz Maker, $75; Test Generator, $60
Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive; printer. DOS 3.3; copy-protected.
CIRCLE 391 ON READER SERVICE CARD

Final Exam
Earthware Computer Services
P.O. Box 30039
Eugene, OR 97403
(503) 344-3383
List Price: $29.95
Requires Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive; text works with any printer; graphics require an Epson or ImageWriter I or II, or a Grappler interface with any compatible graphics printer. DOS 3.3; copy-protected.
CIRCLE 392 ON READER SERVICE CARD

The Quiz System
Diversified Educational Enterprises, Inc.
725 Main Street
Lafayette, IN 47901
(317) 742-2690
List Price: $139.95
Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive; printer recommended. DOS 3.3; not copy-protected
CIRCLE 393 ON READER SERVICE CARD

Warranty	Site licenses	Provides on-screen help	Maximum # of questions	Accepts alternate answers	Permits customized directions	Offers random selection of questions	Permits compiling from several tests	Administers tests on screen	Maintains records of results	Provides feedback for on-screen quizzes	Prints hard copies	Accesses special printer features
90 DAYS	●	●	❷	●	●	●	●	●	●	●	●	●
90 DAYS	●	●	150		●	❼		●		●	●	
NEW DISK $6			100		●	❼	●				●	●
LIFETIME			100		●	●	●	●	●	●	●	
NEW DISK $10	●		75	●	●			●	●	●	●	●
NONE			30	●		●		●	●	●	❸	
90 DAYS		●	255		●	●	●	●	●	●	●	
LIFETIME			100		●	●	●				●	
90 DAYS	●		200	●		●	●	●	●	●	●	
30 DAYS			250		●	●					●	●
NONE	●		❷	●	●		●				●	●
90 DAYS		●	300			●	●				●	
90 DAYS; NEW DISK $8	❺		❷	●	●	●	●	●	●	●	●	

❹ Requires Apple Writer. ❺ Inexpensive lab packs available. ❻ Prerelease version reviewed.
❼ A new version will offer random selection of questions.

Teacher's Pal
South-Western Publishing Company
5101 Madison Road
Cincinnati, OH 45227
(800) 543-0453
(513) 527-6328
List Price: $59.50
Requires: Apple IIe with 80-column card, IIc, or IIGS; 64K RAM; two 5¼-inch disk drives; printer recommended. DOS 3.3; copy-protected.

CIRCLE 394 ON READER SERVICE CARD

Test It! Version 1.3
EduSoft
P.O. Box 2560
Berkeley, CA 94702
(800) EDUSOFT
(415) 548-2304
List Price: $49.95
Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼- or 3.5-inch disk drive; printer recommended. DOS 3.3; not copy-protected.

CIRCLE 395 ON READER SERVICE CARD

Test Maker
Berta-Max, Inc.
P.O. Box 31849
Seattle, WA 98103
(206) 547-4056
List Price: $39.95
Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive; printer. DOS 3.3; copy-protected.

CIRCLE 396 ON READER SERVICE CARD

Testmaker Version 2.1
Live Oak Software
P.O. Box 14814
Baton Rouge, LA 70898
(504) 766-2409
List Price: $25
Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive; printer; Apple Writer. DOS 3.3 and ProDOS versions on opposite sides of disk; not copy-protected.

CIRCLE 397 ON READER SERVICE CARD

TestWorks Jr.
Milliken Publishing Company
1100 Research Blvd.
P.O. Box 21579
St. Louis, MO 63132-0579
(800) 643-0008
(314) 991-4220
List Price: $75
Requires: Apple II Plus, IIe, IIc, or IIGS; 64K RAM; one 5¼-inch disk drive; printer. DOS 3.3; copy-protected.

CIRCLE 398 ON READER SERVICE CARD

TestWriter
K–12 MicroMedia Publishing
6 Arrow Road
Ramsey, NJ 07446
(201) 825-8888
List Price: $39.95
Requires: Apple IIe with 80-column card, IIc, or IIGS; 64K RAM; one 5¼-inch disk drive; printer recommended. ProDOS; not copy-protected.

CIRCLE 399 ON READER SERVICE CARD

"A+ Magazine is accurate, interesting, well written and well designed...for these reasons, it has been named the 'Best Computer Magazine of 1986'"

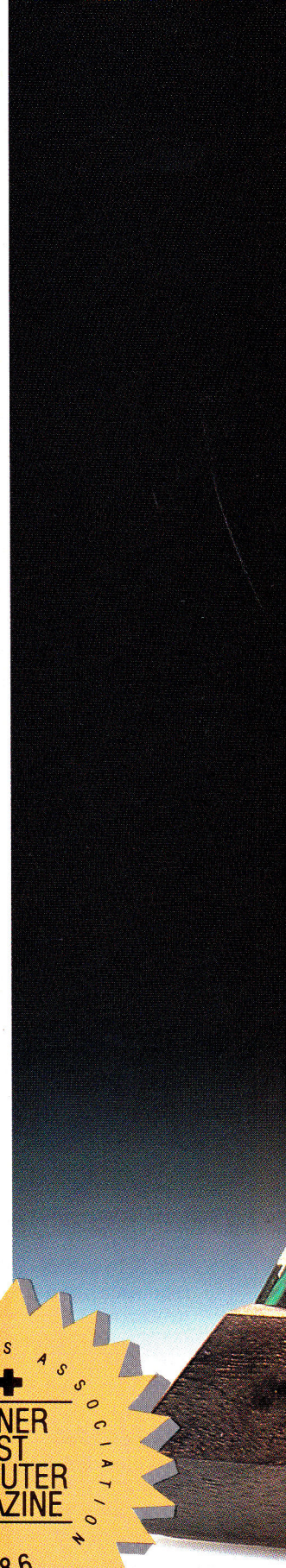
Computer Press Association

On April 7th, 1987, A+ Magazine received the prestigious Citizen America/Computer Press Award as the Best Computer Magazine. Chosen from a list of impressive entries from the Apple, IBM and general interest magazines, A+ Magazine was recognized as the Best Magazine of 1986, providing useful information to its targeted audience.

At the awards ceremony, it was said that "A+ Magazine is a lively, fast-paced magazine that is well designed and edited to invite Apple II users into its pages, satisfying their informational needs. In particular, A+ did an outstanding job in providing well rounded coverage of the new Apple IIGS..."

We are very proud and honored that our professional colleagues have recognized our achievement in creating the #1 Apple II Magazine, confirming A+ as the "Reader's Choice" for all Apple II users.

This award as the "Best Computer Magazine" confirms that A+ Magazine is the information source for all Apple II owners and users.



A+

The #1 Apple II Magazine


Computer Press
Awards
1986
Best Computer Magazine
A+
CITIZEN
Computer Press
Association

PICK OF THE CROP *BY PETER TUCKER*

A collection of educational products for the Apple II family

PRODUCT SPOTLIGHT

ARTIFICIALLY INTELLIGENT

Artificial intelligence, long the domain of theoretical research, is now inching into mainstream computing. Case in point: Scholastic Software's release of A.I.—An Experience in Artificial Intelligence.

Designed for grades 5 and up, A.I. introduces users to a game-playing machine that "learns" to play games without being told the rules. The human player establishes the rules of a game, placing pieces on a game-board grid. A.I. watches the moves, and each time the human wins, A.I. studies the winning position of the pieces on the grid. Then A.I. actually begins to learn the game and before long is devising

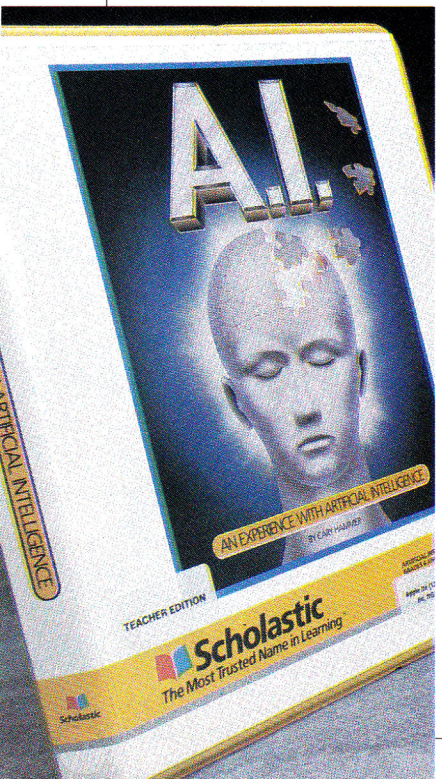


strategies that will allow it to beat the humans at their own game.

Players can decide to have a closer look at the A.I. strategy, using the "Brain Scan" feature. Here you can peek behind the scenes and see the strategies the machine is using—this is the part where the humans learn.

A.I. provides an excellent introduction to two prominent aspects of artificial-intelligence research: pattern recognition and decision theory. The product is the first in a projected series of programs on artificial intelligence.

A.I.—An Experience in Artificial Intelligence
List Price: $49.95 (home version), $87.45 (school version)
Requires: Apple IIe, IIc, or IIGS; 128K RAM; one 5¼-inch disk drive. Copy-protected.
Scholastic, Inc.
P. O. Box 7501
2931 East McCarty Street
Jefferson City, MO 65102
(800) 325-6149
CIRCLE READER SERVICE NO. **450**





READY, SET, READ 'N ROLL

A reading-comprehension-and-bowling combination sounds a bit bizarre, but this new educational software from Davidson promises to enrich and entertain students in grades 3–6.

Read 'n Roll challenges students to recognize the main idea of a reading passage. They must list the sequence of events in a passage, recall specific facts, and make inferences about the information.

Now for the fun stuff. Using an arcade-style bowling game, students define words in context to build vocabulary. Then, students direct an animated bowler and play the game. An enthusiastic crowd cheers while a lighted scoreboard keeps track of pins.

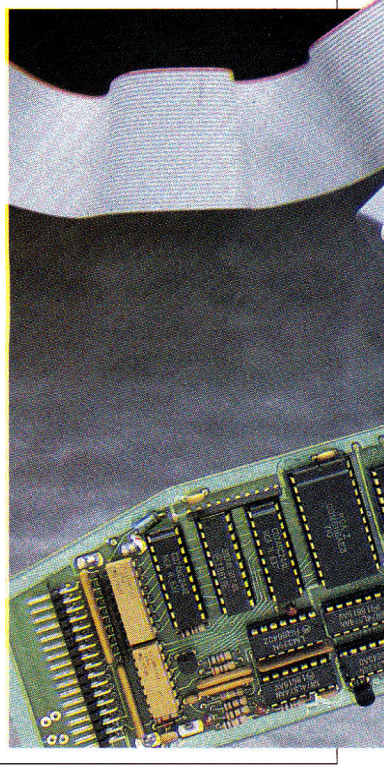
Read 'n Roll features the new Davidson Student Desktop Interface, using pull-down menus and icons, with mouse or keyboard access. A printed certificate of excellence is the prize for outstanding scores.

Read 'n Roll
List Price: $49.95
Requires: Apple II Plus, IIe, IIc, or IIGS; 5¼- or 3.5-inch disk drive; 128K RAM; mouse or joystick optional.
Davidson & Associates, Inc.
3135 Kashiwa Street
Torrance, CA 90505
(213) 534-4070
CIRCLE READER SERVICE NO. **451**

HOW ADAPTIVE IS YOUR PERIPHERAL?

The Adaptive Firmware Card, from Adaptive Peripherals, opens the door to a multitude of alternative input methods and devices.

The card lets you use 16 standard input methods, including Morse code and ASCII input, and gives you special features such as program slowdown, game-paddle emulation, and custom-



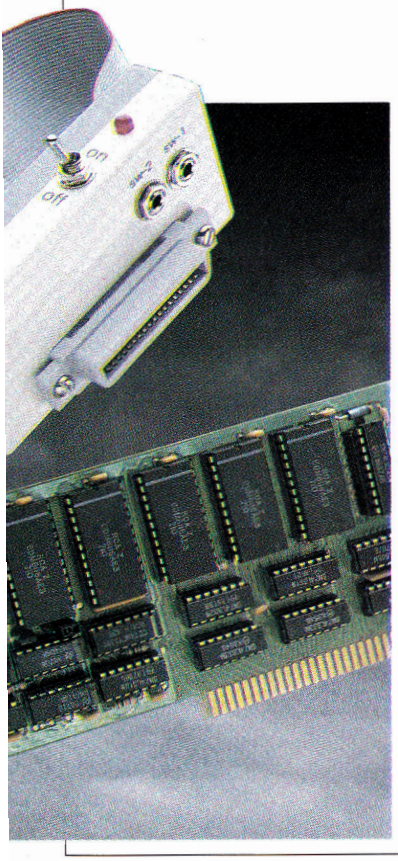
ized scanning arrays for synthesized speech.

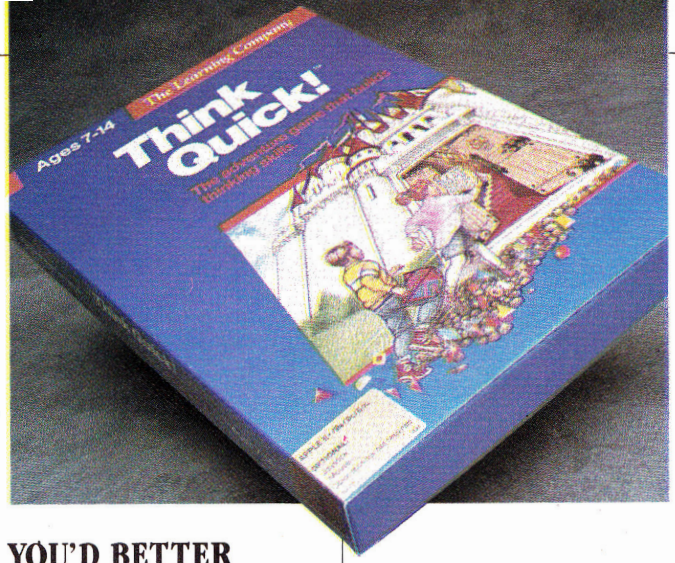
You can choose from a list of "customized setups" to best adapt the computer for the program or person using it. You can also customize the board for a particular program or input device. Certain software (DLM's Arcademic Skill Builders in Math, for example) provides ready-made Adaptive Firmware Card setups.

Adaptive Peripherals also provides game-setup programs to adapt paddle-based programs, including Stickybear Opposites and Edmark Reading Program, among others.

Adaptive Firmware Card
List Price: $400 (new IIGS version available for same price)
Requires: Apple IIe; 5¼-inch disk drive, 64K RAM
Adaptive Peripherals
4529 Bagley Avenue N.
Seattle, WA 98103
(206) 633-2610

CIRCLE READER SERVICE NO. **452**

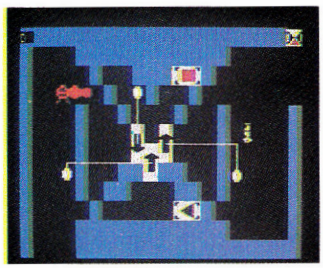


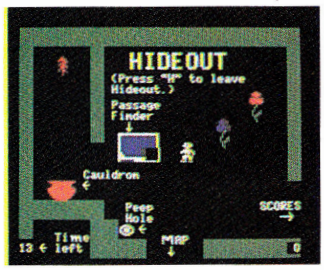


YOU'D BETTER THINK QUICK!

A troublemaking dragon has taken over the Castle of Mystikar and, as luck would have it, you are Mystikar's last and greatest hope to flush the evil beastie out. Like most castles, this one is guarded by Slime Worms that (watch out!) swallow you whole.

What distinguishes Think Quick! is its immediate playability, anima-





tion, and graphics. Using either arrow keys, joystick, or mouse, you'll glide from room to room gathering information and returning to your hideout. Unlock secret passageways, advance to new parts of the castle, and ultimately enlist the help of an enchanted knight to chase away the dragon.

First-time Think Quick! players have the option of attending Knight School, where all the basic elements of play are discussed. The program also contains Castle Creator, where advanced players can create their own castles and playing situations.

As an adventure game for ages 7–14, Think Quick! is challenging and rewarding. As an exercise in logical thinking and reasoning, the program may be a powerful educational tool. Either way, Think Quick! is another joyful addition to The Learning Company's library.

Think Quick!
List Price: $49.95
Requires: Apple II Plus, IIe, IIc, or IIGS; 64K RAM; one 5¼-inch disk drive (3.5-inch format available soon); mouse optional.
The Learning Company
P.O. Box 2168
Menlo Park, CA
94026-2168
(800) 852-2255
In CA (415) 328-5410

CIRCLE READER SERVICE NO. **453**

HIGH-TECH FALL FASHION

What will the fashion-conscience fifth-grader find attractive this fall? Why not make a high-tech statement with one of many cotton T-shirt or sweatshirt styles available from The Apple Collection (sizes 4T, S-L)? The well-prepared youngster may tote cookies and milk in a high-tech lunch box sporting the Apple logo.

And for the more adventurous, this unbreakable Corning canteen, with screw-top lid and woven shoulder strap, will help you quench the meanest afternoon thirst. All these items, and more, are available from the Apple Collection.

Kids' Apple T-shirt, lunch box, and Corning canteen
List Price: sweatshirt, $18; lunch box, $12; canteen, $8
The Apple Collection
P.O. Box T
Gilroy, CA 95021-2249
(800) 345-2888

CIRCLE READER SERVICE NO. **454**



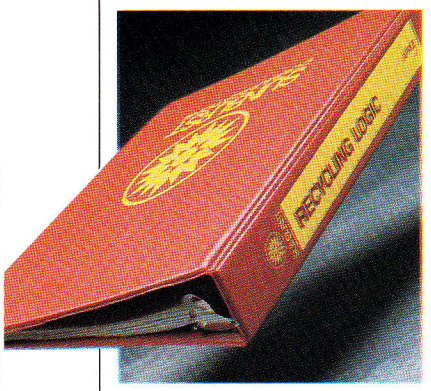


PRODUCT SPOTLIGHT

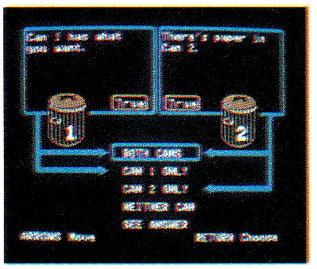
THE LOGIC OF RECYCLING LOGIC

Recycling Logic, a problem-solving logic-puzzle game, is designed to strengthen logical reasoning skills from grade 6 through adult. The students' goal is collecting recyclable paper and metal, but the focus is strictly on Boolean logic, not the environmental impact of trash.

Players move along streets, stopping at pairs of garbage cans. Signs hint whether the cans contain recyclable material or trash. The signs are either true or false, with



students making reasonable conjectures and ideally reaching logical conclusions. Critical thinking and reading-comprehension skills are no doubt strengthened along the way.



Recycling Logic
List Price: $59
Requires: Apple II Plus, IIe, IIc, or IIGS; 64K RAM; one 5¼-inch disk drive. Copy-protected.
Sunburst Communications, Inc.
39 Washington Avenue
Pleasantville, NY 10570
(800) 431-1934
CIRCLE READER SERVICE NO. **455**



SCIENCE THIRTYFOLD

Prentice-Hall, whose textbooks we scribbled in all the way through school, has released what it calls "the most comprehensive curriculum-based science software series . . . by a textbook publisher," and the statement appears to be true.

The 30-title series is enough to drive a curious mind wild with desire. The programs range from Voltage, Current and Resistance to Life Zones in the Ocean to Weather Forecasting to Interplanetary Travel and were selected specifically because they translated well from book to computer. Graphics and animation, interactive questioning, "automatic reteach," and menus throughout keep the series easy for junior- and senior-high students. A built-in record-keeping system and a teachers' guide make it attractive for teachers, too.

Prentice-Hall science series
List Price: $69 per program; $49 for orders of ten or more different programs; 4-Packs and Lab Pack options available
Requires: Apple II Plus, IIe, or IIc; 64K RAM; one 5¼-inch disk drive; color monitor. Not copy-protected.
Prentice Hall
Allyn & Bacon
Software Department
Englewood Cliffs, NJ
07632
(800) 524-2349
CIRCLE READER SERVICE NO. **456**

SAILING THROUGH STORY PROBLEMS

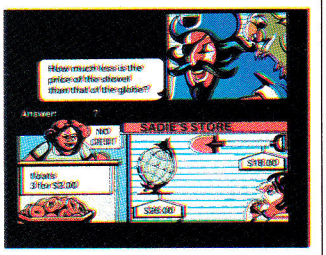
"At the start of the trip the cook had 96 pounds of bacon. He served 3 pounds per day for a week. How many pounds of bacon were left?"

If story problems are your forte, or your kid's worst nightmare, you'll appreciate the activities in Sailing Through Story Problems: A 1- and 2-Step Math Journey from DLM Educational Software.

Captain Horatio and his parrot Zero introduce 12 challenging levels of story problems: "The old pier was 5 times longer than the Salty Dog. New construction added 85 more feet. How long is the old pier now?" (By the way, the Salty Dog is 34 feet . . .)

You get the idea. An interesting pirate theme sails students through reading maps and charts, working with money, addition, subtraction, multiplication, and division.

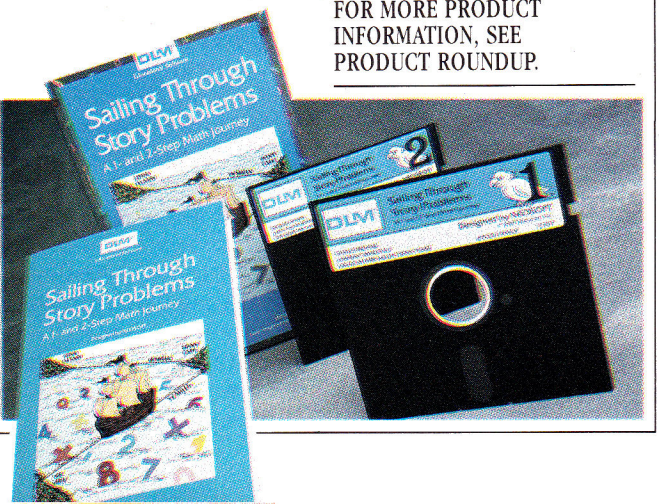
Students are even offered an on-screen calculator for solving problems. Teachers may



appreciate the student record-keeping and specialized game-analysis programs for classroom use.

Sailing through Story Problems
List Price: $46
Requires: Apple II Plus, IIe, IIc, or IIGS; 64K RAM; one 5¼-inch disk drive. Copy-protected.
DLM Educational Software
One DLM Park
Allen, TX 75002
(214) 727-3346
CIRCLE READER SERVICE NO. **457**

FOR MORE PRODUCT INFORMATION, SEE PRODUCT ROUNDUP.



The World's Fastest Floppy Disk Controller Card

For The Apple II, II+ and *IIe*



The Kache Plus Card is the World's fastest 5¼" floppy disk controller card you can buy for the Apple II, II+ and *IIe*! It replaces your standard Apple controller board, giving you the power to operate up to 6 floppy drives and the speed to access data from those floppies several times faster than a hard disk drive!*

But that's not all it offers! The Kache Plus Card is also a multi-function board that gives you the following bonus options-each of them supercharged to run faster* than the same functions on competitive boards! *•Multi-Disk Controller •Duo-Disk Controller •Clock Card •Serial Printer Card •RS-232 Port •Parallel Printer Card •512K Memory Option •Printer Buffer •Cache Memory •RAM Disk*

You can't go wrong with our 30 day trial period! Buy a Kache Plus Card today, and prove to yourself that it is the WORLD'S FASTEST FLOPPY DISK CONTROLLER CARD for your Apple II, II+ or *IIe* computer—plus a whole lot more.

Call us toll free at...

1-800-338-0050

or write for a free brochure.

Ohio Kache Systems Corp.
4166 Little York Road
Dayton, Ohio 45414-2566
513-890-3913
©Ohio Kache Systems is a developer of computer enhancement products.

*Faster data accessing is made possible by the power of the Kache Plus Card's cache memory and its on-board microprocessor operating at 6 MHz.

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Order Today!

You can't go wrong with our 30 day trial period!
Check appropriate boxes to indicate choice of options.

Standard & Optional Packages

☐ **Standard Package** $395.00
On-board 64180 microprocessor
Floppy disk controller for 2 floppies
256K Memory (capable of being configured as RAM disk or Cache Memory)
Clock Card
Complete software utilities on floppy disks (Master and back-up supplied)

☐ **Option Package #1** $195.00
Expander Module, an external plexiglass cartridge that offers...
- Printer Buffer
- Parallel Port
- Two Serial Ports
- Floppy disk controller for up to 6 floppy disk drives.
- EEPROM Option

☐ **Option Package #2** $45.00
Memory upgrade to 512K capable of being configured as RAM disk, Cache Memory and/or Buffer Memory

☐ **Option Package #3** $45.00
EEPROM option only (allows you to save your set-up configuration)

☐ **Option Package #4** $35.00
Power Supply without battery back-up

☐ **Option Package #5** $175.00
Power Supply with battery back-up

☐ **Optional Cables** $25.00 Each
Call for ordering information

Sub Total _____
6% Sales Tax Ohio Residents Only _____
$10.00 Shipping and Handling _____
Total _____

☐ Please send me a free brochure on the Kache Plus Card. VISA, MasterCard accepted. Make checks payable to Ohio Kache Systems Corp., 4166 Little York Road, Dayton, Ohio 45414-2566.

Card # _____
Expiration Date _____
Company Name _____
Name _____
Address _____
City _____ State _____ Zip _____
Business Phone # _____ Home Phone # _____

PHOTOGRAPHY BY CARTER DOW

IIGS UPDATE

Don't get lost in the jungle as you venture into IIGS territory.

IIGS SURVIVAL GUIDE

BY BOB LINDSTROM

It's a jungle in there. Inside the Apple IIGS, that is.

You've explored the Apple IIe/c, blazed the twisting pathnames of ProDOS, lived to tell about your mastery of application software—but the exotic allure of the IIGS was too much for a computer adventurer to resist.

The boxes have been safely stashed in storage. The new Apple IIGS is proudly installed on the desktop. Now, the survival challenge begins.

Even for someone comfortable with the IIe/c, the IIGS has surprises lurking in the electronic underbrush. Sometimes, the IIGS behaves like itself. At other times, the IIGS acts like an Apple IIe or a Macintosh. The IIGS appears comfortable with its chameleon personality, but new users may find it difficult to tell one computer species from another.

For new IIGS owners, especially IIe owners moving up to this latest Apple II incarnation, scouting the Apple IIGS can uncover terrain you never anticipated in an Apple II. The 15-voice sound and eye-filling graphics are among the benefits, but other quirks come to the surface.

Printing programs that worked long and hard with the IIe now seem to snub the IIGS. Text screens that looked fine before the IIGS suddenly fill up with stray, unintelligible characters. Arcade games race to their conclusions at hallucinogenic speeds. Something has gotten into the previously serene world of Apple II computing.

As the Apple II line advances to its next level of capability, new features are added, and old ones are left behind. Apple engineers ingeniously designed the IIGS to act like a IIe/c, but compatibility with the older computers is not 100%, and the differences may produce unfamiliar results in familiar programs and situations.

In some cases, programs and add-on hardware have to be modified to work with the new machine. Many major vendors are already changing their products to make them GS-compatible. In other cases, though, certain simple techniques can help new IIGS owners survive their safari into the Mac-IIe/c-IIGS world of this new Apple II computer.

Key to the Keys

One of the elements that makes the IIGS Mac-like is its keyboard layout. To see what I mean, go to the IIGS keyboard and press the closed-apple key. Oops! Where's the IIe's closed-apple key? And what's that cursor key doing where the closed apple should be?

The answer: It's making the IIGS more like the Mac. It's also causing temporary confusion among Apple IIe users who have programs that

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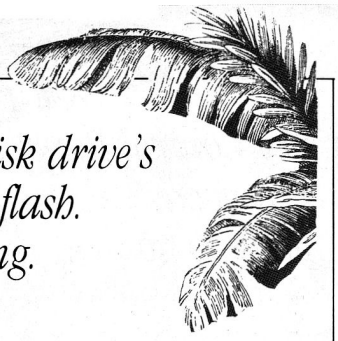

The disk drive's lights flash. Nothing.

call for the closed-apple key. Don't worry. On the IIGS, the Mac-like Option key to the left of the Open Apple/⌘ key stands in for the closed-apple key. When a IIe program calls for the closed-apple key, IIGS owners should reach for Option.

Getting Turned On

You flip the power switch. The disk drive's lights flash. Nothing.

The IIGS suggests, "Check startup device." You suggest that the IIGS (to paraphrase comedian Sam Kinison) "GO WHERE THE DISK IS!" The IIGS remains resistant to your persuasion. Somehow, brains and bytes aren't reaching an agreement. The first thing to do is enter the IIGS Control Panel by simultaneously pressing open apple, Control, and Esc, and then selecting the Control Panel menu item. Go to the Slots menu and check the setting for Startup Slot.

If you have daisy-chained 3.5- and 5¼-inch drives (with the 5¼-inch drive the last device in the chain), the Startup Slot should be set to Scan. Scan tells the IIGS to roam through the slots (or ports) looking for a boot disk, starting with slot 7 and moving down to slot 1. Be aware, though, that the IIGS finds your first 5¼-inch drive before the first 3.5-inch drive, in that order. If it finds a bootable 5¼-inch disk, it does not continue to look for a 3.5-inch disk. So, if you want to start up with a little disk, don't put a disk into the 5¼-inch drive (or leave the drive's door open).

If you have daisy-chained your 3.5-inch drives and installed one or more 5¼-inch drives with an internal controller card, the procedure is different. The IIGS will not scan to your daisy-chained 3.5-inch drives if you are using a 5¼-inch controller card in slot 6. It will search for a disk in the first 5¼-inch drive (slot 6, drive 1). If it doesn't find a bootable disk there, it will stop looking. When using a controller card, you must specifi-

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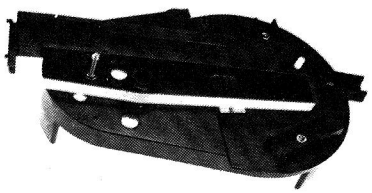

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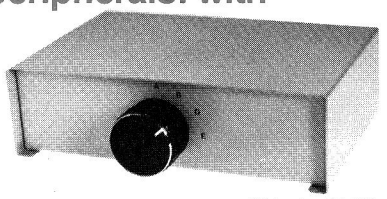

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The Control Panel is a good place to go.

cally tell the IIGS (by using the Slots menu) if you want your start-up slot to be slot 6 (the 5¼-inch drive) or slot 5 (the 3.5-inch drive).

To do that, start the computer and immediately enter the Control Panel. Make the appropriate adjustment in the start-up slot. Leave the Control Panel and reset the IIGS by pressing open-apple/Control/Reset. Now, the IIGS should "go where the disk is."

Another idiosyncrasy of the IIGS boot-up process is that the computer boots up only from the first drive of each type. You can start the system from a disk in either the first 5¼-inch drive or the first 3.5-inch drive. In other words, you can't boot from a 3.5-inch drive daisy-chained to the back of another or from the second 5¼-inch drive. If all the Control Panel settings are correct and the system still doesn't start, be sure that you haven't placed the boot disk in your second 3.5-inch or 5¼-inch drives.

If you still have problems, return to the Slots menu in the Control Panel and check to see that you have made the appropriate port selection: Smart Port for daisy-chained 3.5-inch drives in slot 5, Disk Port for daisy-chained 5¼-inch drives in slot 6, or Your Card for 5¼-inch drives operated by a disk-controller card. If you choose the incorrect setting, the Apple IIGS won't find the disk because it won't know how to "go where the DRIVE is."

Disk and DOS

You've looked on every side of your IIGS system disk to find ProDOS 8 but it isn't there. It *is* there. To ensure that users wouldn't confuse ProDOS 8 with ProDOS 16, the file was renamed P8 on the IIGS system disk. If you want to install ProDOS 8 on a new disk, just copy P8 from the SYSTEM subdirectory of the boot disk to the volume directory of the new disk, using GS System Utilities (or commercial utilities such as Copy II Plus, Pro-

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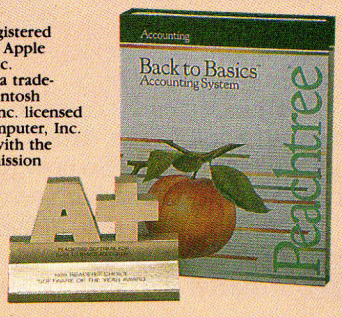

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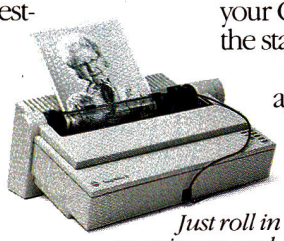

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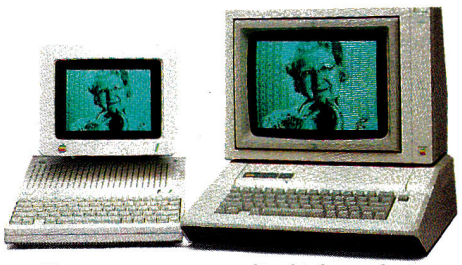

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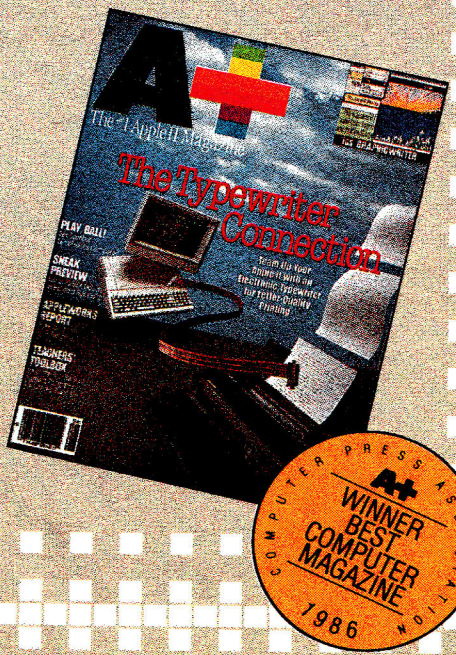

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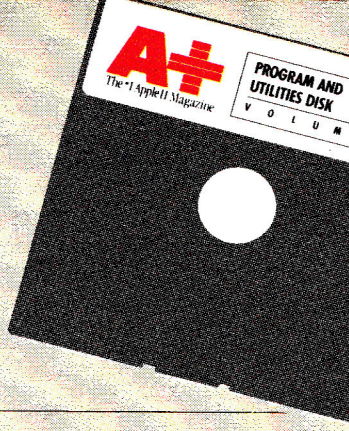

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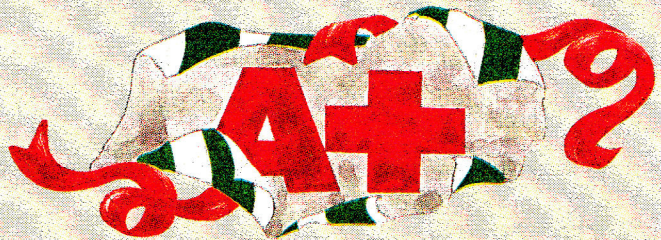

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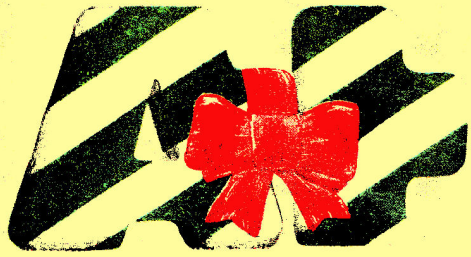

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SEL, or FILER). Rename it ProDOS. (If you already have a file called ProDOS on the new disk, delete it first.)

And then there's good old DOS 3.3, the 5¼-inch DOS that doesn't like those little disks. If you want to place DOS 3.3 applications on 3.5-inch disks, use a utility program such as AmDOS 3.5 (programmed by *A+* Senior Technical Editor Gary B. Little). It modifies standard DOS 3.3 so that it works properly with the 3.5-inch disks.

On the subject of managing files, a new version of Copy II Plus from Central Point Software should now be available that works with 3.5-inch disks for everything

Some software can't find the GS's built-in clock.

from file copying to disk editing to making backup copies. Unfortunately, it does not contain a utility for moving copy-protected programs from 5¼-inch to 3.5-inch disks.

Everything under Control (Panel)

The Control Panel is a good place to go when your IIGS isn't behaving in a predictable way. This adaptation of the Macintosh control panel allows IIGS users to customize their system. You can weave through the menus and change screen colors, alter mouse response, or configure ports. Some Control Panel changes (e.g., speed, color/monochrome, 40/80-column, keyboard options) take effect immediately; others (e.g., Scan, Slots) only after a reboot; and some (e.g., RAMdisk) only after you turn the power off, and on again.

Whatever you do in the Control Panel will be remembered by the IIGS, even after the power is turned off—and the IIGS can remember with a vengeance. You may find that a Control Panel setting that works brilliantly with one program can wreak havoc with another program. When things go awry, a Cook's tour through the Control Panel menus may provide a solution:

Display. In addition to being the place where you choose screen colors, the display menu is where you

The IIGS can remember with a vengeance.

select the color or monochrome mode and 40- or 80-column text. If your screen graphics aren't displaying properly (colors smearing in the desktop, for instance), try changing color to monochrome. Some 40-column IIe programs do not run in the 80-column mode or vice-versa.

Also know that IIGS computers occasionally have problems with the video graphics chip. If the Control Panel doesn't improve a screen-display problem and a phone call to the software publisher can't fix things, have a talk with your dealer about the video chip and Apple's upgrade policy.

System Speed. In a word-processing program, the Fast option of the IIGS can be an incredible advantage. Cut and paste at turbo speed. But in an arcade game you can throw a thumb out of joint just trying to keep up. When that happens, you use this menu to change the system speed from fast to normal. The setting determines more than how fast a program runs, though. Some copy-protection schemes will stop a program from loading if the IIGS is using the Fast system speed. In addition, print routines can work at halting tempos with the Fast system speed in operation. Choosing the Normal Apple IIe speed can turn things back to rights.

Clock. Some software, especially DOS 3.3-based software, can't find the IIGS's built-in clock. The only remedy is a change in the program. Consult the software vendor about a IIGS upgrade if your clock routines are not up to date. All ProDOS software will be able to read the clock if you're using ProDOS Version 1.2 or higher (see the "Disk and DOS" section of this article for the installation method).

Options. If your keyboard is not displaying the correct letters or characters to the screen, you may have accidentally changed the Display Language or Keyboard Layout settings. The IIGS is an international jet-setter and needs the ability to adapt to any country. The language and keyboard-layout settings allow the polyglot IIGS to work as well in Europe as it does in the good old U.S. of A. Unfortunately, an incorrect setting can seem to scramble the keyboard. Be certain that those selections represent the country (and character set) of your choice.

Slots. We already noted the significance of identifying the correct start-up slot. It's also important to realize that the IIGS looks at slots and ports a little differently than the IIe does.

If you install an internal card in your IIGS, be sure to change the Slots setting for that slot from Port to Your Card. If a card fails to work, the IIGS may not be finding it because the Slots setting is incorrect.

Some IIe cards do not work in the IIGS at all. Most multifunction cards that use a "phantom slot" are IIGS-compatible, and so is the Slot-Buster card, which doesn't use phantom slots. If switching the port setting doesn't put the card to work, contact the manufacturer to be sure the card is Apple IIGS-compatible.

Some cards already have been

The IIGS looks at slots and ports differently.

modified for GS use. One example is Central Point Software's Universal Disk Controller (UDC). Some very early versions of the UDC may not function in the IIGS (or even fit inside the GS case!). Central Point Software has made the necessary changes and will upgrade UDC owners who need IIGS compatibility.

Some IIe printing and telecommunications programs malfunction in the IIGS because of differences in serial port design. If that "Welcome Home" banner isn't getting printed or your modem just sits there all lit up with no place to call, contact the publisher about a IIGS upgrade. Most of the common programs now have drivers for the IIGS.

The Slots menu is also a fine place to experiment when you've

tried everything else and a program refuses to run correctly. Games offer frequent challenges to IIe/IIGS compatibility. Among the peculiarities I've encountered are a program that worked when the Smart Port was disabled in slot 5 (Phantasie III from Epyx) and a program that booted on a floppy disk driven by an internal controller card but not from a daisy-chained 5¼-inch drive (Drol from Brøderbund). Destroyer from Epyx ran only when the Mouse Port was disabled in slot 4. Using the acumen of a true IIGS adventurer, few of these fixes make much sense. They just demonstrate that a little imagination, some patience, and a lot of experimentation may be the path to IIGS relief.

Eventually, the Apple II world will adapt to the new abilities and benefits of the IIGS.

Printer Port/Modem Port. Setting up communications among printers, modems, and computers is always a knotty situation and too varied to deal with here. Aside from the variations in serial-port design between the IIe/c and IIGS, problems related to printer and modem connections will require the help of a dealer or manufacturer. When you contact an outside source for help, be sure to make clear that you are using a IIGS and ask for specific Control Panel settings that work with the product in question.

Alternate Displays

Returning to the Desk Accessories menu, notice the Alternate Display Mode option. From time to time when running IIe software on a IIGS, you may be confronted with, say, a screenful of the number 2 where a text screen used to be—an Alternate Display Mode condition. To view the screen as the programmer intended, enter the Desk Accessories menu, turn the Alternate Display Mode on, and return to the program. The text should now be readable. Don't turn the Alternate Display Mode on if it doesn't have to be on, however—it slows down the system.

Enabling this mode can also lock up the program. Since the alternate-display scramble often affects only a few screens in any given program, there is a temporary solution until the program's publisher releases a IIGS update. Take notes that detail the correct responses in the correct order. You may have to boot and reboot the program several times to do so. Then "fly blind" through the screens, entering the appropriate responses to the displays that you cannot actually read.

Eventually, the Apple world at large will adapt to the new abilities and benefits of the IIGS. Until that happens, exploring and surviving the IIGS doesn't have to leave you lost in the woods. Tinker with the techniques listed here, and soon you will be confidently mapping all the new regions of Apple IIGS computing. ✚

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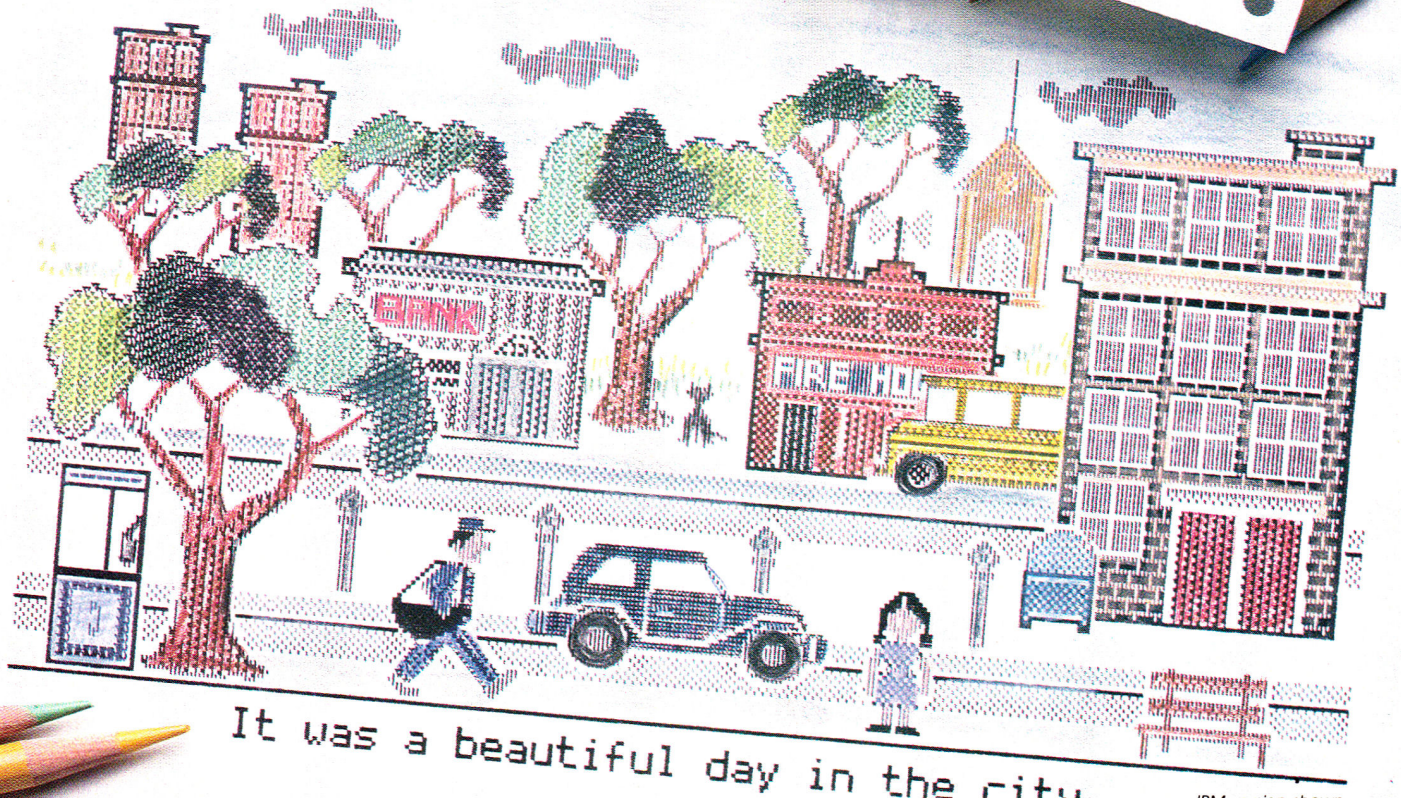

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BY DAN McNEILL

An old standby grows up and learns some new tricks

BANK STREET WRITER PLUS

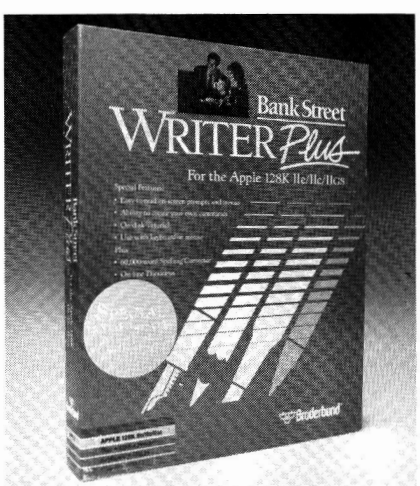
Bank Street Writer has an unusual history. It began with an experiment at a teachers' institute in New York City. Investigators wanted to see if text editing would improve children's writing, and since no word-processing programs existed for children, they had to invent one. The experiment succeeded, and so did the program. Soon Brøderbund Software was placing Bank Street Writer in homes across the country.

Like the children who first used it, Bank Street Writer has slowly grown up over the years, becoming swifter and more capable. The latest revision is significant enough for the company to give it a new name: Bank Street Writer Plus. With the Plus, the program enters early adulthood. It is now fit for most serious uses, although it does not, and does not claim to, compete with such heavyweights as MouseWrite and WordPerfect.

Bank Street Writer Plus offers three major features absent from its predecessor: a pull-down-menu format, macros, and a spelling checker with thesaurus.

You can use the Plus' pull-down menus either with the mouse or without. The previous Writer displayed an array of commands across the top, and you selected them by pressing the Tab key. Sometimes you had to make the highlight hop four or five times to reach your destination.

The new pull-down menus resemble those in the Macintosh, with a few important differences. First, you can reach commands by typing letter shortcuts. Second, if you click on a menu, it descends and stays descended whether you choose a command or not. To fold it up, you must click elsewhere. All in all, pull-down menus make Bank Street Writer Plus quicker and much more pleasant to use than its predecessor.



Macros

The plain Writer had no macros, but the Plus lets you create up to 20 function keys, each a combination of a numeral (0–9) with a closed- or open-apple key. Macros can generate text strings such as "Bank Street Writer Plus," and—more important—they can issue strings of commands.

Command macros on the Plus serve two primary purposes. First, they let you automate procedures the program doesn't provide, such as erasing a word you have just typed. Second, they zip you through procedures you may know very well, such as saving a file and returning to editing. This second power is important, because the program takes a solicitous approach to your welfare and constantly asks if you really want to do what you're doing. Macros speed things up by letting you sidestep such queries.

Spelling Checker

The third major change to Bank Street Writer is a whole new annex: a 60,000-word spelling checker and a thesaurus.

The spelling checker operates either on individual words or on entire documents. The individual-word option shows great variety and power. You select a term, and the checker ransacks the dictionary for it. If it isn't there, the program suggests possible alternatives. For instance, if you type *indispensible*, the checker will tell you it cannot find the word and proffer *indispensable* as well as *indefensible*, *indisputable*, and others.

The spelling checker can also

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perform a "wildcard" search. It lets you insert a question mark in the place of any letter you aren't sure of; then it tracks down the possibilities. For instance, if you typed *c?yptic*, you would get *cryptic*, but if you entered *o???r*, you would get *owner*, *outer*, *occur*, and many more. This feature, the manual notes dryly, can help you solve crossword puzzles.

The checker also makes another kind of puzzle, the Jumble, meaningless, in that it does anagram hunts. You type in a string of characters, and it tells you all the words those characters can form—an agreeable little trick.

The spelling checker can peruse your whole document, either from the start or from the cursor, and flag each word it doesn't recognize. Then it lets you add it to the dictionary, type it into your text, or ignore the whole discovery. On this level, too, the checker offers alternatives to misspellings.

The thesaurus is also able to locate synonyms to words in your text. Moreover, because some words have many synonyms and none may have the exact shading you want, the thesaurus highlights those synonyms with lists of their own. You can easily select these words and follow several trails until you either find *le mot juste* or exhaust your patience.

Other Features

Bank Street Writer Plus has several other pleasant features, including a calculator, a word counter, and a word-frequency analyzer. It can also carry out global replacement, whereas the old Writer replaced word by word. The Plus still limits document size to 3200 words, however. At a simple command, the program reveals how much space you have left.

Bank Street Writer Plus, like previous versions, is copy-protected, but it comes with a backup copy, and you can obtain replacements from Brøderbund through the mail. The program is available on 5¼- and 3.5-inch disks and works on ProDOS 1.2.

I have a few quibbles about the Plus, most of them involving the mouse. The documentation, although generally clear and informative, leaves discussion of the mouse till the end and comments on it only briefly. Hence, you must cope alone with aspects of the program's behavior that at first seem to be quirks.

For instance, if you enter text in the body of the document and then click the cursor elsewhere for more corrections, the cursor jumps instead to the end. Why? The Plus apparently assumes you will make only one internal correction at a time and provides a quick route back to your writing point. Unfortunately, writers don't always work that way. Once you get used to this peculiarity, you can compensate by simply clicking twice, but it's an irritation. Second, after deleting words from a line, the program does not at once shift the prose after the deletion to join the words before it. The documentation points out that you can reformat by pressing open-apple-R, but you can also reformat by clicking the pointer on some other line. These points are just not clarified in the manual.

These foibles are about as serious as a lump in an overstuffed sofa, though. Bank Street Writer Plus is a comfortable, appealing program that can now handle most chores you give it—and a few others besides. ✚

Dan McNeill is coauthor of Computer Sense *(Bantam Books). He lives in Culver City, California.*

VITAL STATISTICS

BANK STREET WRITER PLUS

This grown-up version of the word processing program initially invented for children adds a pull-down-menu format, macros, and a spelling checker with thesaurus to the original Bank Street Writer's capabilities.

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CIRCLE 231 ON READER SERVICE CARD

BY DAVID D. THORNBURG

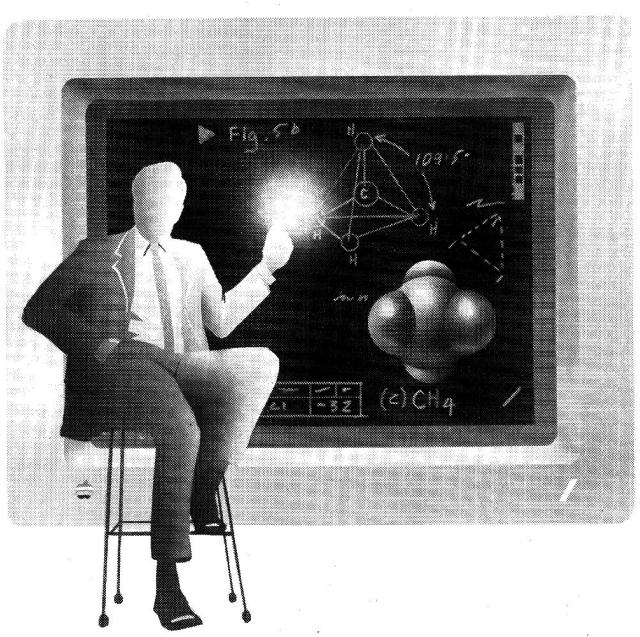
COMPUTER LEARNING MONTH

Perhaps the focus should be on teachers.

The Software Publishers Association has designated the month of October 1987 as "Computer Learning Month." During this month, special attention will be devoted to educational technology throughout the country.

On the surface, declaring a special computer-learning month may seem silly—after all, educational computing has been commonplace in many schools for quite a while. Yet this is a particularly good time to focus attention on this topic, since we are at a pivotal point in the history of this field.

Although one child/one computer remains an unattained dream of Apple's, we have come close to a computer-/teacher ratio of one-to-one. I think this ratio can trigger a shift of focus in educational computing, but more on that later.



The Educator's Computer

Apple Computer, Inc., has sponsored various "Apple for the teacher" promotions for some time now, but, on the whole, educational computing has continued to focus on students' use of these tools, for many reasons:

First, the capacity—long touted, but rarely exploited—of personal computers to promote highly individualized activities is supposed to help students progress at their own speed while freeing teachers for other tasks.

Second, the use of computers as a tool for writing and computation helps students become more proficient workers. Students can do a better job of editing essays when they can fix early drafts and print them with a few keystrokes, rather than having to retype the whole thing.

Third, the computer's animation ability (used to great benefit in Brøderbund's Geometry program on the Macintosh) allows students to explore concepts that cannot be adequately captured in the static pages of a book.

Fourth—and this is the big one—there are a heck of a lot more students than teachers, so any hardware vendor would be crazy to focus on teachers rather than children.

Other Tools

This last point is worth delving into. Let's look at other hardware that teachers have access to: overhead projectors, tape players, movie projectors, videocassette recorders, copiers, filmstrip equipment, and the like. Many schools have at least one each of these items and lend them out to classrooms as necessary. The VCR vendors are delighted to have their products in schools, and they would love to have a VCR in every classroom. But, interestingly enough, I haven't seen any major push to place a VCR on each child's desk, even though this application of video technology can be justified with arguments similar to those I just gave for personal computing.

Furthermore, in the case of the VCR, the cost of each machine is a fraction of the cost of a computer system—and the graphics are better! Why haven't VCR vendors jumped on this bandwagon? I don't know, but I'm just as glad they haven't, and I'll tell you why.

The VCR is a powerful educational tool in the hands of a good

ILLUSTRATION BY ADRIAN DAY

teacher. I visited a classroom a few years ago in which a teacher showed a social-studies class a videotape of a news event as it had appeared in five countries. Based on each country's perspective, the event looked quite different. The teacher then had the class divide into five groups—one for each country—and each group had to defend its country's position. This lesson turned into a creative-writing and public-speaking exercise that also showed the subtle bias of news broadcasts all over the world.

Fortunately, this teacher was able to experiment with his classroom VCR use without having any agencies peering over his shoulder looking for hard evidence to affirm the value of VCRs in the classroom. He didn't have to attend any VCR-literacy classes, and he didn't have to worry about choosing tapes from a state-approved list. All he did was quietly go about his business of getting students excited about learning.

Contrast this positive experience with the zoo we know as educational computing. First, we had parents and others who pushed personal computers into classrooms. A few teachers gladly welcomed these tools, even though precious little software was available in the late 70s. Many teachers, even today, are reluctant to embrace the wonders of this technology, and, quite frankly, they may have a point.

The function of schools is to educate. Education is a process that involves people and tools, the most important component being the people. A good teacher and willing students can accomplish wonders with a blackboard, and no level of technological support can help an unmotivated teacher with an unruly class.

My fear is that, in our zeal to promote educational technology, we have lost sight of the real goal—an educated public. Can tools help? Of course they can, but the tools aren't what is important here. Furthermore, they never were; Socrates and his students did all their geometry in their heads!

Lest you think I am being overcome by the summer heat (I wrote this article during a heat wave a few months ago), let me assure you that I continue to champion educational computing, provided that we recognize our real objective: to help students learn better.

Do computers make adequate tools in today's classrooms? I don't think so. Here's why.

Pessimists calculate that the student/computer ratio is 37 to 1. Optimists think it is lower—perhaps 25 to 1. No matter which figure you choose, the penetration of computers is far too small to have a real impact on education when we continue to support a model that places computers in front of students rather than teachers.

Teacher-Centered Computing

As dismal as the numbers may be when we consider the computer on the student's desk, the picture becomes far rosier when we look at the teacher's desk. If we took our computers out of the lab (where student access averages 20 minutes per week) and placed them on teachers' desks, we could have a revolution in educational computing of epic proportions.

In order to make this happen, software vendors have to shift their focus from students to teachers. Today's available teacher-oriented software is limited mostly to grading programs and the like. How boring.

Most creative computer-using educators I know have embraced The Print Shop from Brøderbund as their primary tool. At our house, I have to wait every morning for my wife (who teaches third/fourth grade) to finish printing out banners with which to decorate her classroom. We need more tools that allow teachers to exercise their own creativity in teaching.

A Prominent Display

New flat-panel liquid-crystal-display plates allow the projection of Apple II images by a standard overhead projector. This technology will have a tremendous impact on educational computing, once we can convince teachers to treat computers as they would projectors and other tools.

The day will come when there are enough computers for student-based educational computing to be appropriate. In the meantime, let's use Computer Learning Month as a kickoff point for thinking about the computer as a tool for teachers.

They deserve it. ✚

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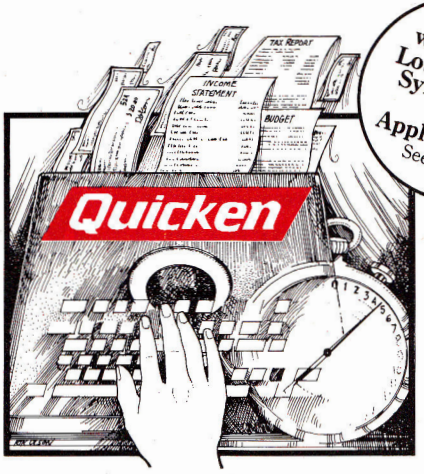

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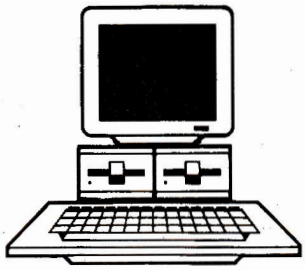

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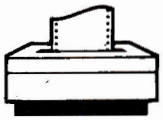

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This month, our recommendations come from the 1985 and 1986 editions of *Only the Best*, an annual directory from Education News Service in Carmichael, California. *Only the Best* draws its listings from reviews by 22 educational organizations across the country. Only products that receive consistently superior ratings appear in this publication. This month, we feature fine-arts and foreign-language programs.



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Eighteen drill-and-practice programs on musical rhythm, pitch, scales, chords, terms, and notation. Provides sequential learning for beginning to advanced music students.
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MELODIOUS DICTATOR
Grades 4-14

A program designed to teach the recognition and notation of single-line melodies. Program automatically adjusts to students' ability levels, from beginning to advanced.
List Price: $150
Requires: Apple II Plus or IIe; 48K RAM; one 5¼-inch or 3.5-inch disk drive; 4-part sound available with Micro-Music DAC Board ($160). ProDOS; copy-protected.
Temporal Acuity Products, 300 120th Avenue N.E., Building 1, Suite 200, Bellevue, WA 98005; (800) 426-2673, in WA (206) 462-1007

KOALA PAINTER
Grades K-adult

Program allows students to draw circles and squares, change colors, select "brush" sizes, erase, fill, magnify, and frame designs by moving finger or pointer across KoalaPad surface. Picture menu makes program fun and easy to use. Suggested as useful for handicapped students since drawings don't require use of computer keys. Package includes a KoalaPad and a program called Graphics Exhibitor.
List Price: $139.50
Requires: Apple II, II Plus, IIe, IIGS; 48K RAM; one 5¼-inch disk drive. DOS 3.3; not copy-protected.
Koala Technologies, Inc., 269 Mt. Herman Road, Scotts Valley, CA 95066-4029; (408) 438-0946

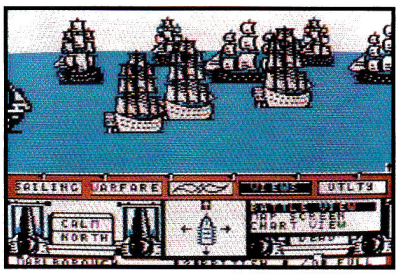
DO RE MI
Grades 3-14

Designed to teach the aural identification of individual degrees of major scales using solfeggio or scale-degree numbers.
List Price: $75
Requires: Apple II Plus, IIe, or IIGS; 64K RAM; one 5¼- or 3.5-inch disk drive; Micromusic DAC Board, MIDI, or IIGS sound recommended. ProDOS; copy-protected.
Temporal Acuity Products, 300 120th Avenue N.E., Building 1, Suite 200, Bellevue, WA 98005; (800) 426-2673, in WA (206) 462-1007



ANAGRAMAS HISPANOAMERICANOS
Grades 6-10

A game designed to teach and review the names, capitals, and locations of the countries of South and Central America, Mexico, and the Caribbean. Students attempt to complete a map by correctly locating the countries and capitals and spelling their names correctly. Provides immediate feedback and keeps students' scores. Spanish text appropriate for first-, second-, and third-year Spanish-language students.



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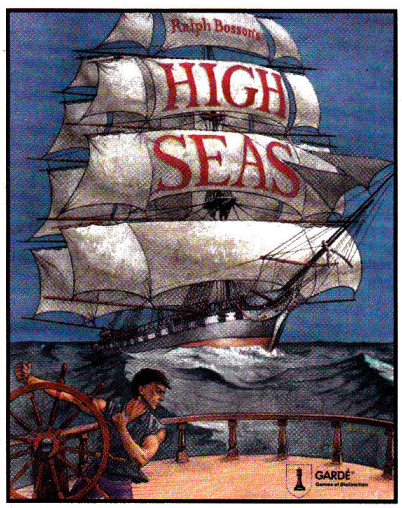

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Grades 6-10
A Spanish Hangman-style game that uses graphics to reinforce and review vocabulary on five different topics, in two levels of difficulty. Gives correct answers and scores in Spanish. Has color, music, and a text file that allows teachers to enter their own vocabulary words.
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Program provides vocabulary drill and practice in two game formats, Hangperson and Pyramid. Allows translation from English to Spanish, Spanish to English, or combination.
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Provides vocabulary practice in format of the French Achievement Examination. Student selects appropriate word from a choice of four options. Program provides score and meanings of missed words.
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Program provides vocabulary drill and practice in two game formats, Hangperson and Pyramid. Allows translation from English to German, German to English, or combination.
List Price: four modules, $39.95 each
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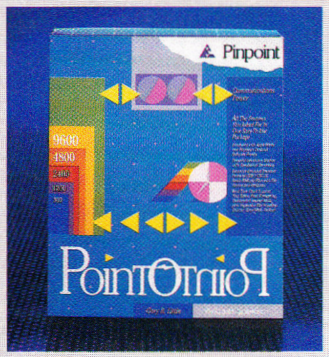

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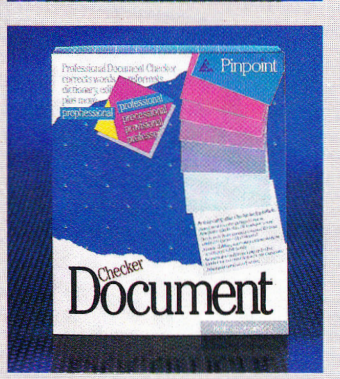

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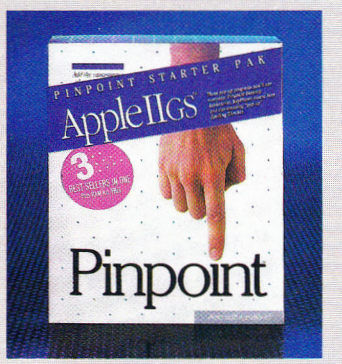

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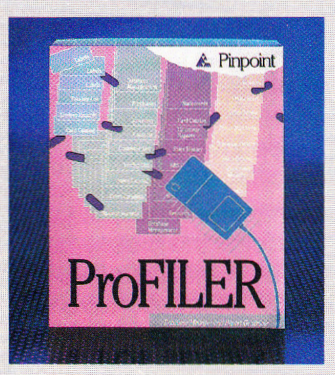

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TEACHING APPLEWORKS TO HIGH SCHOOLERS

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SUGGESTIONS FOR OUR READERS

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FEATURE REPORT *BY DEAN SLUYTER*

TEACHING APPLEWORKS TO HIGH SCHOOLERS

East Coast prep schools are notoriously traditional; mine is pretty progressive, though. Over the years, I've convinced the administration that my Transcendental Meditation course doesn't make the kids shave their heads, that Classic Cinema is a legitimate elective, and that it's all right for my Acting and Public Speaking students to lie on the floor and imitate frying eggs. My latest revolutionary proposition was that computers should not be the sole domain of the math department.

The math wing had had a room full of Apple IIe computers for several years, where those who were so disposed learned BASIC, solved mathematical problems, and engaged in an occasional clandestine game of Ironsides. Many kids, though, persisted in their vaguely hostile indifference to these apparently confusing, possibly useless machines.

It seemed clear to me that the curricular item that would change those attitudes was AppleWorks, the program that has become the all-time Apple software champ by being irresistibly easy, useful, and fun. Our math chairman graciously scheduled time in the computer room for me, I rounded up some bemused guinea pigs, and we launched our pilot program. By banging my way through some trial and error and listening to the kids, I wound up with a course that worked.

How to Teach Anything

Of course, the secret of teaching AppleWorks to high schoolers is the same as the secret of teaching anything to anyone: excitement. You have to bounce off the walls and be lively, funny, and passionate about your subject. Weren't your best teachers a tad on the eccentric side and downright evangelistic about the proper placement of commas or the causes of the Punic Wars? This kind of teaching usually succeeds, no matter what the lesson plan.

You also need to make everything apply to your students' lives, to proceed from concrete experiences to general principles.

Above all, you need to believe in the intelligence of kids. Too many subjects make it hard for the kids to believe in themselves: English grammar doesn't make a lot of sense, and often students conclude that the incoherence is their own. AppleWorks mostly makes sense.

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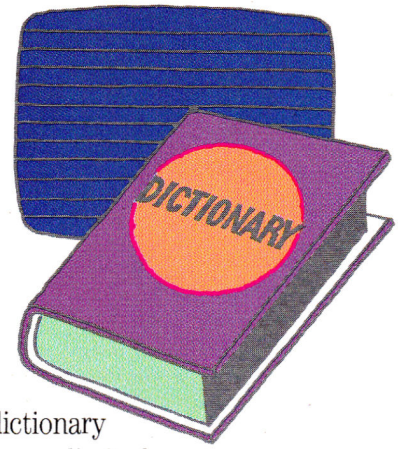

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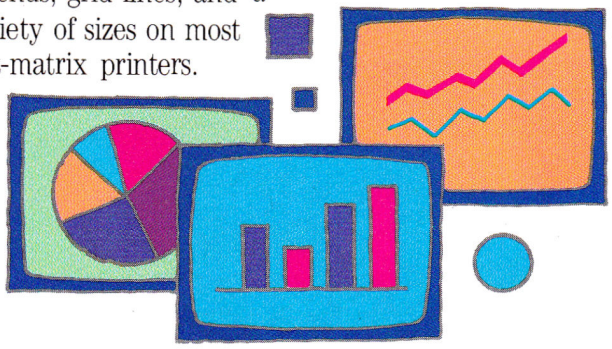

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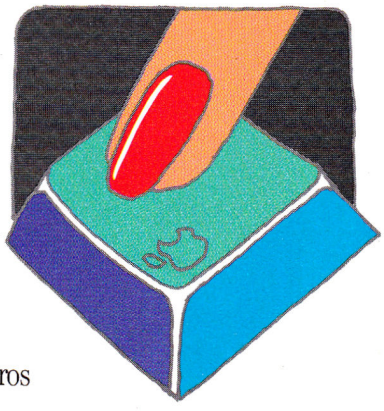

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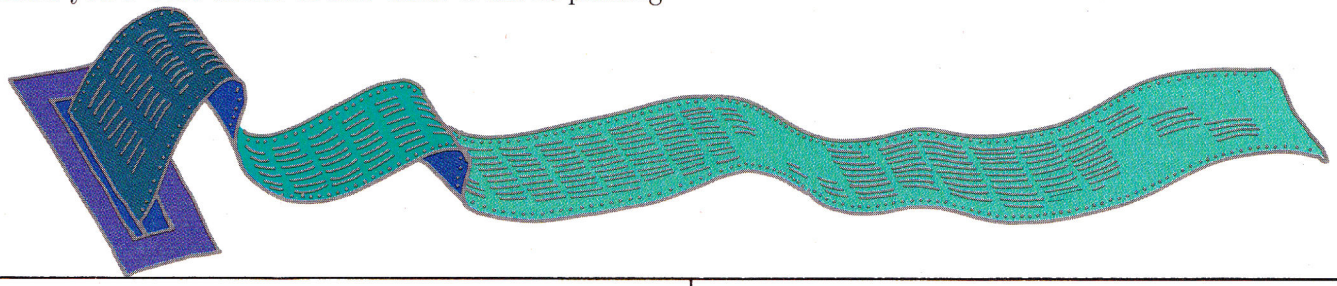

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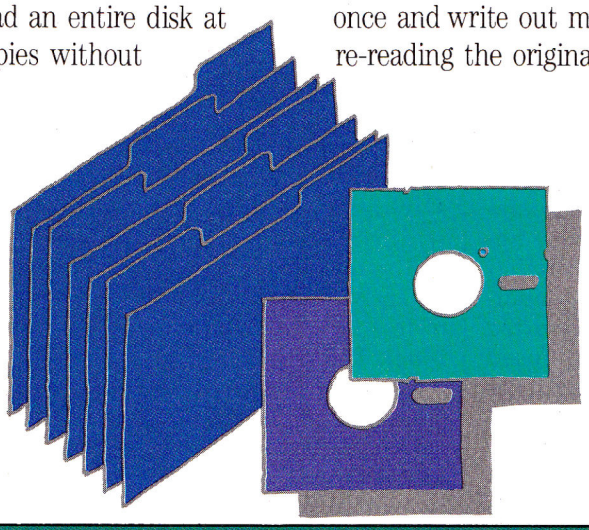

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```
File: Down at Dinghy              REVIEW/ADD/CHANGE
=====|====|====|====|====|====|====|====|====|====|====|====|=
     J..d. Saligner's "Down at the Dingy" is prehaps the the
finnest peace in his collection, "Nine Stories". the storie,
one could sa y, hassalinger's signature all over i.t  It
demonstrates his beleif in the   peotic wisdom of of
children and the importence pr;eserving innocense. The
dialoque is Salunger at best: frought w/ illusions & spiked
w/ minutly detalled body   languag3. And fo course is there
always his de light in teasing teh reader with what appear
be puzzzles.. Why is Sandra the made so nervous?    Why does
lionel kep running away home/

wierd name/ and is the uncle
teh same guy guy as in "a Fin
but Salinger rights thisway.
put hissignature the in story
"Jerome the Ostrich" t-shirt.
salinjer is well known for he
ostrich like?0 style of life.
caricature/

------------------------------
Type entry or use @ or  cmds
```

Figure 1: This sample file provides practice in making simple insertions and deletions.

Figure 2: Students use open-apple/D to censor parts of paragraphs 1 and 4; open-apple/M to get the second pig's adventures before the first's; and open-apple/R to respell pigg *and* bundel *and to turn those rubber bands to sticks.*

```
File: Three Piggs                 REVIEW/ADD/CHANGE                Escape
=====|====|====|====|====|====|====|====|====|====|====|====|====|==
     Once apon a time, were three litle piggs, and they all
went out to seek their fortunes. So they kisssed there
mother goodbye and of they wnet. They were especially
careful not to go anywhere near a butcher shop, for stories
had come back to them about little wayfaring piggs becoming
ingredients for BLT's
     Now the second little pigg met a man with a bundel of
of rubber bands, and he said, "OH, Mr Man, won't you sell me
some rubber bands?" He bought thenm and built a moderately
sturdy house out of rubber bands
     The first little pigg met a man with a bundel of straw,
and he thought, "Well, straw should be a good materal from
which to build a house." So he asked the man, "Will you sell
me your straw?" He bought them and buildt his house
          The thir little pigg was a wise little pigg. Hes
the one our parents want us to be like, but lets admit it:
every kid who hears this story hates that smug,
conscientious little porker. Anyway. he met a guy with a
load of bricks and bought them and bu8ilt his house out of
bricks
------------------------------------------------------------------
Type entry or use @ or  cmds          Line 14  Column 27      @-?
```

Built into its structure is layer upon layer of intelligence, and, as theirs meets its, an "Aha!" experience results. You know you're teaching it right when you hear "Awesome!" and "Hey, this is easy!" Besides, what else can you teach that's as intellectually exacting as geometry and as immediately useful as auto shop?

Fear and Loathing

On the very first day, I address the latent computerphobia that lurks just behind the nervous smiles. I introduce the keyboard, pointing out its similarities to the familiar typewriter, plus a few handy extra keys to make life easier. I explain disk drives and monitors, hand out AppleWorks and data disks, walk everyone through the booting process, and then confront the fear that haunts every novice. "Let's all hit the wrong key and see if we can make the computer blow up!" On the other hand, 5¼-inch floppies must be revealed as the delicate, unreliable medium they are. I like to kill one by stomping on it, pouring Coke on it, and then dissecting the remains and displaying the flimsy, tattered innards.

Curriculum

After introducing the hardware, the floppies, and the concepts of files and filing, I have all the students create a new word-processing file—an autobiography, with their own name as part of the filename—and type for a few minutes. Then I ask them to find mistakes they've just made or places where they'd like to add and remove words, and I show them how to use the arrow and Delete keys. As the text cordially makes way for the insertions, I hear the first murmurs of delight.

I show how to save with open-apple/S and then have them pick up "Down at Dinghy," a one-paragraph file on the data disk (see figure 1). This file gives them further practice fixing misspellings, superfluous returns and spaces, omitted words, repeated words, fused words, transposed words, and the like—all problems that have too often plagued them, armed only with a cranky typewriter and a bottle of lumpy Liquid Paper running on empty—all problems that they can easily solve with skills they've just learned in a few minutes.

For the next few days, I start each class by reviewing the previous material, talking everyone through the booting process, letting them noodle around with the autobiography, and then picking up our next sample file, "Three Piggs."

This one is a virtual mine field of mistakes, not only of grammar but also of sequence, fact, and taste—sort of like real life. "Three Piggs" requires major surgery. For a while I let the kids snip away with the simple arrow and Delete skills they've learned—till these recently miraculous abilities start to feel like hard labor.

Block That Pig

Now the stage is set for block Delete to eliminate sections of the story unsuitable for small children; Move to put paragraphs into correct sequence; and Replace to fix chronic misspellings and misno-

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mers (see figure 2). The file's length calls for more efficient cursor control (open-apple/arrow keys and open-apple/1–9). I introduce each alphabetical command with a litany such as "OK, now, if we want to M-M-M-Move this paragraph, what do you suppose the command would be? Open-apple/M? Good!"

As we go through each command sequence, I point out (repeatedly) the prompts at the bottom of the screen, as well as the Escape cue at the top; the students find it reassuring to know that every sequence comes with instructions and a way out. I let the kids spend a few days learning these commands and worrying slightly about forgetting them before I reveal (to the accompaniment of relieved oohing and aahing) the Help screen.

The next few sample files introduce the rest of the important word-processing commands: open-apple/C, F, N, Y, E, and T, and Control-L and -B. Well over half the course is dedicated to word processing; it's the function that has the most immediate practical value for most students, and it's a good foundation for learning the other two modules. Eventually we press open-apple/O to discover a veritable treasure trove of powers. Now we learn the most important printer options (margins, spacing, centering, unjustifying) and, with open-apple/P, print our work for the first time. I generally avoid homework, but I do have the kids use open-apple/H to produce hard copies of the Help and open-apple/O screens for review at home.

Add Macros

At about this time, I point out that the prompt at the bottom of the screen also mentions solid-apple commands. That's because the AppleWorks disks I've handed out are enhanced by MacroWorks from Beagle Bros. (I use AppleWorks Version 1.3 or earlier, which is compatible with MacroWorks. The later release Super MacroWorks works with AppleWorks 2.0 but lacks the handy built-in macros.) We learn the most useful macros, such as deleting a word or a line at a time, zipping the cursor to the beginnings and ends of lines, and centering or adding files with one keystroke. By now I am encouraging students to bring homework to class. For a paper on the Cuban missile crisis, I show how to compose temporary macros for Kennedy, Khrushchev, Castro, et al.

Then I hand out hard copies of a film script with the assignment of reproducing it. Because they are highly formatted, film scripts are an ideal proving ground for macro power. Returning to real-life prob-

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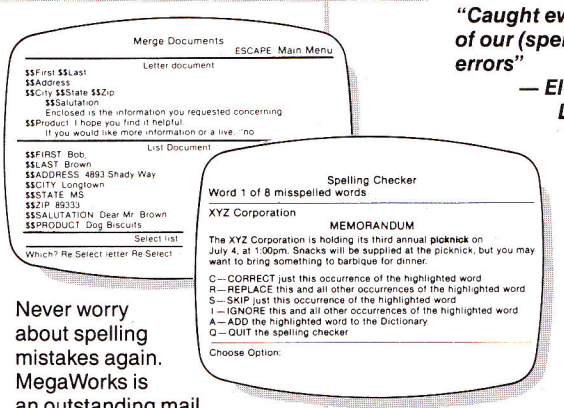

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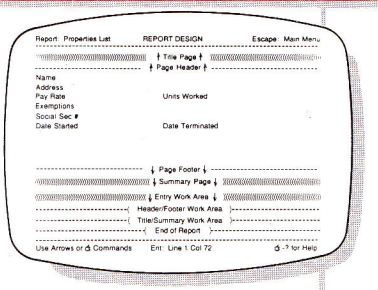

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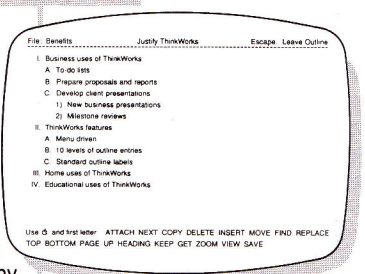

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lems, we write a standard cover letter to accompany several job or college applications—a chance to use EK to insert text from the keyboard.

With a few weeks left in the course, I move on to the database module. Male Stars (figure 3) is filled with information (mostly bogus) that we might need if we were movie producers looking for a lead actor. Depending on our criteria, we use open-apple/A to rank our choices. (I also let the guys add themselves to the list and then realphabetize it.) Finally we decide we want, say, a macho star under 35 who'll work for less than $12 million, and use open-apple/R to generate a list.

Now familiar with the structure of the database module, the kids can write their own databases from scratch. I have them bring in their personal address books and make an improved electronic version, including a "comments" category in which they can put codes for partying habits, membership in various cliques, and the like; then they generate appropriate guest lists for various social functions. We print out a "tables-style" phone book as well as address labels for party invitations.

We also make a list of college or summer job prospects and do a mail-merge with the application letter we wrote earlier. EK was

```
File: Male Stars.                REVIEW/ADD/CHANGE                Escape: Main Menu

Selection: All records

Last        First    Age Films Debut Image      Best Film                  Price $
==============================================================================
Beagle      Sam      97  234   1903  Macho      Rampaging Beagles          5,000,000
Brando      Marlon   57  39    1951  Method     Streetcar Named Desire     8,000,000
Cruise      Tom      25  7     1979  Macho      Color of Money             4,000,000
Dean        James    -   3     1954  Method     Rebel Without a Cause      -
Denver      Bob      49  3     1972  Lummox     Gilligan Meets Bambi       2,000
Gable       Clark    -   72    1931  Sophistic  Gone With the Wind         -
Hoffman     Dustin   49  22    1968  Sensitive  The Graduate               9,000,000
Price       Vincent  68  197   1942  Horror     The Raven                  3,500,000
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Wizard      Mister   55  3     1952  Sensitive  Fun W/ Kitchen Chemistry   40,000

------------------------------------------------------------------------------
Type entry or use @ or  cmds                                    @-? for Help
```

Figure 3: Real-world accuracy is not always necessary for practice in manipulating data.

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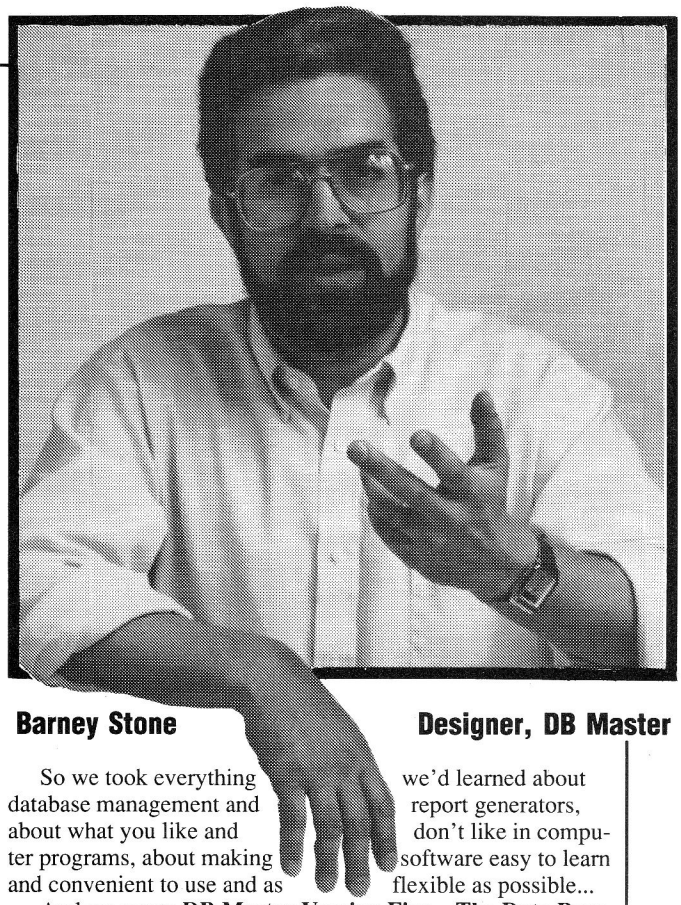

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- 30 screen pages/record
- 250 characters in alphanumeric fields
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- Floppy disk files—up to 50 disks

Field Types:
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- Numeric—3 types
- Dollar/cents, to $99,999,999,999,999.99
- Yes/No—only accepts "Y" or "N"
- Date—11 formats available
- Add Date—date when record was added
- Edit Date—last date when record edited
- Add Time—time when record was added
- Edit Time—time when record last edited
- User Defined—for phone & social security numbers, part #'s, etc., 2-20 characters, control over type of characters allowed in each position
- Label Only—no input area—useful for customizing screens

Computed Fields:
Floating point numeric, dollar & date fields can be computed fields.
Examples: (the F stands for Field)
F10 = F7+F8+F9+.06*F12
F28 = F10*(F50>=F10)+F50*(F50<F10)
F5 = (F10>100 AND F20< 1000) OR (F27 > F26)

Report Generator:
- report width: 20 - 255 characters
- up to 255 lines/record on up to 3 pages
- up to 255 fields per report
- print labels up to 5 across
- header and footer lines: separate lines of text (including normal and computed fields) at beginning/end of report, page, group of records, and/or column
- column subtotals and totals, page #s, record #s, & date or time report is printed can be printed anywhere on the page or in header and/or footer lines
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good; MM—which requires AppleWorks 2.0—is better.

Money and Tests

I give the spreadsheet the least attention, simply because it's the most complex module to learn and the least inherently fun. (Do I have this prejudice because I'm not a math guy?) Returning to our movie-producer fantasy, I show a budget spreadsheet I've prepared. But the Teamsters have demanded a $7/hour pay hike; we recalculate everything to the bottom line, and, based on our new budget strictures, go back to our Male Stars database to find a cheaper actor. I also have the kids lay out a simple spreadsheet for their own monthly personal finances.

Now we're ready for the final exam. I hand out hard copies of a highly formatted document I've prepared: the Comptroller's Report for Megabucks International's production of Preppies on Uranus. Again the assignment is to reproduce the document, which requires using virtually all the functions and commands that we have encountered, including cutting and pasting between different files and modules, creating footers with automatic page numbers, forcing page breaks, and so on. I deliberately throw in one or two fairly obscure tasks that I haven't taught—such as getting a database category to print its value (open-apple/V)—and see if the kids can figure it out themselves.

Adapting

All this material makes for a pretty full semester. Of course, you can adapt the curriculum in many ways. A class with previous computer experience (which is becoming the norm as time goes on) can move more quickly to advanced operations; kids with no typing skills need to proceed more slowly, drill with typing games, and perhaps stick to the simpler word-processing functions. As an English teacher, I'm especially excited about integrating AppleWorks word processing into my regular English courses; it opens up a new, much more fluid way to teach (and do) composition.

The veterans of my course are starting to infiltrate the school, recruiting new converts. A few have gone off to college—with Apples. We're getting our own computer room in the humanities wing and structuring more classes. My revolutionary courses are becoming so respectable it makes me nervous. Next job: teach the teachers. ✚

Dean Sluyter is a teacher and freelance writer. His weekly film column, "The Screening Room," appears in several East Coast newspapers. He is coordinator of the Humanities Computer Center at The Pingry School in Martinsville, New Jersey.

HOW DO YOU SPELL RELEIF?

Spell-checking is one of the most vital services computers can perform for high-school students. Many students have been made to feel dumb since the second grade because they can't spell, and there's little they can do about it. Spelling appears to be more a neurophysiological function than an intellectual skill; spellers are born, not made.

It's a great relief, then, when students realize how computerized spell-checking can ease this pressure. Unfortunately, AppleWorks doesn't spell-check, so I teach my kids to use add-on spellers. Both Sensible Speller and Document Checker are quite serviceable. Novices find Sensible Speller slightly more convenient, but Document Checker has superior features; it finds repeated and fused words, can be configured to tag misspelled words without respelling them (for dictionary practice), and can check up to 16 documents nonstop. Pinpoint's Spelling Checker is probably the most accessible. It pops up from within AppleWorks (the others require rebooting), and you can invoke it to check a word, paragraph, or entire document. I don't use it for my classes, though, because it requires Pinpoint Desktop Accessories, which is incompatible with MacroWorks.

VITAL STATISTICS

Sensible Speller ProDos
Sensible Software, Inc.
210 South Woodward, Suite 229
Birmingham, MI 48011
(313) 258-5566
List Price: $125
Requires: Apple II Plus (with language card), IIe, IIc, or IIGS; 64K RAM; one 5¼- or 3.5-inch disk drive (two recommended); AppleWorks or other ProDOS-based word-processing program. ProDOS; copy-protected.

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Document Checker
Pinpoint Publishing
P.O. Box 13323
Oakland, CA 94661-0323
(415) 654-3050
List Price: $69 (also available with Spelling Checker for $99)
Requires: Apple IIe (enhanced), IIc, or IIGS; 128K RAM; two 5¼-inch disk drives; AppleWorks, Apple Writer, MouseWrite, or ProDOS ASCII files. ProDOS; copy-protected.

CIRCLE 376 ON READER SERVICE CARD

Spelling Checker
Pinpoint Publishing
See above
List Price: $69 (also available with Document Checker for $99)
Requires: Apple IIe (enhanced), IIc, or IIGS; 128K RAM; two 5¼-inch disk drives; Pinpoint Desktop Accessories Version 1.1 or later; AppleWorks (AppleWorks 2.0 requires Spelling Checker 2.0). ProDOS; not copy-protected.

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TIP FOLDER

BY STEVE HIGH

WORD-PROCESSING HELP

The AppleWorks help menus are "context-sensitive." When you ask for help, you get the kind that AppleWorks thinks you need, based on where you are in the program. Two of the most important word-processing commands are not mentioned in the word-processing module help menu, however. They are open-apple/E and Control-Y. These are both described in the main menu's help section. You surely know what open-apple/E does (it changes the cursor type from insert to overstrike), but did you know that Control-Y works just as it does in WordStar and deletes everything on the current line to the right of the cursor? You did? Well, did you know that open-apple/Y did the same? I didn't. Actually, you can do everything in AppleWorks without ever touching the Control key; Control-B and Control-L are redundant commands for the UB, UE, BB, and BE (underlining and boldface) functions on the word-processing module's Printer Options menu.

AVOIDING THE BIG O

Open-apple/O gives you a list of printer options in each of the three AppleWorks modules. The list in the word-processing module is so big it can make you wish you hadn't looked. One alternative is to enter at one time centered, unjustified, group begin, group end, page header, page footer, and any other options you'll be likely to need throughout the document. You can enter them all at the beginning of your document and then copy them to the Clipboard and paste them in where you need them as you work.

If you have one option that you plan to sprinkle liberally through your document—New Page or the centered/unjustified combination, for example—you can copy it to the Clipboard once and then copy (not move) it repeatedly as necessary. If your format seems to go haywire at certain points, remember that open-apple/F can "find" printer options as easily as text. You may have left some unwanted printer options lying around that are causing the undesirable printing results. Finally, you can toggle the display of the printer options in the document on and off with the Zoom (open-apple/Z) command, so you don't have to look at all those options all the time.

APPLEWORKS AND THE IIGS CLOCK

You don't need to patch Aplworks. system in order to get AppleWorks 2.0 to read the built-in clock. You do, however, need ProDOS 8. When AppleWorks boots up, the version number of ProDOS is displayed on the screen. Reader James Gray tells how to remedy the problem if the version number is not 8: You back up AppleWorks, delete the file PRODOS from the AppleWorks boot disk, copy the file P8 to AppleWorks from your GS system disk (it's in the SYSTEM subdirectory), and rename the P8 file PRODOS.

As Gray points out, ProDOS 16 has a nice-sounding ring to it, but it doesn't work with AppleWorks. You need P8 to get the job done.

APPLEWORKS 2.0

Here are three good reasons to pay $50 for the AppleWorks 2.0 upgrade.

1. The new manual. This book, which would retail for $20, reflects the experience of millions of hours of AppleWorks use and several dozen articles and books on the subject. Author Charles Rubin, who pioneered a method of moving files between AppleWorks applications, says that the new sections on transferring data are excellent. In this connection, it is worth noting that you no longer have to configure a "Silentype disk printer" with 2.0; the standard print to text file on disk command automatically adds carriage returns to

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2. Compatibility with future AppleWorks enhancements. The amazing Super Macroworks program from Beagle Bros, for example, works only with AppleWorks 2.0.

3. The Save command. If you have oodles of RAM but only a puny 136K disk to put your new large files on, you'll appreciate the improved Save command in 2.0, which gives you the option of automatically deleting a file from disk just before saving a revised version of it. You will be vulnerable to a power outage for a few seconds, which is often better than returning the next morning to find your unsaved file and an insufficient room on disk message. Here's a macro that uses this new command. It's for people who want to jump up and leave without waiting to see if their large file was indeed "carefully saved": <OA-S>y.

SPREADSHEET-FUNCTION EQUIVALENTS

AppleWorks Version 2.0 added the @ROUND, @AND, and @OR functions to the spreadsheet module. Reader J. Vikramdev Rao of Hyderabad, India, offers three formulas for earlier versions of AppleWorks that approximate these functions.

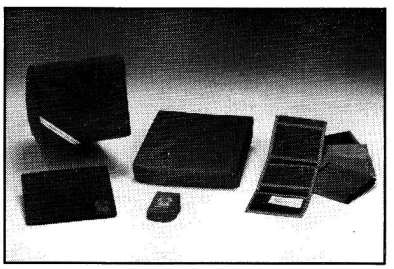
For @ROUND, use the formula (@INT(((A1)+.005)*100))/100, with A1 as the cell reference or formula to be rounded. Doing so rounds the value in cell A1 to two decimal places.

For @AND, use the formula @IF(A1,(@IF(B1,1,0)),0), which returns a *1* only if the logical statements represented by A1 and B1 in the formula are both true. This formula approximates the @AND function.

For @OR, use the formula @IF(A1,1,(@if(B1,1,0))), which returns a *1* if either of the logical statements represented by A1 or B1 in the formula is true. If neither statement is true, the formula will return a *0*. This formula approximates @OR.

LINE-AND-A-HALF SPACING

This selection, which is available on most typewriters, is absent from the AppleWorks word-processing module. But reader Michael Ernstoff of Los Angeles observes that you can get it by changing your LI (lines per inch) setting to 8 instead of 6 and then choosing DS (double space). You must have been a whiz at fractions, Mike. We checked out your tip and you're absolutely right! ✚



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CIRCLE 136 ON READER SERVICE CARD

BY ROBERTA SCHWARTZ AND MICHAEL CALLERY

THE EDUCATION CONNECTION

Students display their computer-graphics expertise.

Art and education have always gone hand in hand. We're referring not only to art as a subject, where students learn skills and aesthetics, but art as it enhances learning in other subjects. A classroom without bulletin boards covered with pictures and posters would be a gloomy, uninspired place to learn. Textbooks without illustrations would be shunned by students, and workbooks would be virtually useless without diagrams.

Today, teachers and students are discovering an exciting new art tool to work with—the Apple.

We've received letters from teachers who are extremely enthusiastic about using computer graphics in their schools. Many of them have sent disks with their students' creations to the Graphics Gallery. Since this month's issue of *A+* focuses on Computer Learning Month, we thought this would be the perfect time to group these submissions together and share them with you. The images described here are all shown on the following two pages.

Classroom Computer Graphics

An increasing number of students have their first exposure to art through an Apple. Although most schools are using the Apple IIe, many teachers have indicated that they're starting to receive Apple IIGS computers. With Apple IIs, students learn not only about computer graphics, but they also learn about art theory: composition, form, texture, perspective, and so on. Using computers, students can create static as well as animated images, and, with a little programming skill, they can also create interactive visual displays.

At Rocori High School in Cold Spring, Minnesota, Linda Reiland's ninth-grade students used an AppleMouse with Dazzle Draw to create images and incorporated these images into a collage entitled "Who Am I?" For inspiration, the students chose a masterpiece that enthralled them, and then they effectively made the transition between the old and new media.

An increasing number of students have their first exposure to art through an Apple.

International Apple Graphics

Apple graphics are used in schools all over the world. Barry Farmer teaches grades K-9 at Asir Academy, an international American-curriculum private school in Saudi Arabia. Barry sent us some images created by his seventh- and eighth-grade students. They used Dazzle Draw on the Apple IIe computer.

Metamorphosis

At Sachem High School North, in Lake Ronkonkomo, New York, Barbara Derison's student Karl Pontoppidan focused on metamorphosis. Because the computer let him save an image, alter it, and save it again under a new name, Karl was able to focus on the project's concept and put all his energy into the creation of the graphics rather than on the mechanics of reproducing an image many times.

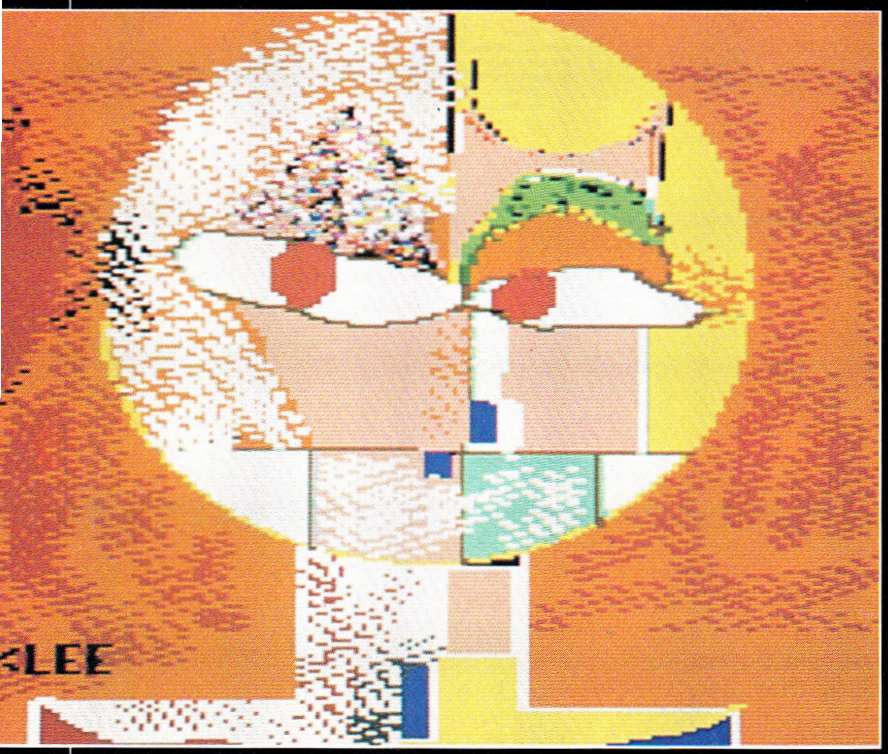
Graphic Activities

Computer graphics can be effectively integrated into all subjects and can inspire inventive student activities.

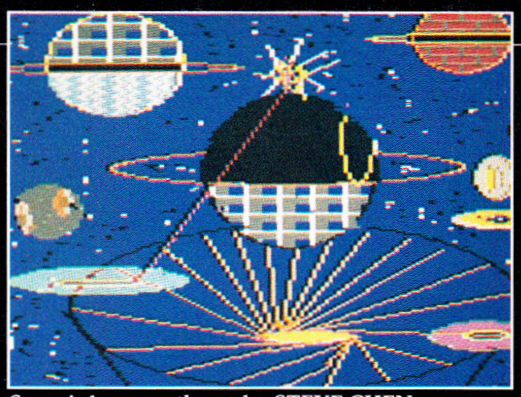
As a project for his school science fair, Matt Champa of the Watkinson School in Hartford, Connecticut, used Dazzle Draw to create a series of images to trace the origin and effects of acid rain. Using Animate, he combined these images with animated figures to create a self-running project.

Stephen Winding is a Technology Education (formerly Industrial Arts) teacher. His eighth-grade students at Islip Junior High School on Long Island created wire-frame images on paper. Then they translated them to the computer, using Apple Graphics Tablets, and manipulated them with Dazzle Draw. Using the Apple IIGS, Winding created a video, called "Memories," using his students' images in a slide-show program adapted from Beagle Graphics. He then overdubbed the show with a Music Studio rendition of "Memories" from the musical "Cats" and entered the video into a local school video competition, where it last year won an award.

Robert C. Moore of Laurel, Maryland, is using the computer in an innovative way. Moore sent an image that he describes as "an imaginary house that belongs to my imaginary friend, Leon. Leon

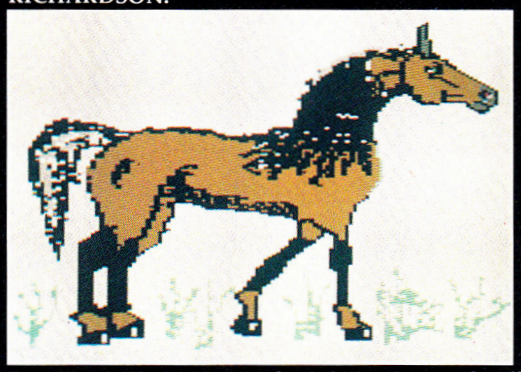


MATT DOUG from Rocori High School

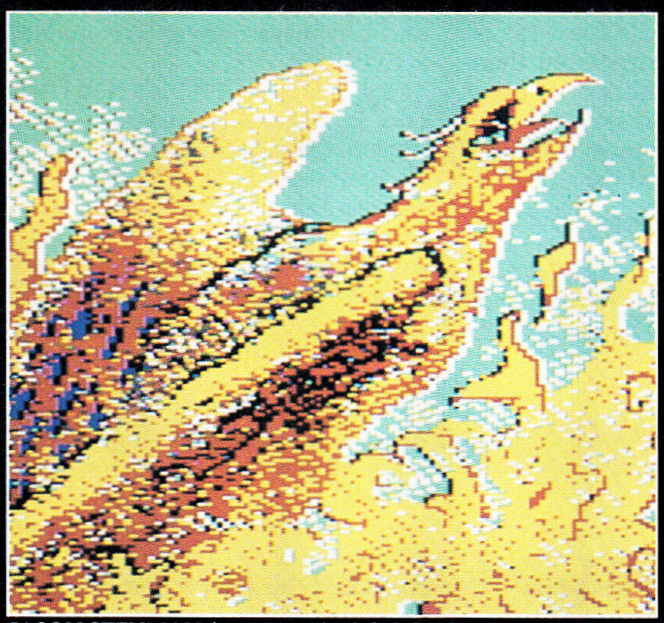


Space is by seventh-grader STEVE CHEN.

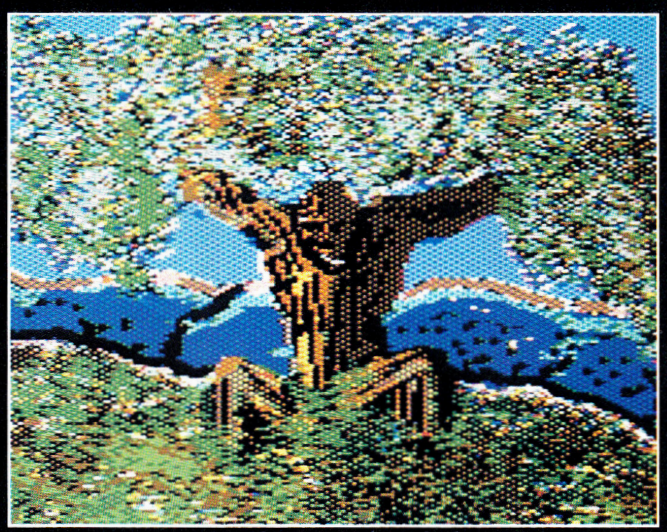
Horse is by eighth-grader BARBARA RICHARDSON.



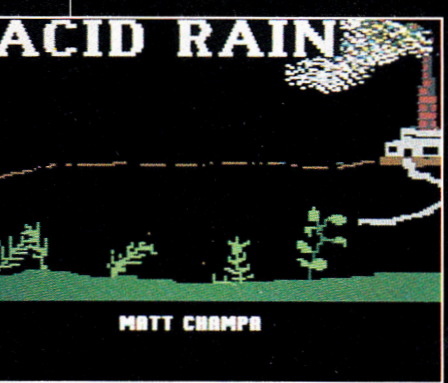
Barry Farmer's students at the Asir Academy, a Saudi Arabian international school, created the two images above with Dazzle Draw.



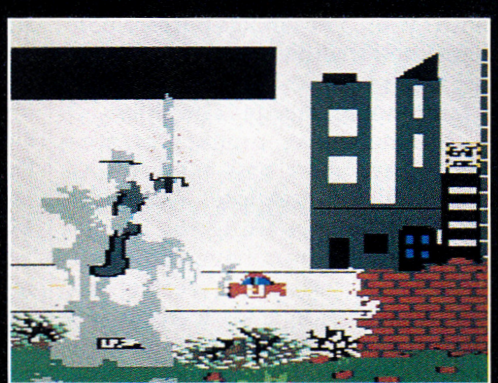
JASON STENMAN from Rocori High School



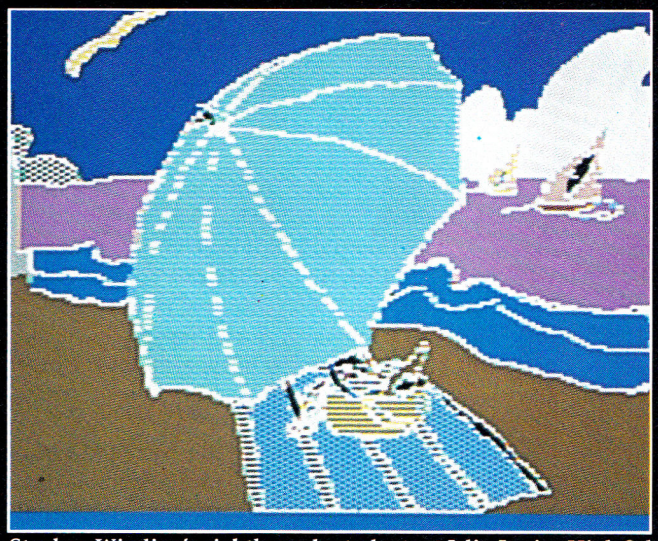
Mantree by KARL PONTOPPIDAN from Sachem High School North in Lake Ronkonkomo, New York

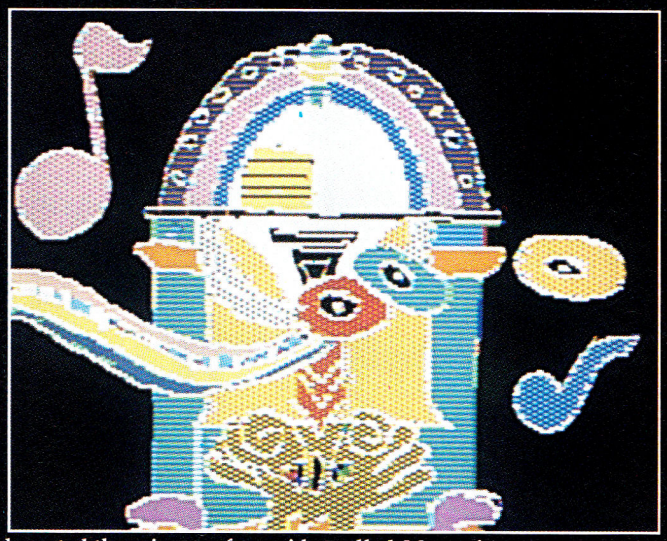






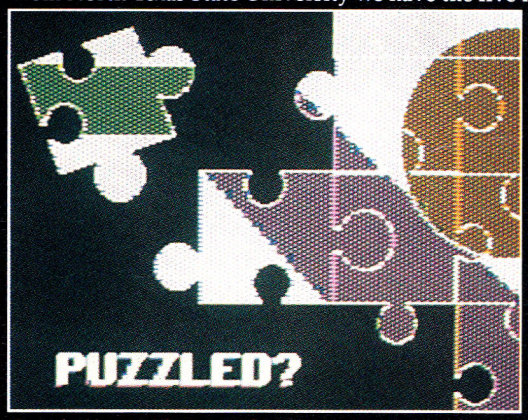
Scenes from MATTHEW CHAMPA's animation *Acid Rain*. Matt is from the Watkinson School in Hartford, Connecticut.



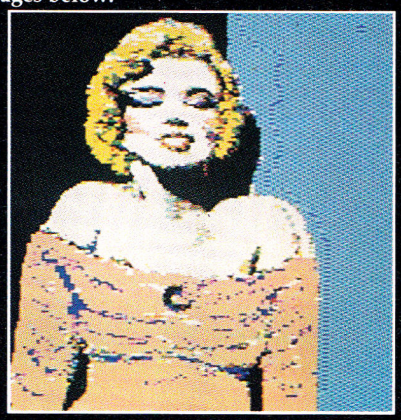


Stephen Winding's eighth-grade students at Islip Junior High School created these images for a video called *Memories.*

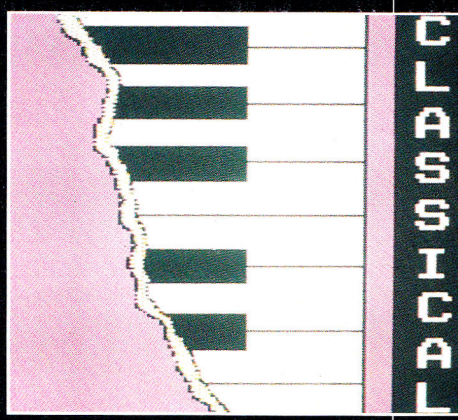
From North Texas State University we have the five images below:



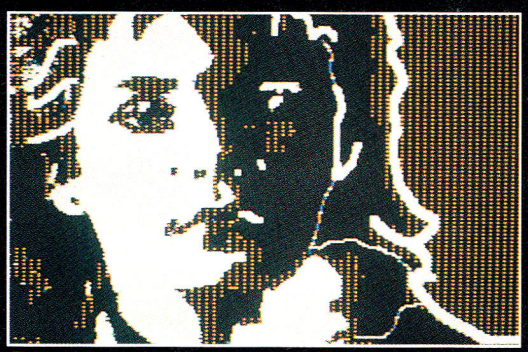
Puzzled by ANGELA BIGLEY



Marilyn by DARRELLENE WILSON



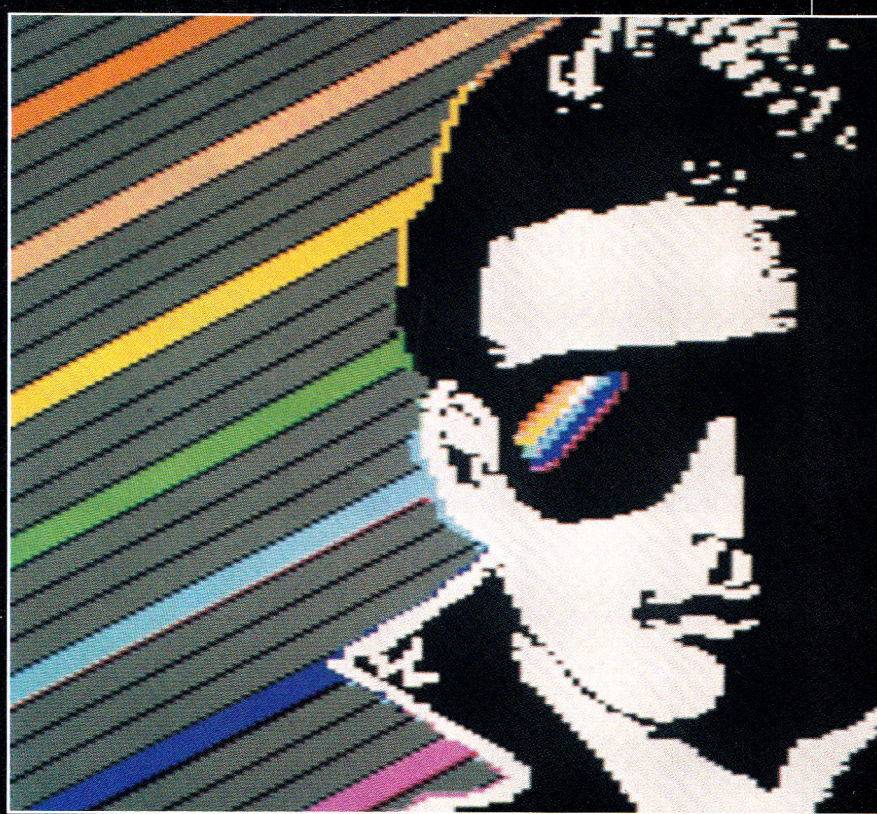
Piano by LISA HARRISON



Portrait by BETH MOEHRING



ROBERT MOORE's *Leon's House* is one image from a computer presentation that entertains elementary students in Prince George's County, Maryland.



Man by JAY RUUSKA

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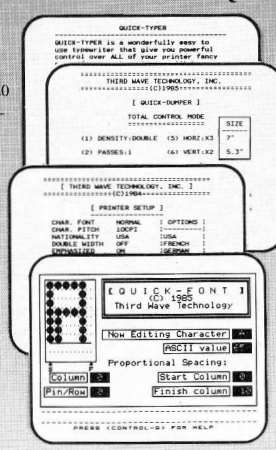

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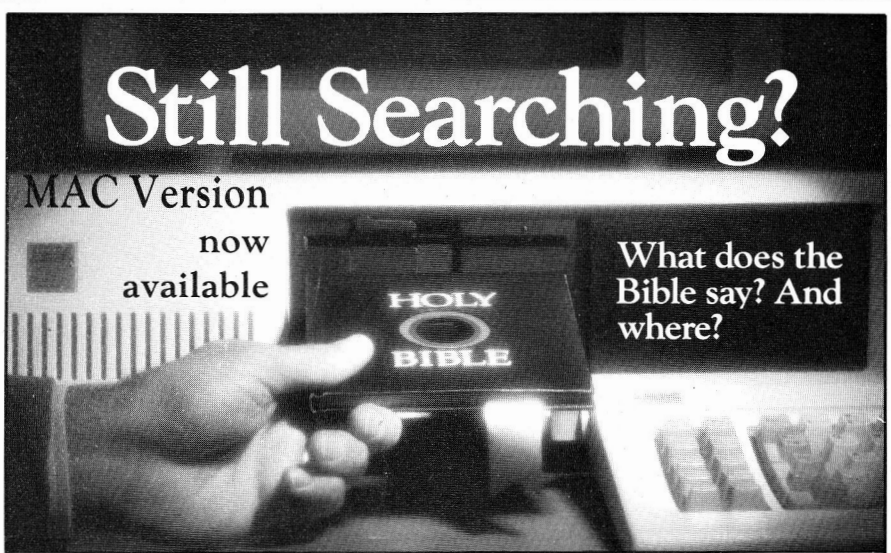

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CIRCLE 158 ON READER SERVICE CARD

The fine-arts approach is only one way to use computer graphics in education.

thinks he is a leopard, but really he is a software module that drives a Street Electronics 'Cricket' speech synthesizer. Leon is one of two synthesized characters who entertain regularly in elementary-school assemblies."

Using an Apple IIc, a Cricket synthesizer, and more than 70 double-hi-res graphics, Moore animated his school's mascot, Leon, and Leon's female friend Leanne. Elementary students in Prince George's County are treated to a welcoming assembly at the start of the school year featuring Moore's computer presentation interspersed with computer speech, computer and live music, dance, and other activities. Besides being entertaining, the program has stimulated great enthusiasm for computers in the classroom.

The Apple in College

Lest you think Apple graphics are confined to the lower educational levels, take a look at the work of Cherry D. Simpson's students. Cherry started a computer-graphics program at North Texas State University. These images were created on 128K Apple IIe computers with Apple Graphics Tablets, The ComputerEyes Digitizing System, the Gibson Light Pen (now marketed as the Koala Light Pen), the AppleMouse, and joysticks. Software includes Polarware's The Complete Graphics System, ComputerEyes, Gibson Pen Painter (now Koala PenPainter), and Mouse Paint. It's apparent from these images that the students benefitted from a teacher who's a professional artist with a graphic-design background.

Graphics for Programming

The fine-arts approach is only one way to use computer graphics in education. Graphics are an excellent way to teach about computers and computer programming.

The Logo crowd is the most vocal about the success of this approach, but using graphics to teach Applesoft or Pascal is equally effective. How many of us "old-timers"

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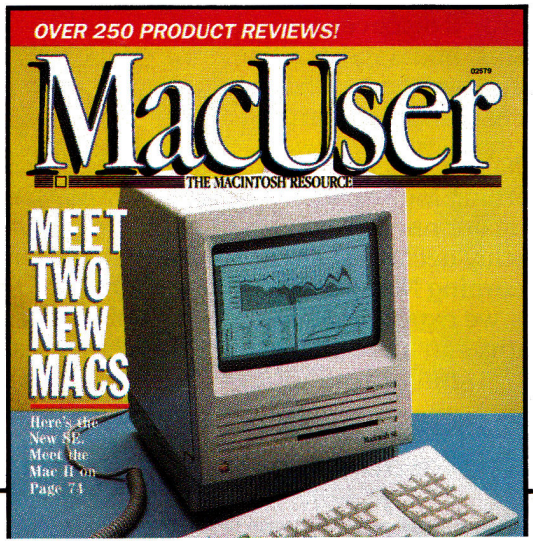

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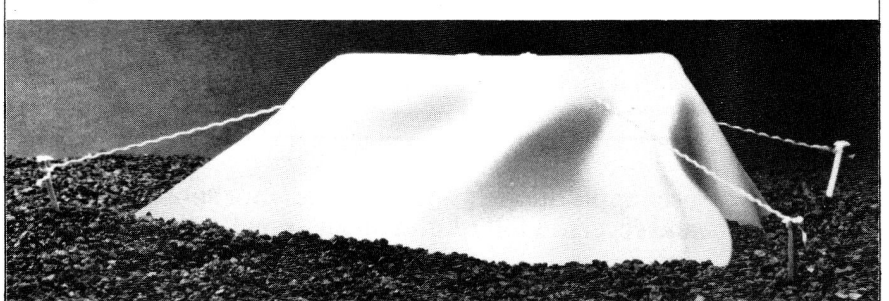

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CIRCLE 127 ON READER SERVICE CARD

Graphics provide a perfect vehicle for teaching computer skills to old and young alike.

had our first exposure to Applesoft through Apple's little lo-res animated horse in the Applesoft tutorial? By programming with graphics, budding programmers can easily see their bugs. If a loop is running once too often, the extra pixel on the screen is a dead giveaway.

Apples Rate A+

We thank the teachers and their students who have shared their graphics and experiences with us. We've learned that students aren't the only ones benefiting from Apples in the schools. When their students aren't monopolizing the computers, teachers and administrators find that Apples are valuable tools for creating visual aids. With programs such as Springboard's Certificate Maker and The Newsroom, Beagle Bros' Banner Maker, Brøderbund's The Print Shop, and Data Transform's Fontrix and Printrix, educators can create attractive handouts and transparencies. Materials are easy and economical to produce, and altering them doesn't necessitate starting from scratch.

A Final Comment

As most of you know by now, we teach computer graphics at the New School Computer Center in New York. Some of our students' work appeared in the first few *A+* Graphics Galleries. We've found that graphics provide a perfect vehicle for teaching computer skills to old and young alike. Many of our students are student or practicing artists, and it's fascinating to see them adapt their skills and translate their styles to electronic media. Unfortunately, many people still try to reproduce "traditional" art techniques on the computer, using it as a kind of electronic coloring book. Perhaps now, as more and more children are using computers in their schools, especially in their art classes, we'll see more innovative use of the computer as an artistic tool. ✚

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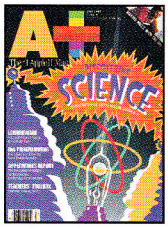

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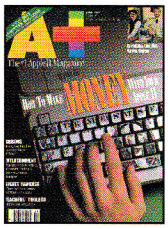

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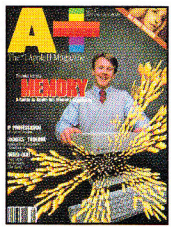

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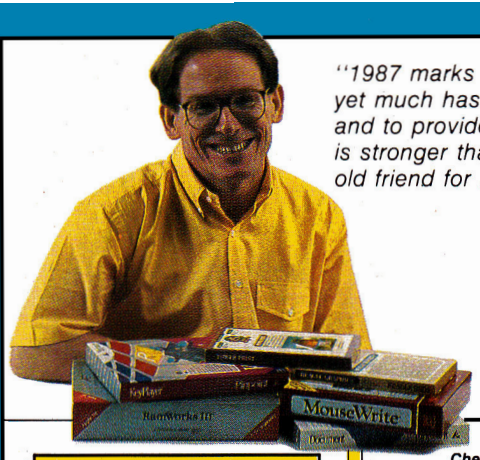

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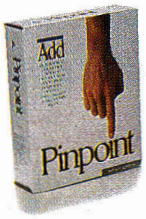

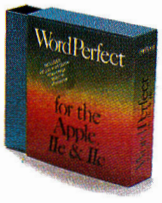

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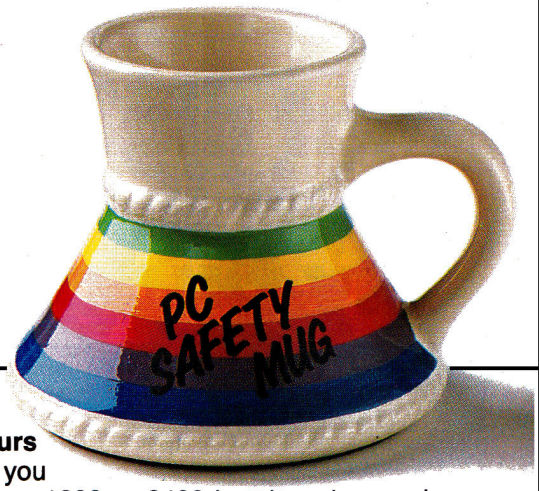

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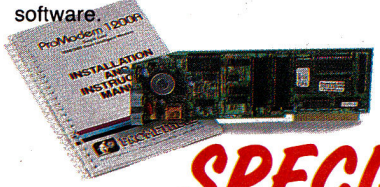

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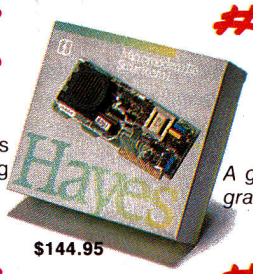

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CIRCLE 271 ON READER SERVICE CARD

BY MICHAEL FISCHER

INSIDE APPLELINK

An Apple insiders' telecommunications service

This month, I would like to introduce *A+* readers to AppleLink, an insiders' telecommunications service devoted entirely to Apple computers and run by Apple Computer, Inc. Access to this restricted service is coveted by many knowledgeable Apple users.

In addition, I'll discuss the addition of XModem mail on GEnie and why you should be excited about it.

AppleLink

AppleLink is one of the better-known restricted-access on-line services. You can't just sign up by completing an application form and paying the fees, at least not yet. You have to have some sort of official status with Apple. In the past, access has been restricted to dealers, registered developers, and a few other outside people, but lately Apple has begun opening the service to a broader base of developers and selected users' groups and is considering whether it should open the system to the public.

The service comes with its own custom software that presently runs only on a Macintosh. When you are connected to the system, AppleLink displays a desktop featuring icons that show bulletin boards, libraries, and in and out mail baskets (see figure 1).

An Apple II version of the software is currently undergoing testing, and its release is expected by the time this column is printed.

The biggest attraction of AppleLink is that it's a source of official Apple Computer information as well as Apple's own compilation, through its developer network, of Apple-related information from third parties.



Bulletin Boards

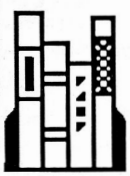


AppleLink has four bulletin-board areas, in addition to a users'-group area. These boards, indicated by the newspaper icon, are

- Headlines and Guide—contains highlights of new information on AppleLink as well as Apple press releases and a guide and help files for AppleLink
- Apple Programs—contains information about Apple-label software
- Product Prices—lists the prices of the complete line of Apple hardware and software
- Third Party Programs—contains information about third-party software and hardware

The contents of the bulletin boards in AppleLink are arranged as documents and folders. Folders are the functional equivalent of subdirectories in the ProDOS operating system. For example, if you open the Third Party Programs bulletin board, you're presented with a display of the available documents and folders (see figure 2). The documents, such as "New Apple IIGS Third Party Products" in the figure, have a small document icon next to them. The folders, such as "3rd Party Promotions" in the figure, have a small folder icon next to them. Inside each folder is a collection of documents and sometimes other folders, all on the same general topic.

Libraries



The libraries contain reference information that is more static than the information in the bulletin boards. The libraries are represented by the icon showing several books standing up. When you open a library, the system asks you to enter search terms (see figure 3). AppleLink then tells you how many documents in the library contain those

ILLUSTRATION BY JAY BELMORE

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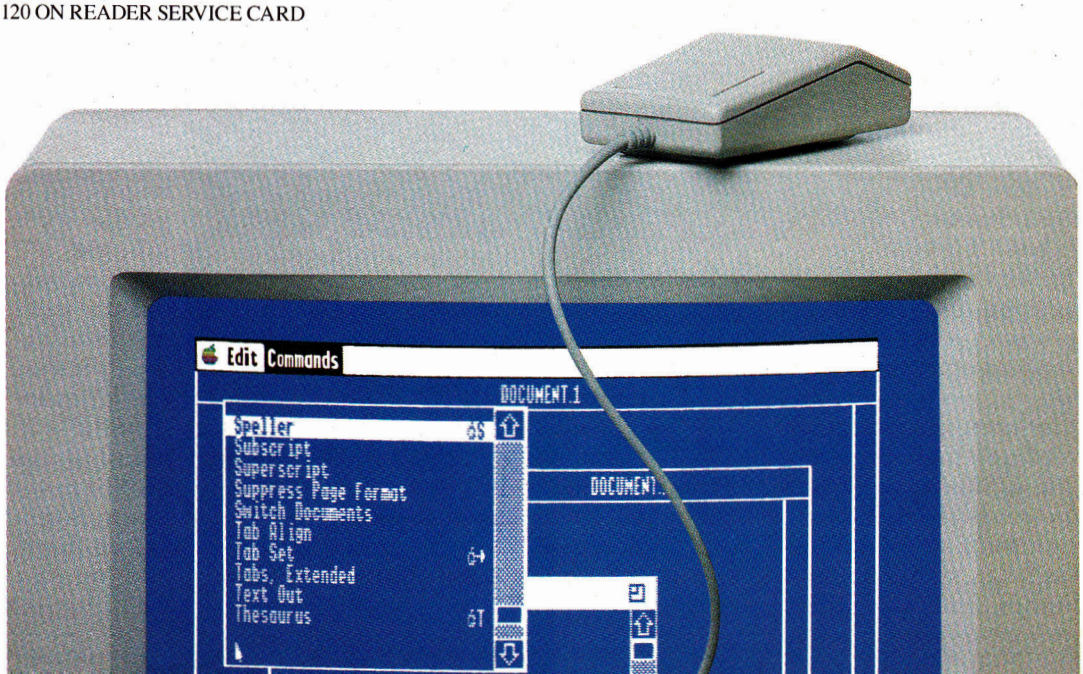

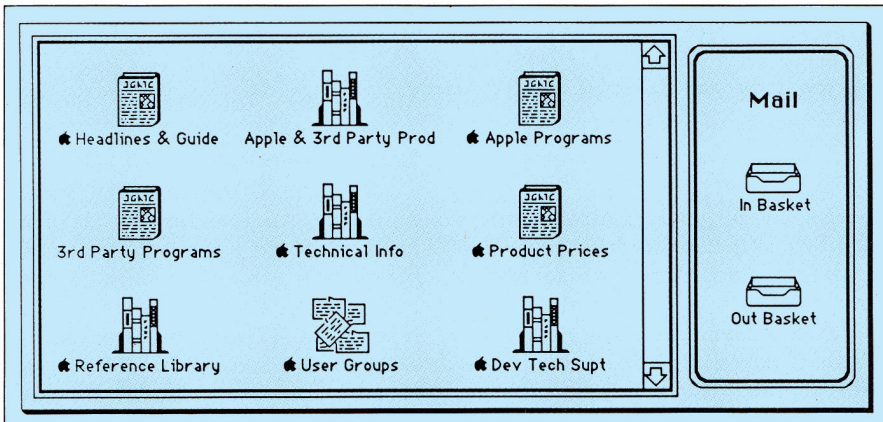

Figure 1: When you are connected to the system, AppleLink displays a desktop featuring icons that show bulletin boards, libraries, and mail baskets.

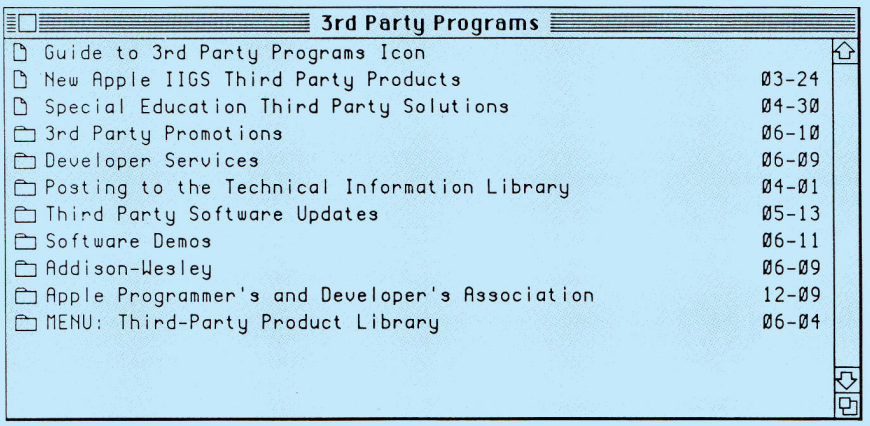

Figure 2: The contents of the bulletin boards in AppleLink are arranged as documents and folders. Within each folder may be a collection of documents or other folders.

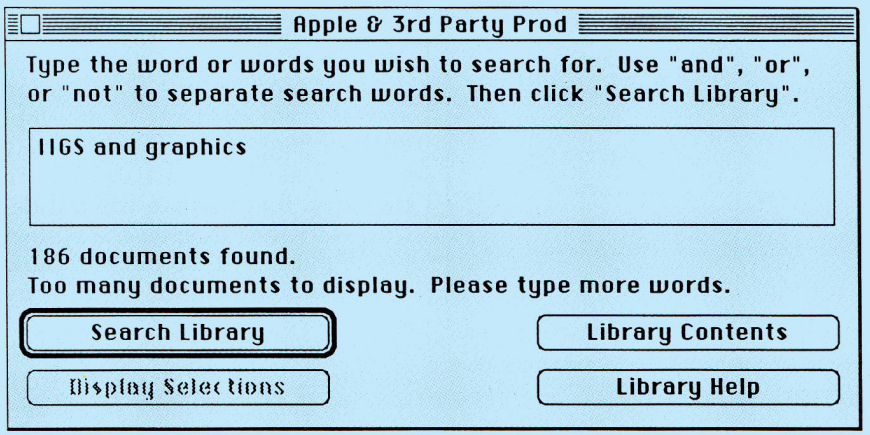

Figure 3: When you open a library, the system asks you to enter search terms and then tells you how many documents in the library contain those terms.

terms. You can narrow a search by adding terms with an "and" connector. You can broaden a search by adding terms with an "or" connector.

Once you've narrowed your search within the library, the display and opening of documents works in a manner similar to the bulletin-board operation.

AppleLink has four libraries:

- Apple & 3rd Party Products contains (1) a full description of Apple products, (2) the Menu software database containing names of more than 11,000 software products for the Apple II and Macintosh, (3) information about special education and rehabilitation products, (4) Kinko's Academic Courseware Exchange description of Apple II and Macintosh educational software, and (5) the listing of the official Apple Addison-Wesley Apple Technical Library.
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• The Technical Information Library contains technical product specifications, documentation clarifications and errata sheets, discussion of known problems with Apple products and potential work-arounds, and hardware troubleshooting information.

Access to AppleLink is coveted by many Apple users.

• The Developer Technical Support Library contains the full text of the Apple II and Macintosh technical notes. These notes are also available in either hard copy or Macintosh MacWrite disk format from the Apple Programmer's and Developer's Association and in electronic form either on GEnie's A2Pro (for Apple) and MacDev (for Macintosh) Roundtables or on CompuServe's AppleDev.

Users' Group Area

The User Group bulletin board on AppleLink is more like a typical bulletin-board system in that it is interactive—that is, you can post information and replies as well as read them. (The other AppleLink sections are read-only.) The areas on the User Group bulletin board include

• Questions and suggestions from users' groups to Apple concerning Apple II and Macintosh products

• Users'-group meeting assistance, including potential Apple speakers and sharing of other groups' successful meeting topics

• Users'-group newsletter articles and reviews

• Location of public-domain software

• Questions and suggestions to, and announcements from, third-party developers.

Everyone on AppleLink does not have access to the same areas. For example, only certified and registered developers have access to the price lists that show developer costs for Apple products, and only dealers can use the dealer price list.

Until recently, the users'-group area was not available to developers, although Apple now actively encourages their participation in that area. Since Apple has not decided whether to open the system to the public, we do not yet know what parts will be included in any public area.

Another feature in AppleLink, electronic mail, is different from that available on most other services. As I discuss later in this column, you can send any Macintosh file, complete with all identifying information, to another person on AppleLink. The recipient's copy of the file will even have the correct file type, icon, and creation dates. This feature is similar to a new mail method on GEnie, XModem Mail (see following section), although XModem Mail works with any type of computer.

XModem Mail

XModem is a method of transferring files from one computer to another by means of a modem. Although the details of the method

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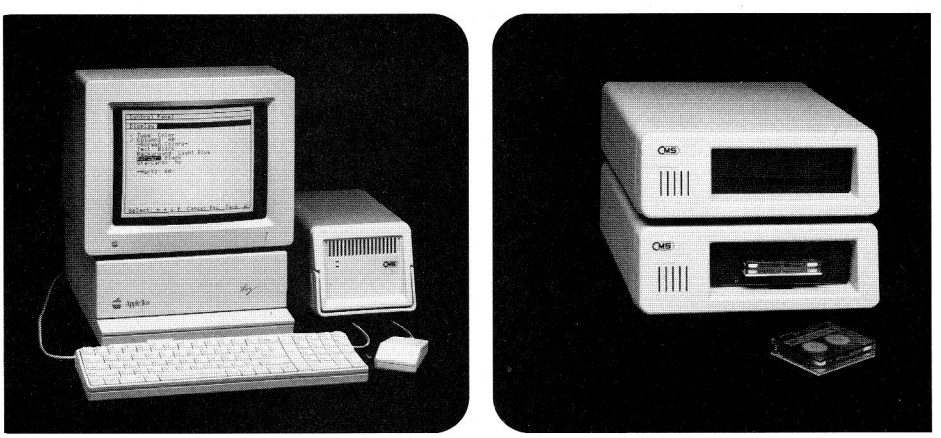

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are somewhat technical, the net effect is that you can transfer any type of file containing any type of information. By comparison, text transfer requires that a file be converted into a text format before it's sent and converted back after it's received—a tedious job at best.

Most on-line services and bulletin boards allow you to transfer files by either text or XModem methods but require that XModem transfers be placed in a public-access library. Private electronic mail is typically restricted to text.

In the Macintosh arena, there are two methods of sending any type of file by means of XModem transfer, either AppleLink or Desktop Express on MCI Mail. AppleLink will probably allow transfer of Apple II files once the AppleLink software for the Apple II is released, but AppleLink is still a restricted system.

The GEnie network (General Electric Network for Information Exchange) has recently introduced XModem mail for all users. It allows any person to send an XModem file to another person. GEnie is the first network to allow XModem electronic mail for all users. Using XModem mail, I can send an Apple IIGS super-high-resolution graphics picture or an AppleWorks spreadsheet to any other users on the system. They can receive the file and load it into their paint program or into AppleWorks without any further modification.

The sending of special file types by XModem mail only works, however, if the file-type and catalog information are included with the transferred file. This requirement points out again the importance of the encoding protocol Binary II, designed by *A+* Senior Technical Editor Gary Little, which takes care of the file-type and catalog information for you. (See discussion of Binary II in "Selecting Software" in the April 1987 issue of *A+*, page 53.)

Coming Up

In the next column, I'll be taking a year-end look at the best of Apple II communications software—both commercial and public domain. As always, I welcome electronic mail at any of my addresses: MCI Mail (326-0809), GEnie (MFISCHER), BIX (MAFischer), CompuServe (74365,40), The Source (CPA184), and Delphi (Michael). ✚

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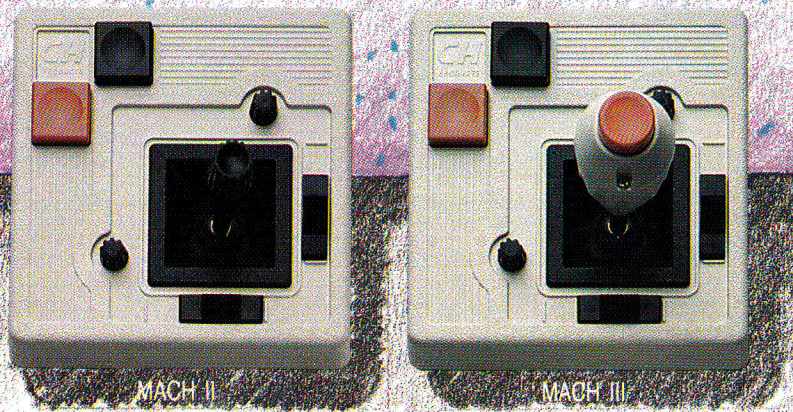

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ENTERTAINMENT GAMEPORT

BY BOB LINDSTROM

Entertainment software that strays close to computer education, a secret graphic in Tass Times, and monsters in stereo

THE TUBE AS TEACHER

"If you don't stop staring at that television set—you'll never learn anything."

It was the parents' battle cry when I was growing up. The TV, every kid's favorite entertainer, was Public (School) Enemy Number 1, the first obstacle to an educated America, just ahead of comic books and movies. Pounded into the national consciousness was the assertion that countries with less TV—the Soviet Union, for example—had a better-educated progeny. Almost everyone over the age of 30 can remember the days when America was asking why Ivan could read and Johnny couldn't.

The parents weren't entirely wrong, as usual. That glowing glass did compromise some kids' growth potential. I've heard legends of hapless individuals so benumbed by TV that they couldn't see anything that didn't flicker and wouldn't eat any food that didn't have its own theme song.

Fortunately for the TV Generation, parents weren't entirely correct, either. Most of us grew up able to read and write, even if reading is limited to the cable listings and writing means being able to jot down in ten seconds the toll-free number to order Conway Twitty's Greatest Hits.

What our folks didn't realize, however, was that the tube was a great teacher in its own right. Some of the lessons clearly were less than useful, though. For instance, I've never been on a job interview during which I was asked to sing the "Leave It to Beaver" theme song. On the other hand, I learned common sense from Jiminy Cricket, zoology from Marlin Perkins, strange and exotic facts from Jeopardy, physics from Dr. Julius Sumner Miller, and American Musical Theater from "The Bell Telephone Hour." Not bad.

Two decades later, computer games have ascended to a high place among potentially destructive influences on our youth. In the 1980s, we're asking why Toshio can read and Johnny can only play video games.

Once again, our national concern appears justified but overstated. I can't argue that the college entrance exams of the future will include a joystick-literacy test, but just like TV before it, entertainment software often has more educational content than meets the electronic eye.

With the inspiration of Computer Learning Month hovering over the keyboard, October seems like a good time to point

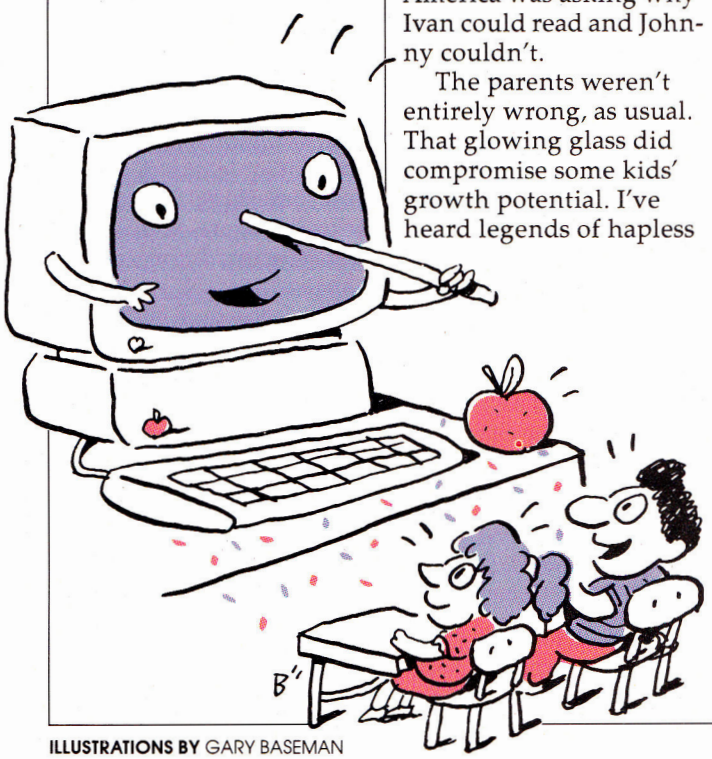


out that some computer entertainment strays rewardingly close to computer education.

Particular game genres, such as the text adventure, naturally lend themselves to providing educational value. It works as follows:

Most tests of educational progress contain a section that measures how carefully a student reads and how well he retains the information. A passage of several paragraphs is followed by a battery of questions about the material.

Stack this approach up against the typical Infocom text adventure. If



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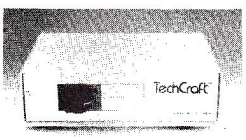

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GAMEPORT

Our folks didn't realize that the tube was a great teacher in its own right.

you don't read every word of, say, Dave Lebling's frightening text fantasy The Lurking Horror, you quickly will be a demon's lunch. If players can't retain the information contained in those words, they'll never make the connections that solve the puzzles. And the reward of completing an Infocom game offers greater satisfaction for some students than does scoring high on a cognitive reading exam. The game isn't literature, but it does encourage meticulous reading skills and tosses in some positive reinforcement.

That sounds suspiciously like education.

If you've never tried to map a dungeon in The Bard's Tale (Electronic Arts), Wizardry (Sir-Tech), any of the Ultimas (Origin Systems and Sierra On-Line), or Phantasie (SSI), you haven't had a rigorous training in observation and mapping. And if the attendant violence of these role-playing games is offensive, programs such as Snoopers Troops from Spinnaker or Agent USA from Scholastic Software cleverly cultivate note-taking, mapping, scheduling, and observation skills in game-like situations.

The point here is that some entertainment software is naturally educational. But it is also true that some educational software naturally is entertaining. Among the best edu-tainment products are Brøderbund Software's Where in the World is Carmen Sandiego? and Where in the USA is Carmen Sandiego? While racing from location to location in search of an international ne'er-do-well, players search a world almanac, gathering a wealth of geographic facts.

A similar series of products from Polarware—The Spy's Adventures—takes detectives throughout Africa, North America, South America, Europe, the Pacific Islands, and Asia. If enormous distances don't scare you, Mindscape's The Halley Project sends you on a tour of the entire solar system.

Knowing the winner of the 1956 World Series or the inventor of alternating current won't qualify you as a National Merit Test finalist, but a good computer trivia game or game-show recreation at least can give you something to discuss with strangers. Share-Data's Jeopardy or Advanced Ideas' New Game Show feed you the facts with a spoonful of sugar.

Where the computer triumphs over almost any other educational tool, however, is in the field of simulations. By inserting a diskette into a drive, you can do things you've never done and vicariously experience alternate lives inside your computer.

Spectrum Holobyte's

GAMEPORT

Lunar Explorer subtley instructs players in the physics of momentum in the guise of a space-exploration game. Wilderness, Spectrum's outdoor-survival simulation, remains one of the safest ways to understand the challenges of staying alive in the great outdoors.

Financial simulations are a specialty of Blue Chip Software. Whether you want to trade stocks, commodities, or real estate, programs such as Baron, Millionaire, Squire, and Tycoon provide a convincing peek at the real-life games that high rollers play.

Electronic Arts' Seven Cities of Gold, a historical

Teach yourself something with your computer during Computer Learning Month. Play a game.

simulation of the Spanish Conquistadors, and SSI's Colonial Conquest go beyond history books by bringing to life the social and political results of imperialism. You Are There, coping with the customs of unfamiliar cultures and overcoming the menace of disease and natural disaster.

Speaking of politics, the computer can be the messenger of sharp-edged lessons in government: the commercialism of a presidential election in SSI's President Elect or the intricacies of nuclear statesmanship in Mindscape's Balance of Power. In these simulations, your decisions shape national and world improvement or destruction.

From flight simulator to war simulator, from international politics to international geography, computer games and simulations have much more substance and educational value than their arcade-game stereotypes suggest.

So, teach yourself something with your computer during Computer Learning Month.

Play a game.

GAME-NET '87

Dum-da-Dum-Dum.

Dum-da-Dum-Dum-DAAAAAAAAH.

I was working the game watch out of Foster City when a sack-toting mug stepped up in his U.S. Postal Service duds and flipped a slightly mangled envelope onto my desk.

It seemed like an ordinary piece of reader mail: motionless, modest, and manhandled. Just the kind I like. No ticking noises. I slipped my desk shiv, letter opener to you, under the flap and tore a gaping wound in its side. No harm done. Just eager. I love reader mail.

It was from an agent in the field: Tim Meekins of Hilliard, Ohio. Meekins had sleuthed a ringer in his Apple IIGS version of Activision's Tass Times in Tonetown. It had something that was not quite on the square—something fishy, cockeyed, screwy, blotto, nuts, totally rad.

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CIRCLE 285 ON READER SERVICE CARD

GAMEPORT





Rad?

Yeah, I know, it doesn't sound like me. Too modern. But on the game watch, we like to stay hep.

"When the disk is booted you are presented with the introductory screen and some Tass music," wrote Meekins. "During this demo, reach [for] open-apple/Option/Control-B. If you've pressed this combination correctly, you will be presented with a new picture."

He was right, of course. And I also spotted it in my Apple IIe version of the adventure. Bigger than life. But on the Apple IIe you had to substitute closed apple for the Option key.

There was no doubt about it. This thing was explicit. It depicted a classic 4589265998364: Decapitation of Programmer in the first degree. Some guy was swinging an ax through the pencil neck of a hacker. Yummy.

It was incriminating, but I let it drop. Sure, it spelled Fatal System Error for somebody, but it gave me nothing firm to go on—nothing airtight, rock-solid, iron-clad, sewed-up, stripped-down; nothing to follow up, track down, dig into, look over, grab hold.

Then, I got a break. At Electronic Arts' annual artists' symposium last summer, I ran into Brian Fargo.

Fargo, alias Capt. Fargo, is Mr. Big at Interplay Productions, the company that created Tass Times. I grilled him on the picture. He played dumb for a while. Then the fog lifted.

He twisted his neck toward one of his henchmen and murmured threateningly, "What's he talking about, Bill?"

I shifted my piercing gaze, and there he was! The glasses, the curly hair, the face—it was ole Frisbee head, the guy whose noggin was going for a skyride in the secret Tass Times graphic. But this time, the head firmly was attached to a body. At least, that was his claim.

It was programmer Bill Heineman: the perpetrator, the plaintiff, the fixer,

GAMEPORT

the hitman, the mug, the fly in the ointment, the bug in the byte. It seems that the head-roller cartoon is kind of a signature for Heineman, and he has tucked it into more than one of his programs, quite unbeknownst to Capt. Fargo or the publishers in question.

Case closed. Well, almost. Fargo dutifully expressed disapproval. It's his job.

As Heineman and I sauntered away, he gave me a sly, sideways glance and whispered, "There's a double-hi-res version of it in Electronic Arts' The Bard's Tale on the IIGS. Same key combination." I winked knowingly.

The preceding story is true. None of the names have been changed to protect the guilty. Congratulations to Detective Meekins for blowing the lid on this caper. As a reward, he gets to sing the closing music.

Hit it, Meekins.

Dum-da-Dum-Dum-DAAAAAAAAH!

MONSTERS IN STEREO

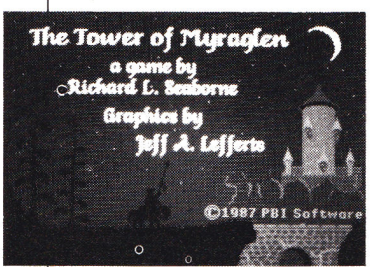
There were demons to the left of me, demons to the right, all of them howling, grunting, screaming, and roaring. I started laughing so hard I could barely punch my mouse button. Those who like to have fun with decibels will get an audible charge out of PBI Software's Apple IIGS role-playing game The Tower of Myraglen.

Programmer Richard L. Seaborne and audiovisual designer Jeff A. Lefferts have integrated some neat puzzles and attractive graphics into this fantasy combination of Ultima and The Temple of Apshai.

But where the program makes IIGS history is in its sound track. Without a doubt, it is the noisiest, most ear-tickling dungeon adventure ever conceived.

The program is a showcase for MDIdeas' SuperSonic stereo card for the IIGS. The impact of multiple skeletons groaning their collective misery is charming through the puny built-in speaker on the IIGS. When pumped into a hi-fi system via the SuperSonic card, it's a tidal wave of supernatural caterwauling. There's nothing quite like hearing yourself flanked on either side by the squishing slurp of stereophonic slime creatures.

Yes, it's overdone, delightfully overdone and irresistible. From the symphony orchestra competing with thunderclaps during the title screen to the ominous rumble of a crystal ball, The Tower of Myraglen is one of the first games to unveil the wondrous potential of the IIGS's Ensoniq sound chip. I call it a high-volume good time. ✚



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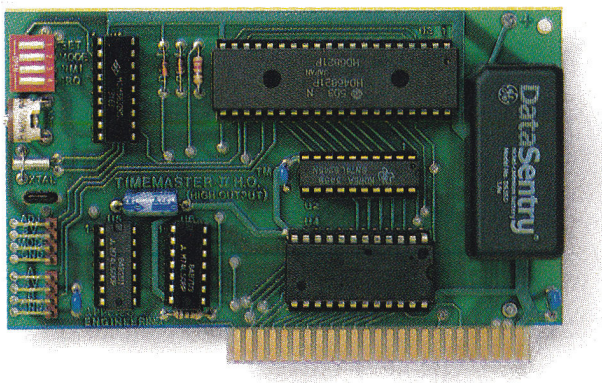

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ENTERTAIN

A famous old-time comic-book hero, a madcap marble maze, and a fierce fleet of battlecruisers come to your Apple II screen.

DATELINE: CUPERTINO

Steve Keene, famous comic character, announces his return to active duty! Keene, a typical old-time comic-book hero, has been observed loitering around the computer monitors of various programmers at Accolade, and it is now confirmed that he has begun a new career as the hero of Accolade's new Comics software.

Keene will investigate two separate mysteries. He'll need help, though. This new world of computers requires some pretty keen decision making, so Apple II owners are being recruited to help. Some decisions lead to disaster; others lead to success.

Keene's adventure begins at the offices of his secret spy headquarters (in a pet-neutering parlor, of all things) and takes him to far-flung locations, among them a castle in Ireland and a corporate headquarters in New York. Some decisions can affect the outcome of the entire story, so Keene's colleagues are encouraged to experiment, even at the cost of one of their five lives.

All the panels of the comic are drawn in Sunday funnies style, and most contain small animated figures. The dialog is sometimes bizarre, sometimes amusing—sometimes even dopey—but those are the funnies for you. Where else could you get rid of a vicious watchdog by telling him there's a sexy poodle outside?

Eight arcade-style games are incorporated into the plot. Whenever Keene finds himself in a pickle, an arcade sequence is likely to appear. Although fairly simple in design, the arcade games are challenging and sometimes even infuriating. Keene finds himself in some awful messes, but you can gain a bonus life for him by completing arcade sequences in record time.

The save-game feature lets you save the game at any point (but only one saved game is allowed on disk), and you can practice arcade sequences separately from the game.

The mission, should you choose to accept it, is fraught with danger and smart-alec remarks from Keene. The graphics and animation are first-rate, but the program is somewhat slowed by the frequent disk accesses and the clever, but time-consuming routines for drawing new panels.

In sum, Accolade's Comics is a remarkable program. It is loaded with asides and subtle jokes,



interesting animation, an occasionally intriguing plot or two, and some challenging arcade-style games. Considering what you get for $44.95, it's a bargain.

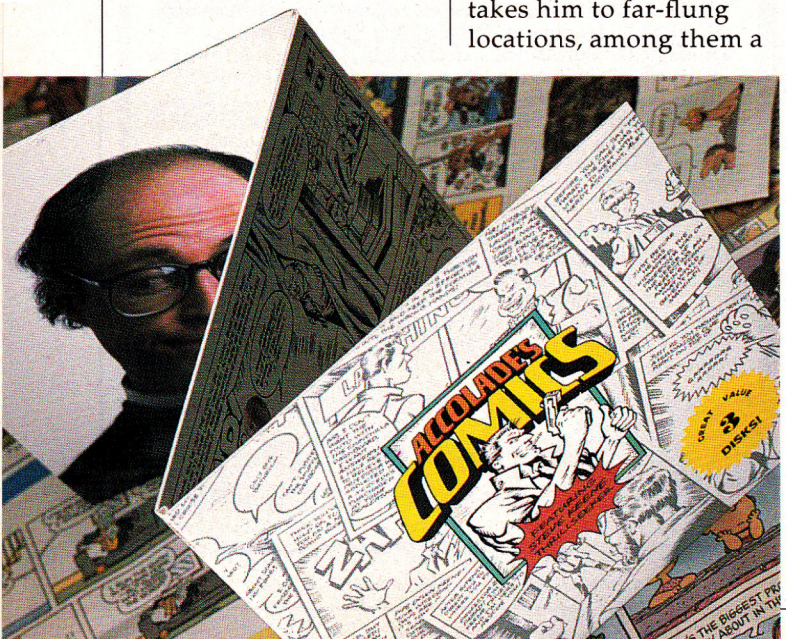
Rusel DeMaria

ACCOLADE'S COMICS
Accolade
20813 Stevens Creek Blvd.
Cupertino, CA 95014
(408) 446-5757
LIST PRICE: *$44.95*
REQUIRES: *Apple II Plus, IIe, IIc, or IIGS; 64K RAM; one 5¼-inch disk drive; joystick optional, but recommended. Copy-protected; comes on 6 sides (3 disks).*

CIRCLE READER SERVICE NO. **401**

ROLLING THROUGH A MAZE

Those of you who have played Atari's coin-op arcade game Marble Madness will probably be relieved to know that you can play it at home now. No more quarters down the drain with a slip of the joystick. Play Marble



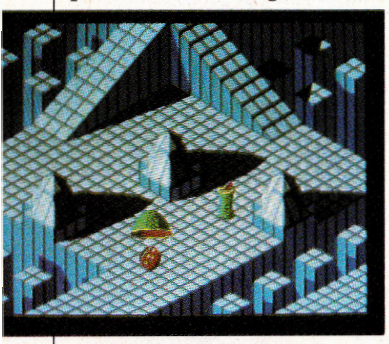
MENT REVIEWS



Madness to your heart's content with Electronic Arts' new offering.

If you've never seen the coin-op version, Marble Madness may remind you of the game from childhood—you know, the frustrating wooden box with the tilting maze and a marble inside. But Marble Madness is full of tricky traps, creatures, and puzzles that you never encountered in any wooden box.

A well-calibrated joystick, good spatial perception, and a determined will are all you need to play Marble Madness. If your joystick leans to the right or tends to move downward, you may experience new highs (or



lows) of frustration. Once you have your joystick trimmed, though, you can begin to guide the marble to glory.

You begin on an easy level, just to get warmed up, but by the second level, you begin to encounter some of the assortment of strange creatures and tricky obstacles that seem to proliferate through the higher levels of the game. Little Slinky-like bugs attack you, and the occasional black marble impedes your progress by aggressively bumping you. Water hazards, moving black holes, narrow twisting paths, death-defying jumps, and vacuum cleaners are just some of the problems you'll have to overcome.

Marbles tend to gain momentum as they move, and you must judge just the right amount of force to exert on the marble at any time to guide it through the maze. Your only additional weapon is the ability to speed the marble's progress with an energy burst from the joystick button.

The game has six basic levels in all and one special hidden bonus level. You must puzzle out its location, but you have to negotiate the first levels first.

You can fall off the maze or be eaten up by a black hole without harm; in fact, any number of difficulties can beset your quest without ending it. Your real enemy is time. Each level is timed, and when you run out of time—it's back to the beginning for you. A good, solid performance on a level earns you bonus seconds to use in the next.

You may grow somewhat weary of repeating the first few of the seven levels as you try to conquer the higher ones, but even the early levels can give you trouble.

You score points as you progress through the levels and sometimes by outmaneuvering certain obstacles. The top scores are kept on disk but only for the current session. Visually, the maze is colorful and entertaining. Curved surfaces are indicated by a clever gridwork that reminds you of computer-generated topographical maps or representations of gravity wells around black holes. Animation is smooth and well implemented in the program.

Marble Madness lives up to its name. It is madcap and bizarre, fun and challenging. In some ways it is similar to Spindizzy, a game from England, but it has its own characteristics. If you are already a Spindizzy fan, you should thoroughly enjoy some Marble Madness on the side.

Rusel DeMaria

MARBLE MADNESS
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171
LIST PRICE: *$34.95*
REQUIRES: *Apple IIe or IIc; 128K RAM; one 5¼-inch disk drive; joystick recommended. Copy-protected; mouse optional.*
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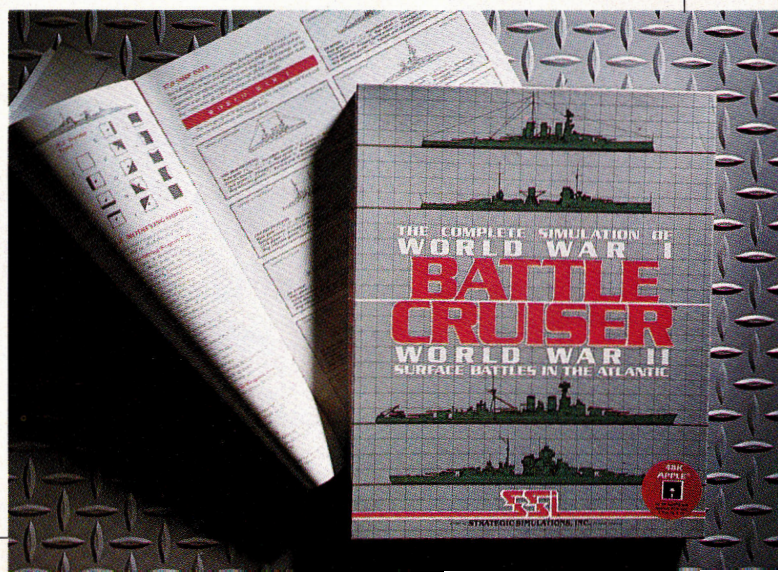
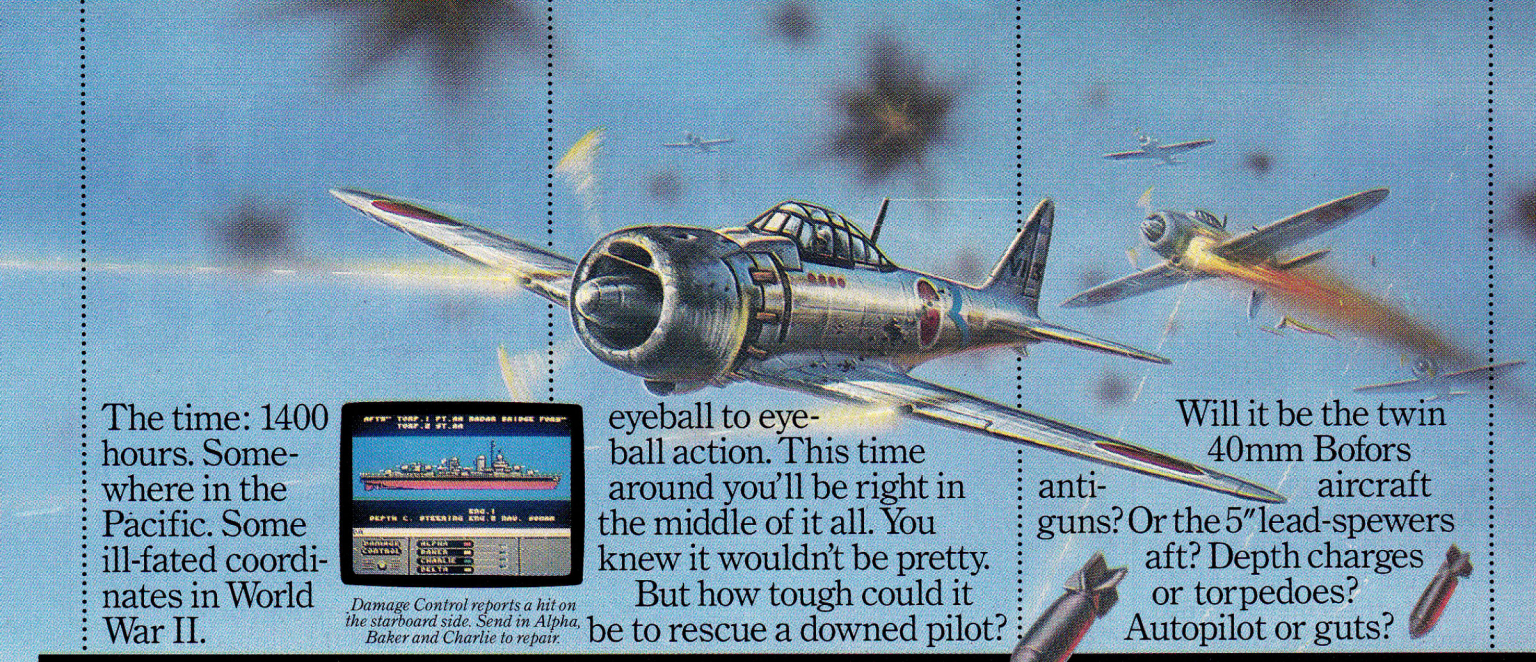
WAR ON THE WATER

If you have never done naval miniatures wargaming, believe me—it can be a bewildering activity to watch. Teams of earnest young men, of





The time: 1400 hours. Somewhere in the Pacific. Some ill-fated coordinates in World War II.

Damage Control reports a hit on the starboard side. Send in Alpha, Baker and Charlie to repair.

eyeball to eyeball action. This time around you'll be right in the middle of it all. You knew it wouldn't be pretty. But how tough could it be to rescue a downed pilot?

Will it be the twin 40mm Bofors anti-aircraft guns? Or the 5" lead-spewers aft? Depth charges or torpedoes? Autopilot or guts?

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It sure seemed a lot easier than shelling islands, escorting a convoy or hunting subs.

Or so you thought. But now look what you've got. Thirteen fully-operational, ear-bursting battle stations to worry about, all armed to the gills. Not to mention radar. Navigation. Sonar.

And half the Japanese fleet crawling up your spine.

Time to make some tactical decisions.

Any choice could be your last, so make it good.

Suddenly, you hear the ominous rumble of incoming Zeroes. You fire, and send one plummeting to the sea, trailing a plume of smoke.

On instinct, you instruct the bridge to commence evasive maneuvers.

Even though, by experience, you know there's nowhere to run.

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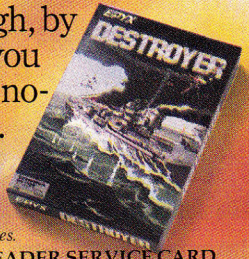

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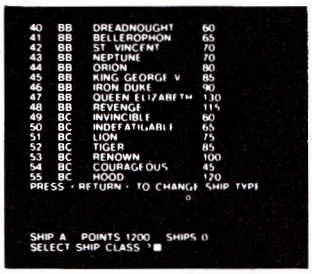
CIRCLE 146 ON READER SERVICE CARD

REVIEWS

limited social skills, huddle over tiny toy ships doing esoteric things with protractors, shuffling through great sheaves of charts and tables, and



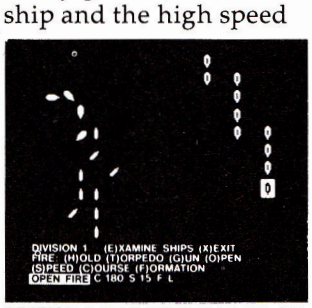
A PARTIAL LIST OF BRITISH SHIPS

rolling handfuls of dice. From time to time, they carefully position variously colored cotton puffs to indicate smoke, fires, or shell splashes. Naval miniatures can be played on any convenient Ping-Pong-table top, but to really get some sea room, you need the floor of a high-school gymnasium.

Battlecruiser, from Strategic Simulations, Inc., brings naval miniatures war-gaming to the screen of your Apple II-series computer. Even though you lose the fun of moving incredibly detailed little ships across the floor, you also avoid the drudgery of rolling dice and consulting intricate tables for every salvo. You also gain a tireless computer opponent that never has to miss a game because of an orthodontia appointment.

One side of the disk provides 79 ships of the German and British fleets of World War I. The flip side provides the same number of vessels from World War II: British, German, French, and Italian. A few British battleships had the longevity to put in an appearance in both wars, after a bit of renovation. The selection is limited to battleships, cruisers, and destroyers, with a few armed merchant ships thrown in as hapless victims. Aircraft and submarines are not included. They rarely affected fleet actions in either war and would only add further complications to a game of numbing complexity. If you don't like the ships provided, a special routine lets you customize and name your own.

The battle cruisers, for which this game is named, were a hybrid class of ships developed by the British, with the heavy guns of a battleship and the high speed



BRITISH BATTLESHIPS TAKE ON GERMAN BATTLECRUISERS.

and thin armor of a cruiser. They were dashing, romantic, doomed ships, if anything painted drab gray that weighs 26,000 tons and belches black smoke can be described as "romantic." In practice, they proved to be "eggshells armed with hammers." In the game, as in history, they tend to blow up and sink.

A game of Battlecruiser

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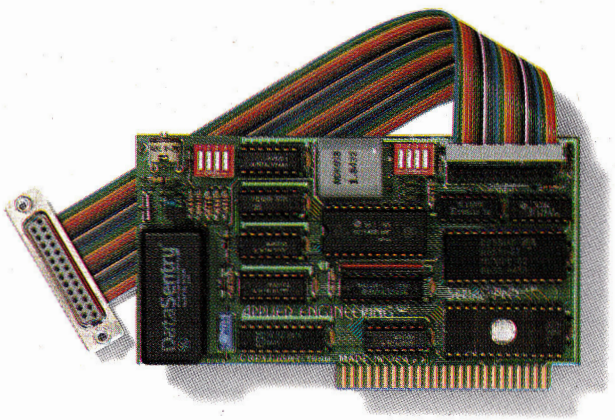

Serial Pro is a powerful multifunction card for the Apple IIe, II+, IIGs and compatible computers. Serial Pro combines a powerful serial port for interfacing to a printer, modem or other serial device, with a full function clock/calendar. Serial Pro's serial port is compatible with virtually all letter quality and dot matrix printers, including Apple's Imagewriter and Imagewriter II, and can communicate with the fastest external modems at baud rates from 50 to 19,200.

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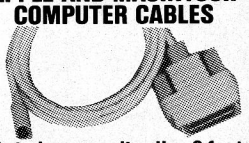

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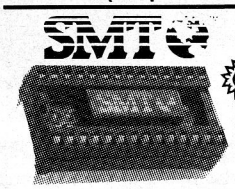

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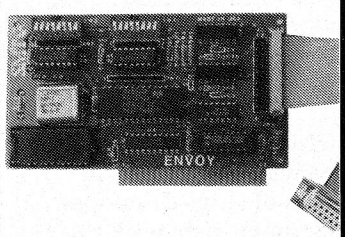

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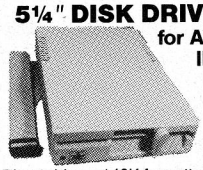

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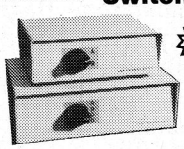

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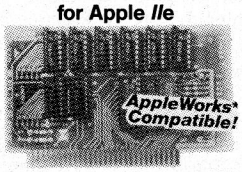

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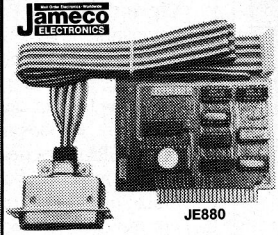

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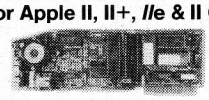

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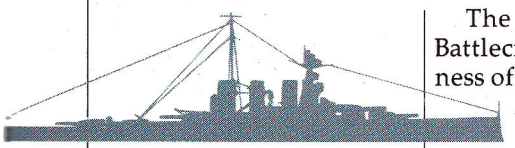


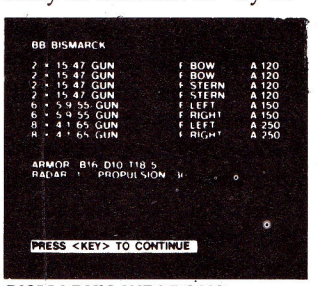
Battlecruiser brings naval miniatures war-gaming to the screen of your Apple II.

can involve two humans, alternating turns, or the computer can command either fleet. The computer can even command both sides, if you just want to watch. You get four canned historical scenarios from each war and a comprehensive system for constructing new scenarios, including customized islands or coastlines.

You score points by damaging or sinking enemy ships and moving ships off a particular map edge. The Battlecruiser ocean is actually more of a big lake, being limited to a square 60,000 yards on each side. You can choose time limits and starting positions to minimize the risk of running off the edge of the world.

At the beginning of each turn, you can save a game in progress to a blank disk and resume it at a later time. The program can format the disk and store five to seven games on it. The program does not inform you when you have exceeded the available disk space.

The best thing about Battlecruiser is the richness of detail in the specifications of each ship and the way that naval tactics and weapon effects are modeled. Damage, for example, may involve fires, flooding, electrical systems, the bridge, the rudder, gun directors, individual weapon mounts, propulsion, or catastrophic magazine explosions. Each navy is rated for damage control, and probabilities of repair are calculated and applied in every two-minute segment of game time. Ships may alter course and speed individually or maneuver "by division," following a designated leader. To fire torpedoes, you must move the cursor to a target square, decide how many to fire, set them for slow- or fast-running, and hope that an enemy ship blunders into their path (and 10% of torpedo hits will be duds!).



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The worst things about Battlecruiser are the user interface and the graphics. You set the date and time for your scenario by using an awkward system of repeated key presses, rather than simply entering numbers from the

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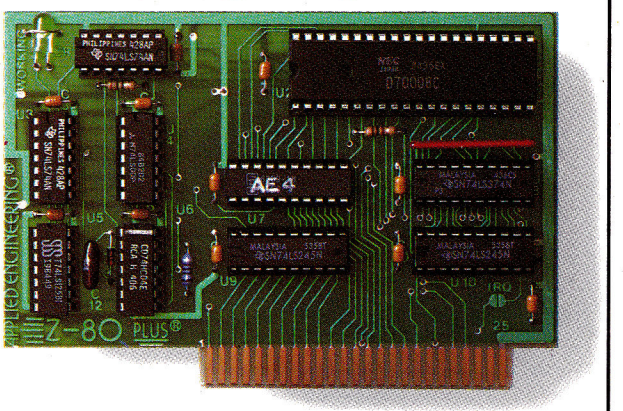

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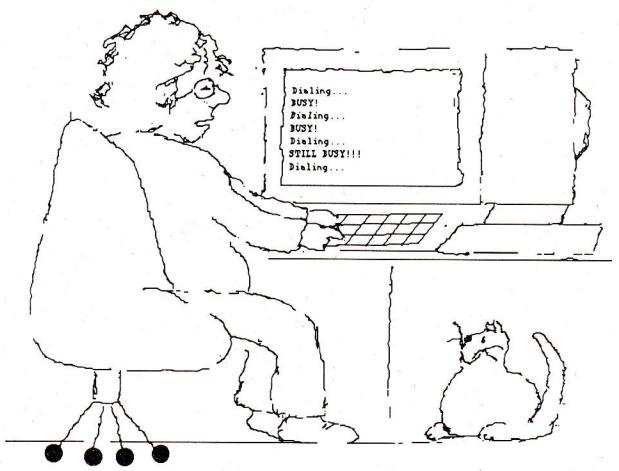

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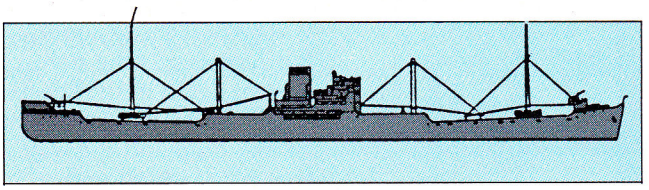

keyboard. You control cursor movement with the digits 1–8, but not in the logical keypad arrangement. The game lacks a joystick or mouse option. Every menu has an exit key (X), but the screen never tells you where the exit goes. There are few error messages—the screen just sits there dumbly until you get it right. You can easily get lost unless you have carefully studied the 30-page manual.

The screen display covers a small part of the map, 16 squares wide by 8 squares high. Some or all of your ships may be off the screen, depending on where you put the cursor. There is no way to zoom in or zoom out on the action. The ships have no color or graphic detail (so they have no individuality), no visual cues for scale or range, and no on-screen representation of smoke. There is no quick-reference card.

The manual is terse, written in the cold, legalistic style of war-game rule books. It has pages of ship silhouettes, with blank spots for several of the WWI ships marked "historical reference not available," although the drawings are easy to find in standard reference books in any good library.

Most of the faults of Battlecruiser are the result of programming to fit the limits of a 48K Apple II and perhaps of trying to write the most generic code, for easy portability to Commodore and Atari 8-bit machines.

Another game from SSI, Warship, uses the same system and covers the United States and

The best thing about Battlecruiser is the richness of detail in the specifications of each ship.

Japanese fleets in World War II.

For true naval-history fanatics, Battlecruiser may be worth $60. I do not recommend it for beginners who are unfamiliar with SSI's games. Gary Grigsby, the designer, is a diligent historian and a meticulous programming artist. He should give himself a larger canvas and more up-to-date tools.

Mike Markowitz

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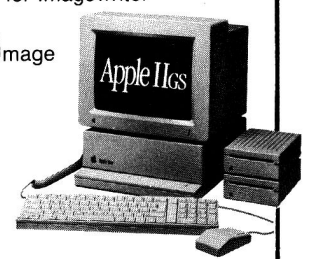

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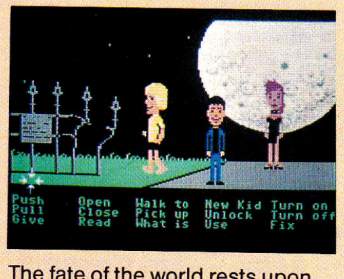

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BY MICHAEL WIESENBERG

PROGRAM AUTHOR EXPLAINS WINNING ENTRY

The answer to July's puzzle

The July "Computer Calisthenics" challenge asked for a numeric expression, $ab \times c = de \times f = ghi$, with each letter representing one each of the digits 1 through 9.

Robert Good, Jr., of Swarthmore, Pennsylvania, and Stan Epstein, of Bellevue, Nebraska, both deserve mention for their BASIC programs, which solve the puzzle in less than 15 seconds.

Jeanne Wurtz, of Norristown, Pennsylvania, cops the prize for her Applesoft BASIC program, which runs on an Apple IIe in 13 seconds or on a IIGS in 5 seconds.

Wurtz offers this explanation with her program:

"The variables *A* through *I* are the one-digit positive integers. *J* is the current value of the three-digit number *ghi*. The array *K* holds all previous values of *ghi*, for comparison with the current value.

"Neither B, C, E, nor F can be 1, because otherwise the product would contain a repeated digit from the other factor. The possibility of this is eliminated by using a range of 2 to 9 for these loop control variables. These digits also cannot be 5 because that would give a product ending in either 0, an excluded digit, or 5, a repeat.

"No digit in *J* can be 0. *G* cannot be 0 by the test in line 200 that *J* cannot be less than 100. *H* is tested directly, and *I* cannot be 0 because no contributing factor is permitted to have a 5 in the units digit.

"The program establishes a relationship between *A*, and *D*, the tens digit of a two-digit factor of a common grand product. *A* builds upward from 1, and *B* builds upward from *A* + 1, thus constructing progressively larger two-digit factors for the grand product. The first time a grand product is found involving a two-digit factor with digits *A* and *B*, the opposing two-digit factor, with digits *D* and *E*, must be larger. Therefore *D* must be larger than *A*. That is, if *D* were smaller than *A*—it can't be the same—then the two-digit factor and the common grand product would already have been found with *A* and *B*.

"The test at statement 400 is for whether *de* is a factor of *J*—that is, if it divides evenly into *J*."

When Should It End?

When should the program end? Several entrants sent programs that produced exactly twice as many answers as I'd expected. That is, $ab \times c = de \times f = ghi$ is the same as $de \times f = ab \times c = ghi$. Here some of the cleverness of Wurtz's program is demonstrated. The program ends when one of the grand products is recalculated through *A*, *B*, and *C*, because those three variables would now be doing the work that *D*, *E*, and *F* already did. Thus the test in line 220: If the current value of J is the same as any preceding, it's time to quit.

Following Wurtz's program is a run with the solutions. ✚

JULY'S WINNER

```
100  DIM K(100)
110 L = 0
120  FOR A = 1 TO 9
130  FOR B = 2 TO 9
140  IF B = 5 GOTO 530
150  IF B = A GOTO 530
160  FOR C = 2 TO 9
170  IF C = 5 GOTO 520
180  IF C = A OR C = B GOTO 520
190 J = (10 * A + B) * C
200  IF J < 100 GOTO 520
210  FOR M = 1 TO L
220  IF J = K(M) THEN  END
230  NEXT M
240 G =  INT (J / 100)
250  IF G = A OR G = B OR G = C
    GOTO 520
260 H =  INT ((J - G * 100) / 10)
270  IF H = A OR H = B OR H = C
    GOTO 520
280  IF H = G OR H = 0 GOTO 520
290 I = J - 100 * G - 10 * H
300  IF I = A OR I = B OR I = C
    GOTO 520
310  IF I = G OR I = H GOTO 520
320  FOR D = A + 1 TO 9
330  IF D = B OR D = C GOTO 510
340  IF D = G OR D = H OR D = I
    GOTO 510
350  FOR E = 2 TO 9
360  IF E = A OR E = B OR E = C
    GOTO 500
370  IF E = D GOTO 500
380  IF E = G OR E = H OR E = I
    GOTO 500
390  IF E = 5 GOTO 500
400  IF J / (10 * D + E) <  > INT
    (J / (10 * D + E)) GOTO 500
410  FOR F = 2 TO 9
420  IF F = A OR F = B OR F = C
    GOTO 490
430  IF F = D OR F = E GOTO 490
440  IF F = G OR F = H OR F = I
    GOTO 490
450  IF (10 * D + E) * F <  > J
    GOTO 490
460  PRINT A;B;" * ";C;" = ";D;E
    ;" * ";F;" = ";J
470 L = L + 1
480 K(L) = J
490  NEXT F
500  NEXT E
510  NEXT D
520  NEXT C
530  NEXT B
540  NEXT A

RESULTS:
29 * 6 = 58 * 3 = 174
39 * 4 = 78 * 2 = 156
```

Michael Wiesenberg is the author of Puzzled Programmers, *a book of new computer puzzles published by Microsoft Press. Last month's "Computer Calisthenics" was the last to contain a new puzzle. Watch for a new column for the mathematically and programmatically minded in an upcoming issue.*

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CIRCLE 286 ON READER SERVICE CARD

TIPS AND TECHNIQUES

Readers share tips for the II

IIGS CRASH CONTROL

When one of those new super-hi-res-graphics programs for the GS crashes, type Control-T and press Return. Doing so causes the 80-column screen to be displayed. You will see the address of the crash, the last instruction executed, and the contents of all the 65816 microprocessor's registers. The developer of the program will be interested in this information because it makes it a bit easier to track down the source of the bug that caused the crash.

Tim Swihart
Fort Worth, TX

Editor's Note: The Control-T command forces the screen display to text page 1, regardless of current soft-switch settings (which may select a graphics mode or text page 2). The command is not available on the IIe or IIc. For information on all the new system-monitor commands on the GS, see Apple IIGS Firmware Reference *(Addison-Wesley, 1987) or* Apple IIGS Technical Reference *(Osborne/McGraw-Hill, 1987) by A+ Contributing Editor Michael Fischer.*

—Gary B. Little

A SUBROUTINE FOR A BETTER WAY TO POKE

Are you a programmer who often POKEs machine-language code into memory from inside an Applesoft program? If so, you probably convert the machine-language bytes to decimal form (from hexadecimal) before putting them into DATA statements. You can use the more convenient hexadecimal form if you take advantage of the techniques illustrated in the subroutine in figure 1. It reads the hexadecimal data entries as strings rather than numbers and then converts the strings to decimal numbers before it pokes them into memory.

To use the subroutine, set SA equal to the starting address of the machine-language code and set N equal to the number of bytes to be poked. Each data element must be exactly two characters long, and you must not type a $ in front of a data element.

Rich Evers
West Union Mills, IN

```
10 SA = 768:N = 19
20  FOR Q = 0 TO N-1: READ DA$
30 A$ = LEFT$ (DA$,1): B$ = RIGHT$ (DA$,1)
40  IF A$ > "A" AND A$ <= "F" THEN A = ASC(A$)-55: GOTO 60
50 A = VAL (A$)
60  IF B$ > "A" AND B$ <= "F" THEN B = ASC(B$)-55: GOTO 80
70 B = VAL (B$)
80 VA = A * 16 + B
90 POKE SA + Q,VA
100  NEXT Q
110  RETURN
1000 DATA A9,FF,85,06,AD,30,C0,A2
1010 DATA 20,C6,06,F0,05,CA,D0,F9
1020 DATA F0,F2,60
```

Figure 1: The hex POKE program

COLORMONITOR FUSES

If you ever flick the switch on your Apple ColorMonitor and nothing happens, you have probably blown a fuse, a problem you can easily repair yourself. All you have to do is open your monitor (which may void your warranty) and replace the .315-amp fuse with a .400-amp fuse. Ordinarily it is a no-no to substitute a fuse with a higher amperage rating, but not here—Apple's suppliers made a mistake in production and didn't use the correct fuse. The fuse is a 3/4-inch-long glass tube with a metal cap on each end. You should see it as soon as you open the monitor if you are looking in from the side where the power switch is located.

Matt J. Snyder
Clinton, PA

Please send your Apple II tips to A+, 11 Davis Drive, Belmont, CA 94002; ATTN: Tips and Techniques. We will pay $25 for each tip we publish, so be sure to include your name, address, and social security number.

BY SHANON CULLEN

A collection of interesting products for you and your Apple II-series computer

PRODUCT ROUNDUP



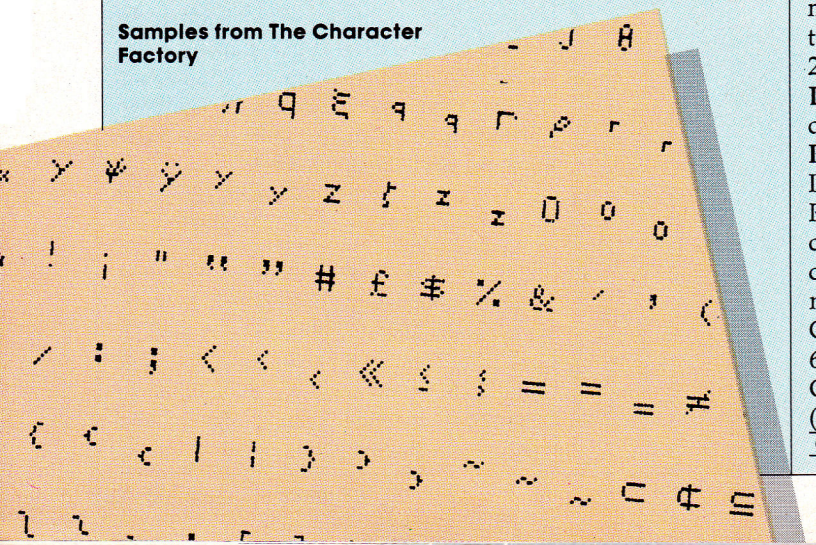
Compu-Quote's STAMPS program line now includes a program featuring stamps of Great Britain.

THE CHARACTER FACTORY

The Character Factory is a software package that prints characters not shown on the Apple keyboard, such as those in mathematics, foreign languages, and sciences. The package includes hundreds of special characters, and you can add more characters, fonts, and graphic designs. The Character Factory works with AppleWorks, Apple Writer, and many other word-processing programs.

List Price: $24.95; $49.90 for unlimited copies per school or college department
Requires: Apple IIe, IIc, or IIGS; 64K RAM; 5¼-inch disk drive (two recommended); printer, such as the Apple ImageWriter or Epson FX-80, that allows downloadable characters. ProDOS; not copy-protected.
Seven Hills Software Corporation
2310 Oxford Road
Tallahassee, FL 32304
(904) 576-9415
CIRCLE READER SERVICE NO. **501**

Samples from The Character Factory



STAMPS

A new STAMPS software program featuring stamp issues of Great Britain is now available from Compu-Quote. Previous STAMPS program versions have covered the postage stamps of the United States, Canada, and the United Nations.

Each STAMPS program disk contains the STAMPS program plus the latest Market Value file for all British postage issues. Annual Market Price update disks are available for $25. You can merge the update disk with your existing STAMPS program to automatically replace each stamp's previous value with its current market value in a process that takes approximately 20 minutes.
List Price: $95; update disk, $45
Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM; two 5¼-inch disk drives or a hard-disk drive; printer. DOS 3.3; not copy-protected.
Compu-Quote
6914 Berquist Avenue
Canoga Park, CA 91307
(818) 348-3662
CIRCLE READER SERVICE NO. **502**

SURGEPRO

General Electric Company has introduced a line of three different SurgePro protection devices for computer applications. These high-performance surge suppressors are designed to intercept sudden electrical surges that result from lightning, power outages, or rapid on/off cycles from other equipment on the same electrical circuit. For most applications, GE recommends the EPC, which comes in four- and six-outlet versions. Both versions have radio-frequency-interference filters to control power-line noise that could re-

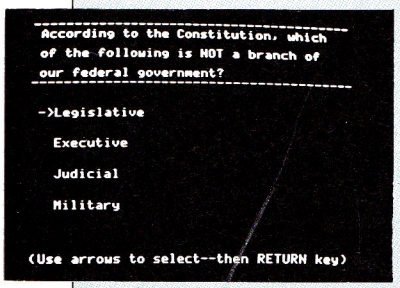


GE's SurgePro devices come in three-, four-, and six-outlet versions.

sult in loss of computer memory. They both come with heavy-duty power cords, on/off switches, and resettable circuit breakers to prevent overloads. Also available is a lighter-duty, triple-outlet unit with an RFI filter.
List Price: EPC line—4-outlet, $24.95; 6-outlet, $29.95. Triple-outlet, $14.95
General Electric Company
225 Service Road
Warwick, RI 02886
CIRCLE READER SERVICE NO. **503**

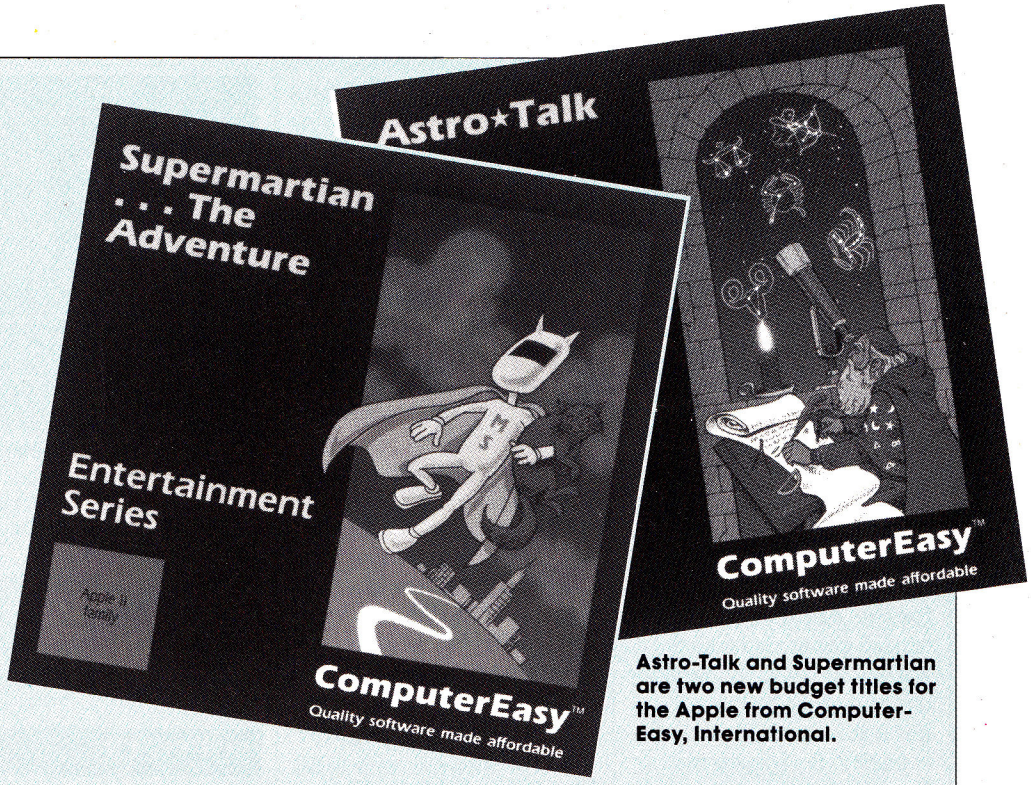
UNDERSTANDING THE UNITED STATES CONSTITUTION

Understanding the United States Constitution is a program that helps students understand the



A screen from Mindscape's Understanding the United States Constitution

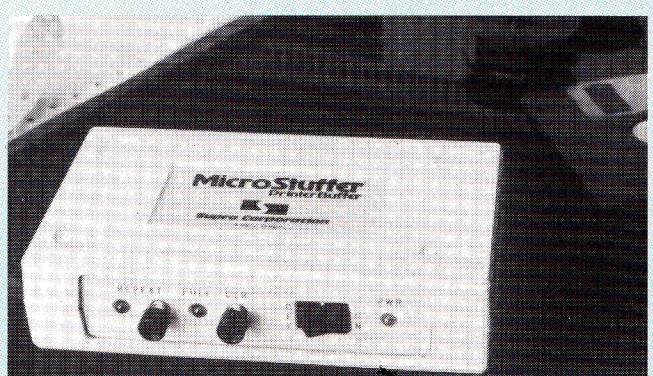
meaning of the U.S. Constitution and the operation of the government it established. The program allows students to test their knowledge of the Constitution, to learn about the United States' political system, and to expand their civic awareness. The flip side of each disk contains a Spanish-language version of the program.
List Price: $49.95
Requires: Apple II Plus, IIe, or IIc; 48K RAM; one 5¼-inch disk drive. DOS 3.3; copy-protected.
Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667
CIRCLE READER SERVICE NO. **504**



Astro-Talk and Supermartian are two new budget titles for the Apple from ComputerEasy, International.

MICROSTUFFER PRINTER BUFFER

The Microstuffer Printer Buffer can eliminate the time you waste waiting for a computer to print a document. You can send files quickly to the 64K Microstuffer, leaving the computer free for the next project. The Microstuffer sends data to the printer at the printer's much slower print rate. The buffer works with both text and graphics data. Output cable is included.
List Price: $69.95
Requires: Apple II Plus, IIe, IIc, or IIGS; parallel printer with Centronics interface.
Supra Corporation
1133 Commercial Way
Albany, OR 97321
(503) 967-9075
CIRCLE READER SERVICE NO. **509**



The Microstuffer Printer Buffer eliminates time wasted while you wait for your computer to print a document.

PRODUCTS FROM COMPUTEREASY INTERNATIONAL

ComputerEasy International, Inc., a company that markets software in grocery stores and drugstores, has released two new budget titles for the Apple: Astro-Talk and Supermartian.

Astro-Talk, an astrology program designed by professional astrologers, provides horoscopes for individuals based on birth date, time, and geographic coordinates. Interpretations are divided into chapters and cover such areas as Life Challenges, Imagination, and Career Skills, allowing individuals to choose the subjects in which they are most interested. The program comes with an on-screen Astro-Guide of astrology terms, and a screen-dump facility lets you print out horoscopes.

Supermartian is a text-and-color-graphics adventure program for grade-school children. The program involves a Supermartian on Earth, going from city to city around the world, trying to find a millionaire's lost cats. Supermartian comes on two double-sided disks and lets you save up to five games.
List Price: $9.95 each
Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive. Not copy-protected.
ComputerEasy International, Inc.
414 East Southern Road
Tempe, AZ 85282
(602) 829-9614
CIRCLE READER SERVICE NO. **506**

PRODUCT ROUNDUP

HARDWARE

VENTUNO 3 and 5 AUTOLOADERS

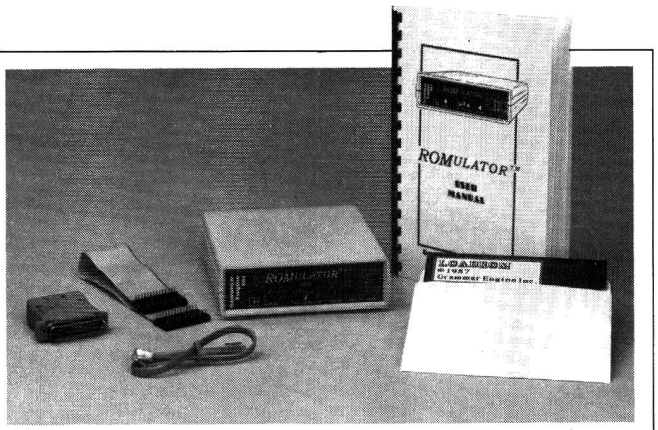
The Ventuno 3 and 5 Autoloaders let you duplicate large numbers of 5¼- or 3.5-inch diskettes for the Apple. The Ventuno 5 comes standard with a 30-diskette capacity, and the Ventuno 3 has a standard 20-diskette capacity. Both systems have an optional expansion capacity for high-volume duplication. Diskette cycle time is less than 3 seconds each. The autoloader is 14.5 inches long and 7 inches high.
List Price: $2995

Ventuno
43301 Osgood Road
Fremont, CA 94538
(415) 651-1936
CIRCLE READER SERVICE NO. **507**

ROMULATOR

The ROMulator is an in-circuit read-only-memory emulator that serves as a time-saving tool for developers of software that runs in ROM.

The ROMulator emulates a 2716 to 27512 ROM at one interface and a ROM blaster on the RS-232 side, which allows developers to download software from a host system. Eight models are available, four of which have a special nonvolatility feature.
List Price: $400–$675 for models emulating one ROM; $650–$1100 for models emulating two ROMs, depending on maximum ROM size and presence of the nonvolatility feature.



The ROMulator in-circuit read-only-memory emulator from Grammar Engine, Inc.

Grammar Engine, Inc.
1021 Tipton Court
Westerville, OH 43081
(614) 882-6366
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SOFTWARE

AWARD MAKER PLUS SOFTWARE PACKAGE

Award Maker Plus is a complete package for printing professional-looking certificates, awards, coupons, licenses, or other documents. The easy-to-use program can print hundreds of predesigned award styles, allowing you to choose text styles, enter your own messages, select border styles and colors, and enter your own hi-res pictures in some styles.

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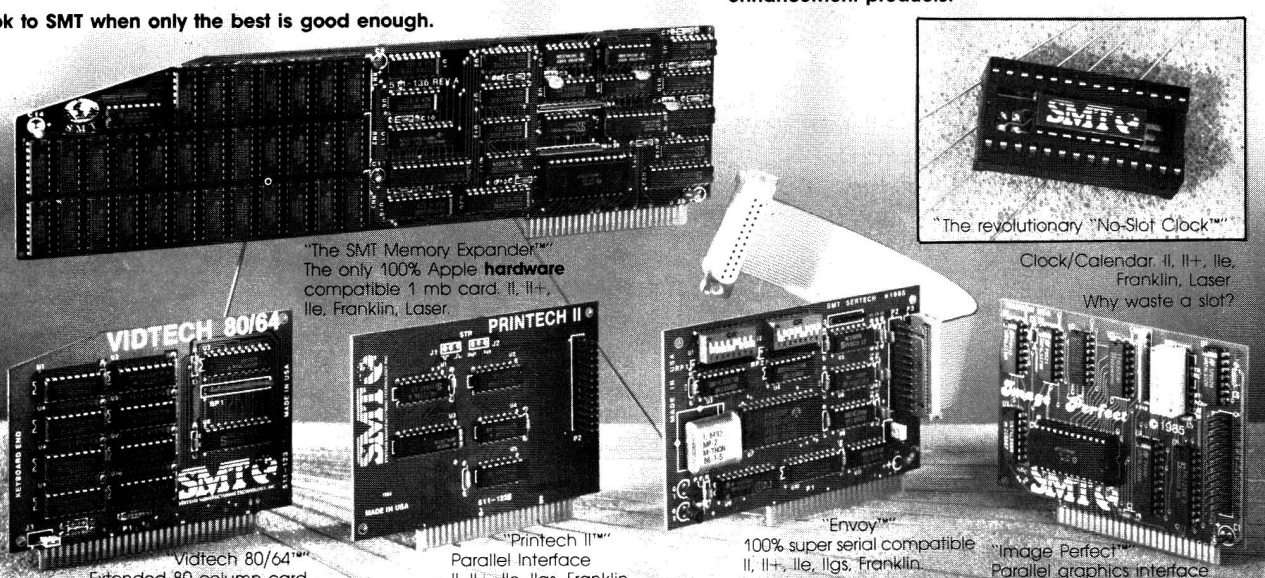

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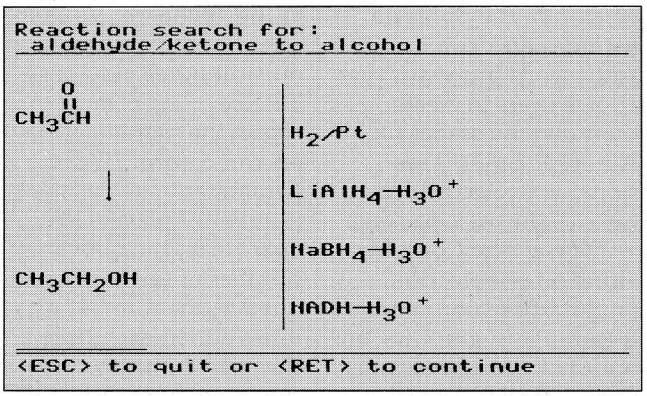
List Price: $39.95
Requires: Apple II Plus, IIe, IIc, or IIGS; 64K RAM; 5¼- or 3.5-inch disk drive. ProDOS; copy-protected.
Baudville
1001 Medical Park Drive SE
Grand Rapids, MI 49506
(616) 957-3036
CIRCLE READER SERVICE NO. **513**

ORGANIC REACTION CHEMISTRY

Organic Reaction Chemistry is a new program from COMPress, designed to help students organize and learn functional group names and the organic reactions commonly encountered in a beginning organic-chemistry class.

The six units in this program provide students with extensive drill and practice, and a built-in database of reactions allows students to search for specific reagents or functional group conversions. Some of the modules also allow instructors to insert textbook references pertinent to the material being presented.
List Price: $60
Requires: Apple II Plus, IIe, or IIc; 48K RAM; one 5¼-inch disk drive. DOS 3.3; copy-protected.
COMPress
P.O. Box 102
Wentworth, NH 03282
(603) 764-5225
CIRCLE READER SERVICE NO. **514**



Organic Reaction Chemistry helps teach subjects commonly encountered in a beginning organic-chemistry class.

WILLWRITER

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List Price: $49.95
Requires: Apple II Plus, IIe, IIc, or IIGS; 64K RAM; one 5¼-inch disk drive. ProDOS; not copy-protected, does not work with mouse.
Nolo/Legisoft
950 Parker Street
Berkeley, CA 94710
(800) 992-6656 (for orders)
In CA (800) 445-6656 (for orders)
(415) 549-1976
CIRCLE READER SERVICE NO. **511**

PRODUCT ROUNDUP

LOCKSMITH®

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Locksmith, the controversial copy program that took the Apple world by storm in 1981, has evolved from a powerful bit-copy programmed into a complete disk utility system, allowing the Apple user to recover crashed disks, restore accidentally deleted files, and perform hardware diagnostics on the disk drive and memory boards. The NEW Locksmith version 6.0 is now available and includes an advanced disk recovery utility, a framing-bit analyzer, an automatic boot tracer, a sector editor, many file utilities, and of course, the most powerful bit-copy program available. A fast disk backup utility copies disks in eight seconds flat. Improvements to Locksmith Programming Language have made it more powerful and easier to use for you to write your own backup and repair procedures. Includes a library disk which contains automatic procedures to copy hundreds of Apple programs.

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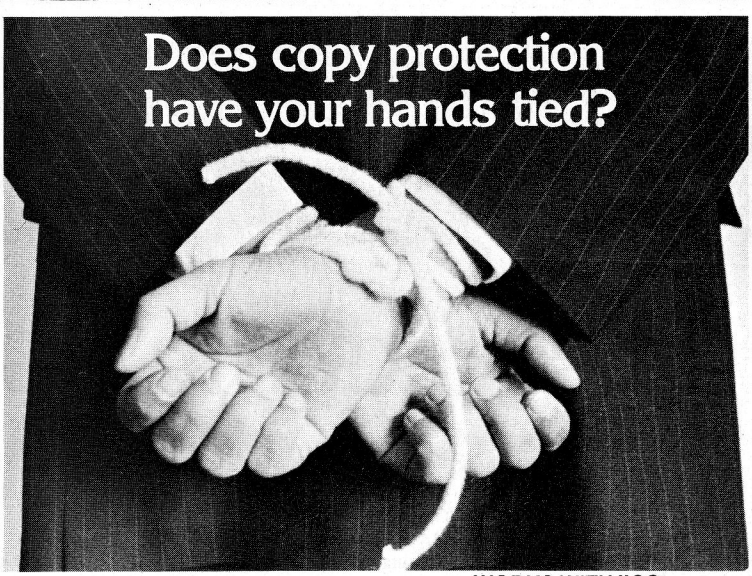

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4119 North Union Road
Woodstock, IL 60098
(815) 568-5166

VISA

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CIRCLE 262 ON READER SERVICE CARD

PRODUCT ROUNDUP

LARESCO SOFTWARE

Several programs are now available from Laresco. All have an introductory reduced price valid for one month after their mention in *A+*.

Spy Message Kit encodes/decodes text messages using a code key created either by users or by the computer. The menu-driven program features a word processor for creating and editing messages; the ability to create automatic, random, or manual key codes; a View mode; disk commands; a data conditioner; code-level selection; and a status window that displays code level, disk-drive number, code-key filename, and message filename.

Math Machine helps users learn add, subtract, divide, multiply, square, and square-root operations.

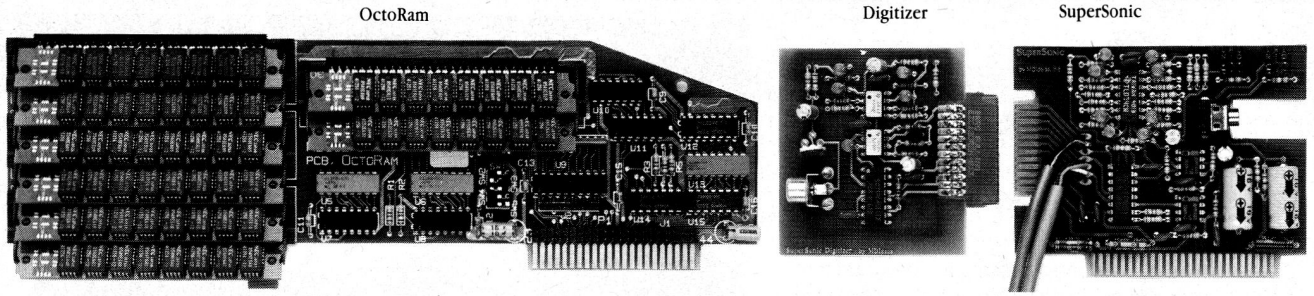
The program offers several modes: Drill mode provides problems, indicating wrong answers and giving corrections; Practice mode answers problems submitted by users, showing steps required for solutions; Review mode shows problems with answers; Test mode provides tests with scores and skill levels on completion; and Teach mode trains users to solve problems, giving hints where necessary.

Designed to teach or enhance typing skills, **Wilma: The Typing Tutor** is available as a basic package or in an elite version. The basic package features a speed of 1–100 words per minute; selection menus; 86 lessons; Drill, Demo, Autotype, View Text, and Manual Typing modes; an on-screen keyboard with six controls; and a game that tests typing speed. The program also types messages or echoes users' typing and has a character generator that creates drills of randomly selected characters. The elite version of the program includes disk commands and a word processor that allows users to create their own messages for Autotype or Drill sessions; as well as all features of the basic package.

Morse: The Code Machine offers selection menus, disk commands, lesson plans, graphics, an optional word processor, and 31 modes. The 31 modes include code-frequency selection; send modes for radio signals; a mode for varying the sound spacing between dots and dashes; Practice, Drill, Teach, and View modes; three character-generation modes; modes for selecting character groups; and disk-command modes.

Designed to test the user's memory, the game **Peter Says** displays a screen of colored squares, each of which contains a character corresponding to the keyboard. As characters disappear and musical notes play in sequence, players must repeat the sequence. Players can control 17 game parameters, such as the number of players (0–9), board size, the maximum number of tones in a sequence, the number of tones added each time, the tone duration, and the speed of the sequence.

OctoRam Digitizer SuperSonic



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OctoRam 256K $149.95, 1 meg $349.95, 2 meg $599.95
OctoRam ESP 128K $179.95, ESP 512K $389.95

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MDIdeas, Inc.

1163 Triton Drive, Foster City, CA 94404

CIRCLE 241 ON READER SERVICE CARD

Finally, in the game **Ocean Wars,** players attempt to sink ships belonging to their opponent, which can be either the computer or another player. The game includes sound effects for shots, hits, explosions, wins, and losses, and the screen displays scores for hits, misses, shots taken, and all of the ships' statuses.
List Price: Spy Message Kit, $19.95; Math Machine, $24.95; Wilma, $34.95 for basic, $54.95 for elite; Morse, $69.95 without word processor, $89.95 with word processor; Peter Says, $29.95; Ocean Wars, $14.95
Requires: Apple II Plus, IIe, or IIc; one 5¼-inch disk drive. DOS 3.3; not copy-protected.
Laresco
P.O. Box 2018
Calumet City, IL 60409
(312) 891-3279
CIRCLE READER SERVICE NO. **525**

MULTISCRIBE PRODUCTS

StyleWare has released three add-on products for use with MultiScribe 2.0, StyleWare's popular word-processing program.

Picture Manager is an on-line graphics program that lets users place single- or double-high-resolution pictures directly into MultiScribe documents. Users can create graphics with popular graphics programs and can place up to 15 parts of one or more pictures into a single MultiScribe document. Picture Manager also lets users move graphics within a document, combine graphics with text, or modify graphics with MultiScribe's built-in Font Editor.

MultiScribe FontPaks let users add fonts to MultiScribe's standard font assortment. Each FontPak package contains ten or more new, custom-designed fonts, including large fonts for posters and fliers, business-quality typefaces, symbols, and fancy fonts. Each package also includes a special Font Manager program that lets users move fonts from disk to disk and delete unwanted fonts from a disk.

The MultiScribe Desk Accessories package contains several useful programs, all of which users can install on a pull-down menu and call from MultiScribe. The desk accessories include a full scientific calculator with all the features of a standard calculator, such as trigonometric functions, memory, inverse, and all math functions; Clock, which displays the time and date and also lets users time-stamp documents; Calendar, which includes day-to-day notepads to help users plan schedules and keep appointments; Control Panel, which provides sound control and cursor-adjustment capabilities as well as up to eight sets of macro sequences; and Puzzle, which provides an amusing puzzle.
List Price: $39.95 each
Requires: Apple IIe or IIc, 128K RAM, one 5¼-inch disk drive, MultiScribe 2.0. ProDOS; not copy-protected; mouse optional.
StyleWare, Inc.
5250 Gulfton
Suite 2E
Houston, TX 77081
(713) 668-4046
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PRODUCT ROUNDUP

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This headline could be about you if you use the power of your home computer to your advantage in these big state lotteries.

THE LOTTO PROGRAM produces a powerful and complete probability study of the past winning lottery numbers with just single key presses from a main menu. The data generated includes 'hot' or 'cold' numbers, any trend or patterns, sums of digits, odd/even numbers and much more.

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You keep it up to date by simply adding the latest winner each week, and you can produce hard copies on any printer if you so desire. This program will cut those big odds down to size and may even pay for your computer (or your house).

Available for Apple only $24.95 and the Super Macintosh version is only $29.95 and comes with disk, hints and instructions.

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PRODUCT ROUNDUP

AIDS EDUCATION PROGRAM

A computer-assisted program to teach young adults and the general public about Acquired Immune Deficiency Syndrome (AIDS) has been released by Substance Abuse Education Software. The program covers the history of the disease, how AIDS affects the body, who gets AIDS, and how the disease is spread, as well as prevention and treatment of the disease. The program uses an interactive format, graphics, and immediate feedback. Program content is based on the recommendations of the U.S. Surgeon General.

List Price: $49.95
Requires: Apple II Plus, IIe, IIc, or IIGS; one 5¼-inch disk drive. DOS 3.3; copy-protected (non-copy-protected disk available on request for transfer to a 3.5-inch disk).

S.A.E. Software, Inc.
670 South 4th Street
Edwardsville, KS 66113
(913) 441-1868

CIRCLE READER SERVICE NO. **515**

GAMCO EDUCATIONAL SOFTWARE

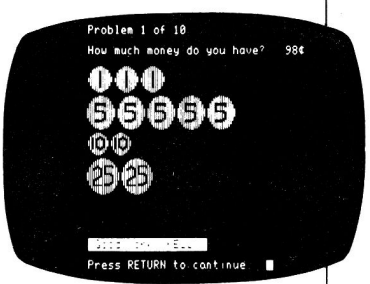
Updated and enhanced versions of GAMCO's educational drill programs States and Capitals, Money, and Telling Time, have been released for the Apple II.

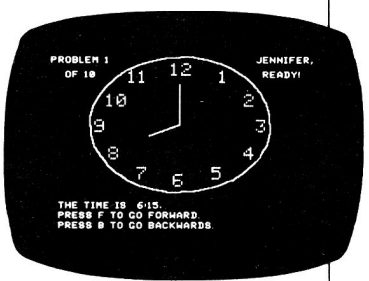
States and Capitals drills U.S. geography skills dealing with regional and state maps, state abbreviations, and capital cities.

Money provides practice in money skills that involve counting money, buying, selecting coins, and determining change.

Telling Time, with four levels of difficulty, involves drill in telling time, using a graphic clock face and digital and written time.

Each program has an arcade-style reward game and a program/student management system. The system holds up to 200 names in alphabetical order.





Screens from GAMCO Industries' educational drill programs Money and Telling Time.

List Price: $44.95 each
Requires: Apple II Plus, IIe, or IIc; one 5¼-inch disk drive; States and Capitals—64K RAM, ProDOS; Money and Telling Time—48K RAM, DOS 3.3. Copy-protected.

Gamco Industries, Inc.
Box 1911
Big Spring, TX 79721
(800) 351-1404
In TX (915) 267-6327

CIRCLE READER SERVICE NO. **516**

PRACTICAL BASIC ALGORITHMS

Practical BASIC Algorithms is a utility package designed for intermediate-level BASIC programmers. It can also serve as a

PRODUCT ROUNDUP

subject-matter preview for people planning to take a programming course.

Topics covered include stacks, queues, shell sorting, binary search, binary trees, structured programming, database management, and more. The disk provides on-screen examples of how the algorithms manipulate data as well as source code. The documentation explains how the algorithms work, situations for their use, and likely bugs. The package also includes information on hi-res graphics, graphics demos, and shape and character font makers and seven complete hi-res character fonts.

List Price: $19.95; registration of shareware, $15
Requires: Apple II Plus, IIe, or IIc; 48K RAM; 5¼-inch disk drive. DOS 3.3; not copy-protected.
Lambsoft Development
P.O. Box 42801
Philadelphia, PA 19101
(215) 438-3695
CIRCLE READER SERVICE NO. **517**

DEC COMPUTING SOFTWARE

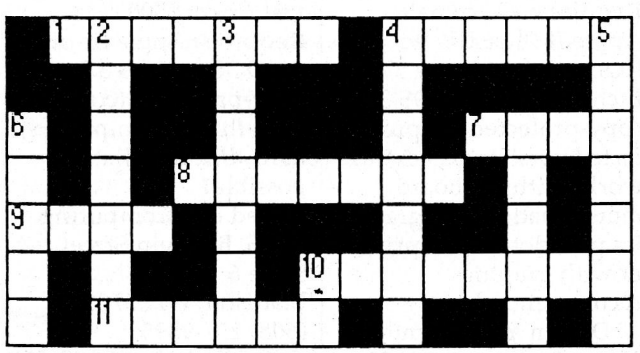
Several entertainment and educational programs for the Apple II have recently been released by DEC Computing.

Wheel of Boredom is a game patterned after the television program with a similar name. Players spin, choose letters, buy vowels, and try to guess the answer to the puzzle. You can use one of the 300 puzzles that come with the program, or you can make up your own puzzles.

Crossword Creator is for people who want to create crossword puzzles. You can enter up to 20 words and clues for each puzzle and store up to 100 puzzles on each disk.

DEC also offers computer-aided instruction (CAI) modules for high-school science and math students. Each program is interactive and menu-driven. Titles include Factor-Label, Chemistry Math I, Chemical Equations, Atomic Structure, Chemical Bonding, and Acids and Bases.

List Price: Wheel of Boredom, $18.95; Crossword Creator, $29.95; CAI modules, $19.95 each
Requires: Apple II Plus or IIe; 48K RAM; one 5¼-inch disk drive; Crossword requires printer—dot-matrix recommended. DOS 3.3; copy-protected.
DEC Computing
5307 Lynnwood Drive
West Lafayette, IN 47906
Written inquiries only
CIRCLE READER SERVICE NO. **518**



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Open-Apple is Tom Weishaar's monthly newsletter for knowledgeable Apple II users. It's thin but packed tight with Apple II lore, humor, letters, tips, advice, and solutions to *your* problems. Compared to other Apple II publications, ***Open-Apple*** has the highest new-idea-per-issue ratio, the clearest writing, the funniest cartoons, the longest index, the *only* warranty (all your money back if you're not satisfied), and it takes up the least shelf space. The only thing it doesn't have is the most subscribers. Yet.

II cue #17

When you finish printing on continuous pressure-sensitive or "sticky" mailing labels, tear the sheet behind the printer and roll the remaining labels forward through your printer. This wastes a few labels, but it is better than the alternative of having a label come loose and get stuck underneath the platen, which sometimes happens when rolling labels backwards. If a label does come loose, you usually have to take the printer apart to get it unstuck. For more information, see "Mail label musings" in our September 1986 issue, page 2.59.

From our fan mail:

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PRODUCT ROUNDUP

ABRACADATA

Welcome!, an electronic handbook, and three programs in the Design Your Own Home Series are now available from Abracadata.

Welcome! offers a structured database that uses both text and graphics to provide information about companies or organizations for employees or members. The database can hold such information as phone and mailing lists, job titles, company history, goals, business plans, safety, benefits, and insurance. "Managers" enter appropriate information and can make changes and additions; they then provide each "user" with a User and Data disk.

In the Design Your Own Home Series, Interior Design lets users plan interior designs quickly, easily, and inexpensively. Users can choose from a large library of furniture shapes and fixtures and create custom furniture. All furnishings are true to scale, and users can explore color schemes and pattern designs as well as rotate furniture and view it from the top or side. In the same series are Architecture Design and Landscape Design, which offer a selection of architectural and structural shapes, and trees and plants, respectively.

List Price: Welcome!, $79.95; Design Your Own Home Series, $69.95 each program

Requires: Welcome!—Apple II Plus, IIe, IIc, or IIGS; 64K RAM; one 5¼-inch disk drive. DOS 3.3; copy-protected (unprotected version, $25 extra); works with keyboard, mouse, paddles, or graphics pad; dot-matrix printer with graphics recommended.

Design Your Own Home Series—Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive. DOS 3.3; copy-protected (unprotected version, $25 extra); works with mouse, paddles, or graphics pad; printer optional.

Abracadata Ltd.
P.O. Box 2440
Eugene, OR 97402
(503) 342-3030

CIRCLE READER SERVICE NO. **541**

TRANSCRIBEX

Designed for high-quality grade II Braille translation and formatting, the TranscriBEX word-processing system includes a text editor for both print and Braille data entry, print and Braille formatters, and a translator that produces grade I and grade II Braille from print. Formats include automatic Braille page numbering, textbook-format prose, literary-format prose, poems and plays with optional line numbers, foreign languages in grade I, and tables and material in columnar format. Step-by-step tutorials provide information on computer use and Braille transcription so that even people with no Braille experience can produce legible Braille.

List Price: $500

Requires: Apple IIe or IIc. ProDOS or DOS 3.3; copy-protected (comes with three backup disks; hard-disk installation possible).

Raised Dot Computing
408 S. Baldwin Street
Suite 6
Madison, WI 53703
(608) 257-9595

CIRCLE READER SERVICE NO. **540**

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CMS A2S ProDOS SCSI Interface Card:	$ 115	AST VisionPlus	$229

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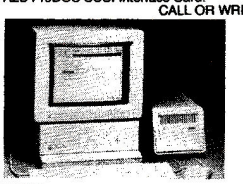

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Number of Cylinders	612	Number of Cylinders	752
Operating Shock	3g	Operating Shock	10g
Non-operating Shock	60g	Non-operating Shock	100g
External SCSI "ID" Select	"0" to "6"	External SCSI "ID" Select	"0" to "6"
Power - 110 / 220 VAC	8 / 16 Watts	Power - 110 / 220 VAC	8 / 16 Watts
Internal Power Supply	Yes	Internal Power Supply	Yes
Reliability - MTBF	20,000 Hours	Reliability - MTBF	20,000 Hours
SCSI Connectors	2 - DB25 Female	SCSI Connectors	2 - DB25 Female
Weight	5 Pounds	Weight	5 Pounds
Cabinet Size	10 x 6 x 5.5"	Cabinet Size	10 x 6 x 5.5"
Warranty Period	1 Year	Warranty Period	1 Year

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MONITORS
Category
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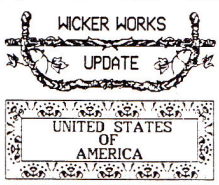

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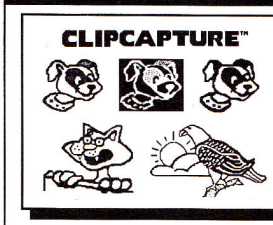

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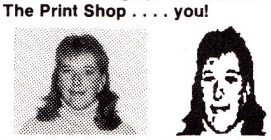

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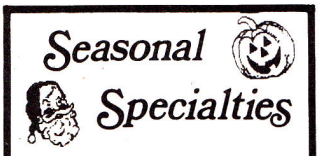

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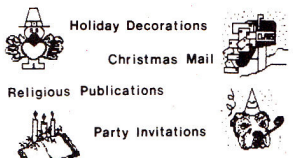

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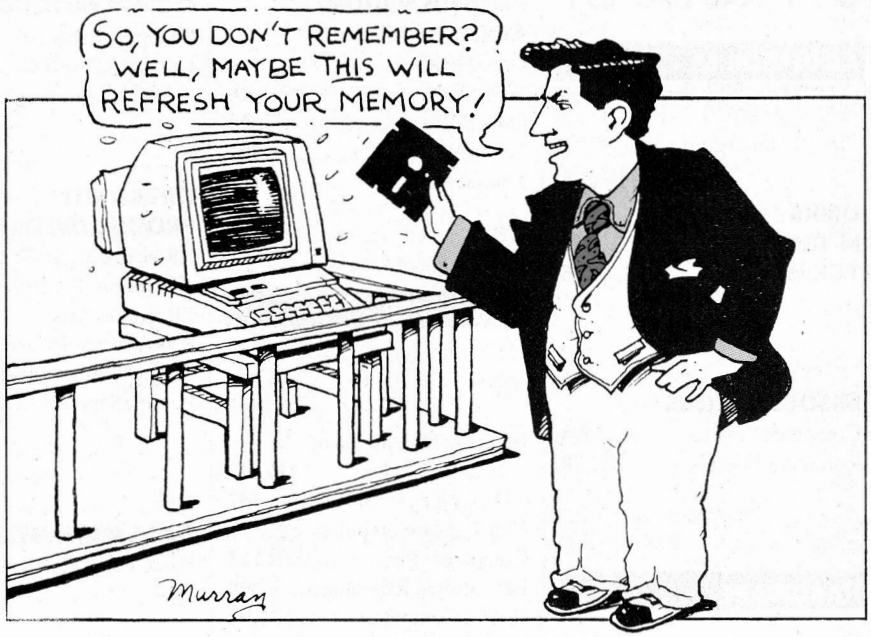

SMT CLOCK AND THE IIc

Q. *Does the SMT No-Slot Clock (reviewed in the July 1987 issue of A+) work on the Apple IIc?*

Marty Halpern
Sunnyvale, CA

A. The No-Slot Clock works perfectly with Apple IIc models shipped in the last year or so. In principle, the clock works with older production models too, but it is more difficult to install because older models of the IIc have a thick plastic support bar under the keyboard and just above the ROM-chip socket where you install the clock. After you install the clock, the keyboard won't fit, because the support bar touches the top of the ROM chip; to make it fit, you must scrape away a portion of the support bar. Messy, but it gets the job done.

PRINTING WITH APPLE WRITER ON THE IIGS

Q. *I've discovered that the Apple Writer program won't print files when I run it on my new GS. It works just fine on my IIc, however. What am I doing wrong?*

Paulo Nogueira Jr.
Cosmopolis, Brazil

A. It's not your fault at all. Apple Writer checks ID bytes in the firmware for the printer interface to see if the computer has a Super Serial card installed; if the ID checks out, it prints by accessing directly the hardware registers for the 6551 serial-interface chip on the Super Serial card. The internal serial port on the GS has the same values in the ID bytes as does the Super Serial card, but the serial-interface chip is the Zilog 8530. As a result, Apple Writer sends printing commands that are inappropriate for the 8530, and nothing gets printed.

The solution is to patch Apple Writer so that it will not recognize the internal GS serial port as a Super Serial card. In this situation, it prints by sending characters through standard firmware entry points, and all works well.

To make the patch for Version 2.0 of Apple Writer, boot ProDOS and enter the Applesoft command mode. Then enter the following commands:

```
]BLOAD AWD.SYS,A$2000,E$6020,TSYS
]CALL -151
*4DB0:60
*4F67:10
*4F6E:13
*3D0G
]BSAVE AWD.SYS,A$2000,E$6020,TSYS
```

For Version 2.1, use the following commands:

```
]BLOAD AWD.SYS,A$2000,E$6020,T$0C
]CALL -151
*4DC7:60
*4F7E:10
*4F85:13
*3D0G
]BSAVE AWD.SYS,A$2000,E$6020,T$0C
```

Note that you should perform these patches only on backup copies of Apple Writer. In addition, you can no longer use Apple Writer with a modem if you make the patch, so don't use the patched version on a IIe or a IIc.

CABLE SOURCE

Q. *I currently have an Apple IIGS and a Sony RGB Monitor/TV (model KV-1311CR). I've heard that this monitor is compatible with the GS, but I need a cable between its 34-pin analog input port and the DB-15 RGB port on the GS. Do you know where I can find such a cable?*

Tony Chang
Torrance, CA

A. A good source for this cable is Redmond Cable, 17371-A1 N.E. 67th Court, Redmond, WA, 98052; (206) 882-2009. The part number is RM670, and the price is $39. When you get your cable, be very careful that you connect it to the monitor correctly—it is disturbingly easy to orient it upside down or misalign the pins, resulting in damage to your equipment when it's turned on. ✚

Gary Little is A+'s Senior Technical Editor and author of several books about Apple computers.

Please send your questions and problems to Rescue Squad, A+, 11 Davis Drive, Belmont, CA 94002. Because of limited space, we aren't able to publish responses to all inquiries we receive.

ILLUSTRATION BY TOM MURRAY

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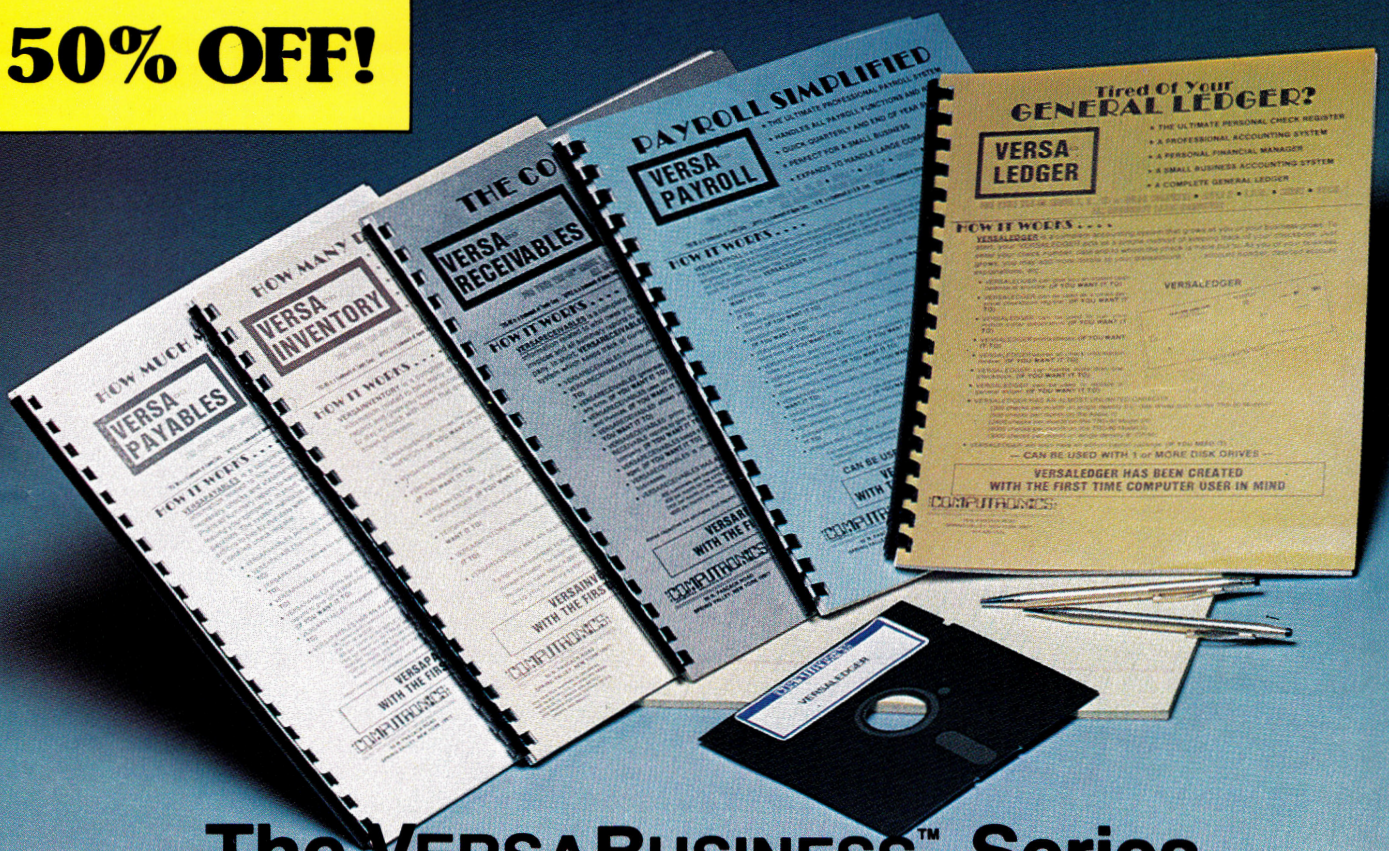

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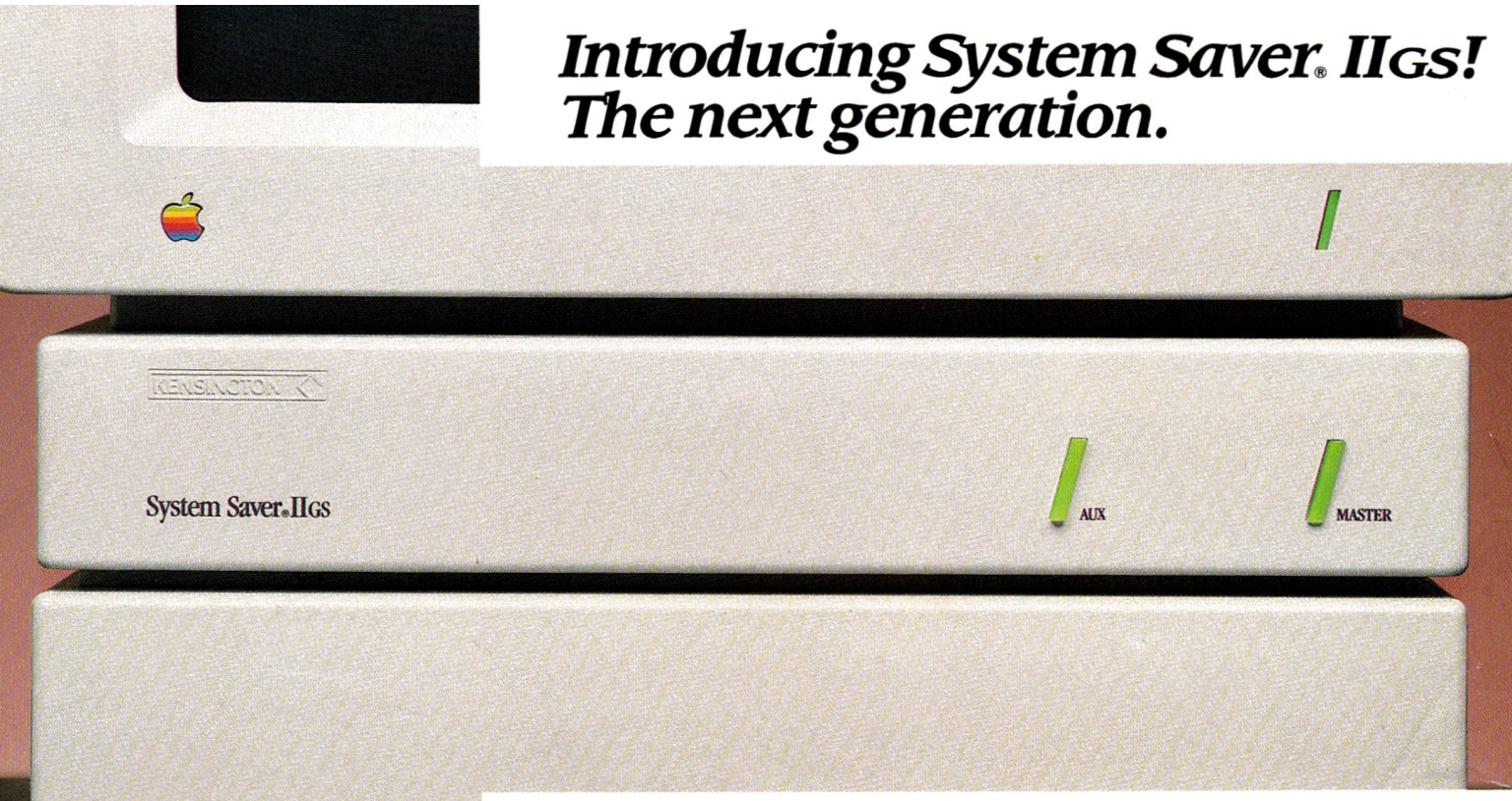

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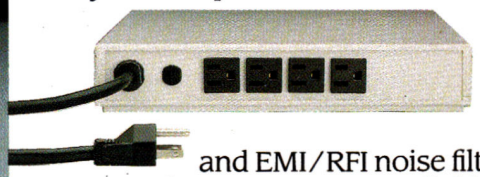

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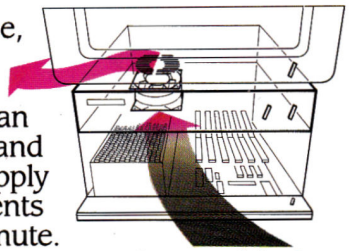

System Saver IIGS, $99.95, is available at Apple dealers everywhere. For a dealer near you, or for more information, call toll-free (800) 535-4242. In NY, call (212) 475-5200. CIRCLE 134 ON READER SERVICE CAR

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