

PLUS:
APPLE II
HOLIDAY
SHOPPING GUIDE

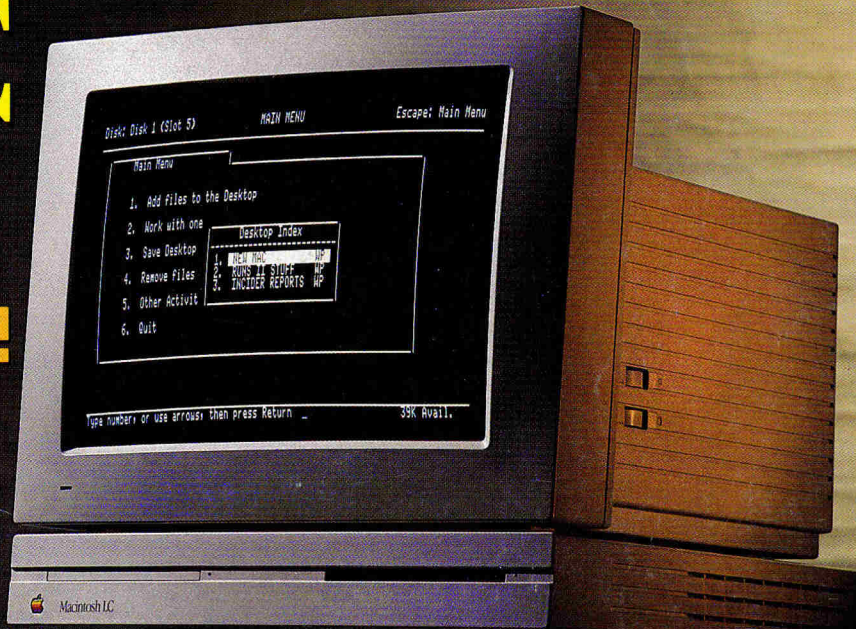


Apple II / Macintosh

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- What Will Educators Think?
- Sneak Peek At the Mac Classic
- Networking IIs And Macs — Old and New



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Inside Story

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Controlled by our own Video Display Generator (VDG) array, this feature off-loads video work from the 128K system RAM, providing both analog and digital (IBM®-type RGB) outputs.

Very Large Scale Integration

We manufacture our own custom gate arrays to improve performance and make our products compact, reliable, and affordable.

Triple Speed Processor

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1MB RAM Board

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Universal Disk Controller

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Having all this performance usually means compromising one thing. Price. But like a good book, this story has a surprise ending. With a one year warranty, the Laser 128EX™ and 128EX/2 cost about half of what you'd pay for a stripped Apple IIe.

Want more inside information? Find out the reason why *inCider* said "Look at today's Laser if you want to see tomorrow's Apple." Call (708) 540-8911 for a free catalog and the name of a Laser dealer near you.

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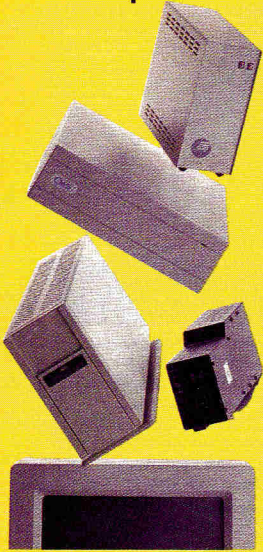
IN120

Softdisk: 64K Required; 128K Recommended.
Softdisk G-S: 768K—One 3.5" drive Required; 1.25 Meg.—Two 3.5" drives Recommended.

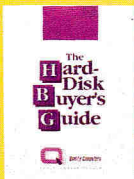
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| 20 MEG. (Ilc) | 579.95 |
| 40 MEG. (Ilc) | 749.95 |

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| RamFAST/SCSI (w/256K RAM) | 179.95 |

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| 256K | 139.95 |
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| 1 MEG. | 209.95 |
| RGB ColorLink Option | 99.95 |
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| AE RAMFACTOR | |
| 256K | 169.95 |
| 512K | 199.95 |
| 1 MEG. | 249.95 |
| RamCharger Option | 139.95 |
| Y Cable Adapter | 20.95 |
| 1 MEG. Expander | 219.95 |
| 2 MEG. Expander | 309.95 |

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| AE Z-RAM ULTRA II | |
| 256K | 179.95 |
| 512K | 219.95 |
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AE RAM EXPRESS II

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| 256K | 179.95 |
| 512K | 219.95 |
| 1 MEG. | 249.95 |

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| 1 MEG. | 199.95 |
| 2 MEG. | 279.95 |
| 3 MEG. | 359.95 |

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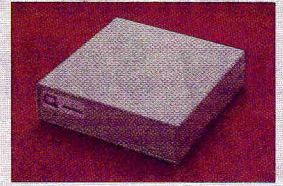
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| 256K (bank) | 24.95 |
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| 1 MEG. (bank) | 79.95 |

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| AE 5.25" | 119.95 |
| AMR 3.5" | 189.95 |
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| Laser 3.5" | 179.95 |
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| Laser UDC | 49.95 |
| Apple 3.5" (Ilc, II+) | 309.95 |
| Apple 3.5" (Ilc Plus, IIGS) | 319.95 |
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| AE Serial Pro | 109.95 |
| AE Buffer Pro Option | 89.95 |
| Fingerprint GSI | 94.95 |
| Fingerprint Plus | 89.95 |
| Fingerprint G+ | 59.95 |
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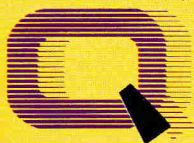


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| ZipChip GSX | 224.95 |
| Zip GSX Plus | 269.95 |

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| Laser 128EX-2 (3.5") | 449.95 |
| Laser 128EX-2 (5.25") | 409.95 |
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| AE FastMath | 139.95 |
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| Lab Pack | 89.95 |
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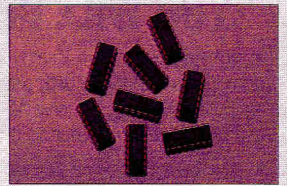
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| 4 MEG | 449 Can. |
| AE 3.5 Drive | 279 Can. |
| Laser 128EX/2 | |
| with monitor | 699 Can. |
| SupraModem 2400 | 125 Can. |
| Q Labs Products | 44 Can. |
| DPS 46 MEG. 28ms | |
| SCSI Hard Drive | 689 Can. |
| DPC 100 MEG. 24ms | |
| SCSI Hard Drive | 1,089 Can. |
| TransWarp GS | 379 Can. |
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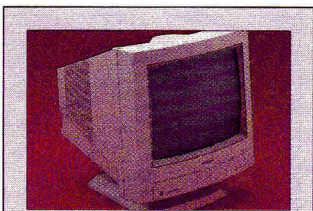
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| Home GS | 32.95 |
| School | 64.95 |
| School GS | 64.95 |
| Lab Pack | 109.95 |
| Lab Pack GS | 109.95 |

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| Home GS | 29.95 |
| School | 34.95 |
| School GS | 39.95 |
| Lab Pack | 69.95 |
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| Where in Time is Carmen Sandiego? (3.5 or 5.25) | |
| Home | 29.95 |
| School | 39.95 |
| Lab Pack | 75.95 |

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| Home | 29.95 |
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| Lab Pack | 75.95 |

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| Where in Europe is Carmen Sandiego? (3.5 or 5.25) | |
| Home | 29.95 |
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| School | 62.95 |
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| Science ToolKit - Master Module | |
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| School | 69.95 |
| Lab Pack | 179.95 |

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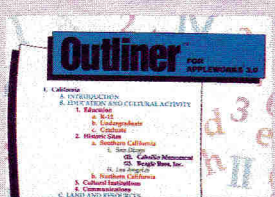
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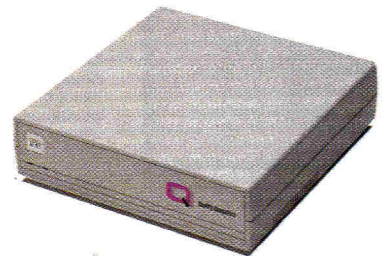
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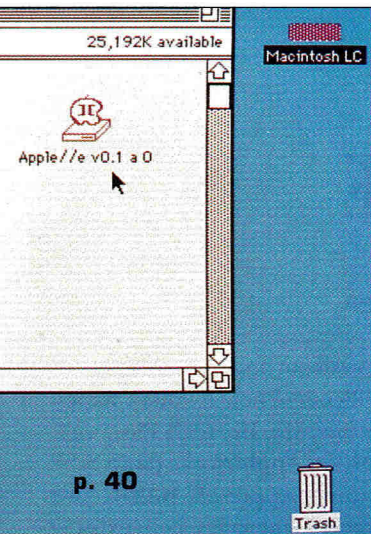
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DECEMBER

1990 Vol. 8 No. 12

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40 Meet the Mac LC: What the Apple IIs Should Have Been?

With stunning color graphics, a reasonable price tag, and an optional 8-bit II emulation card, Apple's new machine closes the gap between the company's two lines and advances into the home, school, and small-business markets.

53 inCider's Apple II Holiday Shopping Guide

inCider presents "the best of the best" — state-of-the-art hardware and software products in five categories: productivity, peripherals, education, creativity, and accessories.

66 Connecting in the '90s

When it comes to sharing peripherals and data, IIs and Macs were made for each other. Networking, local cabling, and file conversion give Apple II users three ways to tap into the power of the Macintosh.

76 Graphics Gallery

Take some risks, explore and experiment — computers make playing with images fun, creative, and satisfying. Pick a tool, start drawing, and open yourself up to the artist within.

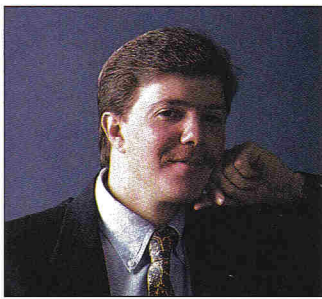
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INCIDER'S
VIEW

COMES A TIME

By DAN MUSE * EDITOR IN CHIEF

Apple II users
and Apple II
magazines can
no longer afford
to ignore
the Macintosh.

I CAN HEARING YOU THINKING, "A MAC on the cover of *inCider*? What's going on here?"

You're probably angry, excited, or confused. I expect you be either of the first two — I'd prefer excitement over anger, of course — but I don't want you be to confused. An old boss of mine once told me, "You can do a lot to your readers — make them happy, insult them, anger them — but never confuse them. Good writing and reporting should generate emotion — confusion isn't an emotion."

We're excited by the chance to cover both the Apple II and the Macintosh and to report on how the two systems work together. The Apple II will continue to be our primary focus. But we recognize that some Mac products are of interest to our readers. If you're confused, however, let me try to explain why we're doing what we're doing. If you're angry, this may help you, too.

First of all, this isn't the first time we've featured a Macintosh on the cover. The March 1984 cover story, "Macintosh: The Gloves Come Off at Apple," by Bob Ryan, *inCider's* technical editor at the time, reported on the just-announced machine. In the following issue, in a column titled "In the Wake of Macintosh," Ryan wrote, "We remain dedicated to bringing you the best coverage possible of Apple's 6502-based computers." *inCider* chose not to cover the Macintosh. It was a good decision. At the same time, our major competitor did add Macintosh coverage, which it later dropped.

That was six years ago. The Apple II and the Mac had little in common besides an Apple logo on the case. Times have changed, however. It now makes sense to report on Macintoshes as they apply to markets we've always addressed: home, school, and small business. This month's cover story on the Macintosh LC marks the beginning of a new era for *inCider/A+*. Apple II users and Apple II magazines can no longer afford to ignore the Macintosh. In fact, as Apple technology advances on all platforms — II and Mac — why would you want to ignore it?

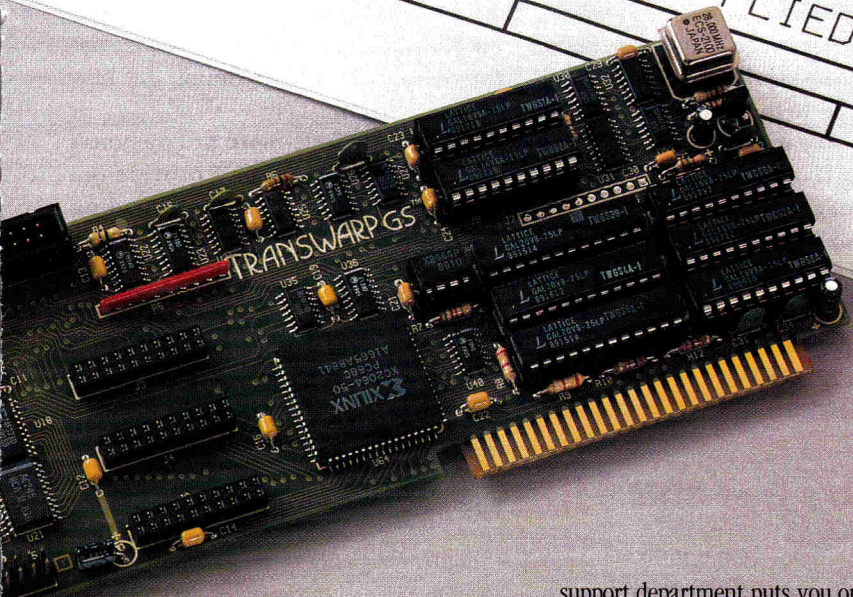
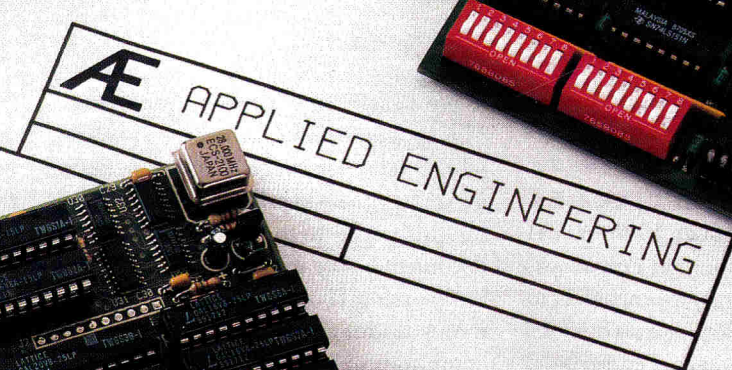
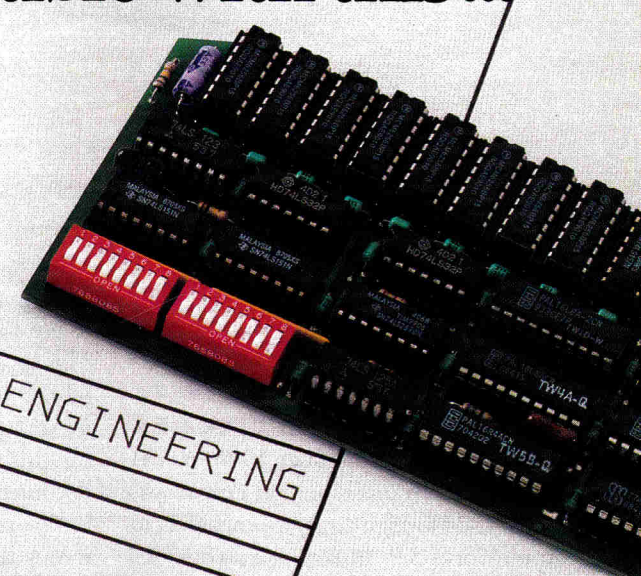
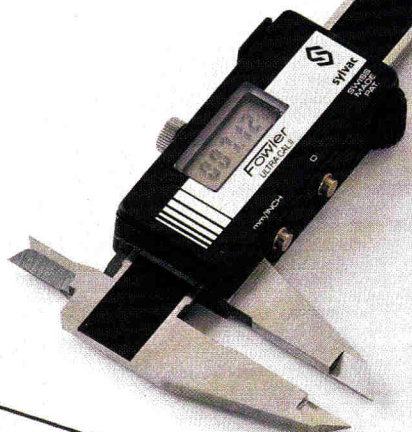
Should you all rush out and buy a Mac LC or a Mac Classic? Of course not. If you're happy with your Apple IIGS, IIe, IIC, or II Plus, we'll continue to report on AppleWorks (both 8-bit and 16-bit versions), Applesoft BASIC and other II programming languages, both existing and new Apple II products and technology, and more. We're not dropping Apple II coverage. We're adding coverage of appropriate Macintosh products — that is, affordable programs that enhance education at home or in school, provide simple but effective desktop-publishing options, help individuals manage their personal finances, and so on.

We'll leave coverage of products for large companies, ad agencies, and professional graphic designers to other magazines. We'll report on the same types of products we always have; it's just that more and more of those products are coming out for the Macintosh in addition to the Apple II. And more software and hardware solutions that make it easier to use the II and the Mac together are becoming available.

This decision isn't one we made quickly or take lightly. In fact, it's something we've contemplated as our demographics have changed. Our most recent reader survey shows that many of you are interested in the Macintosh: About 12 percent of you already own one, and of the readers who plan to buy a new computer in the next 12 months, 45 percent plan to buy a Mac. That compares with 34 percent who plan to buy a IIGS, 8 percent who plan to buy a IIe, and 5 percent who plan to buy a IIC Plus. And this research was conducted before any word on the new lower-priced Mac Classic and Mac LC with its Apple II emulation capabilities had hit the street.

We regret that some Apple II owners won't take this change well. We're confident, though, that most of you will see the logic of our decision and benefit from it. The gap between Mac and II technology has closed so much since the Mac first appeared in 1984 that covering both platforms is not only justified, but natural. □

Only AE accelerators are compatible with this...



A blank sheet of engineering paper. For some time now, we've done all of our design work using CAD (computer aided design), but the blank sheet of paper shown above represents future AE peripherals and accessories for the Apple II line.

Because accelerator cards push technology close to the limit, designing new peripheral cards to be fully compatible with a given accelerator requires a special insight. That's why whenever one of our engineering teams designs an Apple II peripheral, they have to take into account the way in which TransWarp™ and TransWarp GS™ will interact with that particular peripheral device.

Both TransWarp and TransWarp GS were designed with future upgrades in mind (note the 40-pin high speed Bus connector on TransWarp GS). That's why Apple owners who expand and enhance their computers with Applied Engineering products have far fewer compatibility and performance problems than those who try to "mix and match". But should you ever have a question, one call to our technical

support department puts you on line with someone that knows your Apple and all the peripherals in it, making a solution to your configuration much easier.

You've probably already read the great reviews the TransWarps have received; *"I wasn't able to find a single piece of software incompatible with it, nor could I attribute any system problems to the card's presence."* - A+ (IIGS)

"TransWarp is great. I have replaced all my other accelerators with it!" - Steve Wozniak, co-founder of Apple (IIe).

"Wait til you see it perform. Folders and icons open from the finder like lightning text wraps instantly around graphics in your favorite desktop publishing program; documents scroll at a reasonable rate in any graphics-based word processor. TransWarp makes the GS as good as the Mac, because it's fast and it's still in color." - Incider (IIGS)

"Your engineering department should take a bow. As a developer and consultant, I work with the Mac II and Mac SE as well as the IIGS. I have conducted some recent tests which indicate that the "little" IIGS outperforms the Mac SE." - George Dombrowski, Jr. (IIGS)

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LA CUCARACHA YA NO PUEDE ESCRIBIR

LEE ABRAHAM'S LETTER ("EN Espanol," September 1990, p. 12) implies by omission that EuroWorks doesn't add foreign-language capability to AppleWorks 3.0. In fact, EuroWorks 3.0 adds French, German, Italian, Portuguese, and Spanish to AppleWorks 3.0; EuroWorks 2.0 adds the same five languages to AppleWorks 2.0 and 2.1. Also, the GS Spanish character set provides only four of the ten characters required to print that language correctly. EuroWorks provides all ten, and doesn't require a GS — all you need is AppleWorks.

Frank Wells

**S. A. AuTeur Company
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Our answer still stands. Because EuroWorks isn't compatible with AppleWorks GS, the GS' built-in character set provides a partial solution (Note: Look for a review of EuroWorks in an upcoming issue.) To put accents on vowels, you might try inserting your printer's control code for backspace (usually Control-H) and the accent mark after the vowel — or just read the next letter.

OVER THE PAST FEW YEARS several letters have been printed regarding Spanish-language text on Apple II computers. Contrary to what some people believe, the GS has only a partial Spanish character set built in. While it shows the *é*, the *í*, and the *ñ* on screen, it has no provision for showing accented vowels. Spanish also uses other characters not found in English, such as *ü* and brackets « and ». The only way I've found to access all Spanish-language characters with AppleWorks is

to use Beagle Bros' TimeOut SuperFonts. This application won't show up very well on screen (lots of garbage characters), but it makes for dynamite printed output, and you can print easily to the screen to check the document before making a hardcopy.

Also, using TimeOut UltraMacros makes it easy to designate option (solid-apple) combination keystrokes, to make one-stroke entering of these special characters fast and accurate.

**Richard D. Armstrong
4617 Scott Street
Davenport, IA 52806**

I KNOW IT'S ONLY ROM 01, BUT I LIKE IT

I'VE THOUGHT ABOUT IT FOR A good long while and have decided to take exception to your stand on non-toolbox software ("Live Free or Die," Status Report, August 1990, p. 24).

As nearly as I can determine, the only way your position is tenable is if you assume an individual is constantly upgrading his or her system from one ROM to the next.

If some bright soul were to write a respectable application for the GS (ROM 01) using the techniques employed by the Free Tools Association, I wouldn't hesitate to purchase it. I bought my GS way back when they first hit the market, and I expect to be using it for the foreseeable future.

The history of the Apple II has been marked by bright spots that were the direct result of somebody deciding that the rules were too confining. Where would we be if the author of AppleWorks had gone along with the popular conception that an integrated set of programs wasn't necessary?

Granted, I don't have much immediate use for another copy program or game, but the important thing here is not what the people at FTA are doing, but how they're doing it.

With a little luck, more programmers will follow their lead and provide the Apple II world with more astounding software packages.

Therefore I heartily applaud the folks at FTA, and any others who are proving that Cupertino doesn't have the final say on what we do with our computers.

**Erik P. Kloeppel
BilgeRat Enterprises
Box 6451
Key West, FL 33041**

I agree completely — but don't complain to me or to Apple when something goes wrong.

— P.S.

A BBS IN EVERY HOME

AFTER LEARNING ABOUT bulletin-board systems and commercial information services such as CompuServe, I use my modem a lot. Can Apple users create their own BBSes?

**James Arendt
88 Beech Street
Westwood, NJ 07675**

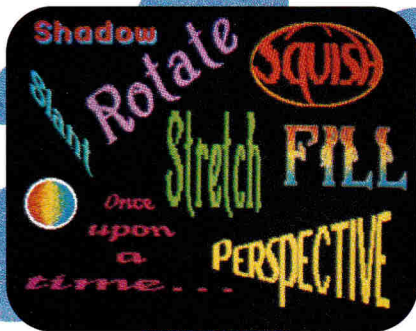
Yes, there are programs available for budding sysops. L+L Productions, publishers of GBBS Pro, maintains a special bulletin board for operators who purchase the company's software. Contact L+L at 8421 Zephyr Street, Arveda, CO 80005, (303) 420-3156. — eds.

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

Forget the Gold... Go for the Platinum

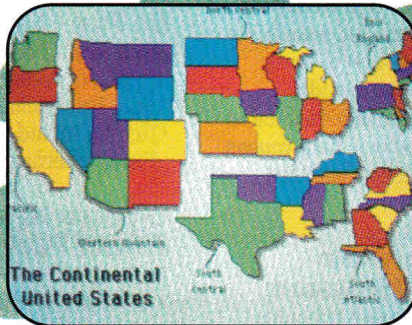


Platinum Paint™ finishes first when it comes to paint programs. With more features and speed than Paintworks Gold, DeluxePaint II and others, Platinum Paint wins top honors in every event. The palette editor lets you quickly find the right color using any 16 of over 4,000 available. Options include controls that lighten, darken, warm, cool, mix and blend.



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\$49.95 upgrade offer available only when ordered directly from Beagle Bros. Platinum Paint requires an Apple IIGS with at least 1 Mb of memory, a 3.5 inch disk drive and a color monitor. Platinum Paint is a trademark of Beagle Bros, Inc., Apple IIGS is a trademark of Apple Computer, Inc., Paintworks Gold is a trademark of Mediagenic/Activision, DeluxePaint II is a trademark of Electronic Arts and PixelPaint is a trademark of SuperMac Software.



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 Graphic Writer III is a fast, flexible, desktop publishing program that offers enormous appeal for GS users who want authentic 16-bit software. Features include 3 view modes, 30 type styles, word processor with expanded search-replace functions, spell checker, painting & more. \$75
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| CH Flight Stick | \$47 |
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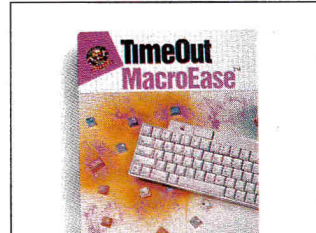
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Roger Wagner

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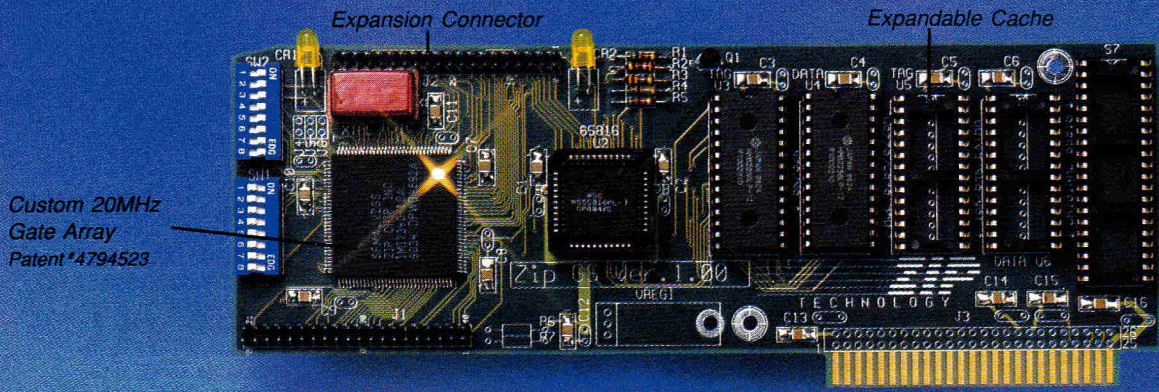
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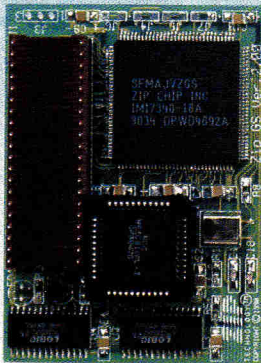


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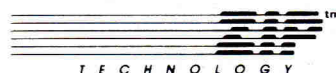
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WHAT'S NEW

edited by Paul Statt

TML PRODUCT SUPPORT

Complete Technology (Jacksonville, FL), a company owned and operated by Vince Cooper, former manager of Apple IIcs products at TML Systems (Jacksonville, FL), has acquired worldwide rights to maintenance, support, and publication of TML BASIC, TML Pascal II, and the TML Source Code Library II from TML Systems.

Complete Technology has renamed the products **Complete BASIC**, **Complete Pascal**, and the **Complete Source Code Library: Pascal**. "Vince Cooper worked with technical support for the products during his tenure at TML Systems," says Bob Leonard, TML's vice president for marketing, "and we're sure the level of support and maintenance will grow considerably with

Complete Technology in the driver's seat." TML says it will continue to sell and service its Macintosh programming products, but wouldn't comment on the rumor that it was concentrating its efforts on an integrated software package for the Mac.

Complete Technology will offer technical support to owners of Complete (TML) BASIC and Complete (TML) Pascal, in

addition to an update of the Pascal program. Only customers who pay for the support program from Complete will be eligible for upgrades and updates. Paid support is available by phone from Complete; free support is provided by mail or on line on GEnie and America Online.

The support program costs \$19.95 for owners of Complete (TML) BASIC. Cost of the program and update for Complete (TML) Pascal owners is \$29.95 (\$59.95 for lab-pack owners, \$79.95 for network-version owners). Details are available from Cooper on line on GEnie ("COOPER.V") or America Online ("VCOOPER"), or from Complete Technology, 5411 Ortega Boulevard, Suite 7, Jacksonville, FL 32210. — C.C.

TAKE SOME TIME OUT

A-2 Central

TimeOut-Central is the latest disk-based product from A2-Central, publishers of the newsletter (disk or paper) of the same name, for all Apple II users, and Stack-Central, news and notes on disk for HyperStudio users. TimeOut-Central is named for Beagle Bros' popular line of AppleWorks enhancements, and is edited by Dick Marchiafava, whom you may recognize as the author of "AppleWorks Advisor," an advice column "syndicated" in many user-group newsletters.

Marchiafava promises to use his contacts at Beagle Bros and Claris, publishers of AppleWorks, and his correspondence with TimeOut users in homes, schools, and offices around the world to keep readers up to date on all the latest TimeOut tips and tricks. Letters to the editor and stories about using AppleWorks are also included. And because TimeOut comes on disk, you'll not only receive Marchiafava's words of wisdom, but actual word-processor, database, and spreadsheet files, as well.

A one-year subscription (6 issues) costs only \$42, postpaid, from A2-Central, P.O. Box 11250, Overland Park, KS 66207, (913) 469-6502. Circle number 351 on the Reader Service card for more information. — P.S.

MY WORD

New on the educational scene is **YourWordBox!**, an innovative CD-ROM software product for the Apple IIcs.

It requires an Apple CD SC player and a SCSI card, as well as 1.5 megabytes of RAM.

YourWordBox!, a comprehensive reading program for 4- through 7-year-olds, is designed to supplement — but not replace — reading with parents. It can be used in school as well as at home. The program teaches reading and grammar in an environment of color graphics, real human voices —

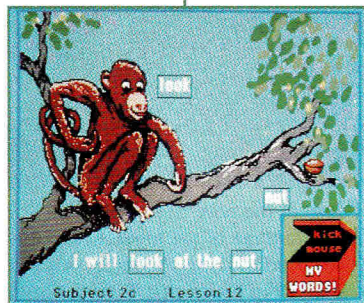
digitized on the CD, not generated by computer — text on screen, sound, and animation.

Youngsters can interact with the software via the keyboard or the mouse.

YourWordBox sells for \$169. For more information,

contact The WordBox! Company, P.O. Box 1115, Belmont, CA 94002, (415) 592-5447, or circle number 350 on the Reader Service card.

— P.S. ⇨



▼ **NOTES** from the **AppleWorks Programmers Association**.....

USERS & PROGRAMMERS
Sharing the Power to Create

▼**AW tip:** AppleWorks' mail merge, designed to move data to the word processor, also moves selected database information into another database or a spreadsheet file with ease. (This feature isn't generally documented.) You can also arrange data so that categories (fields) will be in appropriate sequence in a destination file.

Let's assume that a source database file contains certain names and addresses you need to include in a new database, but also contains unwanted information — or perhaps the categories aren't in an appropriate order for the new file. Create a new database report

format with OA-P. Delete from the report any category you don't want in the new database and arrange report fields in the new file in the order you prefer. Print this new report format to *The clipboard (for Mail Merge)*.

Leave the source database file. Load an existing database to the screen or create a new file; set up and name at least the number of categories you'll need to receive the data. While in multiple-record layout, move the data *From the clipboard* to the new database file to create database records with only the desired categories and in the chosen sequence.

This technique also works when you're moving data to the spreadsheet, so that each report field is transferred to a corre-

sponding column in the spreadsheet. The receiving database or spreadsheet can be an existing file, or you may create a new file for that purpose. Moving data from the spreadsheet to the database via the clipboard, then using the technique described above, is also a good way to create custom reports. Printing database files to *The clipboard (for Mail Merge)* preserves delimiters for appropriate placement in a destination file. Try this method for moving or copying data — it's easy, handy, and fast.

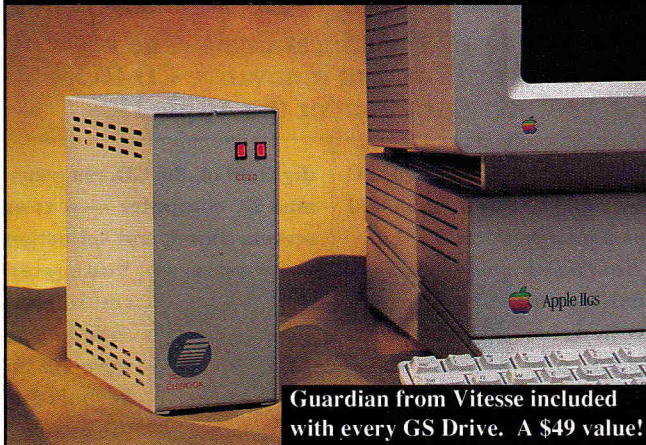
▼**AW enhancement:** JEM Software's DoubleData, by Dan Verkade, removes the 30-category limitation in the AppleWorks database. DoubleData is a patch program that

doubles the number of database fields to 60 and retains compatibility with other popular add-on programs. This expanded database is especially useful for schools, employers, and other users who need to hold additional information in a single database record.

Included with DoubleData is a TimeOut utility to convert a file back to 30 categories so that you can share data with those unfortunate folks who don't own this outstanding enhancement. (JEM Software's new address is P.O. Box 1500 Q, Arvada, CO 80001.)

▼**AW personality:** Don Aquilino is an innovative macro programmer who made some waves in the AppleWorks

YOU NEED SCSI AND CHINOOK IS IT!



Guardian from Vitesse included with every GS Drive. A \$49 value!

With Apple's release of the new High-Speed SCSI controller card you can now take advantage of the inherent flexibility of SCSI, combined with the speed of Direct Memory Access (DMA). For example, DMA allows the Chinook CT-40 to verify over 725 blocks/sec. Combine DMA speed with the flexibility SCSI offers and there can be no doubt. SCSI is the solution.

The Hardware

Chinook sells only Voice Coil Actuator (VCA) disk drives -- the most reliable technology available. Unlike other technologies, VCA keeps the data heads aligned directly with your data using a technique known as closed loop servo positioning. This technique assures fast, error free data transfer every time. A Chinook VCA hard drive translates to a worry free hard drive.

"According to our benchmarks results, Chinook's CT-40 connected to the Apple II High Speed SCSI Card is the best performer of the lot -- that is, if you want a compact, competitively priced, fast, quiet fixed external hard-disk drive."

inCider Magazine, July 1990

The Software

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NOTES from the AppleWorks Programmers Association

community when he released Alpha Check in 1989.

Don is a maverick programmer, by his own admission. He's a businessman, but his tenacity works to his advantage in accomplishing programming goals. Don and his wife, Jan, own and operate an art gallery and picture-framing company.

At home in the dedicated computer room, Don has labored in his spare time to automate his business' accounting tasks with AppleWorks. Using UltraMacros and a lot of talent, he has succeeded in making the database manager more versatile than its creators anticipated.

Knowing what businesspeople need from software has helped Don produce some very effective

programs, including Alpha Check Plus, his double-entry bookkeeping system. Don was instrumental in founding the APA through his strong belief that AppleWorks is a viable product for small business.

▼**AW macros:** Word-processor fans use the *Set Marker* option routinely in a document to mark current position for later return. Unfortunately, the spreadsheet doesn't have any similar built-in marker function. One solution is the pair of macros below, created by Mark Munz. SA-M marks your current position and stores it to variable \$9. (Note: You'll see nothing happen on screen at this command.) Then go elsewhere in the spreadsheet to perform some activity. When you're

ready to return to the marker, SA-G remembers and restores your previous position in the worksheet.

```
M:<asp : z = 1 : posn x,y : if x
> 26 : then : z = 2 : endif :
$9=screen 1,22,z : $9 = $9 +
str$ y>! { marks position }
G:<asp : oa-F>C<oa-Y : print
$9 : rtn>! { returns cursor
to marker }
```

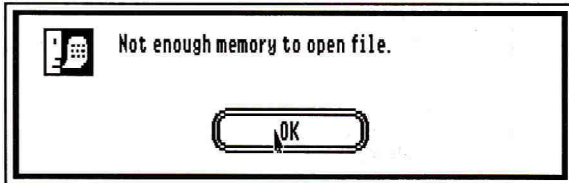
▼**APA news:** Effective, low-cost marketing techniques are important to small producers and new programmers. To promote discussion of this area, a topic is now open on the Pro-APA BBS for members to exchange ideas for software distribution and marketing. Programs that improve installation of task-file programs into users'

systems are being created and shared. Highlights of Pro-APA activities are distributed quarterly on disk to members.

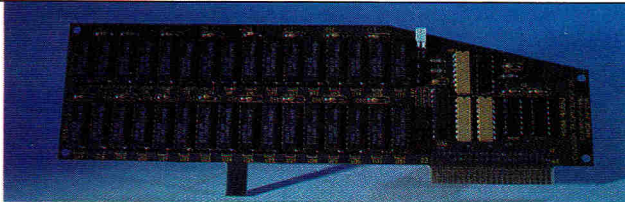
The APA is very pleased to announce the appointment of Steve Beville of Spartanburg, South Carolina, as the Beagle Buddy serving our members.

APA members contributing to this month's notes include Don Aquilino, Steve Beville, Randy Brandt, Dan Crutcher, Dave Gair, and Mark Munz. For information contact the AppleWorks Programmers Association, 6531 Lexington Avenue, Los Angeles, CA 90038-1451, modem apa@pro-apa.cts.com (213) 463-9289, voice (213) 469-9916. The AppleWorks Programmers Association is registered with the Apple User Group Connection.

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UPDATES

♥ The **Visionary GS** video digitizer reviewed in the September 1990 *inCider* (p. 36) is now available from **New Concepts**, 665 West Jackson Street, Woodstock, IL 60098, (815) 338-8658 or (800) 869-9152.

♥ **Rod Nelson**, author of *Printrix* and other Apple hits, has formed a club to support users of **The New Print Shop** and **The Print Shop GS** from Broderbund. Members receive six bimonthly issues of the club newsletter in addition to a disk of 50 Print Shop fonts. Other disks are available at low cost to members; **Bannermania** from Broderbund is available for \$26.21, and *The New Print Shop* for \$37.46. (Include \$4 with each order for shipping.) A full-year membership costs only \$35 a year, from *The New Apple Print Shop Club*, P.O. Box 13774, San Rafael, CA 94913-13774, (415) 898-9031.

♥ **DELPHI** (Cambridge, MA) has announced an aggressive pricing program in addition to its basic membership plan. The **20/20 Advantage Plan** offers 20 hours of evening time on DELPHI for \$20, and additional evening hours at \$1.20 each. (The basic plan costs \$5.95 a month, but includes only one hour; additional hours cost \$6 each.) To join, dial (800) 365-4636 via modem. At the *USERNAME* prompt, enter *JOIN-DELPHI*, then use *SAVE* as your password. The \$29.95 sign-up fee includes your account and one month's membership.

Move Over, Microsoft Works

The ties that bind the Apple II and the new Macs include more than a lle emulation card. TML Systems, known for its Apple II programming languages (see p. 15), has changed its name to the Leonard Development Group (LDG) and announced an integrated program that it hopes will do for the new low-cost Macs what AppleWorks did for the Apple II.

Aimed squarely at Microsoft Works, **SmartWorks** includes eight applications: Outline, Write, Database, Spreadsheet, Chart, Draw, Paint, and Communications. LDG says each module competes aggressively with the leading products in its category.

At the center of the program is LDG's CORE Technologies, which consist of a text engine, standard color, standard objects, XTND file translators, HyperCard Help, sound, and more. CORE Technologies, LDG says, mean consistency among SmartWorks' eight application modules. The inclusion of XTND file translators (developed by Claris) means that SmartWorks can import/export AppleWorks and AppleWorks GS files, as well as most popular Mac file formats.

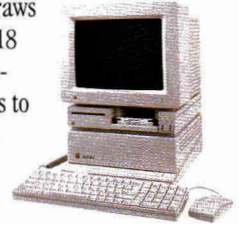
SmartWorks requires a Macintosh Plus or later model, System 6.02 or higher, one megabyte of RAM (random-access memory), and a hard-disk drive. The suggested retail price is \$295; however, the educational price is \$129. For more information, contact the Leonard Development Group at (904) 464-0016.



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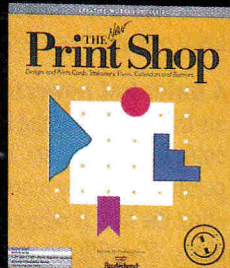
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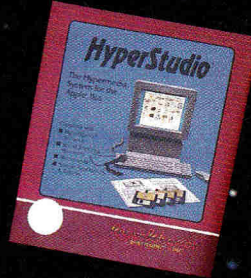
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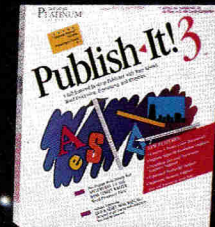
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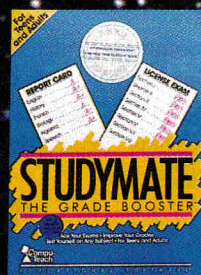
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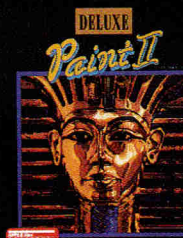
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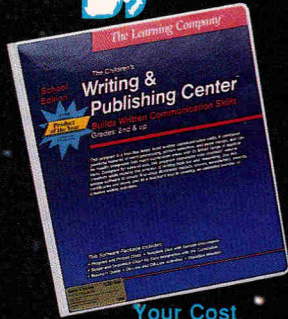
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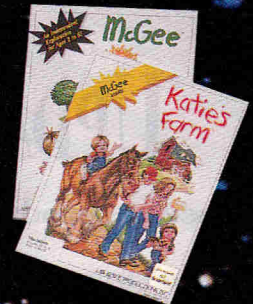
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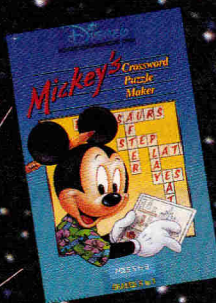
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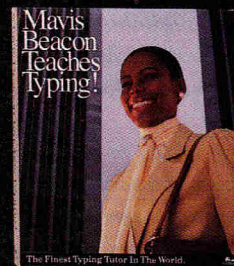
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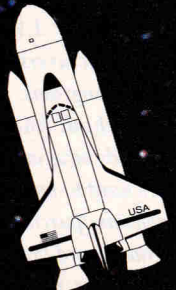
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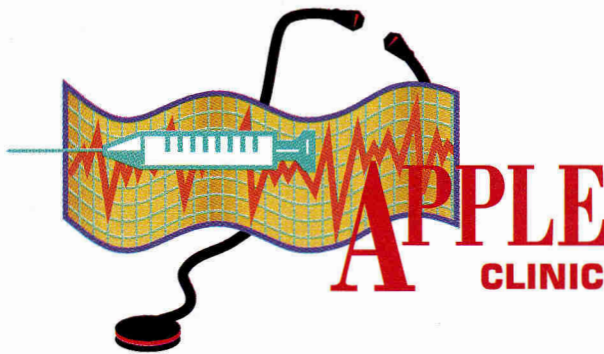


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By **CECIL FRETWELL**

GEARING UP

I'M THE PROUD OWNER OF AN Apple IIc system. Although it's a few years old, I feel it still serves its purpose, but as I browse through the monthly issues of *inCider*, I can never seem to find anything to upgrade my system. Can you offer some advice, other than to purchase a new computer?

Andy G. Buchfellner
Parma Heights, OH

The first improvements you should look for are upgrades to software you currently own. Are you using the latest available version of ProDOS (v. 1.9), for instance? Many software manufacturers offer inexpensive updates to their programs.

Without knowing which programs you already have or what your primary interests are, it's hard to make specific recommendations for software purchases. **AppleWorks 3.0**, the integrated word processor, spreadsheet, and database manager from Claris Corporation (5201 Patrick Henry Drive, Santa Clara, CA 95052-8168, 408-727-8227), is extremely popular, however. You can write letters and reports, keep track of your personal and business expenses, and set up files of everything from mailing lists to genealogical records with one package.

How many and what kinds of disk drives do you have? If you're relying solely on the IIc's internal 5.25-inch drive, treat yourself to at least a second 5.25-inch drive. If you can spare the cash, a 3.5-inch drive makes life simpler.

Finally, if you use your IIc a lot, but seem to spend most of your time waiting for the drive to stop spinning, you might consider a hard drive. **Chinook** hard drives (601 Main Street, #635, Longmont, CO 80501, 303-678-5544) are currently the only ones available for the IIc.

Do you have a modem? Many people enjoy bulletin-board systems and commercial information services such as DELPHI, CompuServe, and GENie. You can trade information with users at your own level, or with technical gurus, or you might even get in touch with an Apple Computer person. Get ahold of a Hayes modem or a "cheap imitation" through a mail-order dealer. Prices of models vary with the number and kinds of features they support.

You'll also need communications software, such as **Point-to-Point** from Beagle Bros (6215 Ferris Square, Suite 100, San Diego, CA 92121, 619-452-5500) or **ProTerm** from InSync Software (P.O. Box 22141, Phoenix, AZ 85028, 602-992-5515). Several mail-order houses carry these products, and your local dealer may have inexpensive alternatives.

You'll need a local telephone number to call to reach the bulletin-board system of your choice. Bulletin boards can be addictive and, hence, expensive. You're charged for the time you spend

connected to the system, so paying long-distance charges can make the cost prohibitive. Two popular companies that provide local phone-number access to distant bulletin boards are **Telenet** (800-336-0437) and **Tymnet** (800-336-0149); call for a phone number near you.

Extra random-access memory (RAM) is always helpful. If you have a standard 128K Apple IIc, some software packages may need that 128K and more. A good source of memory for your system is **Applied Engineering's ZRAM** (P.O. Box 5100, Carrollton, TX 75011, 214-241-6060. Call for more information.

IIc-specific products may not be as abundant as other Apple support hardware and software, but a little research will pay off in more enjoyable computing.

IIc PLUS SPEED

MY APPLE IIC PLUS RUNS programs whose timing loops make them too quick on that machine, as compared to older IIs. I know I can boot the machine manually in normal mode, but I'd like to set the speed under software control in my STARTUP program. How can I do that?

J.L. Solomon
Snellville, GA

Program listing. Set IIC system speed.

```

100 L = 768
110 S = 2: REM SLOW SPEED
120 FOR I = L TO L + 6
130 READ J: POKE I,J
140 NEXT I
150 POKE L + 1,S
160 CALL L
170 END
180 DATA 169,2,72,32,199,199,96

```


Tom Carlton, the Apple II hardware-forum leader on America Online (AFL/TOMC), came to the rescue on this one. If you have the Apple IIc Technical Reference, second edition, appendix H will also show you how, plus many other goodies. Otherwise, use the short program in the accompanying **Program listing**. By changing the value of L in line 100, you can locate the code wherever you like in memory. Changing S to 1 in line 110 makes the system run at high speed. Don't use this BASIC code on any system other than the IIc Plus — it could cause a disaster.

GS PRINT SPOOLING

IS THERE A GS/IMAGEWRITER II print spooler available that's similar to those for the Mac? Specifically, I want a spooler that will work with AppleWorks GS and other programs.

Dave Hart
Fort Greely, AK

A spooler is a program that acts like a traffic cop for documents coming into your printer. It lines them up, or "spools" them, then feeds them to the printer in the order in which they arrived. Tom Hoke, who goes by the name of Sir AWGS on the America Online bulletin-board system, doesn't know of any spooler for the Apple IIGS. If anyone finds one, drop us a line and we'll pass it on in Apple Clinic.

If your ImageWriter II has an added-memory option, you already have a sort of spooler. If you've written a number of letters, say, just issue the appropriate number of print commands, then work on another document while your printer churns them out from its memory.

DISK DETECTION

IS THERE A WAY TO SENSE whether a disk is in a drive? For instance, under the Apple IIGS Finder, when you put a disk into a drive, an icon for it appears automatically. How can I do this in a BASIC program?

John Chang
Terre Haute, IN

The code you're asking for is far too long to present here. You use a standard GS/OS low-level call (DStatus) to obtain the status of a drive; part of the return information from the call shows a bit to indicate the absence or presence of a disk in a drive.

Knowing how to call DStatus is relatively

simple; knowing how to map devices to device numbers for GS/OS, however, isn't.

The device number assigned depends on the hardware present: For example, a system with one 5.25-inch drive and one 3.5-inch drive generates a different device number for the 3.5-inch drive from a system with two 5.25-inch disk drives and one 3.5-inch disk drive. The book **Exploring Apple GS/OS and ProDOS 8** by Gary Little, published by Addison-Wesley (Route 128, Reading, MA 01867, 617-944-3700), includes a disk

with source code for a program called SMART-PORT, which returns the slot number and unit number for a disk device found, among other things.

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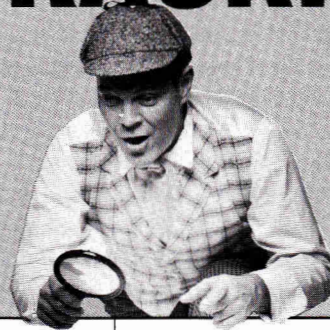
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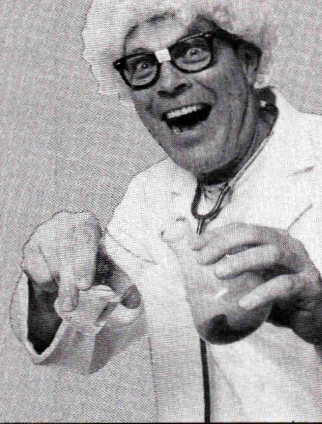
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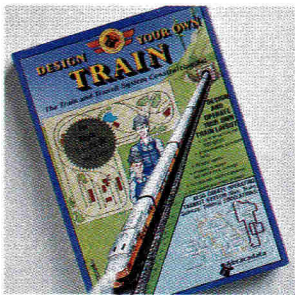
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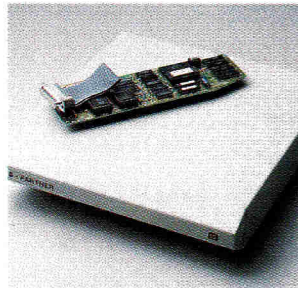
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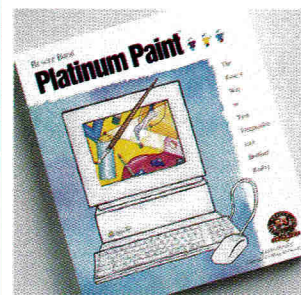
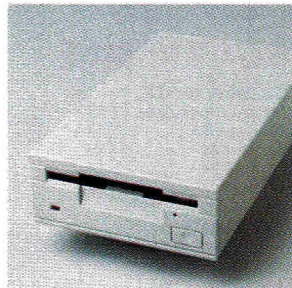
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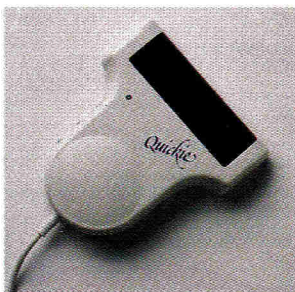
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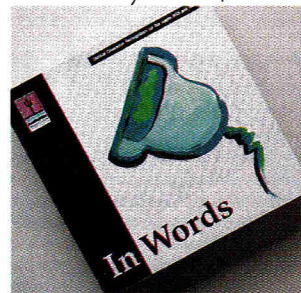
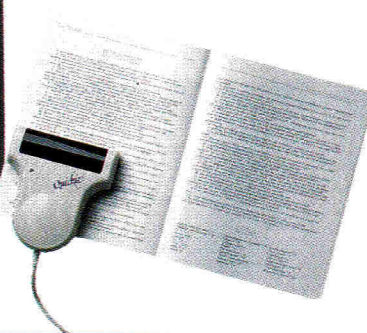
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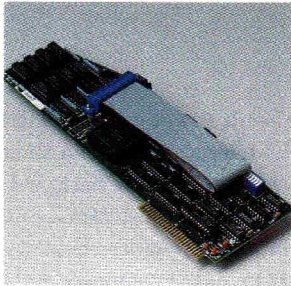
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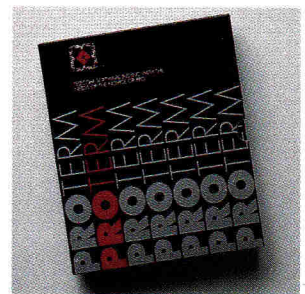
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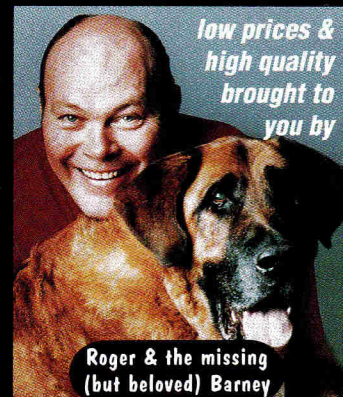
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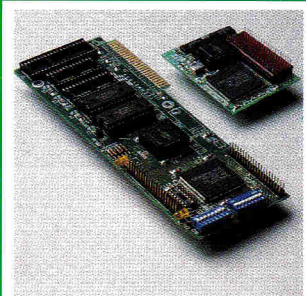
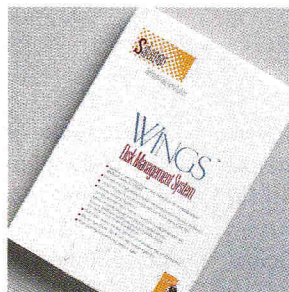
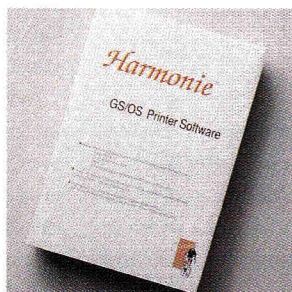
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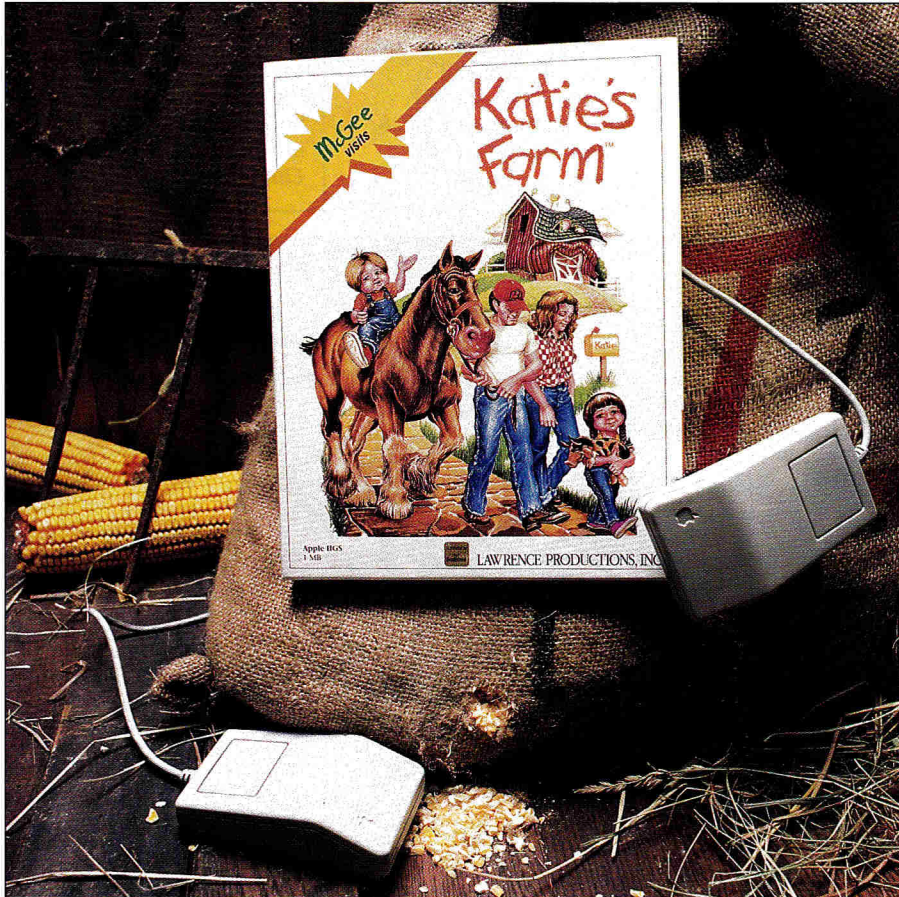
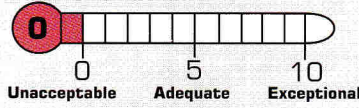
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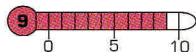


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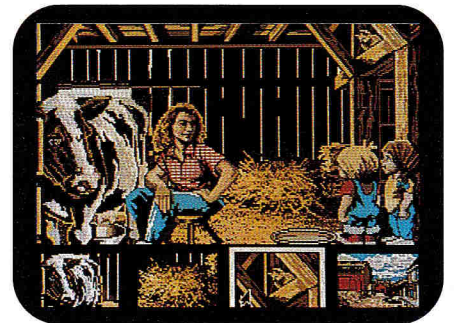
Remember McGee, the program starring a precocious little character of the same name (Editors' Choice, January 1990, p. 132)? He's back in Katie's Farm, and the sequel matches the original

software in the quality of its graphics and of its simple point-and-click interface.

In the first program, McGee gets up at the crack of dawn and invites us in for a visit. We follow him around the house and

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This time McGee's on an excursion to his cousin Katie's farm. The rural setting is very different, but the program's icon-based interface is identical. Preschoolers are invited in for a close-up view of



Join McGee on Katie's Farm.

McGee's adventures — they get to watch him and his cousin Katie visit the barn, the pond, the chicken coop, and the cornfield.

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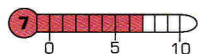
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Carol S. Holzberg, Ph.D.
Shutesbury, MA

STUDYMATE

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Interactive study tool;
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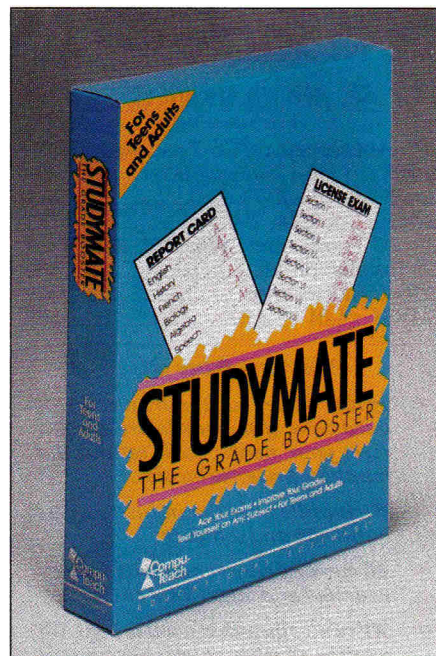
We always want our kids to do well in school, study hard, and get good grades, but we don't teach them how to study. Youngsters may spend many hours "cracking the books," only to discover they haven't mastered the material. They may be unable to use study time efficiently because they don't know how to focus on what's important. They need to learn how to concentrate, organize their time, and take effective notes.

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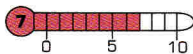
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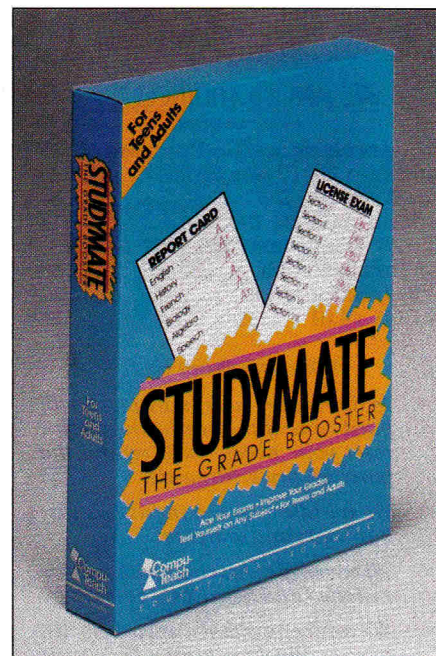
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that the program makes no provision for switching midstream.

In multiple-choice format kids select one of four words or phrases that best represents the antonym or synonym of a target word. As for question/response format, only five of the 19 words on the list actually worked during our tests; the others prompted the program to display the message, "This question is incomplete or cannot be answered! Re-edit!"

As students answer questions (in whichever exam format), Studymate informs them whether a given answer is correct or incorrect. There's no audio reinforcement. After a preset number of incorrect answers, the program displays the correct response on screen. At the end of a round, the program totals the student's score and gives him or her a chance to retest incorrect responses, take the test again, print the results, or return to the main menu.

Studymate is all text and for the most part is easy to use. On-screen instructions also help kids through the program. After logging in, a student enters his or her name, and the main menu appears with eight options. Students may take a test; create, edit, review, print, or delete a test; or change directories to get at files stored on another disk.

The program isn't copy-protected, so you can make backups for archival purposes. Compu-Teach recommends storing all new files on a separate ProDOS disk. You'll have to quit the program to prepare a data disk (if you haven't already); there's no formatting option. Be sure to keep an initialized disk on hand before you create a test, or you'll lose the material in memory when you exit.

Three sample files familiarize teachers and parents with some of the test formats and other program features. They're invaluable because the manual's instructions for writing your own tests are terse. The program's test-creation mode lets you design personalized exams, complete with instructions (up to ten lines of screen text) and hints. Take notes as you work through the sample test files on the program disk, or you may have difficulty knowing what to enter as test descriptions, instructions, or tips when you sit down to compose your own.

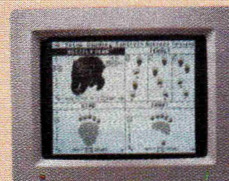
The idea behind Studymate is a good 
Continued on p. 30

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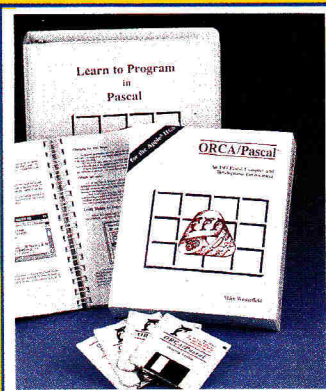
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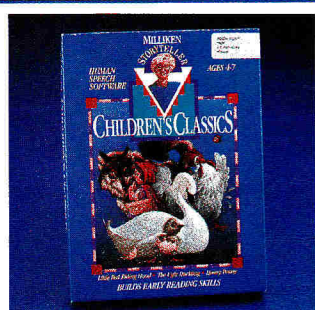
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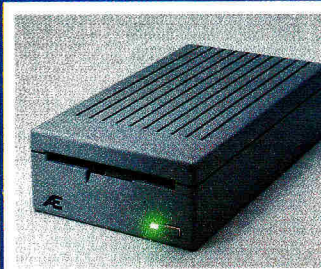
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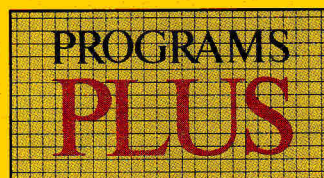
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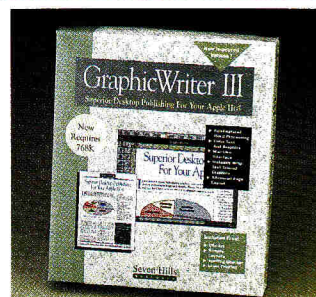
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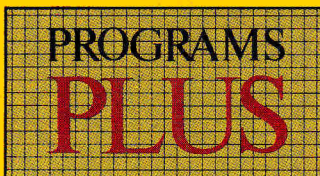
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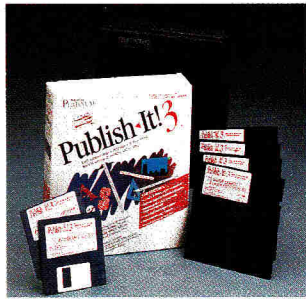
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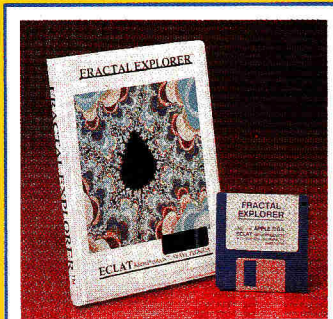
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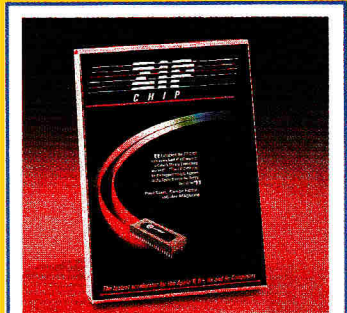
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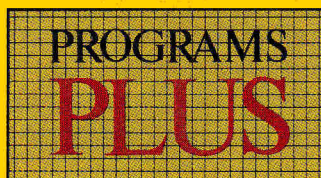


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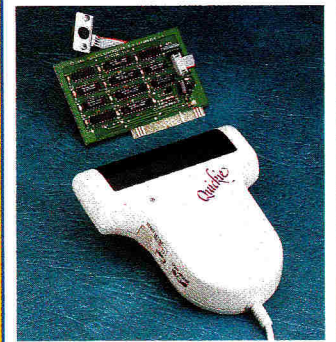
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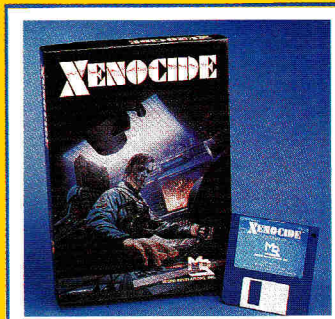
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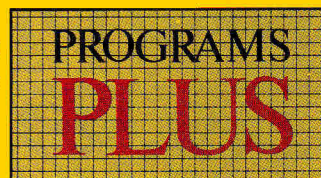
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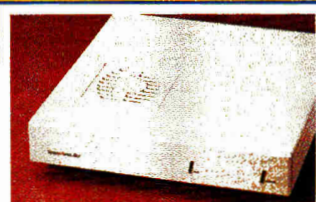
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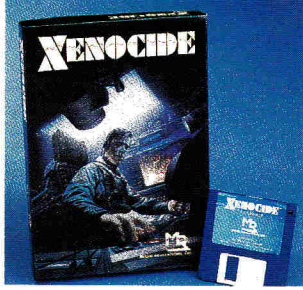
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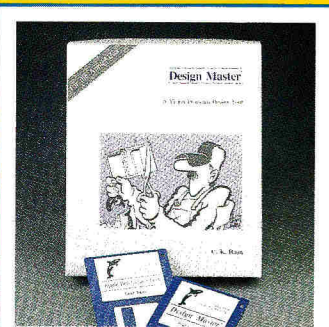
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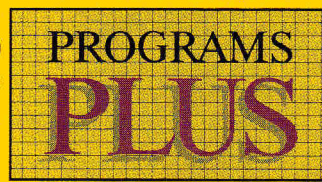
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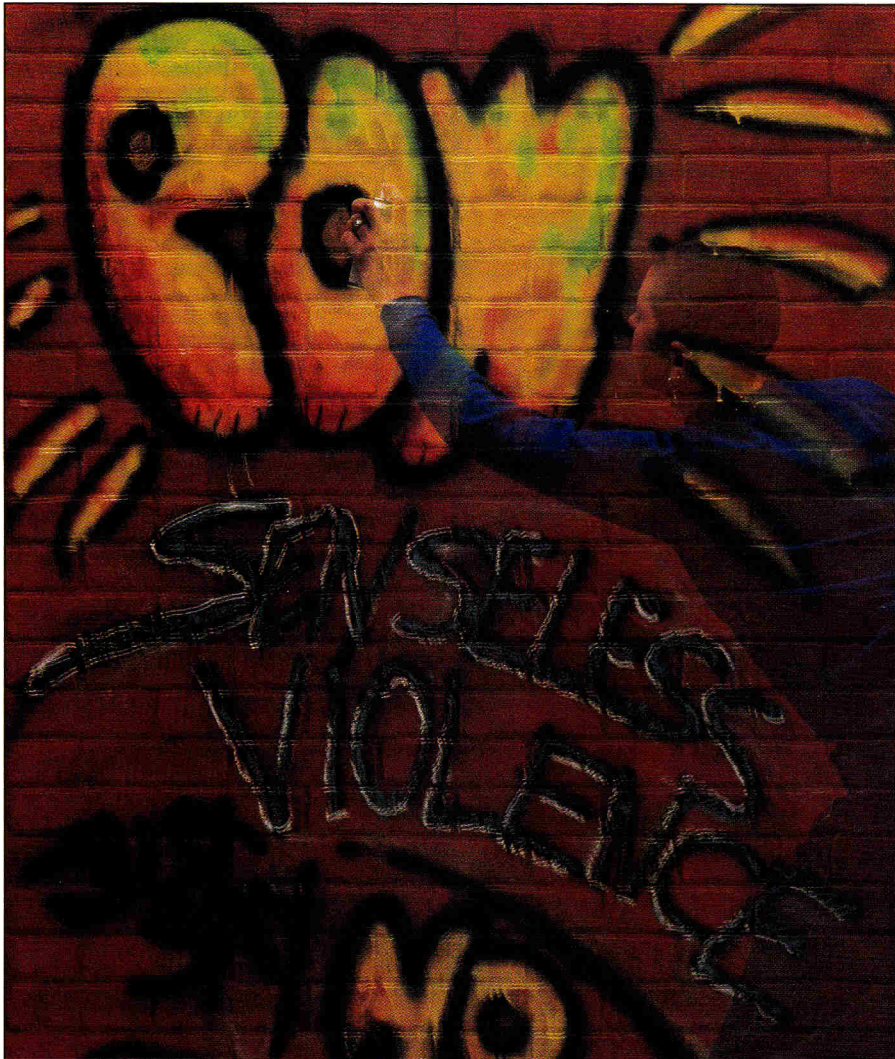
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GAME ROOM



smoking (one of the authors' pet peeves).

Three meters at the bottom of the screen show you how many times you've crashed into any of the "evil" icons. Hit one of the racism signs, for instance, and that meter drops a notch. The game ends when any one of the meters bottoms out.

After each game, an "editorial screen" presents the authors' convictions. You can't disagree that drug abuse, racism, and smoking are bad karma, so why not have fun while you show how you feel about them.

Senseless Violence II is a blast (no pun intended). Just trying to make it through the tunnels intact — never mind trying to aim at evil icons — is enough of a test of your reflexes. If you own a TransWarp GS, you may want to turn down its speed. Unless you're an Olympic-caliber arcade player, the game will play way too quickly. If you spend a lot of time blasting through games like this, however, TransWarp



Blast away at drug abuse and racism.

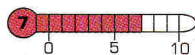
SENSELESS VIOLENCE II: YOU USE, YOU DIE

PANGEA SOFTWARE

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Arcade-action game;

768K Apple IIgs, joystick, GS/OS 5.02 or later (with Expressload); no copy protection; \$5 shareware (plus blank disk and self-addressed, stamped envelope)



Here's a game with a message, and a timely one at that. The violence in this sequel isn't as senseless as it is in the first game. That one is really more

humorous than distasteful, but in Senseless Violence II, you're traveling through a cosmic tunnel as you blast away at icons representing drug abuse, racism, and

speed is just another challenge.

Senseless Violence II features superb graphics. You could easily imagine that you're standing in a video arcade. Brian Greenstone and Dave Triplett — the guys responsible for the original Senseless Violence game and its sequel, as well as Orbzone (reviewed in January 1990, p. 46) and the commercially available game Xenocide (reviewed in May 1990, p. 32) — really know what they're doing. Watch for these designers' future efforts. □

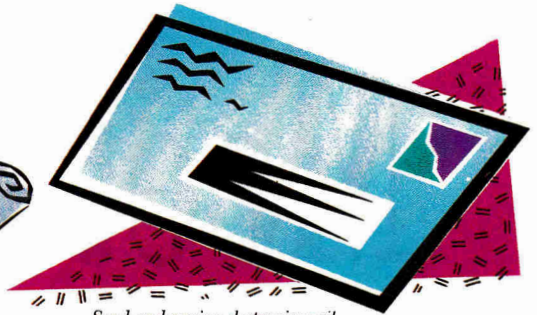
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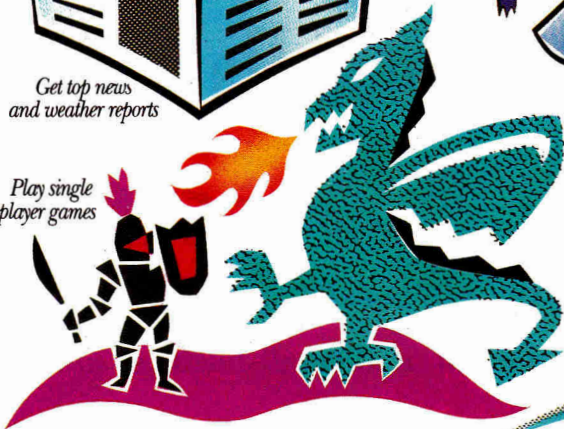
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Meet the Mac LC

What the Apple IIGS Should Have Been?

With stunning color, a reasonable price, and an optional II emulation card, Apple's new machine closes the gap between the company's two lines and advances into the home, school, and small-business markets.

WHEN APPLE INTRODUCED THE APPLE III in 1980, it promised that the computer would be "compatible with the Apple II." The Apple IIe, released in 1983, also ran existing Apple II software, as did the Apple IIc in 1984. And when Apple unveiled the Apple IIGS in 1986, it, too, protected the investment Apple II owners had made in software. A new Apple II has never made old software obsolete.

But when Apple introduced the Macintosh in 1984, it tried to forget the Apple II. No Mac has been able to run Apple II software. Sure, the Apple IIGS looks like a Mac. But, in truth, the Apple IIGS was a new computer — neither a Mac nor an Apple II. While the machine's II emulation was impeccable, its 16-bit character remained underdeveloped until System Disk 5.02 entered the picture, almost three years after the GS' release.

Hindsight, as they say, is 20/20. But knowing the success of the Mac, imagine if the 1986 IIGS had been a Macintosh, able to run both Mac and Apple II software.

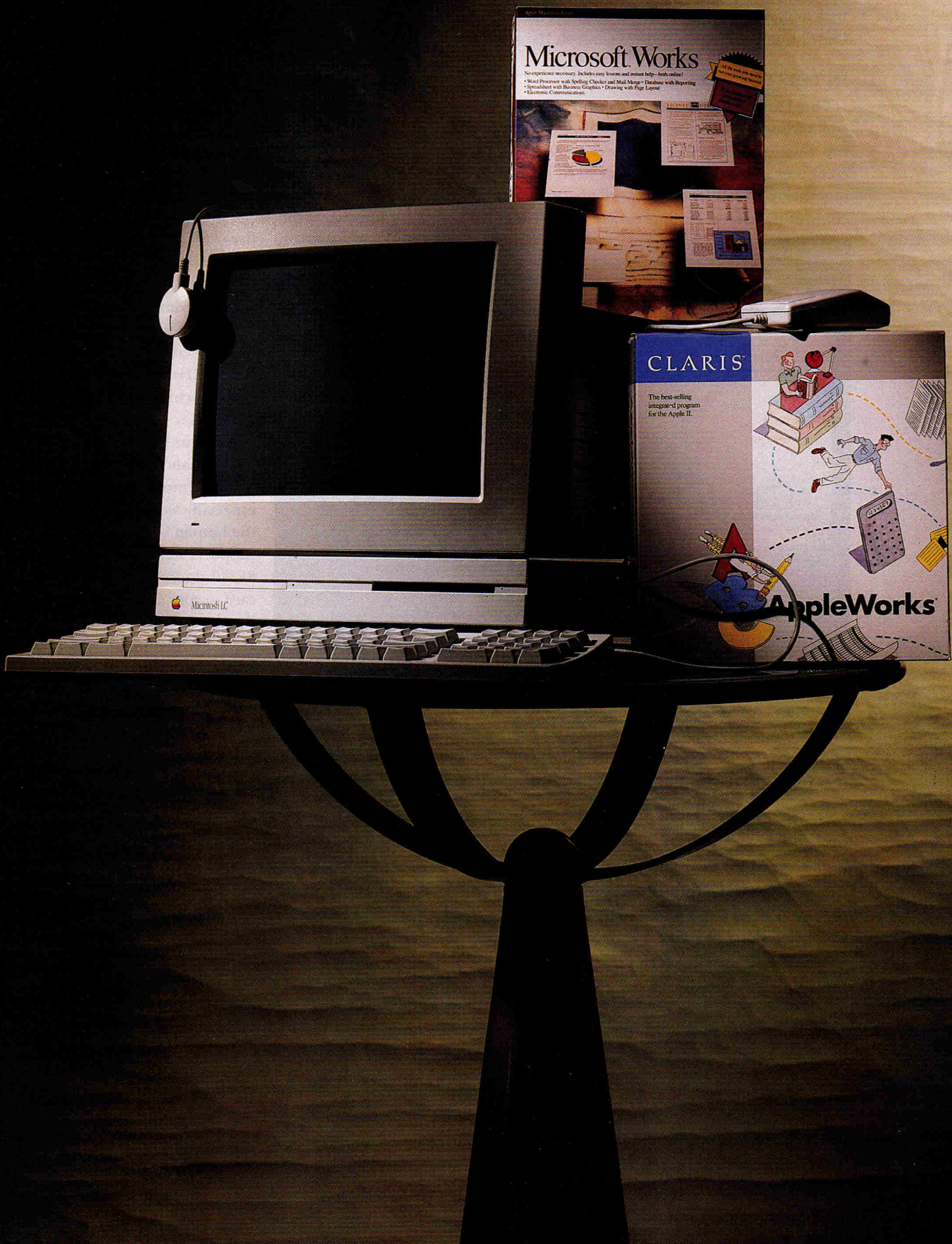
What if the answer to "What do you get when you cross an Apple II with a Mac?" was "an Apple IIGS"? But in many ways the IIGS was more a riddle than the answer to one. Still, a million IIGS users today are happy with their computers. But if the IIGS is the graphics and sound computer for home and school, where does the just-announced Apple II-compatible Mac LC fit in?

THE BRIDGE MACHINE

Even among Macintoshes, the Mac LC is a curious hybrid. It uses the Mac II's 68020 microprocessor and creates color graphics like the Mac II, but it runs at the speed of a Mac SE/30 and uses the same disk drives and offers the same expansion opportunities as an SE/30. With a target audience of home, school, and small business, it also can't help but remind you of the IIGS.

The Mac LC has been referred to as "the bridge machine" that closes the gap between Apple's II and Macintosh lines. But it's also a bridge, especially price-wise, between Apple's black-and-white one-piece Mac-

By **PAUL STATT** * SENIOR EDITOR



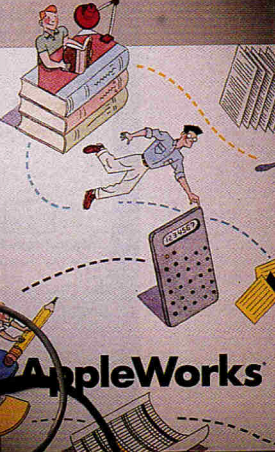
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Meet the Mac LC

intoshes — the Classic (see the accompanying sidebar, “New Wine in an Old Bottle”), the Plus, and the SE — and the color, modular Macintosh IIs. The Mac LC’s place in the Macintosh line is clearly seen in its pricing: Its \$3000 retail cost is centered between the \$999 Mac Classic and the “low-priced” Macintosh IIsi at \$4900.

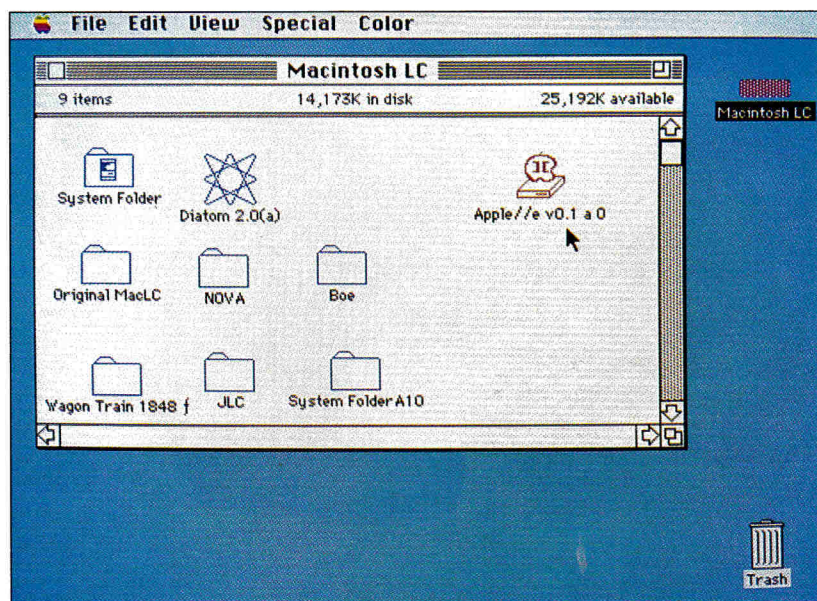
IN THIS CORNER . . .

The IIGs and the LC are enough alike to beg comparison. One of the many similarities between the two systems is covered in one word: *modular*. A modular computer system, like a modular hi-fi, is one you put together yourself from components. In the case of a computer system, the necessary components are a

and another for the Apple II Video Overlay Card, which allows the GS (and the IIE) to synchronize the video signals coming from your computer with signals coming from a videotape or other video source. The result is a single computer screen that combines computer graphics and video. Apple sells no such “genlock” card for the Mac. Genlock cards for the Mac are available from other manufacturers; however, they won’t work on the Mac LC, because they’re designed for the NuBus slots on Mac IIs. Manufacturers could develop a genlock card for the PDS, but for now at least, the Apple IIGs is a simpler and cheaper video solution than the Mac LC.

The ability to generate musical sounds ought to be an advantage of the Apple IIGs, which has a built-in synthesizer. The Ensoniq synthesizer chip has yet to be fully utilized by software developers, however. If you’re interested in writing your own music software, note that Apple just this year introduced a set of software tools, called MIDI Synth, that exploit the Ensoniq chip in the IIGs.

The Mac LC has no synthesizer. But with its built-in software, sound digitizer, and audio input and output devices (more on this below), it’s especially well suited to simulating the human voice. Neither machine supports stereo output, as the Mac SE/30 does. You can add a stereo card to your GS; you can also expect third-party developers to offer a stereo solution for the Mac LC. While the GS may be a match technically for the LC, music-minded



Apple II emulation program on Mac LC Finder screen.

computer, some type of storage device, and a video display; optional components are things such as a printer and a modem. The advantage of a modular computer is that you can buy only what you need or can afford and add on later. The advantage of an all-in-one system, such as the Mac Classic, is that everything you need is probably included.

Both the Mac LC and the Apple IIGs are expandable. They both have memory-expansion slots; that’s where the similarities end, however. The IIGs has six other expansion slots. The Mac LC has a single *020 processor-direct slot* (PDS), which lets you attach exactly one expansion card directly to the LC’s microprocessor.

The LC’s one-slot approach poses some obvious problems. Because the Apple II emulator that Apple plans to make available this March is designed to use the PDS, if you want to run Apple II software you forfeit the potential to add other cards. Third-party companies may produce a solution that lets you use more than one expansion card in the PDS, however.

In the multislotted IIGs, you may, for example, choose to use one slot for an accelerator, such as TransWarp GS,

consumers should be aware that there’s much more music software available for Macintoshes, which makes the LC a better choice for synthesizing and sequencing.

The Mac LC isn’t the first computer to offer the ability to digitize sounds. Many personal computers, such as the IBM PC, the Apple II, and the Commodore Amiga, can record sounds in computer memory or on disk. But the Mac LC is the first computer to come supplied with a microphone, a “sound input” device that Apple hopes will become as commonplace as a keyboard or mouse.

Of course, routine storage of spoken speech will have to wait until hard-disk drives becomes much less expensive. Using Apple’s new Macintosh Audio Compression Expansion system software, which squeezes sounds into memory the way a stenographer squeezes written words onto paper, the Mac LC can store one half hour of sound on its 40-megabyte internal hard drive; you’d need an external drive just to record a single college professor’s lecture. But recording speeches isn’t a job for the Mac LC; it’s more likely that developers will create software that lets you add short sentences and sounds to existing documents. Also, it should be easy to record your own

Meet the Mac LC

sounds. You could, for example, create your own error messages to replace the dull “beeps” of a standard Mac.

THE APPLE CONNECTION

If you're an educator or small-business professional who wants to connect IIs, Macs, and maybe even MS-DOS computers, you can rest easy. Like the Apple IIGs, the Mac LC offers built-in support for AppleTalk, Apple's proprietary scheme for connecting a number of computers together to share files or peripherals.

The Apple IIGs accepts cards that let you use a number of other kinds of networks, such as Corvus and Ethernet. The Mac LC is limited to AppleTalk or Ethernet, the original computer local-area network, now popular in schools and businesses. Most networks are designed to allow a variety of computers from different companies to work together. Using AppleTalk cabling (also referred to *LocalTalk*), it's easy to hook up Apple IIs and Macs to share laser printers. If you want to exchange information

among IIs, Macs, and PCs, however, you need to run Apple's file-serving software, called AppleShare. AppleShare, like some other network-management systems, requires that you use one computer exclusively for running the network. You can use the Mac LC as a file server; you can't use the GS that way. (For more information on networking, see “Connecting in the '90s,” p. 66.)

APPLE II EMULATION

Perhaps the greatest advantage the Apple IIGs has over the Mac LC is its seamless ability to run Apple II software: The GS will probably run more Apple II software more easily and faster than the LC. And remember that to run II software on the LC, you'll need to invest \$249 for an emulation card.

You run Apple II software on a GS just as you would on a IIe or IIc — put your disk in and go. If you're using a hard-disk drive, however, you can also boot ProDOS software from the GS Finder — AppleWorks, Publish It!, ⇨

New Wine in an Old Bottle

It's well named, anyway — the Classic is a Mac Steve Jobs would recognize. It's small — some 13 inches high by 10 inches wide by 11 inches deep — and built into it is that notorious 9-inch bit-mapped black-and-white video display. It comes with a mouse and a keyboard with numeric keypad.

The Mac Classic uses the Motorola 68000 microprocessor, the same chip that was in the original 1984 Macintosh — but it runs now at 7.8 megahertz, some 25 percent faster than the first Mac's.

Apple promises that the Mac Classic's read-only memory (ROM) operates more efficiently than the Mac Plus', as well, for additional speed enhancement.

And just as Steve Jobs would have wanted it, the Mac Classic has no expansion slots — “everything the user could want” is built in.

In 1984, that meant two serial ports — one for a modem and one for a printer — plus a mouse port and a port for an external floppy-disk drive. In 1990, the user wants all that,

and gets it in one form or another, but a little more as well.

The Classic has a small-computer-systems interface (SCSI) port, for one thing — perfect for attaching a hard drive, a LaserWriter printer, a CD-ROM drive, or all three, because you can daisychain SCSI

devices. The Apple Desktop Bus port handles the keyboard and the mouse, but can also connect to other input devices, such as a touch screen, and other output peripherals — a modem, for instance. The Classic even sports a plug for earphones or a monaural speaker, but, unlike the Mac LC or the IIsi, no microphone input.



The Mac Classic

Your choice of video displays is as varied as Henry Ford's choice of colors in a Model T: You can have any kind of output you want, as long as it's 9-inch monochrome. Lacking any expansion slots or external video output, the Mac Classic uses only its built-in monitor.

You have more of a selection when it comes to storage media. First, every Mac Classic includes one Apple SuperDrive, a 1.4-megabyte floppy-disk drive. With three times the capacity of the floppy that came with the original Mac, the SuperDrive can hold about 250,000 words of text, for example. Apple offers an optional 40-megabyte internal hard-disk drive for the Classic, as well, and, of course, there's always the potential to connect an external SCSI drive. For the education market, Apple has also suggested it may sell a Mac Classic model with two SuperDrives, instead of a SuperDrive and a hard disk; at press time the company hadn't announced its decision.

But, keeping in mind that the latest Mac software — including Apple's upcoming Macintosh system software, System 7.0 — requires more than a megabyte of random-access memory (RAM), the greatest improvement over the original Mac is the Classic's standard 2 megabytes, which

you can expand to as much as 4. It's an interesting development that the Classic's ROM, which contains some system software, is twice as big as the RAM in the original Mac. The case may look the same, but under the surface it's a whole new machine.

— P.S.

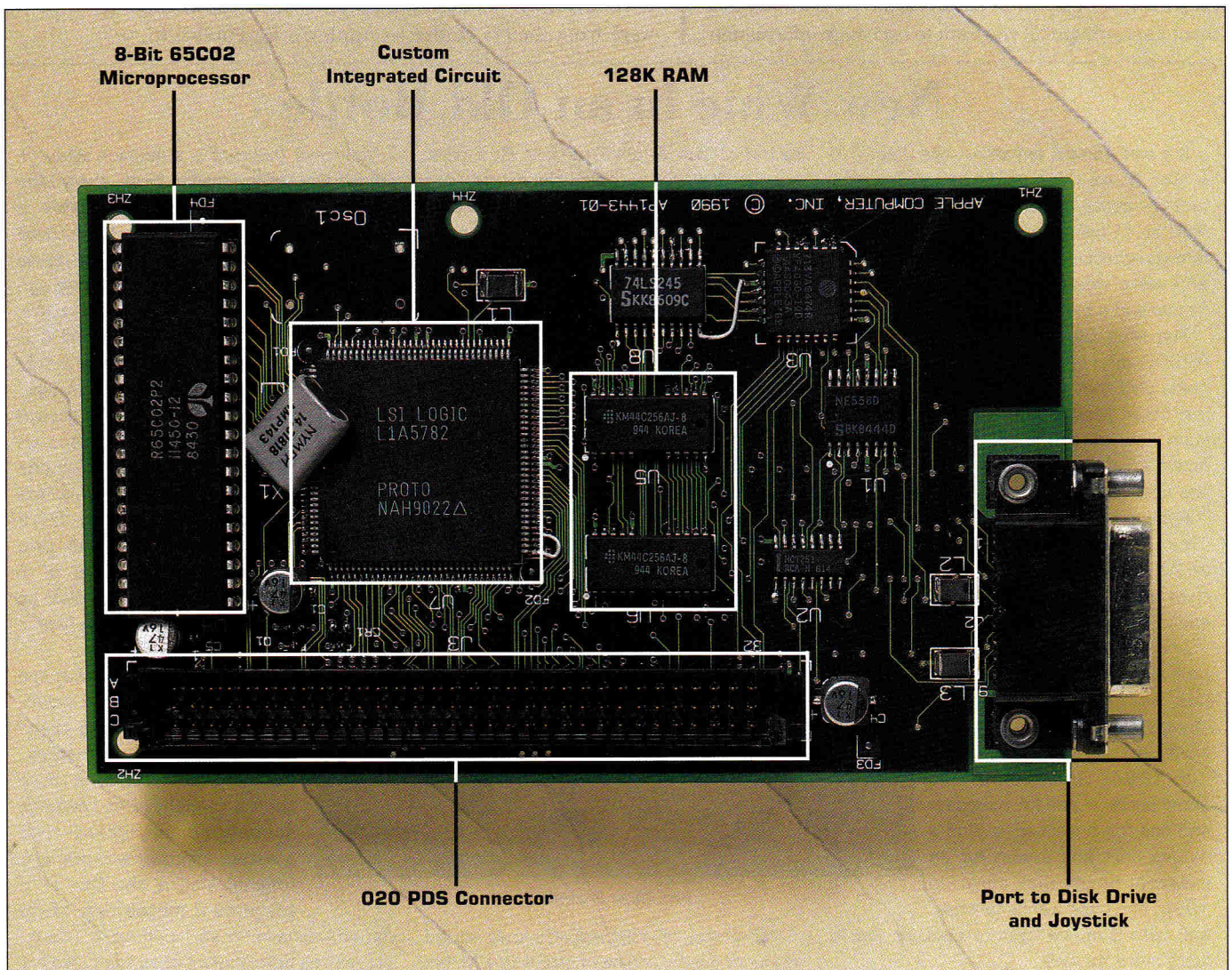
Meet the Mac LC

whatever appears as an icon on the desktop — just “double-click.” To run an Apple II program on the Mac LC, you must install the Apple II Emulation Card in the 020 PDS. You can attach a 5.25-inch Apple II disk drive to this card through the 020 PDS port on the Mac LC (see the accompanying illustration) and put your Apple II program into this drive. You can also run your 3.5-inch disk from the Mac’s built-in drive.

Next, you have to run the Apple II emulation program from the Mac Finder. (At the time we saw it, it was a Mac application called “Apple II.”) The Macintosh then looks at whatever disk drive or device you’ve designated as the boot drive — set to *slot 6*, which is the name given to the 5.25-inch drive. Using the Apple II Control Panel on the Mac LC, however, you can set the Apple II emulator to boot from the 3.5-inch SuperDrive, the SCSI hard drive built into the Mac LC, or an external hard-disk

drive, provided that the disk has a ProDOS partition.

Although it may be easier to run Apple II software on an Apple IIGS than on the Mac LC, the Apple IIe emulation card will be the reason many people buy the Macintosh LC. The version we saw in September wasn’t final, but basically, the card contains a 6502 microprocessor, 128K of RAM, and some ROM. While 128K of RAM is all that’s needed to run any Apple II program, some Apple II programs, most notably AppleWorks 3.0, benefit from having more. When we saw a prototype of the card in August, Apple was aware that the RAM limitation might present a problem. According to product manager Bill Goins, Apple is “looking at ways that we might increase the RAM available to the Apple II emulator — it would require a control-panel setting to steal some RAM from the Mac LC,” which has a minimum of 2 megabytes and plenty to spare.



The Apple II Emulator

Bridging the gap: Apple’s 8-bit II emulation card fits into the LC’s processor-direct slot and functions as a miniature IIe, including 128K of its own RAM. The Mac handles I/O

functions (keyboard, printer, and so on), except for operation of the joystick and 5.25-inch disk-drive. Video signal generated by the 65C02 microprocessor is translated

by on-board ROM into the Mac’s QuickDraw graphics language; the Mac’s 68020 microprocessor then draws the image on the computer’s screen.

Meet the Mac LC

The Apple II emulator works as a small Apple IIe running on a card, with all input and output handled by the Macintosh LC, except for the joystick and the 5.25-inch drive. In other words, you can use the Mac's built-in and external disk drives, the printer and modem ports, the mouse, the keyboard, and presumably other Apple Desktop Bus (ADB) devices, plus the Mac's video and audio output, but not the microphone for sound recording. The joystick and the 5.25-inch drive share the port on the emulation card (see the accompanying photo) thanks to a "Y" connector. The Apple II black-and-white video display we saw was clear and crisp — it didn't look as though the Apple II program were running in a "window" on the screen of the Macintosh.

The Apple II video signal that comes from the 65C02 microprocessor is translated in the card's on-board ROM into QuickDraw, the Macintosh graphics language. The 68020 microprocessor in the Macintosh LC then draws a QuickDraw image on the video display. In theory, this should be slow, but it wasn't in the demonstration we saw, which

is a credit to the engineers who developed the translation. The Apple II has a notoriously strange system for creating a video image, owing in part to its legacy of displaying 40 columns of text on a television screen, a real achievement in its day. It complicated the GS' Apple II emulation, and you'd think it would slow down the Mac LC's Apple II emulation. Yet Apple's Bill Goins claims that the Apple II emulation is "as fast as the Apple IIe."

Indeed, the Apple IIe is faithfully duplicated down to the Applesoft BASIC commands in ROM. Aside from ensuring compatibility with programs written in BASIC, this feature means that you can run ProDOS BASIC and write new programs in that language. If a teacher, for instance, has a Mac LC with a IIe emulator at home, he or she can write and test programs in BASIC for students to use on Apple IIes in the computer lab at school.

Phantom slots in the Mac LC correspond to the real slots in an Apple IIe. PR#1, for example, outputs to the printer port; IN#2 accepts input from the modem port; PR#3 turns on the 80-column screen; and PR#6 boots the 5.25-inch disk — just as though there were real slots in the Mac LC.

Slot assignments will be among the tasks handled by a Control Panel, similar to the IIcs' and separate from

Table 1. Price-comparison chart.

| Feature | Mac LC | Cost | IIcs | Cost |
|-------------------------|------------|--------|-------------------|---------|
| Microprocessor | 68020 | \$2399 | 65816 | \$1149 |
| Speed | 16 MHz | — | 2.8 MHz | — |
| Accelerator | no | — | Applied 7.0 MHz | \$349 |
| RAM | 2MB | n/c | 1MB | n/c |
| | — | — | Apple 1MB | \$229 |
| Color monitor | Apple RGB | \$599 | Apple 12" RGB | \$599 |
| Internal hard drive | 40MB | n/c | Applied Vulcan 40 | \$899 |
| SuperDrive 3.5" | SuperDrive | n/c | Applied | \$279 |
| Floppy-disk drive 5.25" | Apple 5.25 | \$329 | Apple | \$329 |
| SCSI interface | Apple SCSI | n/c | Apple | \$209 |
| Video Overlay | no | — | Apple VOC | \$429 |
| Stereo out/mono in | no/yes | —/n/c | Applied Audio | \$239 |
| Mono output | yes | n/c | yes | n/c |
| Runs Apple II software | II board | \$249 | yes | n/c |
| Runs GS software | no | — | yes | n/c |
| Runs Mac software | yes | n/c | no (Cirtech?) | — |
| Fan | yes | n/c | Apple | \$49 |
| ADB | yes | n/c | yes | n/c |
| Keyboard | yes | n/c | yes | n/c |
| Mouse | yes | n/c | yes | n/c |
| Printer (serial) port | yes | n/c | yes | n/c |
| Modem (serial) port | yes | n/c | yes | n/c |
| RGB video | yes | n/c | yes | n/c |
| Composite video | n/a | — | yes | n/c |
| Sound in | yes | n/c | yes | n/c |
| Sound out | yes | n/c | yes | n/c |
| Total | — | \$3576 | — | \$4091* |

* Total cost does not include optional Audio Animator and Video Overlay for GS.

the Macintosh's desk-accessory Control Panel. It will also determine which "slot" the Apple II emulator boots after you run the Apple II emulation program. We didn't see the final edition, but the intermediate version we did see assigns the slots this way:

- slot 1: printer port**
- slot 2: modem port**
- slot 3: 80-column card**
- slot 4: mouse card**
- slot 5: SuperDrive (3.5-inch disk drive)**
- slot 6: external drive (5.25-inch drive)**
- slot 7: AppleTalk**

You'll need to change these slot assignments to ensure compatibility with Apple II software or to use SCSI devices; *inCider* will discuss the best ways to do just that in an upcoming issue, as soon as the final emulator is available, scheduled for March 1991. At press time, the "quit" software that lets you leave an Apple II program and return to the Mac Finder was also incomplete.

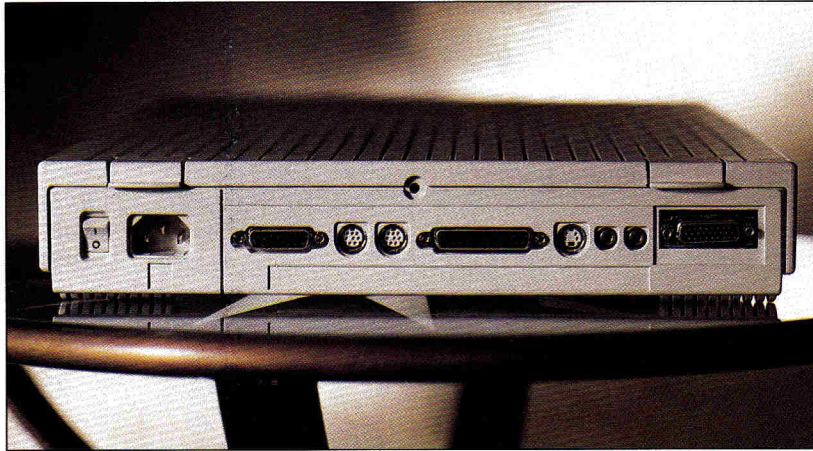
SCSI FOR EVERYONE

The 40-megabyte drive inside the case of the Mac LC is only a half inch tall — it's the same hard drive Apple uses in its Mac Portable computer — but it can hold ↗

Meet the Mac LC

more than a million words of text. Luckily for Mac LC users who want to add the Apple IIe Emulation Card, it's possible to use part or all of those megabytes for Apple II (ProDOS) files, and part for Macintosh files. In mass-

as from Apple. Because the Mac LC has a built-in internal hard drive, though, you're more likely to use the SCSI port for a CD-ROM (compact-disc read-only memory) drive that has the capacity to store billions of words, a scanner that turns photographs into computer graphics, or perhaps one of Apple's Personal LaserWriters. One of the advantages of a SCSI device is that you can attach many different types of peripherals to it. In fact, by "daisy chaining" devices you can attach up to seven peripherals to the SCSI port.



Mac LC connections, left to right: power switch, power cord, video, printer, modem, SCSI, ADB, sound out, sound in, O20 PDS with II emulator installed.

DOWN TO DOLLARS

Price is one advantage the Mac LC has over the Apple IIgs. Based on prerelease suggested retail prices, we computed the cost of two comparably equipped color systems — one based on the Mac LC, the other on

storage talk, you can *partition* the drive.

You can add a second, external SCSI hard drive if you like. You can also divide this one into partitions for Mac and ProDOS operating systems. Many relatively inexpensive drives are available from other manufacturers as well

the Apple IIgs. The Mac LC costs \$515 less than the GS: \$3576, compared with \$4091. (See **Table 1**.)

But it's important to note that what makes the Mac LC a less-expensive system — because it's certainly not a less-expensive computer — are its built-in disk drives and its

Technical Notes

What do you get when you cross a low-cost, boxy, monochrome Mac with a high-priced, modular, color Mac? An Apple called the LC, a true Mac hybrid. Although it sports a Motorola 68020 microprocessor — the same CPU the Mac II series uses — the big difference is that every Mac II (except the IIsi) also has a mathematical coprocessor that the Macintosh LC doesn't.

You're not wrong if you think that a mathematical coprocessor helps a computer add long columns of figures faster, but in the Mac II line its more important job is to get graphics on screen faster. In the world of the Macintosh, where everything on the video display is a graphics image controlled by strict mathematics, a math coprocessor is the only way to get the kind of response an Apple IIe running AppleWorks in text mode has. No math coprocessor means that the LC will be slower than a Mac II.

Speaking of pedigrees, the LC shows signs of more extensive crossbreeding, as well, thanks to architecture that will accommodate an optional Apple II emulator board. But don't think of the machine's

processor-direct slot (PDS) strictly as the "Apple IIe slot." Because it connects directly to the LC's microprocessor, it's also the obvious place for an MS-DOS coprocessor or an accelerator; such products exist for the Mac SE/30, which has an O30 PDS (with a 68030 CPU).

Unfortunately, O30 PDS cards won't work in the LC's O20 PDS; an adapter is a possibility, though. Bill Goins, product manager for the Mac LC, says, "They have a different power budget, form factor, control bus It is, however, fairly easy for a developer to take the circuit for an SE/30 card and modify it and lay out a new board, as long as it works within the 4-watt O20 PDS power budget."

It's also possible that some third-party company will build a 68882 math coprocessor, which would give the LC much of the power of a Mac II, or an Apple IIgs emulation card, which would let the machine run GS/OS software — but not Apple II software at the same time. Goins tells us that "Apple IIgs emulation would be too expensive. Somebody else could try it, but not before talking with us." (Apple jealously protects its system ROM,

which you'd need to build a GS clone.)

As for video features, the Macintosh LC supports three Apple monitors: the 12-inch RGB, the 12-inch Monochrome, and the AppleColor High Resolution. Other compatible monitors will probably be available from third-party developers, as well. The Apple IIgs RGB monitor won't work with the Mac LC; the standard displays will be the 12-inch color and black-and-white models, slightly larger (offering better resolution) than the standard color monitors for the Mac II line. That may result in compatibility difficulties when you run Mac II programs, especially color games, on the LC. If the programmer followed Apple's color guidelines carefully, you won't have a problem, but don't assume anything. Try before you buy.

The Macintosh LC carries 256K of video memory (VRAM) on its motherboard, enough to support the two 12-inch monitors. Apple will also offer a special memory-expansion board, the LC 512K video random-access memory single in-line memory module, or VRAM SIMM. It increases the number of colors that any monitor can display. As **Table 2** in the accompanying

Meet the Mac LC

greater unaccelerated speed. The Mac LC won't be cheaper in every configuration for every user.

Microprocessor speed is an overused, although sometimes useful, measure of how fast a computer works. The 68020 microprocessor in the Mac LC runs at approximately 16 megahertz (millions of cycles per second), considerably faster than the 65816 in the Apple IIGs, which runs at about 2.7 megahertz. But there's more to speed than that. AppleWorks 3.0 on an Apple IIGs may well be faster than Microsoft Works, a comparable integrated program, running on the Mac LC. The Macintosh "look" (that is, its desktop) slows software down. On the other hand, AppleWorks GS, attempting to imitate the Macintosh look on the Apple IIGs, may be the slowest of the three. Also remember that the IIe emulation card for the LC functions at 1 megahertz; on a GS, you have a built-in accelerator when it comes to running Apple II software. AppleWorks 3.0 and Publish It! walk fine on the Mac LC, but they fly on the IIGs.

Forgetting about the Apple II for a moment, you may wonder if the LC is as fast as other Macs. The answer is yes and no. The chip in the Mac LC is faster than the Mac Plus, the Classic, or the SE, and as fast as the Mac II line, except for the speedy IIfx, which runs at 40 megahertz. But don't expect the Mac LC to perform as quickly as a Mac SE/30 or a Mac II. The LC lacks a critical

coprocessor chip that greatly increases the SE/30's and the Mac II's overall speed. (For details, see "Technical Notes" below.) Remember that other aspects of hardware design can affect the performance of a computer more than the speed of its microprocessor.

The moral of the story? Beware of comparisons based on chip speed. It's impossible to compare the speeds of two different computers accurately and fairly. If you insist on such a comparison, however, yes, the Mac LC is faster.

WHAT'S IN STORE?

You don't have to make too many trips to a software store or read too many computer magazines to know there's another advantage to the Mac LC: There's more software for it than there is for the Apple IIGs. Apple's six years of evangelism for the Mac have resulted in a wealth of programs for that machine in business and even in education, where the Apple II has been traditionally strong. The *Redgate Buyer's Guide*, a service for computer dealers, lists 4116 Macintosh products and 798 Apple IIGs products.

In addition to commercial software, the development of HyperCard, a simple programming language for the Mac, has made it easy for even beginners to "script stacks" — that is, to write programs for the Mac. A version of HyperCard that lets you read stacks comes free ⇨

text shows, this card powering Apple's highest-priced monitor can display an extraordinary 32,000 colors; the examples of computer graphics we saw were indistinguishable from photographs. You install the VRAM SIMM in a special memory-expansion slot in the Mac LC, but you don't have to give up any further memory expansion — there are two more slots for that. VRAM SIMM memory is used only for graphics.

What else can you do to boost the LC's power? Because it comes with 2 megabytes of RAM standard, you may not have to add much there. If you do feel the need, though, you can plug in up to 8 megabytes, for a total of 10, with a memory-expansion card. This kind of LC memory, as in all Macs, also comes in SIMMs, available in many different configurations.

The Macintosh LC has 512K of read-only memory (ROM) on its motherboard, evidently the standard amount for all Macs in the future. Putting more system software into ROM takes some of the pressure off the system-software disk. The ROM in the Mac LC is socketed (plugged in) on the motherboard, not soldered, allowing for

easy ROM upgrades — something that was difficult with earlier Macs.

As for mass storage, the built-in disk drive on the Mac LC is a 1.4-megabyte 3.5-inch SuperDrive, which reads Macintosh files as well as MS-DOS or ProDOS files with the proper driver. Goins informs us that Apple has written "an INIT [startup file] for the Mac so that a II disk is always recognized and can be opened, and files transferred on the Mac desktop." A similar utility for MS-DOS is already available from Dayna Software.

The LC's built-in hard disk is an Apple SCSI drive. Thanks to the machine's slim appearance, the LC can't accommodate any internal drive higher than one inch. Both the hard drive and the SuperDrive are probably the same models that were developed originally for the Mac Portable.

The back of a Mac LC has seven built-in ports, and space for another. First, the Apple Desktop Bus (ADB) is where the keyboard and mouse are attached. Traditionally, ADB has been used to connect up to seven input devices to a computer; you can also have an input/output device such as a modem on an ADB daisychain.

Two identical ports connect serial devices — usually a printer and a modem. The small-computer-systems interface (SCSI) port is the usual place to attach a hard-disk or CD-ROM drive, using a DB-25 connector.

The video port supports the three Apple monitors mentioned above. The sound-in port is where you hook up the hands-free, nondirectional microphone that comes with the Mac LC. You can also record from any player that uses a mini-DIN plug. The sound-out port is a monaural mini-DIN socket.

There's one "knock-out" panel for any port associated with a card installed in the Mac LC's processor-direct slot. It's the place where the 5.25-inch disk-drive and joystick port from the Apple II emulator would go, for instance.

Can a new machine find a place in schools, homes, and small businesses? Apple's betting on it. Bridging some gaps in the Mac family tree and serving as a link to the world of the Apple II, the LC's a powerful package — a hardy hybrid adapted to today's competitive environment.

— P.S.

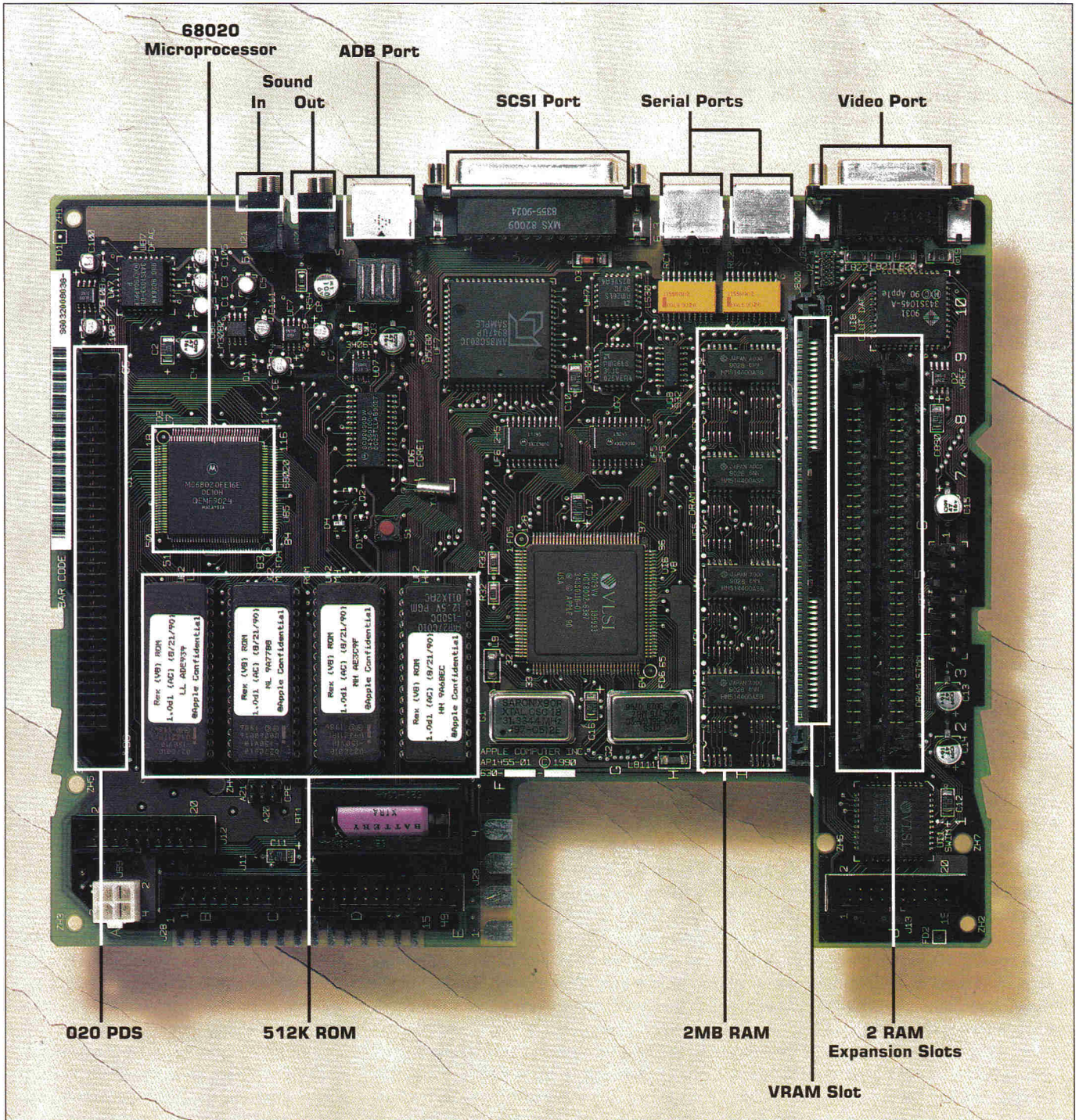
Meet the Mac LC

with every Macintosh purchased, including the LC; to create stacks, you'll need a separate version of the program, available from Claris Corporation.

Another advantage is the sophistication of the Macintosh operating system. System software in computers such as the Mac and the Apple IIGx is what gives the

screen its distinctive look — it creates the desktop. System software also includes routines for adding printers, modems, scanners, hard drives, and all kinds of other devices to your computer.

The Macintosh world has been patiently awaiting the arrival of System 7.0, a major upgrade to the system soft- ➤



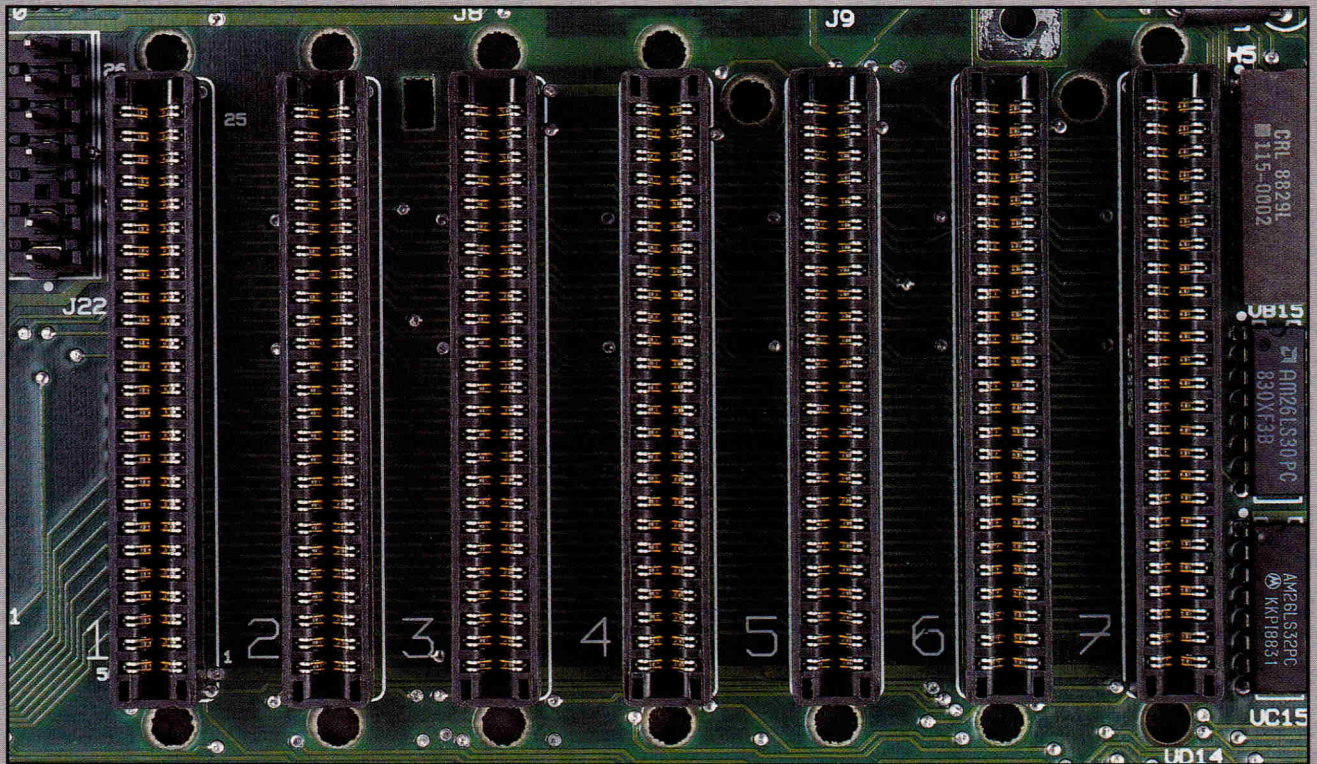
The Mac LC Logic Board

Two computers in one box: The LC's 020 processor-direct slot accommodates Apple's II emulation card and connects directly to the Mac's 68020 microprocessor.

LC motherboard features include up to 10 megabytes of RAM; 512K of socketed (not soldered) ROM, for easy upgrades to system firmware; and 256K of video RAM,

plus 512K potential video RAM expansion for 32,000 hues with AppleColor monitor. Seven built-in ports (in addition to any PDS-associated port) round out the picture.

This is the most important feature of any computer.



They are called expansion slots and they should be at the top of anyone's checklist of important features when considering the purchase of any new computer. With six to eight expansion slots and a socketed micro-processor, there's almost no limit to how your computer can grow, expand and increase in performance as future technology continues to develop.

At Applied Engineering we have a long history of upgrading and enhancing the capabilities of the Apple II using the expansion slots provided. We have developed memory cards that use technology achieving 1000 times greater memory density than was available at the time the computer was originally designed. We have designed and built co-processor cards, accelerator cards,

data acquisition cards, RAM disks, speech synthesizers, stereo sound effects cards, MIDI interfaces and much more.

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So if you want to avoid being "locked out" of the improvements that are taking place every day in computer technology, think very, very carefully before you buy any computer that has less than three or four expansion slots (portable laptops excluded).

We at Applied Engineering understand that just because you have expansion slots doesn't necessarily mean that you will choose Applied Engineering when you want to upgrade your

computer. Yet we still promote the expansion slot philosophy. Because what we *would* like is for you to have choices as new technologies become available. So you don't have to buy a whole new computer every two or three years. There's an old saying in Silicon Valley, "I don't care how many capabilities you build into your computer, it won't do the one thing I want it to do six months from now."



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Meet the Mac LC

ware the Mac currently uses; it should be available sometime in early 1991. It includes, among dozens of other features, routines to make sound a standard data format,

example, the Apple IIGS system software includes no ability to read Mac files into GS programs, but Mac system software's Apple File Exchange can read and write Mac, ProDOS, and MS-DOS files. There's no reason GS/OS can't do many of the same things; it's simply a matter of where Apple's priorities lie.

Table 2. Video comparison.

| Monitor | Price | Mac LC | 512K VRAM SIMM |
|---|----------------------------|------------|----------------|
| Apple 12" Monochrome | \$399 640x480 76 dpi | 16 grays | 256 grays |
| Apple 12" Color | \$599 512x384 64 dpi | 256 colors | 32,000 colors |
| AppleColor High Resolution (designed for Mac II) | \$999 512x344 | 16 colors | 256 colors |

like text or graphics — tools that will simplify the job of writing programs that record and use sound. For instance, new word processors may offer users the ability to annotate documents orally — comments noted by an icon on the page: Click on the sound icon and hear the comment.

A computer like the Mac — a machine that prides itself on ease of use and a consistent look and feel among programs — is defined by its system software. System 7.0 is more mature than its Apple IIGS counterpart, 5.02 — not only older, but also less clumsy doing more tasks. For

people who never owned a computer before. We expect to see unit sales [of Macs] grow even faster than revenue." He added that Apple had "built a lot features into" the new Macs, and noted that color, sound, and SCSI were what Macintosh customers were asking for.

Keast neglected to mention something that five million Apple customers have been asking for for a long time — since the introduction of the first Mac. Fortunately, Apple didn't neglect to add it. Apple IIe compatibility should make the Mac LC attractive not only to those "new people," but also to the Apple II faithful. □

APPLE II FOREVER

At the press introduction of the Macintosh Classic, LC, and IIsi, Apple's marketing manager, Brodie Keast, stressed that the company wants "to reach more people with these computers —

Be True to Your II: Education and the Mac LC

Apple is unique among computer manufacturers in that it has had, without a doubt, a universal impact on the education market. Dropping II compatibility as it develops new machines — rendering whole libraries of excellent software obsolete — would damage Apple. Yet it can't afford to remain wedded to technology as outdated as the 6502 microprocessor, no matter how inventive II programmers are.

Enter the Mac LC, a high-powered gem of a computer with an optional Apple II emulation card — a coprocessor that lets the machine run 8-bit II programs, thus preserving educators' significant investment in software. The memory limitation results from the card's use of its own on-board RAM, bypassing the Mac's memory management. By adding the emulator to the LC, Apple has provided a smooth transition path for educators who have remained loyal to the II while secretly lusting after a color Mac.

The ability of the LC to run Apple II software highlights the fundamental difference between the Mac and II platforms. The Mac's user interface and operating system

are tailor-made for document creation and presentation — whether the document is paper, sound, video, or a still image. Remember that the original Mac was shipped with MacWrite and MacPaint, and that today's Macs come with Hypercard, whose multimedia stacks represent the latest advance in the technology of document production.

The Apple II's user interface, on the other hand, was lean and mean because in the early days of personal computing, very little commercial software existed and many educators used Apple IIs to teach programming. Just as the Mac was shipped with document-creation software, the Apple II was (and still is) shipped with programming software — Applesoft BASIC.

Although you probably use your II to create documents, the bulk of the educational software for the machine consists of closed programs designed to illustrate a particular concept or to provide activities to reinforce skills. The machine's other main application is program creation: You're never more than a few keystrokes away from BASIC and from the machine-language

monitor. A diehard Apple II fanatic would rather type PR#6 than double-click a mouse button.

The beauty of the new Mac LC with its II emulation card is that it provides both computational worlds in one box. You can be tinkering with an Applesoft program one minute and creating a page layout for a newsletter the next. By making the transfer of text and images across the II/Mac boundary as easy as possible, Apple has created a "synergy" in which the whole is far greater than the sum of its parts.

Whither the IIGS in the wake of this new development? Attempting to replicate the intuitive Mac interface on a II proved tricky. The machine does a lot right — it runs 8-bit software and supports color and sound well. Still, it's had its problems — a whole new operating system to design for, resulting in some fairly crude attempts to convince you you're really using a Mac. Now that you can purchase a real color Mac for about the same price — and run all your 8-bit II programs on it — will the GS suffer a loss of software support and go the way of the Apple III? — **David D. Thornburg**



IIGS High Density arrives.

AE's new 3.5 High Density Drive™ for the IIGS sets a new standard for Apple IIGS storage. 1.6 MEG capacity means you can stop playing diskette roulette. Simply store your large 2-disk application programs on one, high density disk and forget about fumbling for clumsy "sets" of disks. And storing files just became twice as easy too, because you'll only need half the number of disks.

Compatible with all versions of GS/OS, our design incorporates the same, top-quality SONY mechanism that Apple uses. Aesthetically, the AE Drive is every bit as handsome as the Apple Drive. We designed a thick, high-impact plastic case to stack with and exactly match the footprint of Apple's drive. But AE's drive gives you twice the capacity at a far lower price.

Our exclusive 2-way LED indicator shows green for reading, red for writing. Now you can monitor the drive's progress and know that a disk is actually being copied, instead of being confronted with an ambiguous "on" light.

The 800K version of the AE drive works with the Iie, Iic, Iic Plus, IIGS, Macs and our PC Transporter. For Iie owners, we've even designed a low-cost optional controller card that allows the Iie to accept data from the 3.5 format. The AE Drive is also Macintosh compatible as an 800K drive. And owners of AE's 800K drive wanting 1.6 MEG high density capacity for their IIGS can affordably upgrade.

High density is quickly becoming the standard for other personal computer platforms. Now you can bring the power and convenience of high density to your IIGS!

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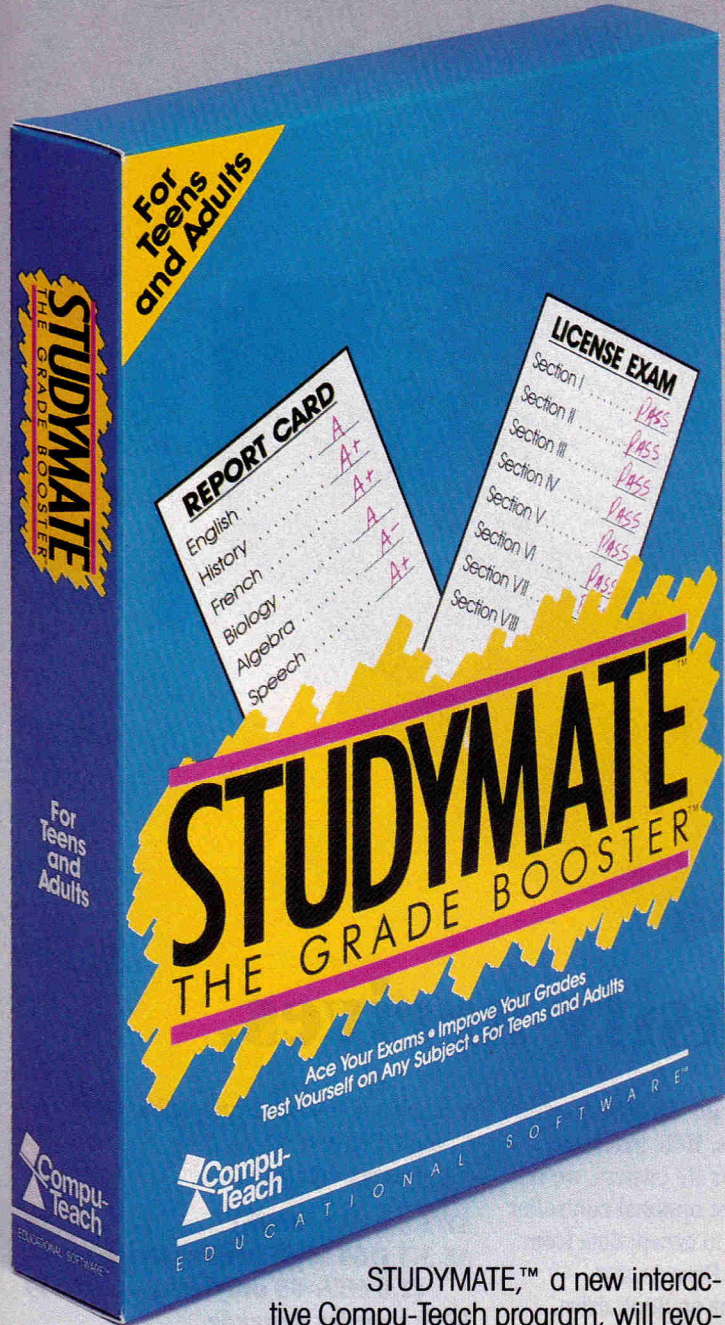
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inCider's Apple II Holiday Shopping Guide

With more than 10,000 software packages alone to choose from, pinpointing "the best of the best" in Apple II products for a holiday shopping guide is no easy task. Nevertheless, we've come up with what we consider to be top-echelon products in five categories: productivity software, peripherals and hardware, educational programs, creativity software, and accessories. These choices, featuring products that are at least outstanding if not unique in their respective fields, reflect the state of the art of Apple II computing.

If you're in the mood for fun, check out

our list of Top 20 entertainment products on p. 62. The roster includes today's hits as well as some classics that only perennial Apple II gamers will remember.

Note that the product information we provide includes suggested retail prices. If you're a smart Santa, you already know that you can often save substantially by shopping with reputable mail-order firms. Mail-order shopping can make an already good value an even better one. Just be sure to order early so that no one on your gift list is disappointed Christmas morning. Happy Holidays — and let the shopping begin! 

inCider's Apple II Holiday Shopping Guide

PRODUCTIVITY SOFTWARE

1 **HyperStudio**
Roger Wagner
Publishing, Inc.
1050 Pioneer Way
El Cajon, CA 92020
(619) 442-0522
\$149.95

Face it — you could use a shot in the arm if you've been spending all your time word processing, number crunching, or desktop publishing. Like no other product for the Apple IIGs, HyperStudio will soon reawaken your waning enthusiasm. Roger Wagner Publishing's hypermedia authoring system excels even in comparison to HyperCard for the Macintosh. Text, cards, buttons, line art, paintings, digitized images, even video frames and sequences explode in super-hi-res color. The program comes with an easily installed sound-digitizing circuit board and a microphone. Record the spoken word or "live" music and incorporate those sounds into your HyperStudio stacks. (If you're looking for hypermedia for your 8-bit Apple, we recommend the **Tutor-Tech Hypermedia Toolkit**, \$195, from Techware Corp., P.O. Box 151085, Altamonte Springs, FL 32715, 800-34-REACH, 407-695-9000.)

2 **DB Master Professional.....\$295**
DB Master Version Five.....\$45
Stone Edge
Technologies, Inc.
P.O. Box 3200
Maple Glen, PA 19002
(215) 641-1825

Arguably the most powerful program ever written for the Apple II, DB Master Professional pits the Apple head to head against so-called serious business machines. The program's enormous database capabilities mean that among other things you can set up "relational rules" linking one file automatically with one or more others, to gather or update pertinent information. DB Master Professional's free-form record design lets you create virtually any kind of layout you want, complete with mathematical formula fields. A nonrelational adap-

tation — DB Master Version Five — is available as shareware through public-domain software libraries and user groups.

3 **AppleWorks 3.0**
Claris Corporation
5201 Patrick Henry Drive
P.O. Box 58168
Santa Clara, CA 95052
(408) 987-7000
\$249

Claris' three-in-one workhorse is affectionately dubbed a "Classic" for a



AppleWorks — Classic and GS versions

good reason: AppleWorks is one of the most popular Apple II programs ever sold. The latest version heaps even more features and functions, including a built-in spelling checker, onto an already prodigious foundation. Nowhere else will you find such an easily integrated combination of word processor (with mail merge), database manager, and spreadsheet module. And AppleWorks 3.0 documentation is not only thorough, it's thoroughly well written. Getting familiar with AppleWorks is easy, too: Thousands of ready-to-customize templates are available from commercial sources and in the public domain.

4 **AppleWorks GS 1.1**
Claris Corporation
5201 Patrick Henry Drive
P.O. Box 58168
Santa Clara, CA 95052
(408) 987-7000
\$299

If you've got a GUI (graphical user interface) hankering that just won't quit, you'll love AppleWorks GS. You can work to your eyes' content with any of six built-

in modules: word processing (with spelling checker and mail merge), database manager, spreadsheet, page layout, graphics, and communications. Best of all, the program displays everything in super-hi-res color. Thanks to AppleWorks GS' windows environment, you can copy and paste information easily from one document to another. Together with GS/OS System 5.02 (included in the package), AppleWorks GS could be the only program you ever need.

5 **GraphicWriter III**
Seven Hills Software Corp.
2310 Oxford Road
Tallahassee, FL 32304
(904) 576-9415
(800) 627-3836
\$149.95

Tops in desktop publishing for the Apple IIGs, GraphicWriter III is more than just a page-layout program. The latest Seven Hills Software release includes a built-in word processor with spelling checker as well as object-oriented (drawing) and painting graphics capabilities. Color-coded column and arbitrary guides, intelligent linking tags, and the ability to wrap text around irregularly shaped objects set GraphicWriter III apart. A few glitches persisted in the version available at press time, but a free (and bug-free) update is in the works for registered users, according to the company.

6 **SoftDisk**
\$19.95
per 3-month subscription
SoftDisk GS
requires 768K Apple IIGs
\$29.95
per 3-month subscription
SoftDisk Publishing
P.O. Box 30008
Shreveport, LA
71130-0008
(318) 221-8718
(800) 831-2694

If print publications such as *inCider* aren't enough to satisfy your insatiable appetite for computer-related information, programs, templates, and tutorials, try the

inCider's Apple II Holiday Shopping Guide

disk-based magazines *SoftDisk* and *SoftDisk GS*. Pop an issue into your drive and spend a couple of relaxing hours listening to jukebox selections, perusing clip art and desk accessories, playing arcade games, testing a new productivity program, or just reading letters to the editor. It's not exactly like curling up in an easy chair, but then again, *inCider* doesn't play Beethoven sonatas.

7 SuperConvert 3.00
Seven Hills Software Corp.
2310 Oxford Road
Tallahassee, FL 32304
(800) 627-3836
(904) 576-9415
\$39.95
update, \$40
minus original cost

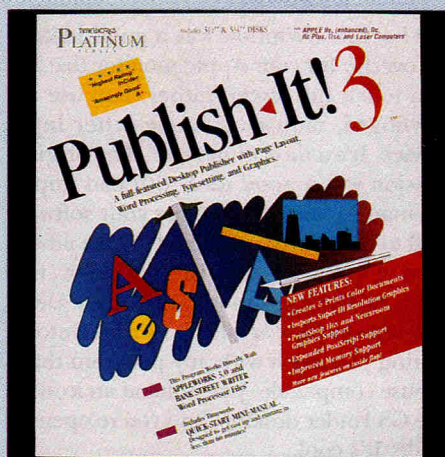
Any GS owner hoping to expand his or her clip-art resources should investigate SuperConvert, née SHR Convert, by Jason Harper. If there ever was a "Gumby" product for the GS, this is it. SuperConvert is so incredibly flexible (and easy to use) that it can convert virtually any type of graphics file to super hi-res. We're not just talking Apple hi-res, double hi-res, or Print Shop GS graphics, either. With SuperConvert you can transform Atari ST, Commodore 64/128, and even Macintosh graphics into super-hi-res format.

8 Graph It!
Timeworks Inc.
444 Lake Cook Road
Deerfield, IL 60015
(708) 948-9200
\$69.95

Whether you're creating graphs for a school science fair or charts for a strategic business meeting, Graph It! is equal to the task. Enter data directly, extract it from an

AppleWorks Classic spreadsheet, or import it in ASCII text format from other Apple II programs such as DB Master. Educators and entrepreneurs alike will appreciate the sheer variety of chart styles, including scatter, column, bar, stacked column line/column, and three-dimensional. Switching from one style to another takes only seconds. Printouts are available in a choice of sizes, or you can save charts as double-hi-res graphics, a format that's compatible with desktop-publishing programs such as Publish It! 3.

9 Publish It! 3
Timeworks Inc.
444 Lake Cook Road
Deerfield, IL 60015
(708) 948-9200
\$129.95



Publish It! 3

The *inCider* writers and editors have been unabashed fans of Publish It! for as long as we can remember, so it's no surprise that again this holiday season we recommend the program enthusiastically. The

latest version brings even more power to the Apple II desktop publisher. Among the program's notable enhancements are color-printing capabilities, direct support for super-hi-res graphics and so-called GS fonts, more versatile object-manipulation options (including locking and don't-print selections), and a Postscript print-to-disk feature that facilitates laser printing by service bureaus.

10 EuroWorks 3.0
requires AppleWorks 3.0
EuroWorks 2.0
requires AppleWorks 2.0 or 2.1
French, German, Italian,
Portuguese, Spanish
\$39 five languages
\$24 French only
or Spanish only
S.A. AuTeur Company
P.O. Box 7459
Beaverton, OR 97007
(503) 645-2306

If you *parlez-vous* AppleWorks and need to print documents in one or more foreign languages, you need EuroWorks, a program that installs within AppleWorks (a process that's easier than it may sound) and utilizes the Beagle Bros UltraMacros programming language. But the good news is you don't have to program a thing. Whenever you need an accented character, just press the appropriate combination of keys. When you're done, print your document on a Seikosha SP-1000 AP, Mannesmann-Tally 85/86, or any of a variety of Apple-brand dot-matrix printers. Recalling gobbledegook keystrokes and fiddling with DIP (dual in-line package) switches are things of the past thanks to EuroWorks.

PERIPHERALS AND HARDWARE

1 Apple II High Speed SCSI Card
Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 974-1010
\$129

If you want to take advantage of SCSI (small-computer-systems interface) devices,

notably hard-disk drives, the Apple II High Speed SCSI Card offers a dramatic increase in the speed with which your GS or enhanced IIe moves information. How fast is faster? Thanks to DMA (direct memory access), a scheme in which the card bypasses your computer's central processing unit and talks directly to RAM, Apple claims that you can expect hard-disk per-

formance to increase up to ten times over that of its earlier card — and the heavier the workload, the greater the performance. Maximum throughput on the GS is 1 megabyte per second; on the IIe, 511K per second. The package includes a 3.5-inch disk with utilities and device drivers for the GS and the IIe, a 5.25-inch disk with other IIe utilities, and an owner's guide.

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2 **FingerPrint GSi III**
Thirdware
Computer Products
4747 Northwest
72nd Avenue
Miami, FL 33166
(305) 592-7522
\$149

Here's a real find for teachers, desktop publishers, and computer hobbyists — anyone who needs to capture a screen. Just press the fingerprint symbol on the activator button at the end of this card's ribbon cable to create printed or disk-file versions of any single-, double-, or super-hi-res screen. FingerPrint GSi software lets you



FingerPrint GSi

print screens in full color as well as crop, rotate, and invert graphics. This invaluable enhancement for the GS even lets you print posters and theatre backdrops, as well as choreograph manual or self-running slide shows for classroom presentations, business meetings, store displays, and animated greeting cards.

3 **Apple II Video Overlay Card**
Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 974-1010
\$549

The Apple II Video Overlay Card turns your mild-mannered GS or IIe into a super video system. (In fact, just try to find a similar product for the new Mac Classic or

LC.) In short, this *genlock* card lets you merge video from a tape or camera with computer graphics and text. For example, you can videotape your child's Little League game and then insert Billy's or Bobbie's name, batting average, and other vital statistics over the video. Or you can take the John Madden approach and analyze your young slugger's swing in chalkboard style. Hundreds of uses exist — if you've got the imagination, Apple's got the card for you.

4 **TouchWindow**
Edmark
14350 Northeast
21st Street
P.O. Box 3903
Bellevue, WA 98009
(800) 426-0856
\$249.95

The TouchWindow was a good idea — an overlay for your Apple monitor that lets you touch the screen rather than use the keyboard, mouse, or some other input device. It's a direct interface. The original version was a good idea with bad implementation, though, because your software had to be specially modified to take advantage of it. But the new TouchWindow, now from EdMark, plugs into the Apple Desktop Bus on your Apple IIgs or Macintosh, letting you use it with any program that's mouse compatible. Just point at an icon on the GS Finder desktop, and you're opening a file. It's cool.

5 **RamFactor**
Applied Engineering
P.O. Box 5100
Carrollton, TX 75011
(214) 241-6060
\$259 512K
\$319 1 megabyte
\$399 2 megabytes

A number of memory-expansion cards are available for Apple IIs, and most them are pretty good. We recommend the Applied Engineering RamFactor board — and not only because of its high quality, reasonable price, and great accompanying software. What sets RamFactor apart from the crowd is its flexibility: You can use it with any Apple II model except the IIc, and you can use its memory chips to populate other memory cards. If you can buy only one RAM card, RamFactor's the way to go.

6 **TransWarp/TransWarp GS**
Applied Engineering
P.O. Box 5100
Carrollton, TX 75011
(214) 241-6060
\$119/\$349

If there's one piece of hardware every II user should consider, it's TransWarp. If you use AppleWorks GS, GraphicWriter III, or any heavy-duty 16-bit software, TransWarp GS is almost a necessity. If you use an Apple IIe, life is certainly bearable without an accelerator, but it's a luxury you should at least consider.

7 **CrossWorks 2.0**
SoftSpoken Inc.
P.O. Box 18343
Raleigh, NC 27619
(919) 870-5694
\$99.95

If you're a portable-PC user or a telecommuter who needs to bridge the gap between your Apple II and an IBM PC, XT, AT, PS/2, or compatible, CrossWorks provides the link. In addition to AppleWorks look-alike utility software for both computer types, the CrossWorks pack-



CrossWorks

age includes a cable with terminals fitting an assortment of communications ports on both machines. If the two computers aren't located in the same room, you can use 1200-baud Hayes-compatible modems for file transfer. With CrossWorks, the letter you wrote and formatted with WordPerfect on your laptop PC can be converted quickly (at 19,200 baud) and sent to the AppleWorks word processor; the file you built with dBase III (or a later version) can be transferred to the AppleWorks database manager; and your latest Lotus 1-2-3

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worksheet can be imported into the AppleWorks spreadsheet module. Converting and sending files in the other direction — from AppleWorks to IBM-compatible software products — is also possible, as is two-way transfer of ASCII text files.

8 **CT-20c**call Chinook for price and availability

CT-40ccall Chinook for price and availability

CT-20\$449

CT-40\$529

CT-80\$769

CT-100\$799

Chinook Technology, Inc.
615 Main Street
Longmont, CO 80501
(303) 678-5544

If you have an Apple IIc and can't put a hard drive inside, we recommend the Chinook external hard disk — the CT-20c or CT-40c. These 20- and 40-megabyte drives, respectively, are the only ones currently available for your IIc. Chinook is

a name to remember if you're looking for a hard drive for your IIe or GS, as well. The CT-20, CT-40, CT-80, and CT-100 are SCSI models: fast and Mac compatible to boot. Five megabytes' worth of demonstration software is included with each drive.

9 **LightningScan**
Thunderware
21 Orinda Way
Orinda, CA 94563
(415) 254-6581
\$295

Quickie
Vitesse
P.O. Box 929
La Puente, CA 91747-0929
(818) 813-1270
(800) 777-7344
\$299

Choosing between a Quickie and a LightningScan is like choosing between a Pontiac Grand Am and an Oldsmobile Calais. They're not the same thing, but they sure look a lot alike. On the hardware side, Quickie and LightningScan are identical; the products' interface cards and soft-

ware are quite different. (Look for our head-to-head comparison in an upcoming issue.) If you own anything but a GS, though, your decision is easy — get Quickie; LightningScan doesn't work with the II Plus or the IIe. Quickie is also a little more adept at reproducing line art; LightningScan handles photos better.

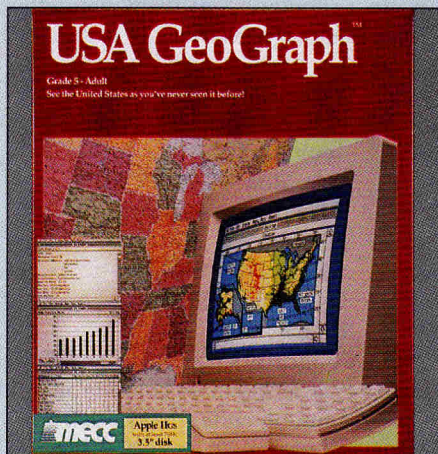
10 **Vulcan**
P.O. Box 5100
Carrollton, TX 75011
(214) 241-6060
\$699, 20 megabytes
\$899, 40 megabytes
\$1795, 100 megabytes

An internal hard-disk drive costs more than an external one, runs more slowly, turns up the heat in your Apple IIcs or IIe, and probably won't work with the next computer you buy. So why buy one? Internal hard drives are neat — they're the latest thing in peripheral equipment and they keep the top of your desk tidy. The best internal hard-disk drive is the Vulcan from Applied Engineering — you can use it with DOS 3.3, ProDOS, or GS/OS, and it comes with its own fan and power supply. It's as fast as an internal hard drive can be.

EDUCATIONAL PROGRAMS

1 **USA GeoGraph**
MECC
3490 Lexington
Avenue North
St. Paul, MN 55126
(612) 481-3500
(800) 228-3504
\$139

The visual impact of USA GeoGraph's "living" maps is astonishing. But this exquisitely attractive program — like World GeoGraph, its global companion — has a beauty that's a lot more than skin deep. Simply clicking on a map can begin a custom search of 105 database categories and help you learn about the USA in ways that until now would have required a stack of atlases and reference books. Whether you have an ongoing curiosity about the 50 states (and six selected U.S. territories) or you're preparing a school report on topics



USA GeoGraph

as wide-ranging as precipitation, pollution, or politics, you'll find USA GeoGraph an extraordinarily useful — and enticing — research tool.

2 **Mavis Beacon Teaches Typing**
The Software Toolworks
60 Leveroni Court
Novato, CA 94949
(415) 883-3000
\$49.95

Seeing the terms *artificial intelligence* and *typing skills* in the same sentence may jolt you — unless you've tried Mavis Beacon Teaches Typing, the best Apple II keyboard trainer available. A host of features make this program a standout: It's suitable for everyone, regardless of age; it displays "guide hands" on screen to help you achieve correct finger placement; its lessons are automatically customized to your specific needs. (That's where the artificial intelligence comes in.) Moreover, there's a car-race typing game for diversion and a résumé writer for more serious ◊

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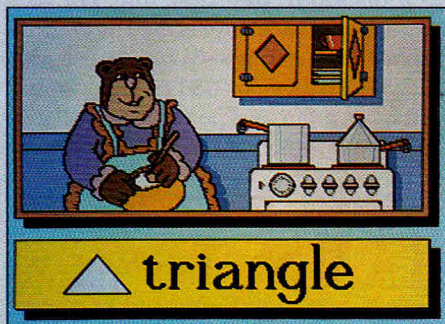
pursuits. The frosting on the cake? A beautifully illustrated interface, particularly in the GS version.

3 The New Talking Stickybear ABCs

The New Talking Stickybear Opposites

The New Talking Stickybear Shapes Weekly Reader Software Optimum Resource
10 Station Place
Norfolk, CT 06058
(203) 542-5553
(800) 327-1473
\$49.95 each

For nearly a decade Stickybear and his clan have helped young children develop skills as diverse as learning the alphabet, mastering the computer keyboard,



Stickybear Shapes

composing original music, and even building make-believe towns. The New Talking Stickybear ABCs, The New Talking Stickybear Opposites, and The New Talking Stickybear Shapes add yet another dimension — digitized speech — to an already appealing mix of super-hi-res animated graphics and engrossing learning games. A poster, stickers, and a supplementary-activities book reinforce the learning that takes place at the GS.

4 Talking Reader Rabbit The Learning Company 6493 Kaiser Drive Fremont, CA 94555 (415) 792-2101 **\$59.95**

If you'd like to give your child a head start in acquiring vital reading skills, check

out Talking Reader Rabbit for the Apple IIs. Rabbit speaks each word in his vocabulary, some 200 monosyllabic terms in all, including familiar words such as *bus*, *jet*, *net*, and *lid*. Reader Rabbit's four learning activities, featuring some excellent color graphics, can help your child achieve reading readiness, acquire spelling skills, and build vocabulary. A nontalking version is also available for the 8-bit Apple II family.

5 The Children's Writing and Publishing Center The Learning Company 6493 Kaiser Drive Fremont, CA 94555 (415) 792-2101 **\$59.95 home version** **\$99.95 school version**

Kids who want to be desktop publishers just like mom and dad will find a helping hand in The Children's Writing and Publishing Center. This unique program from The Learning Company can assist kids in preparing book reviews, compositions, and science reports while it encourages development of both analytical and creative skills. Ready-to-use layouts remove the drudgery without reducing the fun: Kids get to select the graphics and fonts they want to use in their desktop-published communications. Who knows? Putting the Children's Writing and Publishing Center under your Christmas tree might even inspire a spontaneous thank-you-letter writing campaign this holiday season.

6 Tutor-Tech Hypermedia Toolkit Techware Corp. P.O. Box 151085 Altamonte Springs, FL 32715 (800) 34-REACH (407) 695-9000 **\$195**

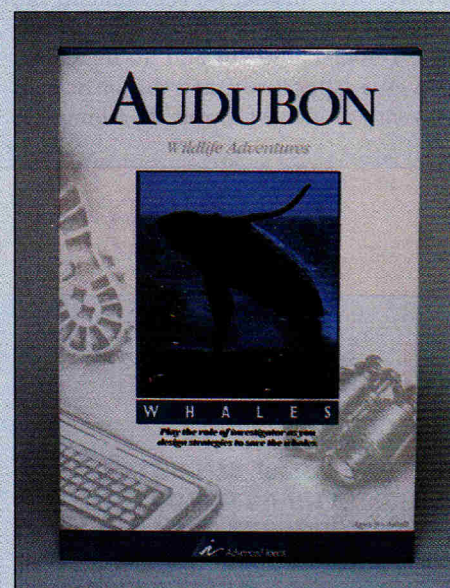
At last educators can write enticing, interactive lessons without knowing an iota of programming code, thanks to Tutor-Tech, the "hypermedia toolkit" that raises computer-assisted instruction to new heights. Tutor-Tech's Mac-like interface — together with its support for computer peripherals, including videodisc and videocassette players, TouchWindow, Echo speech synthesizers, Muppet Learning

Keys, and the Tutor-Talk Tape Cassette Controller — means you can design courseware, interactive stories, and tests for mainstream and special students largely by clicking the mouse and making selections from pull-down menus. An optional grade-book-manager program helps you measure your students' progress.

7 Audubon Wildlife Adventures: Grizzly Bears

Audubon Wildlife Adventures: Whales
Advanced Ideas
2902 San Pablo Avenue
Berkeley, CA 94702
(415) 526-9100
\$49.95 each
\$59.95 GS version

Sparking in your child an enduring interest in the earth's creatures is a little easier thanks to the Audubon Society and Advanced Ideas. Their initial collaboration



Audubon Whales

produced Grizzly Bears, an entertaining program with varied simulations that help impart insights into bear biology, human behavior, and business economics. Whales, a recent release, maintains the same high standards of quality programming, superb graphics, and appealing sound effects. These nonsexist, nonracist Wildlife Adventures are certain to appeal to all budding naturalists aged 9 and up.

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**8 McGee
Katie's Farm**
Lawrence Productions
1800 South 35th Street
Galesburg, MI 49053
(616) 665-7075
(800) 421-4157
\$39.95 each

McGee and its sequel, Katie's Farm, are probably the most comfortable programs a young child could approach. No text or typing is involved, an obvious necessity for software that's designed to appeal to children too young to read and write. Kids simply point the mouse to whatever scene they want to explore, click, and away they go. They'll follow along as the cherubic little character McGee plays all around the house. Animation and digitized sound effects make McGee a engaging exploration. Katie's Farm takes the logical step of getting the mischievous McGee out of the house on an adventurous visit to his cousin in the country.

9 The Playroom
Broderbund Software, Inc.
17 Paul Drive
San Rafael, CA 94903
(800) 521-6263
(415) 492-3500
\$39.95

The Playroom, Broderbund's discovery learning program for preschoolers and early elementary students, piques kids' natural curiosity and willingness to explore new environments. The program's half-dozen activities can help develop important skills such as telling time, counting, and recognizing letters of the alphabet. The child explores the main-menu screen, which looks like a playroom littered with toys, games, and other appealing objects, such as a radio, a computer, and a fishbowl. Click on the teddy bear, and he'll wave to you. Click on the cuckoo clock and play a telling-time game. The Playroom is a safe and charming place to let children fool around — and learn at the same time.

**10 Where in Time Is
Carmen Sandiego?**
Broderbund Software, Inc.
17 Paul Drive
San Rafael, CA 94903
(415) 492-3500
(800) 521-6263
\$44.95

In the latest in the ever-popular Carmen Sandiego series, the elusive thief and her henchmen are now traveling throughout time as well as all over the world, with more locations and extra clues to boot. Thanks to a time machine that sends Carmen on her way, kids can pick up all sorts of historical tidbits, besides the wealth of geographic information we've all come to expect from this series. Check out the other programs while you're at it: Where in the World, Where in the USA, and Where in Europe. Where in Time is an ambitious and successful sequel; the only question remaining is "What's next for Carmen?"

CREATIVITY SOFTWARE

1 Award Maker Plus
Baudville, Inc.
5380 52nd Street
Southeast
Grand Rapids, MI 49512
(616) 698-0888
(800) 728-0888
\$49.95 64K version
\$59.95 128K version

Whimsical or serious, the awards and certificates you design with Award Maker Plus always look impressive. Get creative — the program offers hundreds of ready-to-customize templates, four title and text fonts, and ten plain or filigree borders, which you can print in any one of more than a dozen stunning colors. Make it easy on yourself: You can use Print Shop graphics as borders and incorporate hires clip art into some of the award styles. A built-in database lets you batch print certificates for a whole group at a time. Whether they're members of your school's poetry club or the senior-citizens computing class, recipients appreciate the recognition that only a quality ready-to-frame certificate can bring.

2 The New Print Shop
Broderbund Software, Inc.
17 Paul Drive
San Rafael, CA 94903
(800) 521-6263
(415) 492-3500
\$49.95

Referring to the long-standing popularity of The Print Shop, Broderbund Software boasts that "over a million people can't be wrong." After all, The Print Shop was helping Apple II users "desktop publish" before the term was coined. If you've never used The Print Shop, isn't it about time you joined in the fun of creating custom greeting cards, invitations, announcements, stationery, certificates, calendars, signs, and banners? If you're already a Print Shop fan, now's the time to upgrade. (If you own The Print Shop GS, though, you won't need to — that version contains these enhancements already.) The program's latest version, The New Print Shop, touts a significant number of creativity-boosting features. Among them are graphics-manipulation techniques such as flipping, reversing, stretching, and 3D;

a project-preview option; enhanced printing resolution; color-printing capability; and a multiple-page printing feature for creating garage-door-sized posters.

3 Slide Shop
Scholastic, Inc.
P.O. Box 7502
2931 East McCarty Street
Jefferson City, MO 65102
(800) 541-5513
(800) 392-2179 (MO)
\$69.95 home version
\$99.95 school version

What do greeting cards, business meetings, product demonstrations, videotape title screens, and classroom lessons have in common? Slide Shop — the desktop-presentation program for the Apple II family. It's easy to create self-running slide shows and "slidemail." Start with one of the program's canned backgrounds or frame templates. Add borders and clip art, including Print Shop graphics or original illustrations you create with Slide Shop's drawing and painting tools. Incorporate sound effects, music, or speech, then type ↗

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your message. Write a script that ties the show together. You can even add special effects, such as flicker animation, and transitions such as wipes and dissolves.

4 **Pyware MusicWriter**
Pygraphics Corp.
P.O. Box 639
Grapevine, TX 76051
(800) 222-7536
(817) 481-7536
\$119 Limited Edition
\$295 Special Edition
\$595 Professional Edition

A sophisticated authoring toolkit, Pyware MusicWriter sports an authentic Apple IIGS interface with pull-down menus and mouse



MusicWriter

support. The program features standard (and copious) musical notation. Adding articulations or ornaments is as easy as choosing them from a musical-symbol palette. Facilitating real-time composition, Pyware MusicWriter works with MIDI-compatible synthesizers. You can print scores with or without lyrics. Whether you're a Wagner wannabe, a music teacher, or a professional conductor, MusicWriter in its appropriate configuration may be the only music software you need.

5 **Sound Smith**
available through
commercial on-line services
and public-domain libraries
\$20 shareware

Sound Smith is a 14-track sequencer for creation and playback of synthesized music. Written by Huibert Aalbers, author of the games Laser Force and Jigsaw, Sound Smith takes full advantage of the GS' Ensoniq chip; the tonal quality is unlike

that of any other music program available for the GS. Sound Smith uses synthesized instruments in standard ASIF format, making it easy to create additional instruments with a digitizer such as Applied Visions' FutureSound. Load an instrument and the software displays a piano keyboard; click on it to play. Load a song and a graphics-based playback area appears, complete with animated VU meters. You can designate any four tracks for playback and use a variety of instruments in any song selection. Aalbers has also compiled five song disks for use with Sound Smith.

6 **Bannermania**
Broderbund Software, Inc.
17 Paul Drive
San Rafael, CA 94903
(800) 521-6263
(415) 492-3500
\$34.95

Imagine being able to show school spirit, promote your business, or liven up parties with banner messages printed in one of 19 fonts and oriented in any of nearly two dozen shapes, from arch to pennant to wave. Bannermania creations don't include clip art; instead they sport a multitude of graphics special effects, including shadows and perspective. The program's "transmoglify" feature automatically generates a series of variations based on your initial design. Sit back, watch, and choose the one you like. A WYSIWYG (what you see is what you get) preview feature displays your banner in full detail — right down to the paper's tractor-feed strips.

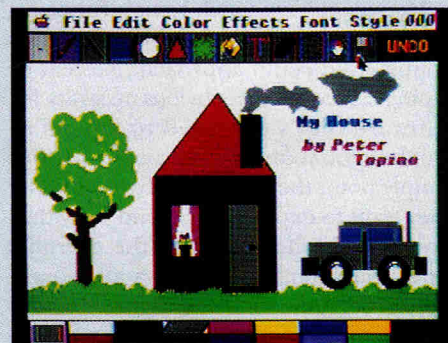
Color 'n' Canvas
\$99

Lab Pack
10 program disks
\$297

Wings for Learning, Inc.
1600 Green Hills Road
P.O. Box 660002
Scotts Valley, CA
95067-0002
(800) 321-7511
(USA and Canada)
(408) 438-5502 (collect)

Designed for use in elementary-school classrooms, this authentic GS paint program offers a number of unique features. The Color 'n' Canvas screen is crisp, clear, and uncluttered. Its 16-color paint palette

has generously sized paint chips stretched along the bottom of the screen; the program's tool palette is similarly arranged at the top. Traditional mouse movements are simplified: Instead of holding down the button while you draw a line, for example, all you have to do is select the line tool and click once to turn it "on." Roll the mouse to



Color 'n' Canvas

draw the line and turn the tool "off" by clicking when you're done. In addition to traditional RGB (red, green, blue) sliders for editing a color palette, Color 'n' Canvas provides RYB (red, yellow, blue) sliders for working with primary colors. Because Wings for Learning is a subsidiary of Sunburst Communications, it's no surprise that the Color 'n' Canvas manual is chock-full of classroom ideas, lessons, and worksheets.

8 **Diversi-Tune**
Diversified
Software Research
34880 Bunker Hill
Farmington, MI
48018-2787
(313) 553-9460
\$75

Diversi-Tune isn't the slickest-looking music program for the Apple IIGS, but it's the slickest sounding. And isn't the sound what you're looking for in music (unless you were raised on MTV)? Diversi-Tune uses your GS' Ensoniq synthesizer chip to create the music — you can hear it in stereo if you have a GS stereo card. You can play notes yourself on the keyboard, but Diversi-Tune can also work like a player piano when you buy disks of prerecorded songs, from show tunes to jazz to rock, from Diversified Software or in the public domain. When you play them, watch simulated piano keys on screen, or "follow the bouncing ball" for singalongs. Diversi-Tune is a long-running musical hit.

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9 **GS 131**
GS 132
Public Domain Exchange
2078-C Walsh Avenue
Santa Clara, CA 95050
(800) 331-8125
(408) 496-0624 (CA)
\$9 each

These two disks from the Public Domain Exchange include 84 of the hundreds of so-called GS fonts available at little cost through public-domain libraries and Apple II user groups. For pennies apiece, you can experiment with both fancy and unorna-

mented fonts for desktop presentations and publications of all descriptions. GS fonts work with GS-specific programs such as AppleWorks GS and with some 8-bit Apple II programs such as Publish It! 3 — or even the 8-bit version of AppleWorks if you use TimeOut SuperFonts.

10 **Cheap Paint 1.4**
Earl Gehr
1824A Manning Circle
Charleston, SC 29404
\$10

Both would-be and accomplished computer artists may wonder how a pro-

gram named Cheap Paint can supply such a rich assortment of graphics tools. It's a rare gem — this shareware program sports not only a 16-color paint and pattern palette, but just about all the tools you need to create any-style super-hi-res rendering. What could you possibly get for just \$10? A lot more than you'd guess: Among those tools are spray paint, filled and hollow shapes, lasso, text, and even a magnifying glass to zoom in for pixel-sized detailing. With color-cycling animation and on-line help rounding out its list of features, you might say that Cheap Paint is cheap in name only.

ACCESSORIES

1 **IIGs Antiglare Filter**
Kensington Microware Ltd.
251 Park Avenue South
New York, NY 10010
(800) 535-4242
(212) 475-5200
\$49.95

It goes without saying: Your eyesight is a precious — if not irreplaceable — commodity. One way to reduce eyestrain is to invest in an antiglare filter. Kensington's model attaches to the front of your monitor via adhesive-backed Velcro strips. According to the manufacturer, the filter not only decreases glare by some 96 percent, but also reduces certain types of radiation and dissipates static. Say goodbye to distracting, dingy, dusty screens, and say hello to better vision.

2 **Curtis Clip**
Curtis
Manufacturing Company
30 Fitzgerald Drive
Jaffrey, NH 03452
(603) 532-4123
\$6.95

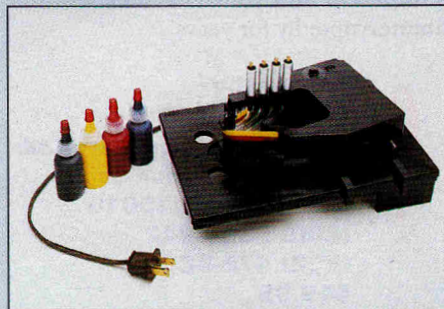
What's the best way to combine economics with ergonomics? An inexpensive copy holder such as the Curtis Clip. This adjustable device attaches to either the left- or right-hand side of your monitor. Whether you're typing a chapter in your Great American Novel, adding new entries to a customer mailing list, or transcribing a thumbnail sketch of your newsletter, a

copy holder can relieve neck strain and improve productivity at the same time. For seven bucks, how can you go wrong?

3 **MacInker**
\$45 dedicated ImageWriter
and Epson models
\$66 universal
\$9 adapter kit

Multicolor Adapter
\$40
Computer Friends, Inc.
14250 Northwest
Science Park Drive
Portland, OR 97229
(503) 626-2291

Depending on the number of ribbons you go through in a year, a reinking unit can pay for itself on its maiden voyage.



MacInker

Reinking ribbons doesn't require an engineering degree, either: Just fill the inkwell (or inkwells in the case of multicolor

ribbons), insert the ribbon onto the platform, and turn a switch. The job can be a little messy, so you may want to wear vinyl gloves, but a spritz of WD-40 is usually all that's required to clean up any inkspots.

4 **User Group Connection**
Apple Computer, Inc.
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Cupertino, CA 95014
(800) 538-9696 x500

Ever get lost trying to clear your way through the computer jungle? If you've ever needed help figuring out what to do or what to buy, call Apple's User Group Connection first. This service, provided free by Apple Computer, can steer you to user groups in your area. Joining a group usually costs nothing, but brings benefits galore, among them public-domain software, new-product demonstrations, free advice, and sometimes club discounts on commercial software and hardware.

5 **System Saver IIGs**
Kensington Microware Ltd.
251 Park Avenue South
New York, NY 10010
(800) 535-4242
(212) 475-5200
\$99.95

If you're looking for protection and convenience at an affordable price, consider the System Saver. It fits unobtrusively

inCider's Apple II Holiday Shopping Guide

on top of your GS, where the unit's quiet fan cools your computer's innards. Plug as many as three peripherals into the rear of the Kensington unit and control them via front-mounted master and auxiliary push-buttons. One vital feature that can neither be seen nor heard is the built-in surge suppressor, a device that smooths the flow of electricity coursing through your computer system. Applied Engineering's **Conservor** is another excellent choice in this category of product. In fact, our advice is to shop around and buy whatever you find at the lowest price.

6 National AppleWorks Users Group (NAUG)
P.O. Box 87453
Canton, MI 48187
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7 Teachers' Idea & Information Exchange
P.O. Box 6229
Lincoln, NE 68506
(402) 483-6987
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Teachers from all 50 states and Canada have already discovered the Teachers' Idea & Information Exchange (TI&IE), a rich resource for educators who are also AppleWorks aficionados, and those who would like to be. TI&IE's motto should be "share and share alike," because members themselves contribute most of the templates and lessons that TI&IE compiles and distributes. A yearly membership brings you six double-sided disks stuffed with AppleWorks files, but you can extend your subscription for free by contributing files of your own.

8

Slide-On
Nite Owl Productions
5734 Lamar Avenue
Mission, KS 66202
(913) 362-9898
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Slide-On replacement battery

tions that accompany the product. Install a Slide-On and your GS clock will tick uninterruptedly for years.

9

Security System IIgs
Kensington Microware Ltd.
251 Park Avenue South
New York, NY 10010
(800) 535-4242
(212) 475-5200
\$49.95

Forewarned is forearmed, and one way to protect your computer investment is to physically restrain your GS and its peripherals on your desktop. Kensington's security system comes with custom clips

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10

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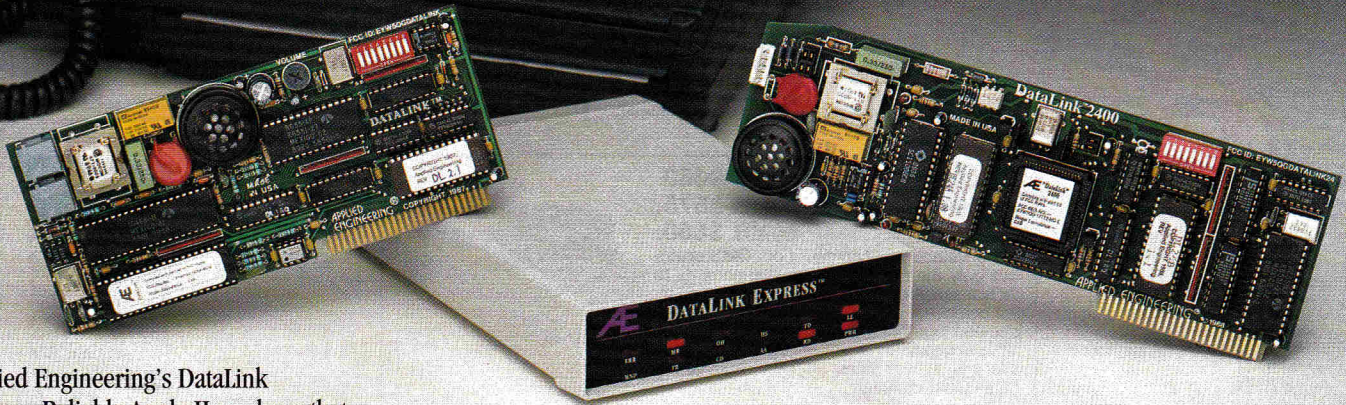
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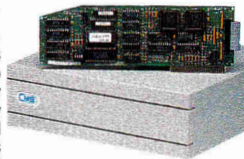
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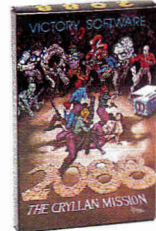
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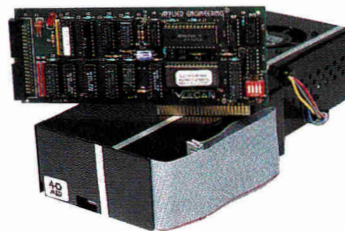
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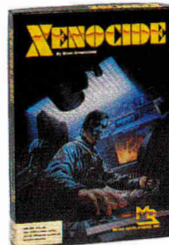


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Connecting in *The* *'90s*

When it comes to networking and file sharing, the Apple II and the Macintosh were made for each other.

By GREGG KEIZER

Donald and Ivana Trump, Mike Tyson and Robin Givens, Apple IIs and Macs. Some personalities were just never meant to mix, right?

Maybe that's true for gossip-column celebrities, but not for computers. If you still think that the Apple II and the Macintosh have to live in separate-but-equal worlds, you're stuck in the past. Apple's two systems can co-exist — peacefully — in the same classroom, the same office, even the same house, and combine to bring even more power to your desktop.

Why bother? Jane Lee, Apple Computer's Apple II product marketing manager, has a quick answer: "Networking is very important to the future of the Apple II line. The Apple II is a strong stand-alone machine, but it can do a lot more when it's networked" — such as sharing expensive peripherals like laser printers, scanners, and CD-ROM players, or sharing AppleWorks information with a Macintosh running software like MacWrite II or Microsoft Works. The Macintosh, as Apple points out, is the future of the II. Connecting to Macs makes IIs more efficient, more effective tools — and will well into the 1990s.

An associate of Lee's, Tim Golden, product manager for

classroom networking, pitches in: "Look at the number of Apple IIs. We want to be able to provide the most we can with the existing equipment. We want to provide additional benefits. After all, nothing in education is ever obsolete." In other words, you can keep getting a big bang out of the bucks you've already spent.

When you talk about computer connections, most people picture a *network* — a spaghetti-like tangle of wires and cables running from one computer to another. **AppleTalk**, Apple's own set of network specifications, can link Apples and Macs, as well as other computers and peripherals, in a way that boosts the productivity of the machines at the lower end of the power scale. In effect, an AppleTalk network — complete with cabling, a file server (a computer/software combination that lets users share files and programs on a hard disk), and multiple workstations — can turn an Apple II into an extension of a Macintosh.

But although a network is a major option, it's not the only one. Jane Lee suggests you first decide what you're trying to accomplish by connecting Apples and Macs. "That defines your needs," she explains, and lets you come up with the right connectivity answer. Let's take that approach here as we explore three ways you can partner ☛



Robert Mapplethorpe

Apple IIs and Macs. Not everyone needs a massive network — some people get by with simple solutions.

SHARE AND SHARE ALIKE

Setting up a full-fledged Apple II/Macintosh network isn't for the technologically faint at heart. But if you start small — easy to do with Apple's modular approach to network building — you'll be on safe ground.

An AppleTalk network makes sense if you want to share files on a large scale, or run multi-user software. Consider this setting: A school's writing lab, equipped with six Apple IIs, has outgrown its small room. Another classroom is set up down the hall with two Mac Plus and three GS computers. Each room has an ImageWriter II printer. How can students in both rooms work on the school newspaper simultaneously?

Here, an AppleTalk network will make file transfer between machines simple, and will even let students working within different applications contribute to the same project:

1. Plan the network. Before you lay a foot of cable or spend a dime on hardware, decide how you want to organize the network. Map its layout, or *topology*; specify components such as location of the file server, place-

ment of computers, and where cabling will run. Because we're creating a simple AppleTalk network here, we'll use a *bus* (also called *daisychain*) configuration (**Figure 1**): all nodes connected in a line. (Other configurations include *ring* formation, in which workstations connect to each other in a circle, and *star* topology, in which each workstation connects to the central file server via its own cable.) Although AppleTalk has limitations, notably number of nodes and length of cabling, neither factor will come into play in this short-range network.

2. Set up the file server and install AppleShare. That's the Macintosh software, running on a dedicated file server, that establishes, runs, and manages the network. AppleShare makes it easy to create both private and public folders for file storage and allows multiple launching of network-compatible programs, such as **AppleWorks Multi-User** (Claris Corporation, 5201 Patrick Henry Drive, Santa Clara, CA 95052-8168, 408-727-8227). Our network needs a Mac SE with a 20 megabyte hard disk as a dedicated file server — the big-ticket item on the network shopping list. If the network had more than 20 nodes, we'd probably move up to a faster Mac SE/30. One copy of AppleShare is also on the list. For maximum data-handling speed, you might

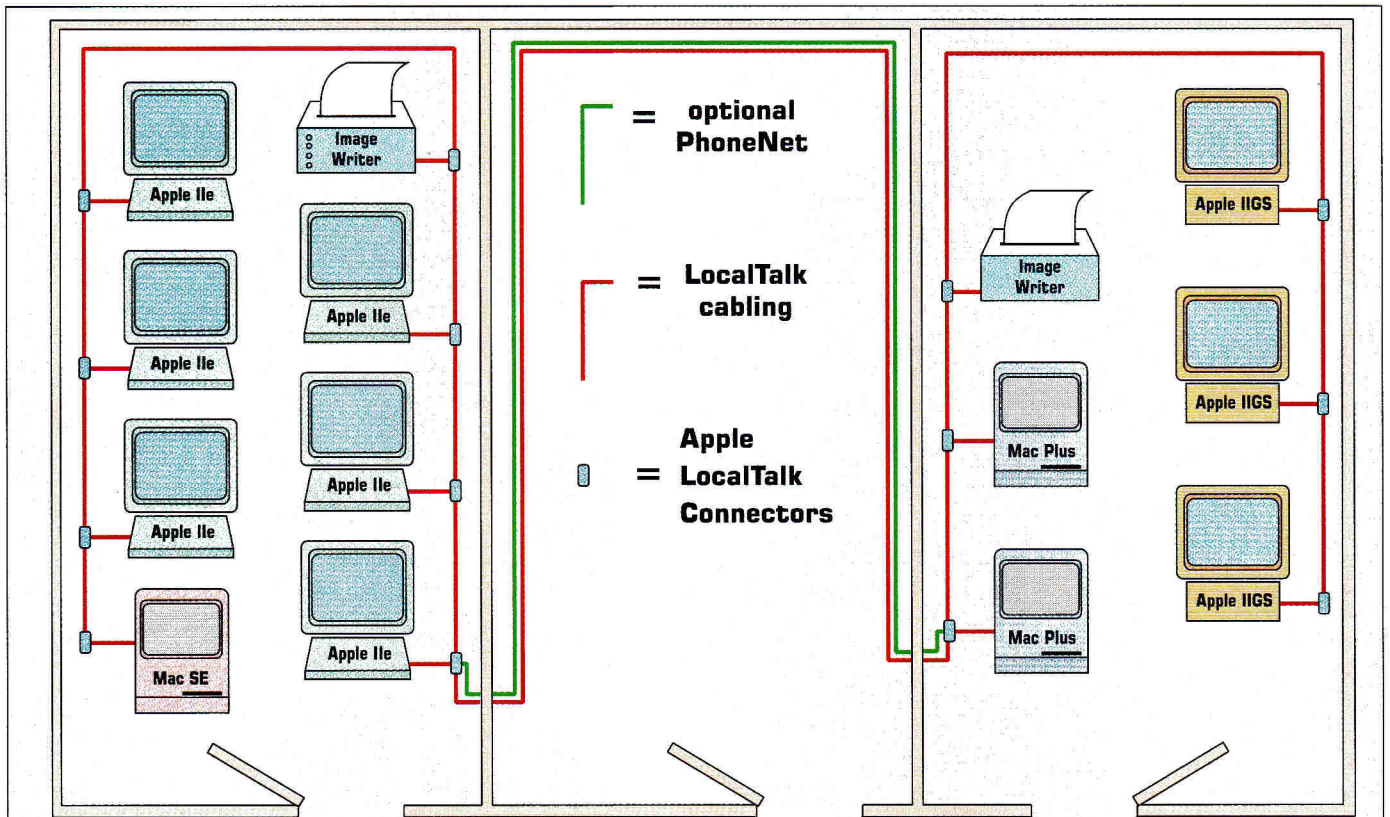


Figure 1. Sample AppleTalk network — bus configuration.

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| 6 Apple II Workstation Cards..... | \$249 each | | \$1494 | total |
| 14 LocalTalk Connector Kits | \$75 each | | \$1050 | total |
| 1 LocalTalk Cable Locking Kit (25 meters) | \$125 | | \$125 | total |
| 1 AppleShare File Server (software) | \$799 | | \$799 | total |
| | | | \$6437 | |

also consider an **Excelerator** unit from JDL Technologies (3531 Nevada Avenue North, Suite 200, New Hope, MN 55437, 800-JDL-3969). It's a device that connects via **Ethernet** cabling (Xerox Corporation, 800 Long Ridge Road, Stamford, CT 06904, 203-968-3000) to your file server, which must have an EtherTalk card installed. Think of the Excelerator as an extension of your file server, caching and routing data at top speed.

3. Install Apple II Workstation Cards. Every Apple IIe must have a Workstation Card before it can connect to the network. Because the GS has a built-in AppleTalk connector, we'll need only six Workstation Cards.

4. Hook up the nodes to LocalTalk connectors. Each computer or printer (and the file server, of course) must be linked to the network. It's simple: Just plug a LocalTalk cable extender into each IIe's Workstation Card or the LocalTalk port at the back of each GS and Mac. We'll need 14 LocalTalk Connector Kits, one for each of the 12 computers and one for each of the two printers in our network.

5. Lay the cable. In this case, putting down network wiring is relatively simple. Each AppleTalk Connector kit comes with about six feet of cable, so we can use that to run from one node to the next. Linking the two rooms is a bit more difficult. Another 75 feet of cable should do it; we can run it up through the ceiling in the first room, then across to the second room. Or we could connect the two rooms with **PhoneNet**, a third-party network system from Farralon Computing (2000 Powell Street, Emeryville, CA 94608, 415-596-9100) that uses existing phone lines, if both rooms are already telephone wired (\$75 per connector box). You can create a longer network with PhoneNet — something to keep in mind if you're linking machines buildingwide.

6. Test, test, test. Before you let anyone use the network, test the components. Troubleshooting is easier if you test each node before connecting the next in line.

That way, if there's a problem, you've immediately got it localized and pinned down.

With the network up and running, your Apple IIs and Macs can begin working together. Kids writing with AppleWorks on an Apple IIe or GS save their word-processing files to the server. Someone else working on a Mac Plus with MacWrite II, a word processor that can

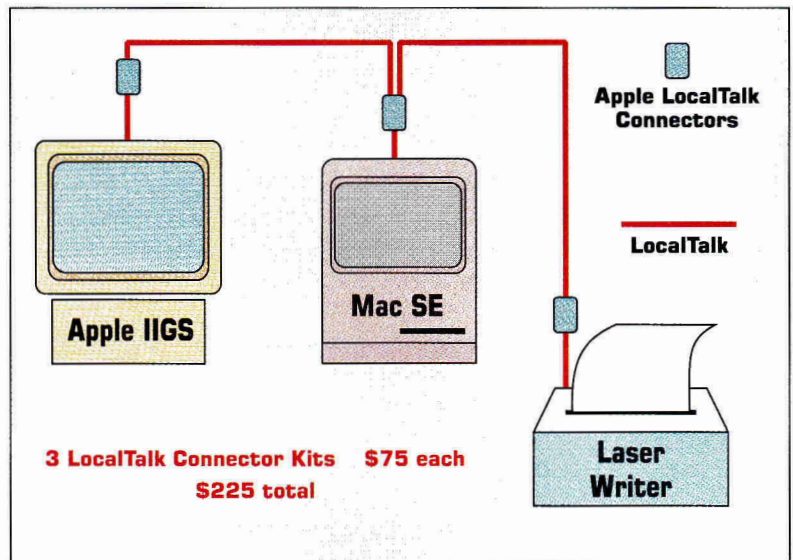


Figure 2. LocalTalk cabling setup for sharing a peripheral.

translate and open AppleWorks files, edits the work and saves it to the server as MacWrite files. Using a desktop-publishing program such as Quark XPress on the other Mac, yet another student pulls in copy from the MacWrite files stored on the server to assemble and lay out the newspaper. The result? A Macintosh-produced newspaper written by students using AppleWorks on Apple IIs: shared power in action.

LOCAL CONNECTIONS

Not every situation demands a network — some solutions are much simpler. If your goal in an Apple ⇨

Hooked on Macs: A Glossary of Networking Terms

AppleShare. Macintosh software that lets users access files and applications on the file server's hard-disk drive. Manages and administers the AppleTalk network.

AppleTalk. Apple's network specifications. Sometimes used interchangeably with **LocalTalk**.

E-mail. Messages (and sometimes files) sent electronically over a network. Requires special software on an AppleTalk network.

File server. A computer with a hard-disk drive where shared files and applications are stored.

LocalTalk. Apple's cabling system.

Network. A collection of computers and peripherals (commonly printers, scanners, and CD-ROM drives) linked by cable or wire.

Node. Any computer, printer, file server, or other peripheral on a network.

Topology. A network's layout. Most simple AppleTalk networks are in bus form.

Workstation. A computer on a network that can run software from the file server's hard-disk drive. In an AppleTalk environment, the file server can't be used for any other task while the network is running.

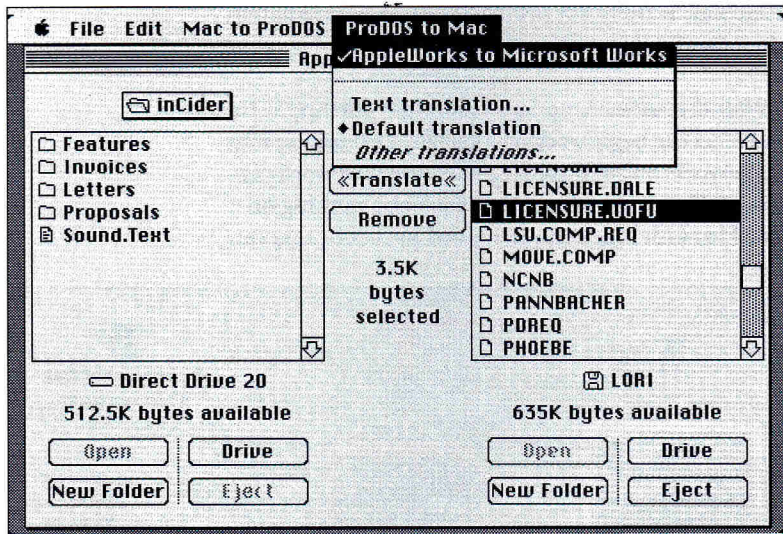


Figure 3. Apple File Exchange translation screen, WKSTOW installed.

II/Macintosh partnership is to share an expensive peripheral, such as a printer, you don't need a full-blown network. Instead, you can connect your computers and printer with LocalTalk cabling.

Imagine this scene: A small insurance firm has been using a GS running GraphicWriter III to produce its client newsletters and custom forms. Because it wants to create quality documents, it's also bought a LaserWriter NT.

Two months later, the company adds a Macintosh SE to the office — spreadsheet needs have exploded and Microsoft's Excel is the program of choice. How can both computers share one printer?

You don't need a network, with the accompanying expense of a dedicated Macintosh file server, to share a printer. Instead, a LocalTalk link among the three

machines — the GS, the Mac SE, and the LaserWriter — will do just fine. It might go like this:

1. Hook up each node to a LocalTalk connector. There's little planning required — all you have to do is put the computers and printers where you want them, then plug in a LocalTalk cable extender into the LocalTalk port on each machine (Figure 2). We'll use three LocalTalk Connector Kits.

2. Run the cable. It might be tough to keep it out of the way, but if you run it along the base of the wall, you'll be fine. If the machines are close together, you can use the cable segments included with the kits. (As in any LocalTalk configuration, make sure that the end of the cable is properly terminated.) No additional cost then.

3. Print. On the GS, go to the *Control Panel*; make sure slot 7 is set to *AppleTalk*; click on the LaserWriter icon. On the Mac SE, simply select the *LaserWriter* printer from the *Chooser* desk accessory and make AppleTalk active. You're ready to print from either machine.

Now you can produce typeset-quality documents with either computer, cutting costs and improving the company's image at the same time. Adding computers is simply a matter of plugging in another connector in the LocalTalk line. This is a good solution at home, too, where you may want to share an ImageWriter between a GS and a Macintosh without having to connect and disconnect cables whenever you want to print.

DOUBLE-DUTY DRIVES

Your printer isn't the only thing that can do double duty with IIs and Macs: It's even possible to connect ⇨

Wire Head of the Class

Mike Smith is a man with a mission. He's the computer teacher/coordinator at Meigs Magnet School in Memphis, Tennessee. And he's a man who burns white hot when he talks about connecting Apple and Macintosh computers. That's because Smith has hard-wired Meigs, a middle school with 575 fifth- through eighth-grade students. Three file servers run a three-zone AppleTalk network tying together 160 Apple IIs and Macs, a MicroTek scanner, and two LaserWriter printers. Language-arts labs abound, each with eight to 15 computers. There's a computer in every classroom for student use; every teacher has a computer on his or her desk; the office prints report cards on a LaserWriter; E-mail is

available to Mac-equipped faculty; there's even an after-hours bulletin board where home-bound kids can post assignments from loaned computers.

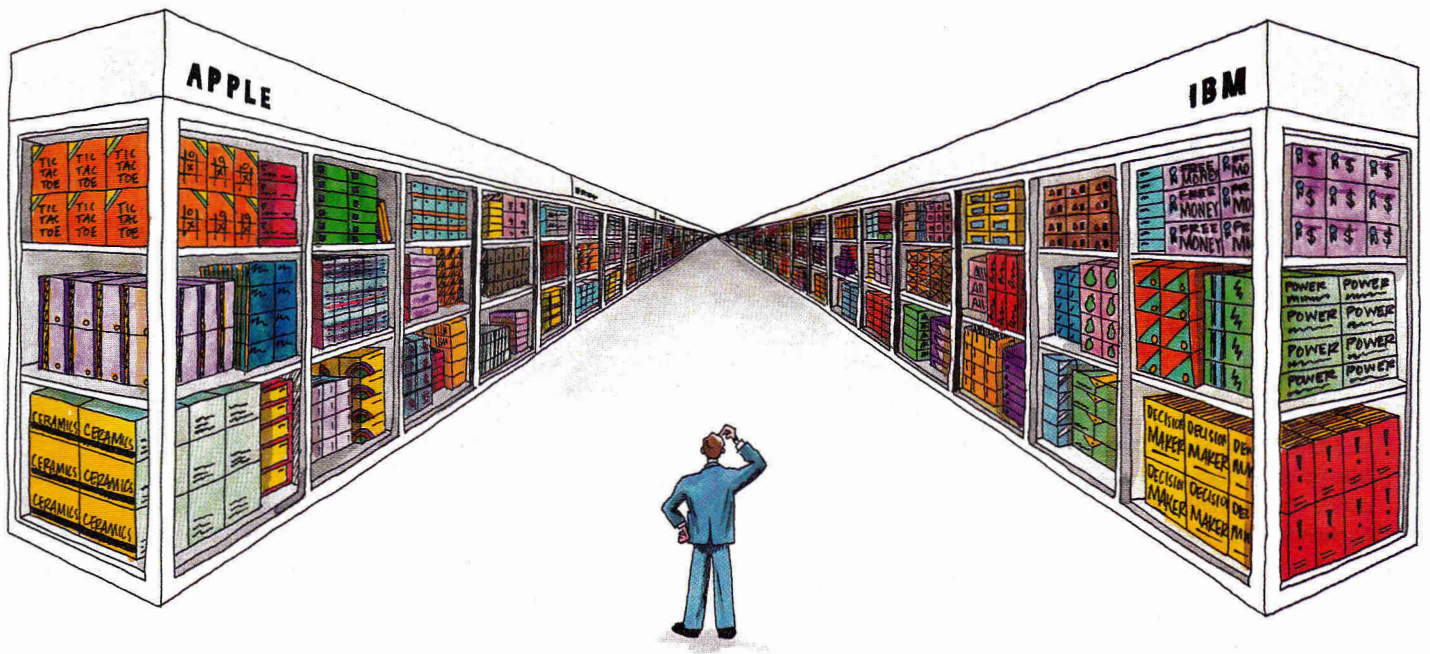
As Smith sees it, Meigs is the future of education. "If we want to stay the top technology country, we're going to have to change the way we educate children," Smith explains. "We've been talking about individualized instruction for years. Now we have the technology to give kids individual instruction."

And Smith sees Meigs as an example of what computers, networked and working together, can do in education. "The Mac and the IIs are the perfect marriage," he says. "The GS will run 95 percent of the IIe software, and on the Mac

side, all the programs work the same way. I can concentrate on teaching the applications, not what function key to press."

Smith has hard evidence of hands-on network use that's made a difference. Whether it's kids posting AppleWorks documents to a file server for a teacher's perusal from a Mac running MacWrite II, or students scanning pictures into a Mac, then translating them with SuperConvert for painting on a GS with Paintworks Gold, Meigs and Mike Smith know the power of connectivity.

"We've got to educate kids to be ready for the jobs 10 to 20 years in the future," Smith adds. He's right — and he's helped forge the right tool to make it happen. — G.K.

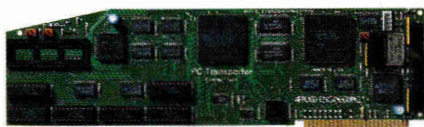


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Two Screens Are Better Than One

When Pam Michaelson talks, more than 50 countries listen. That's because her 36-year-old "International New Product Newsletter" keeps readers across the globe informed about interesting new developments ready for licensing. From her home office, where she's combined an Apple IIe and a Macintosh SE in a desktop-publishing venture, Michaelson keeps her fingers on the pulse of world product licensing.

There are no wires or cables stretched between the veteran IIe and the more recently acquired Macintosh. Instead, Michaelson depends on sneakernet and Apple File Exchange to let her work with both computers. She writes at the

Apple IIe with AppleWorks and depends heavily on Beagle Bros' UltraMacros — but she lays out and produces her newsletter on the Macintosh with PageMaker.

Why the double dipping? "I'm so used to the Apple II that I get more out of it," Michaelson says. "I find it easier to write on the II; I do all my bookkeeping and invoicing on the II. I just haven't been able to find the power on the Mac without spending a fortune."

Why the Mac then? "I think the Mac is just super for desktop publishing," Michaelson explains. "If you have two different machines, it makes sense to use both to the best of their abilities."

And that's just what she does.

Nothing beats AppleWorks tied to UltraMacros for sheer writing speed, she says, so she continues to punch out text files to pop into the Macintosh. From there, Apple File Exchange takes over, translating the AppleWorks text files to Macintosh format. Then she works in PageMaker, pulling those text files into her layout. Print — and she's done.

"It's amazing what a home office can do with an Apple II," Michaelson adds. "There's an awful lot of home business that wants to get into desktop publishing. The Apple II can do so many things so well."

Especially when it's partnered with a Macintosh.

— G.K.

different computers to the same storage device. A removable-cartridge hard-disk drive, though more expensive than the typical fixed hard disk, is a clear winner when you've got more than one machine on the desktop. That's because the hard disk comes packed in a protective shell, or cartridge, which you can remove and replace easily.

One example is Tulin's 44-megabyte **TLT44GSH** (\$785; 2156H O'Toole Avenue, San Jose, CA 95131, 408-432-9025). Set up the drive within reach of both a GS and a Macintosh, for instance, and connect cables between the SCSI port of each computer and the back of the drive. (The TLT44GSH package includes Apple's **High-Speed SCSI Card**, which you insert into one of the GS' empty slots.) Format one cartridge as a Macintosh volume, another as a GS/OS volume. (Each cartridge, essentially a 44-megabyte hard disk, costs only \$89.) When you want to use the GS, just slap its hard-disk cartridge into the drive and you're off. Switch cartridges when you want to use the Mac. You can't use the drive with both computers at the same time, but the benefits of sharing space are clear: You get more disk space for your money with one removable drive and separate cartridges than if you bought separate drives for each computer.

FILE SWAPPING

"Sneakernet" is the low-tech answer to the file-sharing question — a time-honored way to swap between different computers inexpensively: You save a file to a floppy disk, get up from your desk, and walk to the other computer. Stick the disk in the drive and you've just transferred a file.

That's fine when both computers use the same operating system. But how can it work when the computers are an Apple IIe running AppleWorks and a Macintosh running Microsoft Works, say?

One answer is **Apple File Exchange**, a utility that's included with every new Macintosh. It's the perfect solution to II/Mac partner problems when all you need is the occasional file transfer between machines. It gets the job done, and it doesn't cost you a dime.

Let's say you've got a Macintosh at work or at school, and a GS at home — a network is clearly out of the question. Instead, use Apple File Exchange to translate text files from one format to another, quickly and easily. Here's how it works:

“Apple's two systems can co-exist peacefully — and combine to bring even more power to your desktop.”

1. Work at home. Write your proposals, letters, and reports on your GS running AppleWorks 3.0. Save your work as ASCII files to a 3.5-inch disk, then take it with you to work or to school.

2. Boot Apple File Exchange on the Mac. Put your ProDOS disk into the Mac drive, and you'll see a screen similar to **Figure 3**. Select one or more files, then click on the *Translate* button. In a matter of seconds, the program converts the file and places it on the Mac's hard disk (or on a Mac-formatted 3.5-inch disk if you prefer).

3. Launch your Mac application and open the text file. Now you can work with your words, format them, even make a hardcopy on the Mac's printer.

Apple File Exchange works best with word-processing text files, although you can translate ASCII-format database or spreadsheet files to the Mac as well. ☞



“Elegant, innovative, flexible and in all aspects the leader of the field.” — Incider Magazine

Accolades continue to pour in. Vulcan hard drives were recently awarded FIVE stars by Incider Magazine, a rating reserved for products judged “excellent and remarkable”. Incider went on to say, *“The Vulcan sets a new performance standard for hard drives . . . Applied Engineering has done it again.”*

Hard drives tremendously boost your productivity. The Apple II’s operating system, hardware and memory-gobbling software take on a new agility and finesse with the addition of a hard drive.

Speed? The IIGS Buyer’s Guide put it this way, *“Everything this drive does is fast. TimeOut modules, installed in AppleWorks and configured as disk-based, came up as fast as if they were memory-based. Graphics load almost immediately. Even that damnable lie, ‘One Moment Please’ suddenly delivers its promise. We recommend the Vulcan wholeheartedly.”*

And Incider said, *“The Vulcan walks all over the competition. Twelve seconds to the GS Finder; 10 seconds to AppleWorks GS. Sounds good doesn’t it? It is. That sizzling speed is achieved thanks to a high-quality internal tracking unit.”* Vulcan incorporates an ultra-fast 16-bit data bus controller, not the less expensive 8-bit others use.

Features? As Nibble Magazine said, *“AE drives support more operating systems and have more features in the supporting software.”* And Incider added, *“Applied Engineering has put together the most complete set of utilities to date for an internal hard drive that leads the market.”* And since Vulcan’s made by Applied Engineering, you’re assured of full compatibility with current and future AE products.

Power? Vulcan’s high-efficiency power supply is rated in excess of 70 watts, *nearly double* the capacity of other hard drives. The power supply components are heatsinked to the aluminum case for cool operation and long life. To harness all that power, Vulcan incorporates an ultra-quiet, flush mounted cooling fan, keeping the temperature inside the Vulcan, and inside your Apple lower than before.

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(access four simultaneously). Choose slot 1, 2, 4, 5, 6 or 7. Even pseudo-slot to slot 7 from elsewhere. Vulcan works on 110/220 VAC, even European 115/230 VAC at 50-60 Hz.

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That's pretty cumbersome, though. One handy utility is a program called **WKSTOW**, an Apple File Exchange translator found on line on CompuServe's Macintosh forum. It converts word-processing, database, and spreadsheet documents from AppleWorks to Microsoft Works on the Mac (that is, only in the II-to-Mac direction), without your saving them first as ASCII. Database records appear automatically with proper fields; word-processing documents even retain their formatting (**Figure 3**).

Even with its limitations, Apple File Exchange is an invaluable utility for anyone who uses both IIs and Macs. It's the sneaker alternative to high-priced networking.

CONNECTING TO THE FUTURE

Today, there are all kinds of ways for Apples and Macs to enter into a productive partnership. Whether it's high-end AppleShare networks, simple LocalTalk lines, or sneaker sharing, you've got your choice of II/Macintosh connections.

Tomorrow's connectivity picture is even brighter. The Macintosh LC promises to put a new spin on II/Mac cooperation, for one thing: Thanks to an optional add-in card, the LC will offer Apple II software emulation: It will be able to run 8-bit Apple II software without modification. (See "Meet the Mac LC: What the GS Should Have Been?" in this issue, p. 40, for details.)

With almost seamless computer integration like that, sharing becomes transparent.

Apple's GS system-software development teams are also working on enhancements that will make connectivity easier between different operating systems. System 5.0 was the first attempt to merge workstation software with system software, and new development continues in that direction.

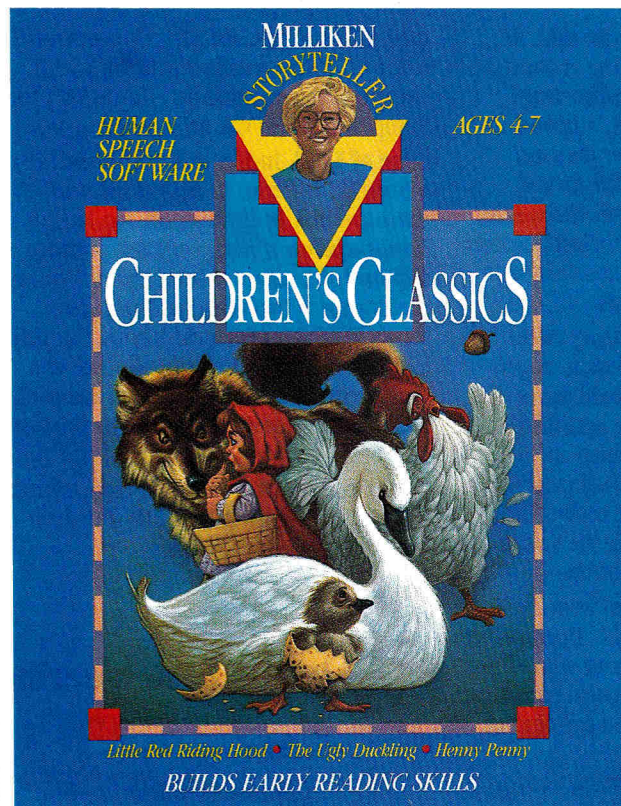
"Those types of enhancements to system software that make the [GS] experience more Mac-like will continue," says Apple's Tim Golden of the company's plans for its 16-bit II. "Look for various utilities to bridge the gap between the machines."

Other research divisions of Apple are working on networking solutions that forgo the dedicated file server, the most expensive element of a network. When every hard disk on the network is available to every user, when Macs can help run the network and function simultaneously as workstations, then more Apple II users will find AppleTalk networks affordable.

Apple IIs and Macs can live and work together, productively and peaceably, right now. A year from now, Apple IIs and Macs may be even closer — by then, even Madonna and Sean Penn may be back together. □

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AppleIigs and Macintosh

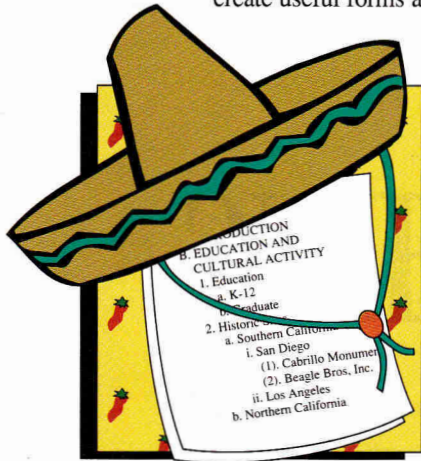
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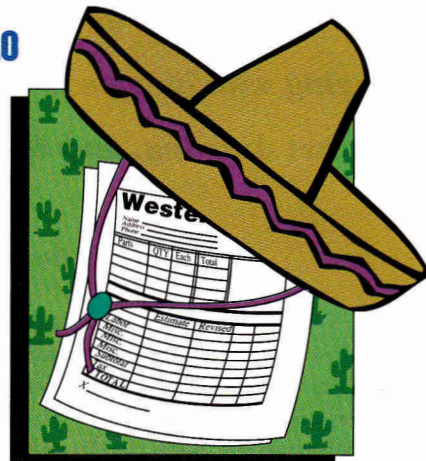
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PLAY'S THE THING

Take some risks, explore and experiment — computers make playing with images fun, creative, and satisfying. Pick a tool, start drawing, and open yourself up to the artist within.

By DEBORAH GREH, Ed.D.

SOMEWHERE ON THE WAY TO adulthood many of us lose the ability to play. All the things we do in adult life have to have some meaning or purpose — even our leisure activities. Fooling around with visual ideas and images, for instance, is something most adults just won't do. "I have no talent," "It doesn't look like anything," and of course the infamous "I can't draw a straight line with a ruler" are phrases we've all heard a thousand times.

Children don't have that problem. Give them a piece of paper and some crayons and they're lost in a world of images that don't have to look exactly like "the real thing." Unencumbered by practicality and the need to "produce" something tangible, children are free to play and to create.

But as children approach adulthood (somewhere in their early teens), they begin to think that the only true artistic image is a perfect reproduction of something. Forget abstraction or self-expression — if it doesn't look like something, it must not be any good.

But art isn't just a collection of images that look like something. We adults have lots to learn from children, because most good ideas are the products of playful thinking. Doodles and scribbles have

become the basis of sound scientific theories and solutions as well as great artworks. What does that have to do with computers? Everything!

In a word, computers restore playfulness to art — and not only to art, but to many other areas of creativity, as well. Risk taking, experimentation, exploration, and play are essential elements of all creative processes. Take writing, for example. Computers enhance writing skills because they make writing easier. You don't have to start at the beginning and work to the end — you can start in the middle and work out. You can let the ideas come to you as you write. You don't have to retype a whole page for one error. You're not *afraid*.

Art's not so different. For whatever reason, some of us feel comfortable doodling and drawing, and some of us are terrified. Putting an idea on paper (whether a drawing or a paragraph) gives substance to thought. Initial ideas and images aren't finished, aren't polished; once they're on paper, they're open to criticism.

But computer images don't seem to have the feeling of permanence that paper, pencil, and brush do. Computers encourage you to play with images — like sketch pads, they provide a place where you can

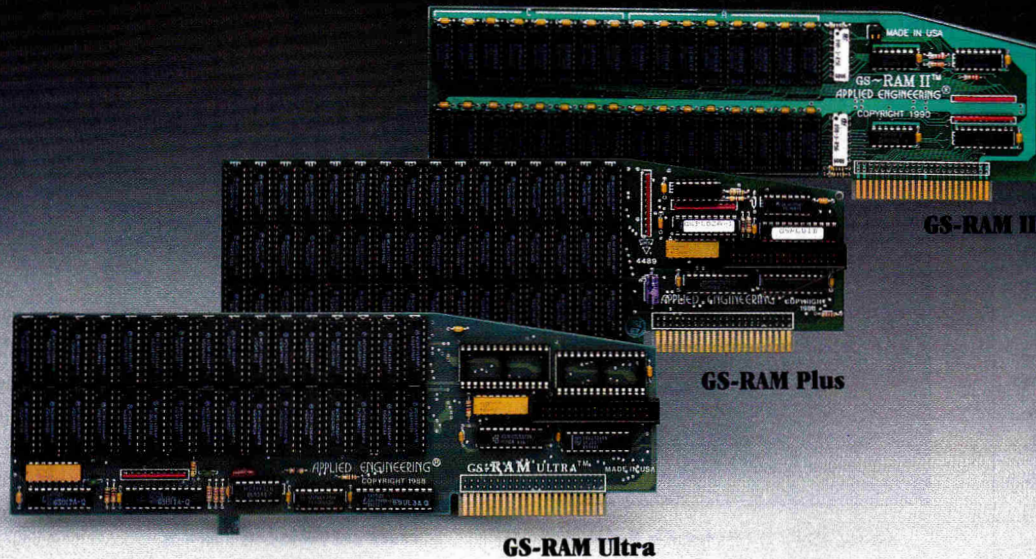
test and explore ideas. We rarely expect what we draw on the computer screen to be finished works in their own right — we see these images as "experiments."

Most people avoid drawing or experimenting with what we call art because they assume that because they can't "draw" they're not artists. When using computers, most people come to an understanding that there's much more to artistic talent than the ability to render objects with realism; traditional representation is only one aspect of creativity and artistic skill. You'll learn quickly that careful placement of images is important, that a wide variety of media define artistic talent.

We tend to think that what we do must be perfect, and we think the control should come naturally. But the computer is a "new" tool, and most people don't mind spending time learning to control the machine's input devices. They see the computer as an exciting challenge — they enjoy playing with images.

The hardest part of any endeavor is "where do I start?" My answer sounds like the Nike commercial: "Just do it!" As in writing with a word processor, sometimes the place I start becomes the middle, and my ending becomes the beginning. That's

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the hard part about “creating” — sometimes you just have to let it happen. Here are a few ideas to help you get going.

If you’ve never used a paint program, start by selecting one of the tools. The box tool is a good place to begin: Just place some rectangles on screen. And where do you find these tools? In most paint programs you’ll see a pictorial menu at the bottom, top, or side of the screen. In Broderbund’s Dazzle Draw, for instance, they’re part of the pull-down menu under *Tools*. To select a tool, simply move your cursor or pointer to the tool you want to work with and click the

mouse. Position the cursor somewhere on screen. While holding down the mouse button, drag it to an opposite corner. When you’re satisfied with the size of the box, release the mouse button.

Place a dozen or so boxes and then sit back — remember, you’re just playing for now, just learning how to use the tools. Look at your images: Do any overlap? Are they all the same size? Are they all horizontal? Are some of them vertical?

What next? Clear the screen and start all over. Overlap the boxes and vary their sizes. When you feel comfortable using the tool, select a different brush shape or try a thicker line to draw the rectangles. (These selections are also visible on screen or under a pull-down menu.) Continue along these lines with any of the tools available to you. Now try again using circles or ovals, for example.

A few words of advice will help you get started with a minimum of frustration:

- * Begin working near the middle of the screen and work out instead of near the edges working in.

- * Stick to black-and-white at first; save color experiments for later.

- * Be patient. Working with the mouse (or whatever your input device) can be awkward at first; some people get very discouraged when they first use the freehand

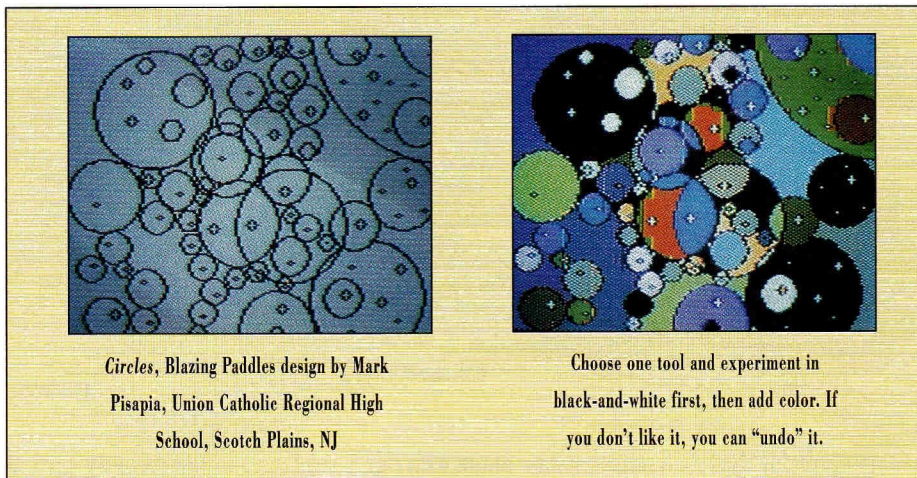
drawing tool or paintbrush. Hang in there.

- * Most important, keep it simple.

- * Don’t underestimate the power of “undo.” In most paint programs the *Undo* command is available under the *Edit* menu; in some it’s also available via the escape key. *Undo* is a powerful command

a while and come back to it later. If you remember to save in stages, experimentation is “risk free” — you can explore a variety of alternatives before declaring a work “finished.”

With commands that let you draw “straight lines without a ruler,” and dozens of programs with graphics and clip-art libraries, the world of computers may open the world of art to those of you who assumed you had no artistic talent. Art’s not easy, of course, even with computers. Artistic talent requires nurturing and practice, not only to learn skills and techniques, but to



Circles, Blazing Paddles design by Mark Pisapia, Union Catholic Regional High School, Scotch Plains, NJ

Choose one tool and experiment in black-and-white first, then add color. If you don't like it, you can "undo" it.

that makes it possible to alter images quickly. Playing with visual relationships is easy because if some part of an image is unsuccessful, whether it’s a simple line or a major color fill, you can “undo” it. You can combine and recombine shapes, lines, colors, and forms in a variety of ways. Experiment with your tools and images and try different lines, colors, and shapes. If you don’t like it, “undo it.”

How many shapes should you draw? As many as you want — as many as you can without getting bored! Do you like any of the images you’ve created? You don’t have to know why you like them, but if any appeal to you, save them. If you decide later that you don’t like them, you can always delete them.

Save your images in various stages of completion. Because you can save an initial image and recall it to the screen an infinite number of times, you can experiment with a number of options and combinations without starting from scratch each time.

You can test elements such as line thickness, size and spacing of text, and effectiveness of color without “ruining” what you’ve done thus far. If a new idea comes to mind you can try it out without endangering the original image or changing it permanently. Or you may just want to leave an idea for

develop your powers of observation.

How do you start? Do it. Draw, draw, and draw some more. Look at images in museums, books, and computer games and see how they were created — observe shapes, colors, shadows, edges, perspective. Do you see how they might have been created? What tools might have been used?

Mastering the medium doesn’t guarantee you’ll be an “artist”: Someone can teach you to draw, but the vision must come from within.

Still, there’s no way to avoid learning to control the medium you’re working in, and that requires practice. Whether you’re drawing for fun or you’re developing an illustration for a business report, presentation, or memo, I think it’s more fun and less frustrating to work with computers. If that makes the ideas flow more easily, as well, then the easier it is to open yourself up to the artist within. □

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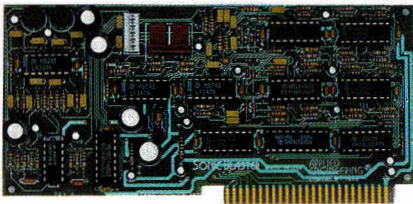


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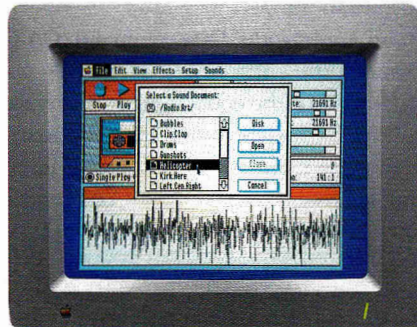
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The Sound Graph

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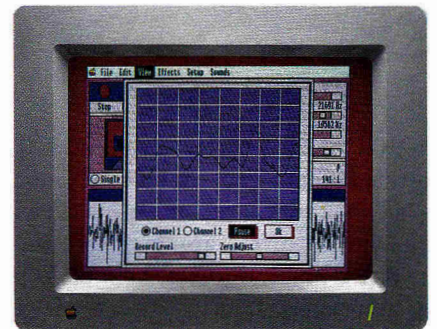
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DYNAMIC DESIGN

Desktop publishing a party invitation shows off AppleWorks' versatile formatting features and gives you a head start on your own unique creations.

By **RUTH K. WITKIN**

IF YOU'RE PLANNING A SMALL party and want a one-of-a-kind invitation — but don't want to shell out big bucks for it — you're surely going to like this month's column. **Figure 1** shows an invitation to a New Year's Eve get-together, and **Figure 2**, a birthday bash. (The final result prints on two pages, not one as you see here.) I used ordinary keyboard characters to create the eye-catching borders. The line drawings of the cherub and Betty Boop came from a cut-and-paste clip-art service. Draw your own or find them in the public domain or a clip-art catalog and paste them on as I did, or pull them in from a graphics or publishing program.

If at first you don't succeed, does it make sense to keep on trying? You bet! I experimented over and over with the design elements — keyboard characters, line drawings, horizontal and vertical spacing — until I finally got the result I wanted.

The niftiest part of each invitation is that it appears to be printed on both sides of a single sheet of paper! The secret is in the formatting and folding. You'll see for yourself in only a short while.

Start up AppleWorks and create a new word-processor file. Name it **INVITE1**. You should now see the *Review/Add/Change* screen with the cursor in line 1 column 1.

Figure 3 shows the front-cover text on the New Year's Eve invitation, with line numbers, and "blots" where you press Return. (Press Open apple-Z, OA-Z, to keep the blots visible as you work.) Each line alternates equal signs and asterisks as a border, starting and ending with the equal sign.

Using **Tables 1** and **2** as a guide, enter the border and text, paying careful attention to line numbers. (*NA* here means *not applicable* — that is, no left or right column.) The last equal sign in each line is in column 59.

Use AppleWorks' *Copy* command (OA-C) to speed the entry of identical lines. For instance, type the equal signs and asterisks in line 1, copy the line to the clipboard, then copy from the clipboard to line 2 (and later, to lines 27 and 28). You can also copy shorter lines to make longer lines and vice versa.

In lines containing border and text, type the border characters in the left column, then press the spacebar as many times as needed to start the text; type the text with one space between letters (but not before the apostrophes in lines 4 and 23) and two spaces between words, then space over and type the border in the right column. When you finish entering all border and text characters, press OA-S to store the invitation on disk.

The inside page has the same design as the front cover — only the text is different. There's no need to go through the entry process again; all you need do is copy everything you've already entered, then overtype the old text with the new, as shown in **Figure 4**.

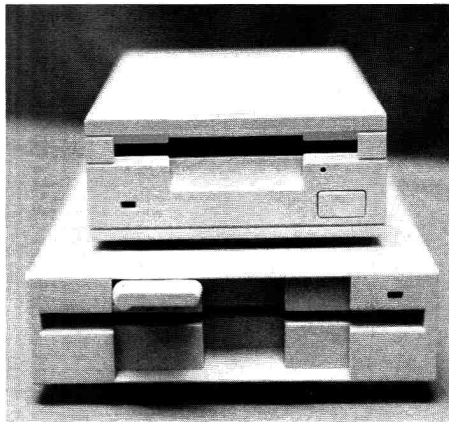
Press OA-1 to jump the cursor to line 1 column 1. Now press OA-C to start the *Copy* command, press Return, press OA-9 to highlight the text to line 28 column 60 only (make sure of this), and hit Return. With the cursor in line 29 column 1, hit Return again. Voilà! A duplicate of the front cover appears from line 29 down.

You're about to type over your old text. If you haven't already done so, press OA-E to turn on the overtype cursor (a flashing rectangle). To correct a typographical error, use the left-arrow key (not Delete) to back up the cursor. Use the down-arrow key (not Return) to move the cursor from line to line.

Now place the cursor on line 32 column 4 (atop the *I* in *IT'S THAT TIME*). Press the spacebar five times and type **COUNT-DOWN STARTS AT 9 PM**. (Leave one space between letters and two spaces between words, but not between 9 and *PM*.) Press the spacebar six times to erase the excess characters. Now move the cursor to line 35 column 21.

Type **DECEMBER 31** and move the cursor to line 39 column 24. Type **COME FOR** and move the cursor to line 41 column 23. Type **COCKTAILS** and move the cursor to line 43 column 25. Type **COOKING** and move the cursor to line 45 column 29. Type **AND** and move the cursor to line 47 column 13. Type **GREAT CONVERSATION** and move the cursor to line 51 column 9.

Press the spacebar 13 times. The cursor should now be in column 22. Type **Dick &**



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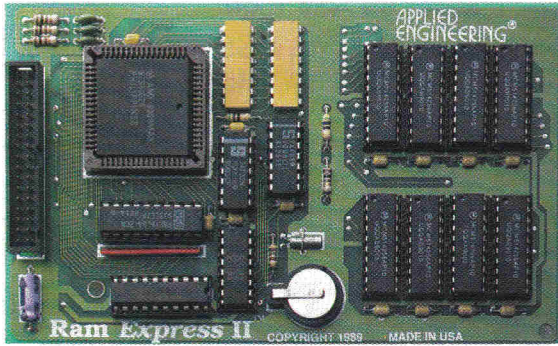
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APPLEWORKS IN ACTION



Figure 1. Invitation to a New Year's Eve celebration.

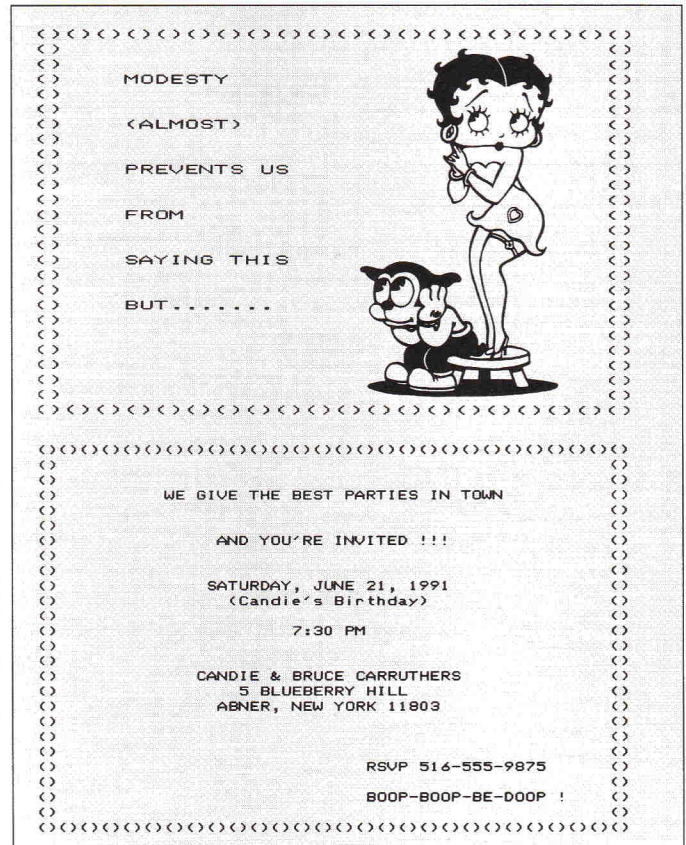


Figure 2. Invitation to a birthday party.

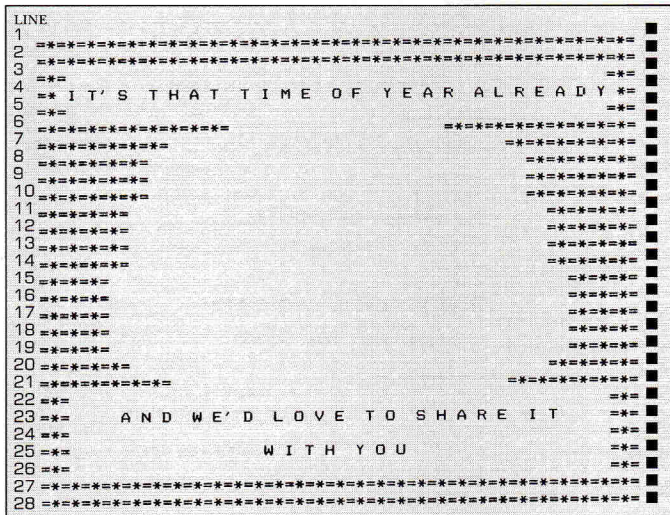


Figure 3. Cover of New Year's invitation.

| Line | Left Column Ends | Right Column Begins |
|--------------------------|------------------|---------------------|
| 1, 2, 27, 28 | NA | NA |
| 3, 5, 22, 23, 24, 25, 26 | 3 | 57 |
| 4 | 2 | 58 |
| 6 | 19 | 41 |
| 7, 21 | 13 | 47 |
| 8, 9, 10 | 11 | 49 |
| 11, 12, 13, 14, 20 | 9 | 51 |
| 15, 16, 17, 18, 19 | 7 | 53 |

Table 1. Entering border in Figure 3.

| Line | Text Starts in Column | Text |
|------|-----------------------|--------------------------------|
| 4 | 4 | IT'S THAT TIME OF YEAR ALREADY |
| 23 | 9 | AND WE'D LOVE TO SHARE IT |
| 25 | 23 | WITH YOU |

Table 2. Entering text in Figure 3.

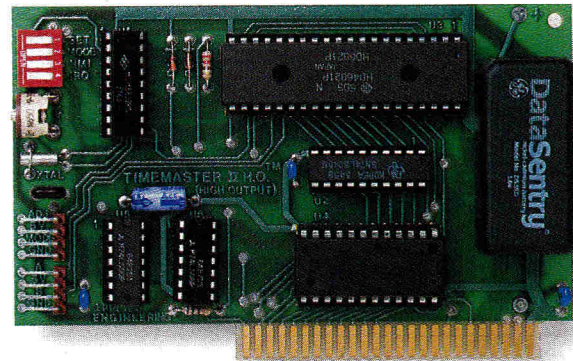
Jane Peeples (no extra spaces between letters or words), then press the spacebar 11 times to erase the excess characters. Move the cursor to line 52 column 20. Type **5 Arcadia Drive, Abner** and move the cursor to line 53 column 22. Type **RSVP 516-555-1235** and leave the cursor where it is, which should be line 53 column 39. Press OA-S to store the invitation on disk.

The New Year's invitation is now ready for formatting — setting the margins, character size, and boldface. Press OA-1 to jump the cursor to line 1 column 1. Now press OA-O to bring up the *Printer Options* screen.

Type **TM** (for *Top Margin*) and press Return. Type **6** and hit Return again. (A top margin of six inches makes each page of text start printing halfway down the page.) Now type **BM** (for *Bottom Margin*) and press Return. Type **0** (zero) and hit Return again. (This permits the text to print to the very bottom.) Next, type **LM** (*Left Margin*) and press Return. Type **.5** and hit Return again. Next, type **RM** (*Right Margin*) and press Return. Type **0** (zero) and hit Return again. And, finally, type **CI** (*Chars per Inch*) and press Return. Type **8** and hit Return again.

Press Escape to exit the *Printer Options* screen. With the cursor on line 6 column 1, press Control-B. The caret that appears tells ◊

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| Line | Text Starts in Column | Text |
|------|-----------------------|----------------------------------|
| 30 | 13 | WE GIVE THE BEST PARTIES IN TOWN |
| 33 | 18 | AND YOU'RE INVITED !!! |
| 36 | 17 | SATURDAY, JUNE 21, 1991 |
| 37 | 19 | (Candie's Birthday) |
| 39 | 25 | 7:30 PM |
| 42 | 16 | CANDIE & BRUCE CARRUTHERS |
| 43 | 20 | 5 BLUEBERRY HILL |

Table 3. Entering text in Figure 6.

parenthesis is in column 56. Move the cursor to line 28 column 37. Hold down the spacebar until the right-border characters align with the line above, then release.

Continue this way, ignoring any text in the lines, until the right border in each line aligns properly. (If you overshoot, press OA-Delete before the right column to erase an extra space.) Extend the last line as you did the first. Press OA-S to store the invitation.

Now press OA-E to switch to the overtyping cursor. Referring to the line numbers in **Figure 6**, overtype the old text with spaces or new text. **Table 3** shows where each line of text starts. Remember, to correct a typo, use the left-arrow key (not Delete) to back up the cursor, then hit the spacebar. Use the down-arrow key (not Return) to move the cursor from line to line. When you finish entering the text, press OA-S to store the invitation on disk.

The birthday-party invitation is ready for formatting. Press OA-1 to jump the cursor to line 1 column 1. Press OA-O to bring up the *Printer Options* screen. As you did with the first invitation, set a top margin of 6 inches, bottom margin of 0 inches, left margin of 0 inches, and character size at 6 characters per inch.

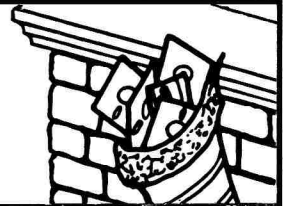
Press Escape to exit the *Printer Options* screen. With the cursor in line 5 column 1, press Control-B to print the entire invitation in boldface. To force a new page, move the cursor to line 31 column 1 and press Control-P. And, finally, with the cursor on line 32 column 1, press OA-O, and set 8 characters per inch for the inside. Now press OA-S to store everything on disk. Print this invitation, then fold it as you did the first one. As a finishing touch, cut off one inch of paper on the right side so that the left and right borders are the same distance from the edge of the paper.

When you design your own invitations, try not to get discouraged if things don't work out perfectly the first few times. Try some different approaches, too — make invitations even more attractive, for instance, by printing them on colored paper. Keep plugging away until you come up with your own unique masterpiece.

In our next column, you'll be creating a spreadsheet that helps you budget for your retirement. It includes both current and retirement income and expenses, and contains a built-in inflation-factor table. See you then. □

CONTRIBUTING EDITOR RUTH K. WITKIN IS THE AUTHOR OF THE TEMPLATE/HANDBOOK SERIES *SUCCESS WITH APPLEWORKS* (inCIDER, IDG COMMUNICATIONS/PETERBOROUGH), *THE BEST BOOK OF APPLEWORKS* (HOWARD W. SAMS), AND *PERSONAL MONEY MANAGEMENT WITH APPLEWORKS* (JOHN WILEY & SONS). WRITE TO HER AT 5 PATRICIA STREET, PLAINVIEW, NY 11803. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A REPLY.

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

WANT TO MAKE A GOOD IMPRESSION this holiday season — literally? Try creating custom reusable “rubber” stamps with your favorite desktop-publishing (DTP) program. Christmas or Hanukkah theme stamps, for instance, are perfect for designing matching gift tags and wrapping paper. And before you know it, you’ll discover all kinds of other decorations and labels you can design that will extend the usefulness of our stamp-making method throughout the year, whether at home, at school, or in the office.

Even DTP newcomers can create custom stamps easily, with virtually any page-layout or graphics program. This month we’ll describe the surprisingly simple process of creating stamps with **GraphicWriter III**, a first-rate DTP program for the Apple IIGs from Seven Hills Software (2310 Oxford Road, Tallahassee, FL 32304, 904-576-9415, \$149.95). We’ll also include specifics for creating similar stamps with **Publish It! 3**, our favorite DTP program for the Apple II family, from Timeworks (444 Lake Cook Road, Deerfield, IL 60015, 708-948-9200, \$129.95).

But no matter what program you use, designing custom stamps involves only three basic steps. First, start up your

favorite DTP or graphics software and use the program’s rulers or guides to lay out the stamp’s drawing-board area on your computer screen. Second, use the program’s text-entry capability to add a holiday message. Third, invoke the program’s graphics-importing feature and incorporate clip art or an original illustration. That’s it!

Transferring your custom layout to the actual stamp couldn’t be easier, thanks to the **Sanford Impresto Custom Stamp Kit**. With a pre-inked stamp (black, blue, or red), ten stencils, and easy instructions, it’s priced at \$12.95 retail, although you may be able to buy it at a discount office-supply store for just \$7.99. It’s a bargain either way: Each stamp you create costs only about a dollar and lasts through hundreds of impressions. Extra stencils are available at less than 50 cents apiece.

Try adapting the large blue mimeograph stencils that some schools and organizations use for duplicating exams and bulletins. Cut the stencils to size (about three inches square) with scissors or a paper cutter first. Sanford stencils not only look more or less like mimeo stencils, they work similarly. Instructions accompanying each stamp kit indicate that you can type (or write) your message. As a typewriter key or your ballpoint strikes the stencil, it “cuts” its pattern into the blue stencil material.

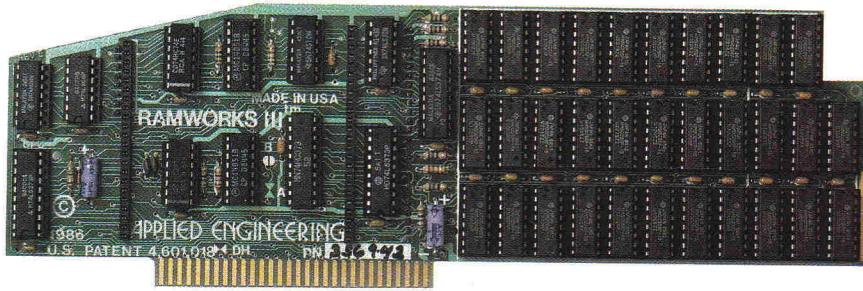
You can also insert a stencil into your ImageWriter II printer and let the print-head’s pins cut the stencil. Because the stencil itself is so small, though, you need to use a regular piece of friction-feed paper (8.5 by 11 inches) as a carrier. Carefully line up the top and left-hand edges of the stencil with the top and left-hand edges of the carrier sheet. Use three pieces of cellophane tape to hold the stencil in place on the carrier sheet: Fold one piece of tape over the left-hand edge and another over the top; use the third piece to secure the right-hand side of the stencil to the carrier sheet. Be careful not to use too much tape or to cover the stencil’s printing region. Before cutting a stencil, remove the printer ribbon.

After a stencil’s “cut,” separate it from the carrier paper by removing the cellophane tape carefully. Place the stencil onto the pre-inked stamp pad and lock the stencil into place with the pad’s plastic retaining frame. When you press a custom-designed stamp lightly onto paper (or adhesive-backed label stock), ink “oozes” through the pores that were created by the printhead pins’ hammering action. Blue stencil-correction fluid, such as **Sure-Rite** brand (available in office-supply stores), corrects minor flaws effectively. A minuscule amount of fluid can repair unwanted pin holes or inadvertent scratches.

DECK THE HALLS

Using our stamp-making method with GraphicWriter III is a snap. Start up the program, name your new file *SANFORD.XMAS*, and work in *Actual Size* mode (*View* menu). Pull down the *Page* menu and make sure that the *Show Guides* and *Snap-to Guides* features are turned on. Click on these features with the mouse if they’re not already selected. ☞

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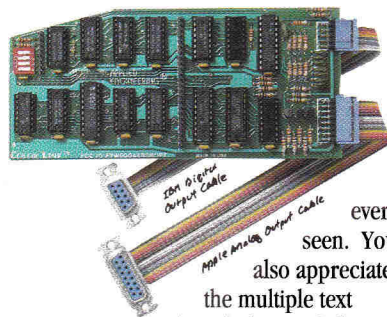
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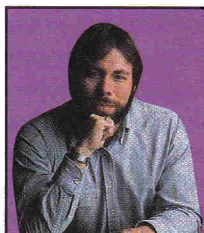
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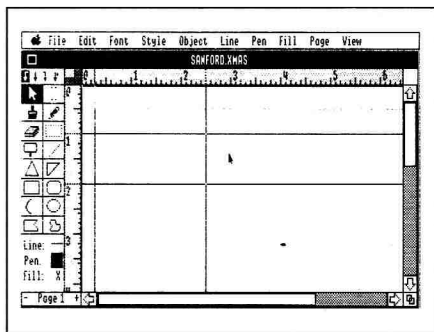


Figure 1. Placing "arbitrary guides" in GraphicWriter III.

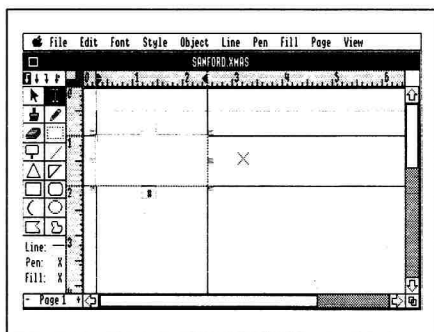


Figure 2. Rubber-banding a typing frame within GraphicWriter III's arbitrary guides.

The actual printing area of each Sanford stencil is 2.25 inches wide and 1 inch high, but the stencil itself is somewhat larger. To accommodate the stencil/carrier setup, you need to leave a quarter-inch left-hand margin and a 1-inch top margin on the GraphicWriter III page.

Demarcating a custom stamp's printing area is easy if you use GraphicWriter III's arbitrary guides. Drag a vertical orange guide from its guide-area "well," located at the intersection of the vertical and horizontal rulers near the top of the screen. Drop the vertical guide into place at the 2.5-inch mark on the horizontal ruler. This area accommodates the required left-hand margin (0.25 inch) and the width of the stencil's printing area (2.25 inches).

Now drag two horizontal orange arbitrary guides into place. Drop the first at the 1-inch mark on the vertical ruler and the second at the 2-inch mark. These guides leave a 1-inch top margin and accommodate a 1-inch-high printing area (Figure 1). With the I-beam tool, rubber-band a typing frame within the borders of the arbitrary guides: Position the X-shaped I-beam cursor at the top left-hand corner and stretch the frame to the lower right-

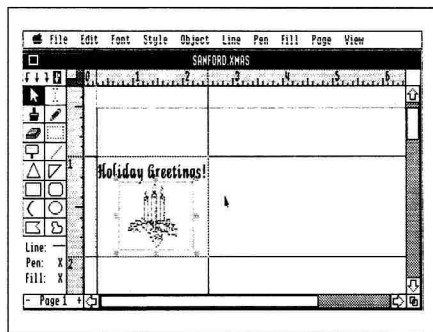


Figure 3. Screen dump of completed stencil design.



Figure 4. Finished stamp.

hand corner. The typing frame should look like that shown in Figure 2. Pull down the *Font* menu to select the typeface and size you'd like to use for your message (24-point *Venice* in the accompanying Figures).

GraphicWriter III lets you import artwork from nearly any Apple II graphics source. (Remember that the illustration will ultimately print in a single color only.) To add artwork to your layout, select any of GraphicWriter III's painting tools (brush, eraser, marquée, magnifying glass, or pencil) and rubber-band a painting frame. Select the *Import* option from the *File* menu and choose the appropriate graphics translator. Click on the *Half-Height* check box and select from its disk directory the illustration you want to use.

Fine-tuning your stamp stencil is easy. Resize artwork by holding down the open-apple key and dragging on a painting-frame handle with the mouse. Highlight text with the I-beam tool and restyle the message (*Style* menu), or center it by pulling down the *Edit* menu, selecting *Paragraph*, and clicking on the *Center* radio button in the *Justification* section of the resulting dialog box. Depending on the sequence you use in importing, resizing, or rearranging graphics and text objects, you

may need to invoke the program's *Send to Back* (or *Bring to Front*) feature as well as its *Text Wrap* capabilities (*Objects* menu).

Then when your design is complete (see Figure 3), save it (*File* menu), select your printer (*Apple* menu), and print a facsimile of the stencil (*File* menu) on regular computer paper with an ordinary printer ribbon. Place a blank stencil on top of this sample printout to see whether the design fits within the stencil's printing-area boundaries. If not, find appropriate paper-placement adjustments on your printer.

Line up the left-hand edge of the paper with the single-sheet icon on your ImageWriter's back cover. Line up the top edge of the paper with the top edge of the plastic paper guide. A bit of trial and error may be required to determine the proper placement of paper in your printer. Once you've noted paper settings, remove the ribbon and insert a stencil/carrier-sheet set as described earlier. Now you're ready to cut the stencil. See Figure 4 for final results prepared with the holiday stamp we created with GraphicWriter III.

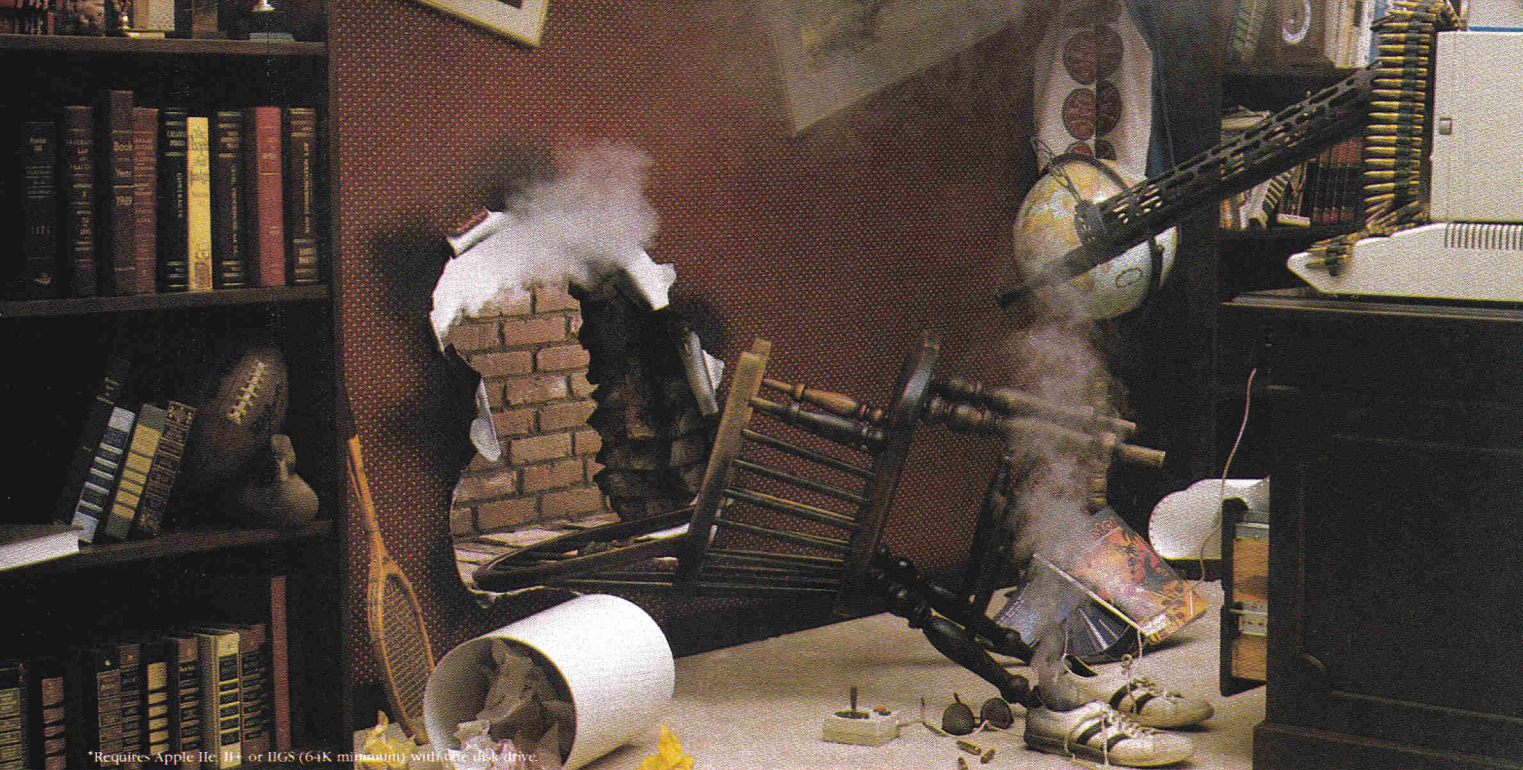
PUBLISH IT! 3 WRAPUP

Designing a stamp template with Publish It! 3 (or any earlier version of the program) is even easier than with GraphicWriter III, thanks to Publish It!'s *Show Specifications* feature (*Objects* menu).

Start up the program, work in *Size to Fit* mode (*Special* menu), and select the text tool. Rubber-band a text frame approximately 1 inch high and 2.25 inches wide. Press Open apple-M (or pull down the *Objects* menu and select *Show Specifications*). Into the resulting dialog type the following values: *Left Start 0.250"*; *Top Start 1.000"*; *Width 2.250"*; *Height 1.000"*. That's all there is to it. Adapt the procedures described above for GraphicWriter III to insert text, add clip art, fine-tune the stamp template, and cut the stencil.

Your favorite DTP program can provide innumerable opportunities for you to show off your creativity. A \$10 investment is all it takes to begin crafting some attractive yet practical stamps to use the whole year through. Happy Holidays! □

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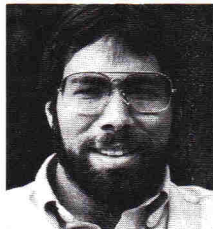
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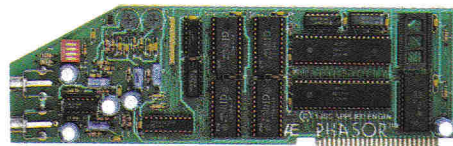


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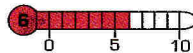
one — kids need help learning how to learn. David Griswold's How to Study will help them accomplish that, but the current version of Studymate may not be the most appropriate tool to supplement the text. At the very least it needs a few revisions to run more smoothly, and more detailed documentation to assist with test creation.

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

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TimeOut UltraMacros, from Beagle Bros, is a landmark program in its own right, working hand in hand with AppleWorks to let you record frequently used sequences of keystrokes that you can re-create subsequently with a two- or three-key combination. Soup Up Classic! provides nearly 300 such prerecorded macros for use within the powerful AppleWorks/UltraMacros environment, delivering such capabilities as flow charting, a word processor-based calculator, page numbering, file-handling tools, and new power for Beagle Bros' TimeOut SuperFonts program.

Soup Up macros don't actually add new abilities to AppleWorks; they instead offer new approaches to using its existing abilities. For instance, the calculator macro, which you can add to a word-processor document, simply automates the process of using a spreadsheet file to perform the desired calculation. The macro backs out to the main menu, makes a spreadsheet

file, does the calculation, copies the result to the clipboard, ditches the spreadsheet file, re-enters the word-processor file, and pastes in the result. (Of course, you have to know how to enter spreadsheet formulas to use this macro.)

Soup Up Classic! does add hundreds of new macros to AppleWorks, and it does deliver. Many of them seem too simple, though, or may be somewhat redundant in the context of your daily work environment. But you'll get your money's worth if you find just a half-dozen outstanding macros. Most UltraMacros owners probably use it just that way — to speed up a sparse handful of frequent tasks, rather than dozens of infrequent tasks. The obvious question, then, is whether there are a half-dozen macros here of sufficient interest to be worth your money.

SOMETHING FOR EVERYONE?

Soup Up Classic! is divided into three primary macro sets, any of which you can install as your default working set of macros. One set is the general collection; a second focuses on TimeOut SuperFonts; and the third emphasizes cursor drawing.

Most of you may already have a customized default macro set, so you'll probably want to add selected Soup Up macros to your existing sets. You can also use macros built into each of the three Soup Up files to switch among them whenever you like.

A number of the macros focus on file-handling chores, from numerous lightweight tasks such as removing a file, to useful things such as saving all files to their original directories. The collection also includes 20 disk-drive and ProDOS path-name-management macros of varying usefulness. Several of the macros are aimed at minimal computer configurations; some are IIc specific.

A few of these macros are also floppy-drive specific. You'll appreciate the macro that helps you "save files & backup to floppy." One whole section concerns designing other macros. On closer examination, however, most of them turn out to be useful only if you happen to be working on Soup Up macros.

Other macros are specific to the AppleWorks word processor, database, and spreadsheet, respectively. In the word

processor, you can set the page margins to any of several presets; duplicate a paragraph; duplicate a file or copy it to the clipboard; get and insert a specific file; and move sections of text in a variety of ways. Again, each macro varies in its usefulness.

I liked the idea of the macro that puts a centered page number at the bottom of each page, but it doesn't take page formatting into account. Adding those page numbers messes up the way some pages break, and because the page numbers are already there, you can't do a quick rewrite of the document and renumber it. You'll end up with multiple copies of the numbers scattered about on the page.

Various database macros copy and move records, find text, and adjust column width. You can print labels or mail-merged letters for all names or for selected names in a database file. The spreadsheet macros don't get beyond automation of the standard functions, but within this narrow framework, nearly everything you could think of is present. There are macros for editing cell formats, for cell protection, and for cell copying.

As noted above, one of the three Soup Up Classic! sets is devoted to automating SuperFonts, another Beagle Bros product that lets you add custom fonts to AppleWorks. The Soup Up macros address loading fonts, font styles, font sizes, page setup, page preview, and picture manipulation.

There is a legitimate need for such macros; SuperFonts can be a hassle to use. In the cursor-drawing section you'll find tools for drawing various sizes and styles of boxes and lines, which you can use to dress up text, generate a table, or design flowcharts.

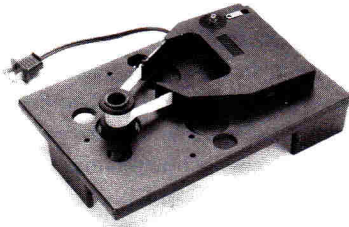
IT'S IN HERE SOMEWHERE

Soup Up Classic! was designed in the best tradition of Apple II software — in someone's home as a family project. That guarantees two things: uneven polish and personal commitment from the publisher. Does Soup Up save time? Eventually yes, but it would save even more time if the presentation were smoother. Any serious AppleWorks user will find enough goodies in this product to make it worthwhile, but it will take some time for you to dig through everything.

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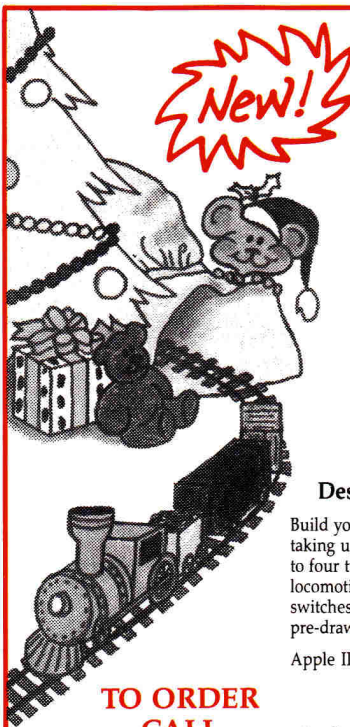
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REVIEWS

from text files on disk, but first you'll have to figure out which ones to print. Then you'll need to supplement them by reading the macro-definitions files. The directions, however, don't really provide an adequate index or quick reference, and they sometimes assume too much sophistication — Soup Up Classic! assumes you're a master of both AppleWorks and UltraMacros. If you aren't, plan on doing some remedial work with both programs.

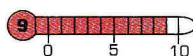
If you found anything above in the breakdown of the program that caught your fancy, if you're in love with UltraMacros, or if you hate writing your own macros, take a look look at Soup Up Classic!. If you're still considering whether you even need a macro program, or if you've just purchased one, you should get comfortable with it first before adding something like Soup Up Classic!. Good software fits the way you work, so you should always think about whether any given product does so before spending your money.

Joe Abernathy
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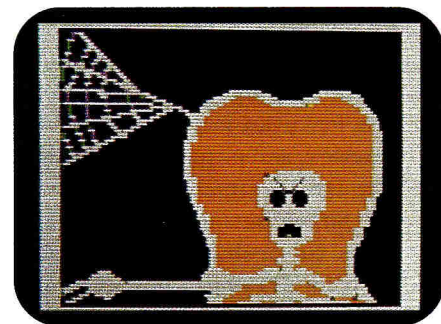
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The Adventure of Learning series uses a

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The master program ships with three modules (data files to use with the main program). Two of them supplement conventional textbook concepts: *The Legend of the Hidden Seeds* is a 5th-grade social-studies module focusing on the settling of North America up to the French and Indian Wars; *The Adventure of the Lost Plygon* teaches middle-school students about earth science as it challenges them to find a new home for the inhabitants of the planet Plomac, which will be destroyed by the impact of a wayward comet. The third module, *The Adventure of the Sarcophagus*, is entertainment — not designed to complement any curriculum textbooks. Students will find this module helpful as an introduction to the adventure-game genre. Once they solve that mystery, they'll work easily with other modules in the package.



Motivate kids by making learning fun.

Abracadata sells several other modules in addition to the ones that ship with the main program disk. All are aimed at particular grade levels and specific topics — art, music, health, language arts, math, science, and social studies. (See the list of modules on page 94.)

All Adventure of Learning modules have the same look and feel, making it easy to switch from one to another. You can configure the program to work with a joystick, mouse, or keyboard.

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REVIEWS

down the *Experience* menu, select *Adventure*, and choose *Run*. The adventure begins once the master program loads a data module into memory.

Once it's running, youngsters can use the arrow keys to move around the maze, participating in program situations as they arise. They score points for making correct choices. If they answer questions correctly, kids should be able to find their way through the maze and solve the riddle, quest, or dilemma.

One of the program's major strengths is

that it encourages you to create your own modules. The software incorporates a variety of interactive design tools to help you do so; reproducible black-line master worksheets included with the program also provide a helpful organizational framework.

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| The Ascent of Kancha Addem | Math | Whole Numbers; Approximating | LM 7 |
| Stinging the Bees | Math | Fractions, decimals and percents | LM 7 |
| The Galactic Land Sale | Math | Geometric shapes; Area; Volume | LM 7 |
| Science | | | |
| A Voice In The Night | General | Life Cycles, Cells | LM 4 |
| Search for the Hidden Gold | General | Water | LA 4 |
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| Deadly Dragon of the Deep | General | Matter, Atoms, Energy | LA 5 |
| Treasure of the Lost Kingdom | General | Earth Science | LA 5 |
| The Heir of the Dog | General | Life Science | LM 6 |
| Hair on Fire | General | Physical Science | LA 6 |
| The Troglodyte's Treasure | Earth | The Earth | LM M |
| Earthbusters on Call | Earth | The Earth's Crust | LM M |
| Return to Oydill | Earth | Air & Water | LM M |
| Triathlon of the Mind | Physical | Motion | LM M |
| The Wizard of Zoph | Physical | Wave Motion & Light | LM M |
| The Lab of Dr. Hydrovitus | Physical | Transformations of Matter | LM M |
| The Case of the Mysterious Machine | Physical | Electricity, Magnetism, Energy | LM M |
| The Cell Explorers | Biology | Cell Structure and Function | LM M |
| The Daring Diagnosis | Biology | Body Systems | LM M |
| Fleas from Outer Space | Biology | The Diversity of Life | LM M |
| The Giant Flytrap | Biology | The Plant Kingdom | LM M |
| The Case of the Mystery Morsel | Biology | Nutrition & Digestion | LM 10 |
| Social Studies | | | |
| Jewel Smugglers in Africa | Africa | | LA 6 |
| The Pact of the Shipwrecked Sailors | Early Colonial Life, 1492-1700 | | LA 8 |
| The Bill Killer Caper | Congress & the Executive Branch | | LA 9 |
| Rise of the Ruthless Empire Builder | Government & Economics | | LA 9 |
| Miscellaneous | | | |
| The Adventure of Effective Parenting | Self-Help | Parent Effectiveness | LM A |
| The Path of Effective Communication | Self-Help | Effective Communication | LA A |

LA = Learning Adventure, LM = Learning Module, EA = Entertainment Adventure, E = Elementary (2-6), M = Middle (7-9), H = High (9-12), A = all ages, 3-10 = grade

design, or you can direct the software to create a maze automatically with the *Autocreate* command. With *Autocreate*, you only need to edit the mazes the program generates; you don't have to design them from scratch.

Special drawing tools in the picture menu let you illustrate situations with simple but effective graphics. Every maze can have up to 61 illustrated screens. Once you've drawn a picture to accompany a situation, you must save it to disk. A special text option also lets you enter a description at the bottom of the picture screen. The text should prompt students for a response. You may also select one of 71 sound effects to enhance each presentation. Sounds include the familiar whirs, whizzes, shoot-

'em-ups, and explosions typically heard in video arcades. When your descriptions are complete, you connect each picture to a specific location on the maze, add as many as three objects per picture (up to a maximum of 89 objects for the entire maze), and specify the commands students must give before they can continue.

Designing a customized module will take advance planning and experimentation. The well-written *Instruction Manual* contains a step-by-step tutorial with information on everything from formatting a special DOS 3.3 data disk to useful strategies in game design. The task would be easier if Abracadata provided clip art you could paste into a situation's graphics window. (At press time, Abracadata stated that it planned to create accompanying clip-art disks.)

You can design your own modules or join Abracadata's Module of the Month Club; members pay \$14.95 per module. You may also choose to take a first module for \$5, plus one free module for every ten purchased. Abracadata also sells an Adventure of Learning Toolkit for \$29.95, which includes special program utilities to help you create customized module templates.

Abracadata sent me several modules to review, including one entertainment adventure called *Find Noriega*, based on real events during the U.S. invasion of Panama. Players set off to track down the notorious Panamanian leader. If they succeed, they win the promised booty; if they lose, the general remains free. The tongue-in-cheek approach takes several liberties with news events, but offers an amusing mystery game.

I also examined *The Baffling Bratnapping*, a 7th-grade language-arts adventure focusing on grammar, interviewing, and parts of speech. The objective is to find the kidnapped Bratley Bratley III, 7-year-old grandson of Grandpa Bratley, a recently deceased millionaire publishing tycoon.

In addition to locating the boy, students must also uncover the perpetrators of the crime. They'll get paid \$500 for interviewing a suspect successfully, \$250,000 when they find the boy, and another \$250,000 when they figure out who was behind the kidnapping.

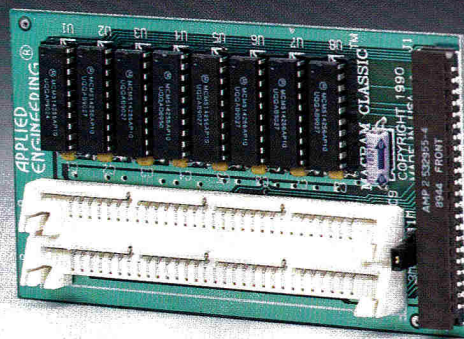
As students travel through the Bratnapping maze, they'll pick up clues that help

solve the mystery. I found the game much easier to play with the dot-marker option turned on, highlighting every situation on the maze to make traveling as easy as possible. Adventure diehards can play without marked situations for an added challenge. It took me a while to get in sync with the program, however, because the *Cluebook* that comes with the game contains a glossary, but no clues. An on-line help option with plenty of hints might be more useful.

The Adventure of Learning software series places children in challenging situations. The curriculum-based modules motivate kids to solve problems, while encouraging them to use concepts learned in class to find answers to perplexing situations. While the adventure-game genre may not be suitable for all children, most youngsters will find these activities an enjoyable supplement to textbook instruction. □

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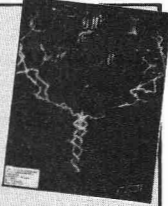
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LEARNING
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A TREE GROWS IN BASIC

By DAVID D. THORNBURG, Ph.D.

The ability to choose rules randomly to produce lifelike images of plants staggers the imagination.

The Universe can best be pictured, although still very imperfectly and inadequately, as consisting of pure thought, the thought of what, for want of a wider word, we must describe as a mathematical thinker.

— Sir James Jeans

IS THE NATURAL WORLD JUST A collection of chance events, or is there order to be found in the beauty around us? As the words of the early-20th-century astronomer Sir James Jeans suggest, playing with mathematics — and in 1990, that means plotting functions on the graphics screen of your Apple II — may be one way to begin exploring the latter possibility.

Last month (“The Beauty of Chaos,” p. 86) we opened the door to an interesting method for creating highly regular, yet infinitely complex, patterns. Through the application of randomly selected rules that modified the coordinates of an arbitrary starting point, we created a *Sierpinski gasket* — an infinitely nested set of equilateral triangles, each one of which replicated the structure of the whole.

If you worked with last month’s GASKET program, you were probably as amazed as I was when I first saw order emerging from chaos. This month we’ll use a similar mathematical process to create pictures of plants, especially conifers and ferns.

Structures like the gasket we explored last month are called *self-similar* because they’re built from components that reflect the overall shape of the whole. If we can find an appropriate set of rules that define the overall shape of such structures, the repeated random application of those rules will create a replica of the structure in fine detail, even if the detailed form of the structure wasn’t expressed explicitly in the rules. Last month’s program created new values for x and y through two simple transformations:

$$X_{\text{new}} = rX_{\text{old}} + h$$

$$Y_{\text{new}} = sY_{\text{old}} + k$$

This set of transformations is adequate for creating shapes for which each component has

the same orientation as the overall figure. You can use a more general set of transformations (called *affine* transformations) to include rotations and skewing of the original shape, and shrinking and translation of the coordinates. Equations for these transformations follow:

$$X_{\text{new}} = rX_{\text{old}}\cos(A) - sY_{\text{old}}\sin(B) + h$$

$$Y_{\text{new}} = rX_{\text{old}}\sin(A) + sY_{\text{old}}\cos(B) + k$$

If A and B are both zero (signifying no rotation), these equations become the same as the ones we used last month. If A and B are the same, the new coordinates are rotated by angle A from the previous values. If A and B are different, the new coordinates are both rotated and skewed (*deformed*).

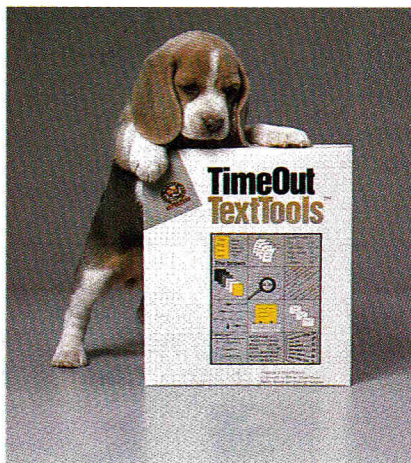
The use of affine transformations to create pictures of plants was developed by Michael Barnsley of the Georgia Institute of Technology. His interest stems from his search for efficient representations of complex pictures.

To see how this process works, think about the self-similar structure of certain trees, in which each branch replicates the overall structure of the tree itself. **Figure 1** is a digitized image of a cypress. Note that the shape of each branch is similar to that of the tree itself, although the branches are rotated from the main stem.

Schematically we can create an “archetypal” conifer from four rules, describing the overall shape of the tree, a left-leaning branch, a right-leaning branch, and the stem or trunk. **Figure 2** is a composite picture showing the basis for these four rules, which can also be seen in the subroutine starting at line 1000 in **Listing 1**.

Lines 130 and 140 perform the affine transformations. Rule 1 is implemented in line 1010. There’s no rotation, and the coordinate is translated upward along the y -axis. The next two lines produce the left and right branches. The rotation is less than 90 degrees, because these branches point upwards a bit, and, to make the picture look more realistic, the shape has been skewed slightly. (That’s why A and B have different values.) Line 1040 is the rule for the trunk. ◀

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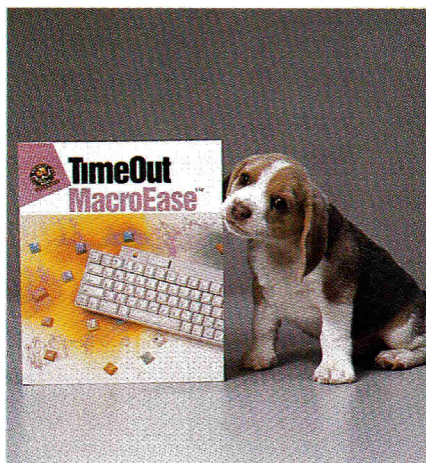
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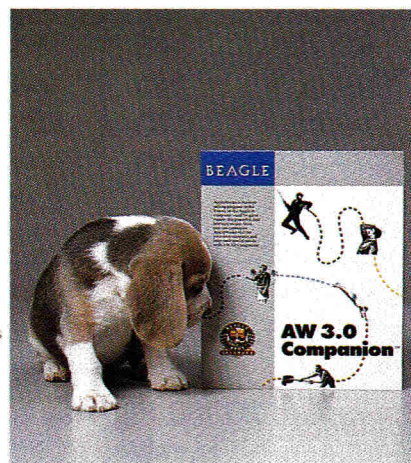
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LEARNING CURVE

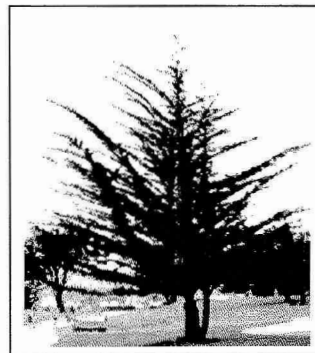


Figure 1. Digitized photo of a cypress tree.

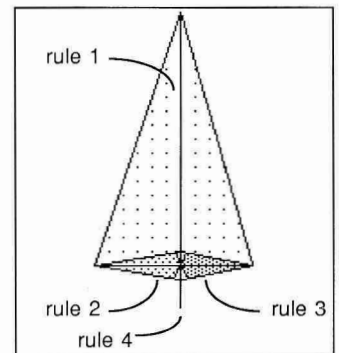


Figure 2. Schematic archetypal tree with four transformations.

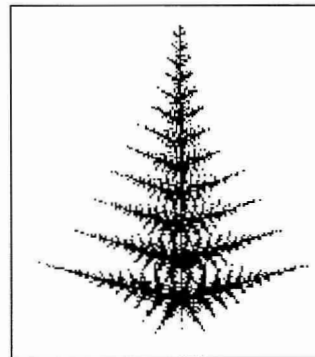


Figure 3. Calculated image of a cypress.

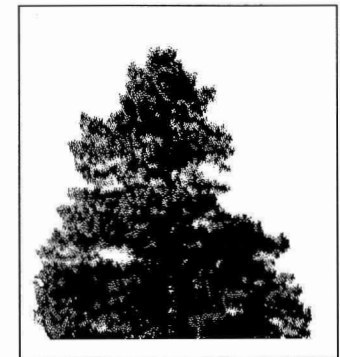


Figure 4. Digitized photo of a Monterey pine.

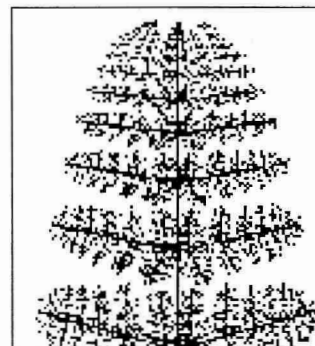


Figure 5. Calculated image of a Monterey pine.

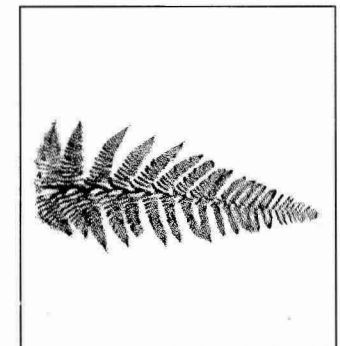


Figure 6. Digitized photo of a fern.

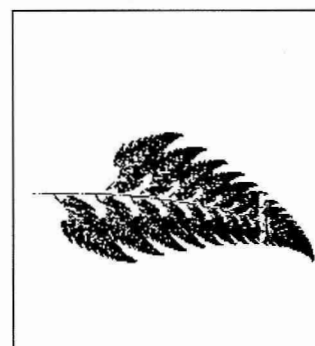


Figure 7. Calculated image of a fern.

ordinates to points along the vertical axis. Notice that the probabilities for the different rules are unequal; they ensure that all parts of the picture will develop at roughly the same rate. Experiment with various probabilities to see what happens to the overall image.

Run this program for 10,000 points with a magnification of 1 centered at 0,40 to get the picture shown in Figure 3. Although it's more symmetrical than the actual tree, the overall

To get a vertical line we make r equal to zero to collapse the co-

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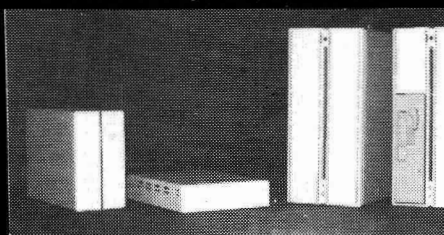
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Listing 1. Reproducing the shape of a cypress tree.

```

0 REM CYPRESS
10 HGR : HOME : VTAB (21): HCOLOR= 3
20 INPUT "Number of points ";N
30 INPUT "Magnification = ";M
40 INPUT "Center coordinates ";XC,YC
50 INPUT "Start at ";X,Y
60 FOR J = 1 TO N
70 U = 140 - M * XC + M * X
80 V = 95 + M * YC - M * Y
90 IF U < 0 OR U > 279 THEN GOTO 120
100 IF V < 0 OR V > 191 THEN GOTO 120
110 HPLLOT U,V
120 GOSUB 1000
130 XN = R * X * COS (A) - S * Y * SIN (B) + H
140 YN = R * X * SIN (A) + S * Y * COS (B) + K
150 X = XN:Y = YN
160 NEXT J
170 END
1000 Z = RND (1)
1010 R = .8:S = .9:A = 0:B = 0:H = 0:K = 20
1020 IF Z < .4 THEN R = .3:S = .4:A = 1.4:B = 1.3:H = 0:K = 5
1030 IF Z < .25 THEN R = .3:S = .4:A = - 1.4:B = -
- 1.3:H = 0:K = 5
1040 IF Z < .1 THEN R = 0:S = .8:A = 0:B = 0:H = 0:K = 0
1050 RETURN
    
```

figure shape is fairly realistic.

What about *r* and *s*? The values chosen for *r* and *s* in each rule have an impact on the overall shape of the branches and on the density of the "leaves". If you look at the first rule in Listing 1, you'll see that we made *r* equal to 0.8 and *s* equal to 0.9. That means that the x-coordinates will shrink faster than the y-coordinates, resulting in a pointed shape.

Now, some trees have round instead of pointed tops, such as the Monterey pine in Figure 4, a digitized photo. To compute a replica of a tree like that, all you have to do is make *r* greater than *s*, as we do in the rules in Listing 2. Running this modified program for 10,000 points centered at 0,30 with a magnification of 2 produces the picture shown in Figure 5.

Let's experiment with some other types of plants. Ferns, for

example, are highly self-similar in structure. Even the tiniest leaflet seems to contain the overall shape of the entire frond, as shown in Figure 6.

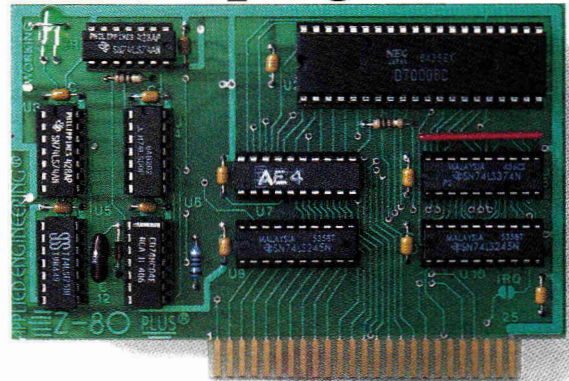
Michael Barnsley has found a set of rules that produces amazingly lifelike reproductions of these plants. To explore the full beauty of this structure, we'll rotate the image by 90 degrees to allow a larger image on screen. Use the rules shown in Listing 3 and change lines 70 and 80 to the following:

```

70 U = 140 - M * YC + M * Y
80 V = 95 - M * XC + M * X
    
```

If you run this modified program for 50,000 points centered at 0,3 with a magnification of 30, you'll get the picture shown in Figure 7. The similarity between a photograph of an actual fern and this calculated picture is stunning — especially when you realize that the calculated image was determined ⇨

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LEARNING CURVE

Listing 2. Adjustments to re-create the shape of a Monterey pine.

```
1000 Z = RND (1)
1010 R = .9:S = .7:A = 0:B = 0:H = 0:K = 20

1020 IF Z < .4 THEN R = .4:S = .4:A = 1.4:B = 1.3:H = 0:K = 5
1030 IF Z < .25 THEN R = .4:S = .4:A = - 1.4:B =
-1.3:H = 0:K = 5

1040 IF Z < .1 THEN R = 0:S = .8:A = 0:B = 0:H = 0:K = 0
1050 RETURN
```

Listing 3. Drawing a fern on screen.

```
1000 Z = RND (1)

1010 R = .85:S = .85:A = - .0436:B = - .0436:H = 0:K = 1
1020 IF Z < .2 THEN R = .3:S = .37:A = 2.0944:B =
- .8727:H = 0:K = .44

1030 IF Z < .1025 THEN R = .3:S = .34:A = .8552:B =
.8552:H = 0:K = 1.6

1040 IF Z < .005 THEN R = 0:S = .16:A = 0:B = 0:H = 0:K = 0
```

by only 24 numbers (six for each rule). Merely by changing these 24 numbers we can describe plants as different as ferns and conifers. If we use different numbers of rules, there's almost no limit to the complexity of the shapes we can create.

The ability to choose rules randomly and apply them to arbitrary starting points to produce lifelike images staggers the imagination. Detail emerges from the crudest assumptions, suggesting that the forms of living organisms are *strange attractors*, descriptions of the steady-state behavior of orbits, as discussed in last month's column. This notion isn't new, although it's usually expressed in different terms.

To Goethe, the rules of form for a plant are contained in the plant itself. This Aristotelian perspective was further developed 100 years after Goethe's work by the Austrian philosopher Rudolph Steiner and, nearly 100 years after that, expanded still further by the biologist Rupert Sheldrake. Sheldrake's hypothesis of *formative causation* suggests that plants form the way they do "out of habit." In other words, when the first plant of a certain type grew, it created a "morphic field" that acts as an attractor to determine the shape of other plants of the same type. Perhaps the field is represented by the rules of our programs.

As you continue your exploration of these programs, you'll look at plants in a new way. In the words of William Blake:

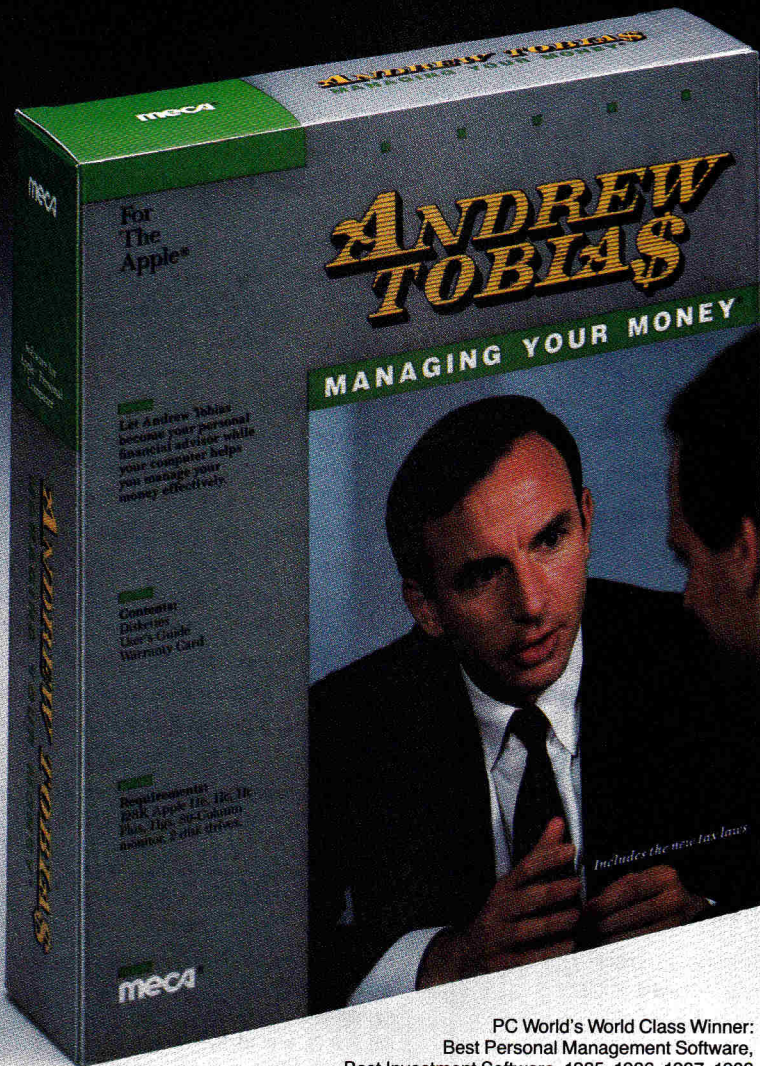
*To see a world in a grain of sand
And heaven in a wild flower,
Hold infinity in the palm of your hand
And eternity in an hour. □*

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By Susan W. Rollinson

THE BACKDOOR SOLUTION

IN THE JUNE 1990 APPLE CLINIC item "Text-Page Protection" (p. 24), James Pfaffly tried to BLOAD full screens of lo-res graphics to page 1 and

had no luck. ProDOS protects text-page 1 because the last 8 bytes of each 128 bytes don't belong to the text page; instead, they're reserved for use by your computer's peripheral slots. BLOADing a saved lo-res (or text) screen can really mess things up!

To circumvent the problem, try BLOAD-

ing the file to the hi-res graphics memory area first, then transferring the data to the lo-res screen.

The rationale is twofold: You're unlikely to mix lo-res and hi-res graphics in the same program, and these programs are relatively small, so BLOADing to the hi-res location won't disturb the Applesoft program or its variables.

Listing 1 shows this method in Applesoft. If the program's glacial speed doesn't impress you, try **Listing 2**, which uses a short machine-language routine to accomplish the same goal. Both programs assume you've saved your graphics with the command BSAVE filename, A\$400, L\$400. If you need a sample lo-res screen with which to experiment, type in **Listing 3** and run it. The resulting binary file is called COLORS.TEST. □

Write to Susan W. Rollinson at 849 Lou Avenue, Clifton Forge, VA 24422.

Listing 1. BLOADing to hi-res graphics.

```
100 REM RESTORE LO.RES BINARY FILE
110 REM APPLESOFT VERSION
120 REM BY SUSAN W. ROLLINSON
130 REM COPYRIGHT INCIDER, DEC. 1990
140 HOME
150 INPUT "FILE NAME: ";N$
160 PRINT CHR$(4);"BLOAD;N$;";A$4000"
170 GR
180 FOR X1 = 0 TO 7
190 FOR X2 = 0 TO 119
200 POKE (1024 + 128 * X1 + X2),
    PEEK(16384 + 128 * X1 + X2)
210 NEXT X2,X1
220 HOME
230 END
```

Listing 2. Loading in machine language.

```
100 REM RESTORE LO-RES BINARY FILE
110 REM MACHINE LANGUAGE VERSION
120 REM BY SUSAN W. ROLLINSON
130 REM COPYRIGHT INCIDER, DEC. 1990
140 FOR A = 768 TO 818: READ X:
    POKE A,X:NEXT
150 DATA 169,0,133,6,133,8,
    169,4,133,7,169,64,133,9,160,
    119,177,8,145,6,136
160 DATA 16,249,24,165,6,105,128,
    133,6,133,8,144,236,230,7,230,
    9,165,7,201,8
170 DATA 240,3,76,14,3,32,88,252,96
180 HOME
190 INPUT "FILE NAME: ";N$
200 PRINT CHR$(4);"BLOAD;N$;";A$4000"
210 GR
220 CALL 768
230 HOME
240 END
```

Listing 3. Experiment with a sample lo-res screen.

```
100 REM CREATE LO-RES SCREEN AND FILE
110 REM COPYRIGHT INCIDER, DEC. 1990
120 GR
130 FOR CL = 0 TO 15
140 COLOR = CL
150 HLIN 0,19 AT CL * 2: HLIN 0,19
    AT CL*2+1
160 VLIN 0,39 AT CL + 20
170 NEXT
180 PRINT CHR$(4);
    "BSAVECOLORS.TEST,A$400,L$400"
```

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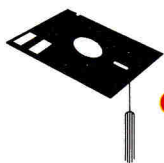
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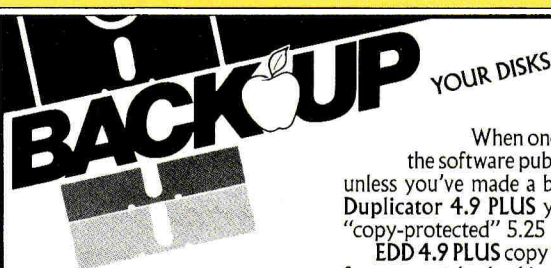
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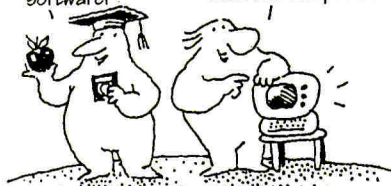
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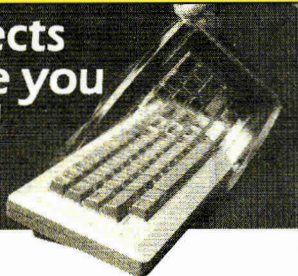
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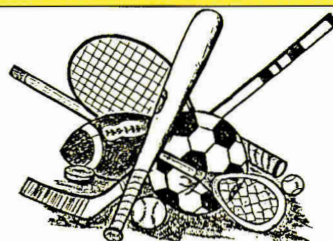


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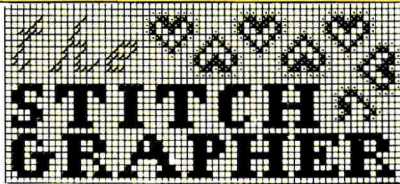
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Think It Through

OUTLINE 3.0

The second rule of writing — after “Have something to say” — might be “Have a structure.” Teachers at every level, from third grade to graduate school, stress that every piece of writing — a letter, a memo, a novel, a poem, or a magazine article — must have a beginning, a middle, and an end. Why? Probably because that’s the way we think.

I. What an outline is

II. What Outline 3.0 does

III. Who needs Outline 3.0

I. What an outline is

- A. Every piece of writing needs structure
- B. An outline organizes your thoughts
- C. It’s a simple way to keep lists

II. What Outline 3.0 does

- A. Outline organizes your thoughts
- B. Outline simplifies access to information

III. Who needs Outline 3.0

- A. People who use a word processor
- B. People who use a database to organize info

I. What an outline is

- A. Every piece of writing needs structure
 - 1. Beginning
 - 2. Middle
 - 3. End
- B. An outline organizes your thoughts
 - 1. Prewriting
 - 2. Postwriting
- C. It’s a simple way to keep lists

II. What Outline 3.0 does

- A. Outline organizes your thoughts
 - 1. Writing
 - 2. Lists
- B. Outline simplifies access to information

III. Who needs Outline 3.0

- A. People who use a word processor
- B. People who use a database to organize info

An outline helps a writer or speaker, whose work is communication, make sure that he or she has something to say, and a structure in which to say it. But in a less obvious way, for anyone who uses information — and who doesn’t? — an outline makes you think more clearly. Now **Outline 3.0** from Randy Brandt, author of *UltraMacros*, and Beagle Bros, publishers of the *TimeOut* series of *AppleWorks* utilities, takes outlining out of the elementary-school classroom and makes it almost fun — even for teachers. Outline 3.0 isn’t just a tool for writing — it’s a tool for thinking.

Outline 3.0 modifies *AppleWorks 3.0* so that the key combination Open apple-+ turns any word-processor file into a free-form Outline file. It sets “markers” in your word-processing file at the beginning of each “topic.” Because Outline 3.0 works within *AppleWorks*, it has a number of advantages over similar applications:

- * It uses the editor of the *AppleWorks* word processor. You can use all the power *AppleWork* has: print your outline any way *AppleWorks* can, move, delete, and copy text, use *TimeOut* and other *AppleWorks* accessories, use the mouse if you have *TimeOut*. In short, if you use *AppleWorks*, you already know more or less how to use *Outline 3.0*.

- * You can switch easily between word-processing and outline modes.

- * You can write the final text as you outline, but you don’t have to. You can remove the outline with three keystrokes, leaving only the body of your text.

If you plan carefully, you’ll find that reports, term papers, business letters, memos, and anything else you try seem almost to write themselves. All you do is set up the basic structure:

Thanks to the power of word processing, you can go back to the beginning later and add detail:

You can return to the outline as often as necessary to insert more detail, more subsections, where appropriate.

As an “information organizer” *Outline 3.0* works like a database, letting you keep information in a form that can function as a kind of table of contents or an index. Because of the way *Outline 3.0* can “hide” levels of an outline, you could load a file called *Calendar*, say, into *AppleWorks* and see this:

By “zooming in” on the seasons, you could see the months; by zooming in on the months, the days.

In an era of hypertext, multimedia, knowledge navigation, and intelligent software agents, writing an outline doesn’t seem quite up-to-date. But for those of us who have to resort occasionally to such low-tech communication strategies as reports, essays, and letters, *Outline 3.0* can help.

Outline 3.0 is priced at \$69.95. For more information, contact Beagle Bros, 6215 Ferris Square, Suite 100, San Diego, CA 92121, (619) 452-5500.

- I. Beginning
- II. Middle
- III. End

- I. Beginning
 - A. Beginning of the beginning
 - B. Middle of the beginning
 - C. End of the beginning

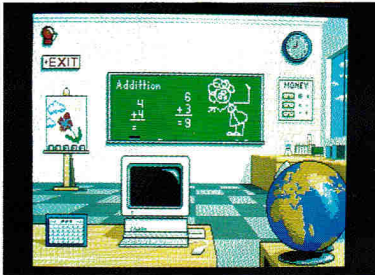
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- II. Summer
- III. Fall
- IV. Winter

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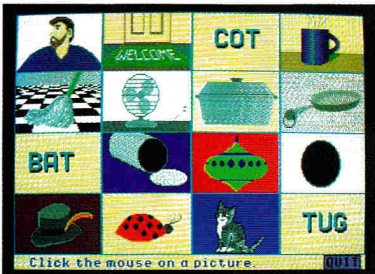
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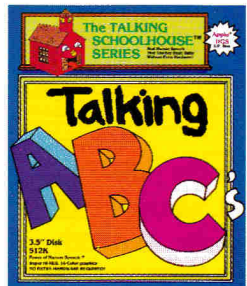
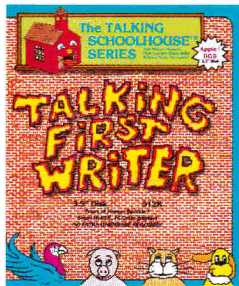
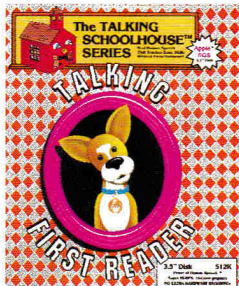
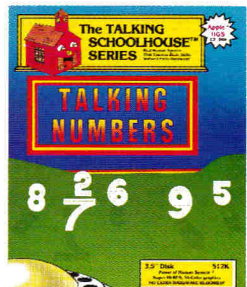
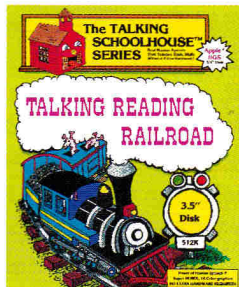
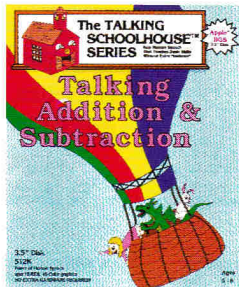
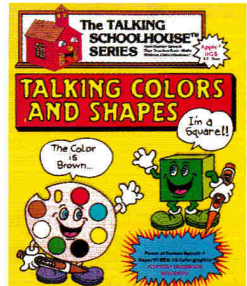
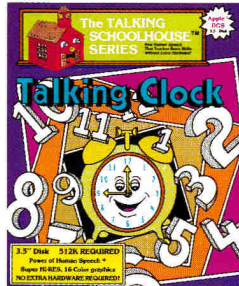
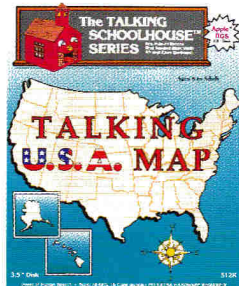
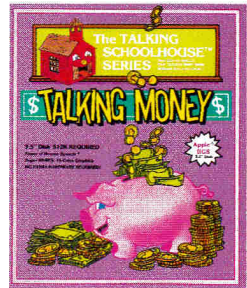
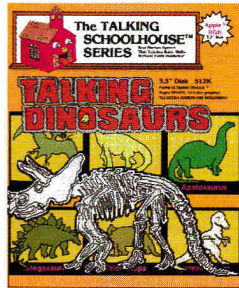
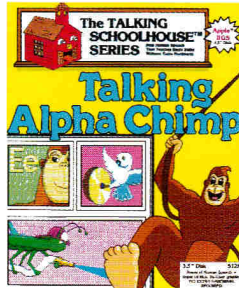
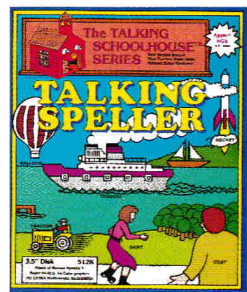
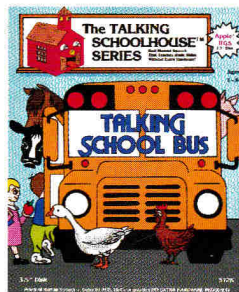
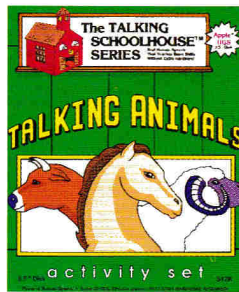


Talking Multiplication & Division provides a human voice to help kids with basic math skills.

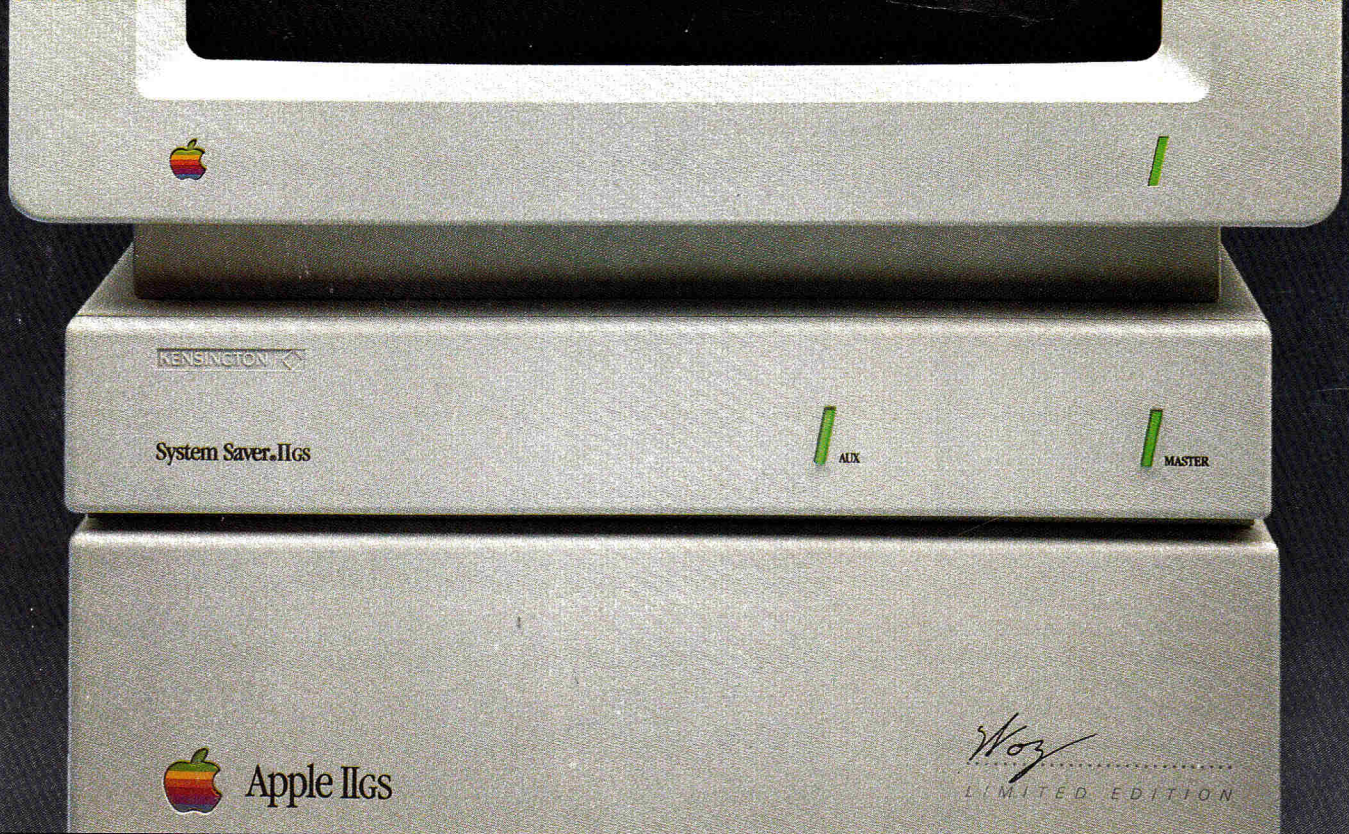
These new programs join the 15 others listed here to form the Talking Schoolhouse Series, which educators and parents across the country are hailing as the most outstanding software available for the IIGS. IBM PS/2 and TANDY 1000 versions will be ready for shipment shortly.

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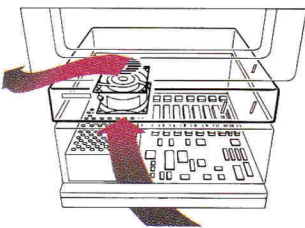


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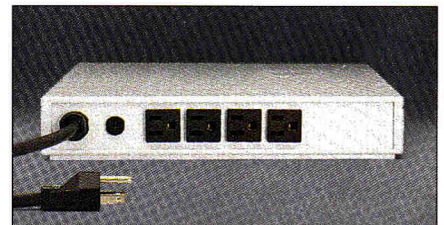


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