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March 1991

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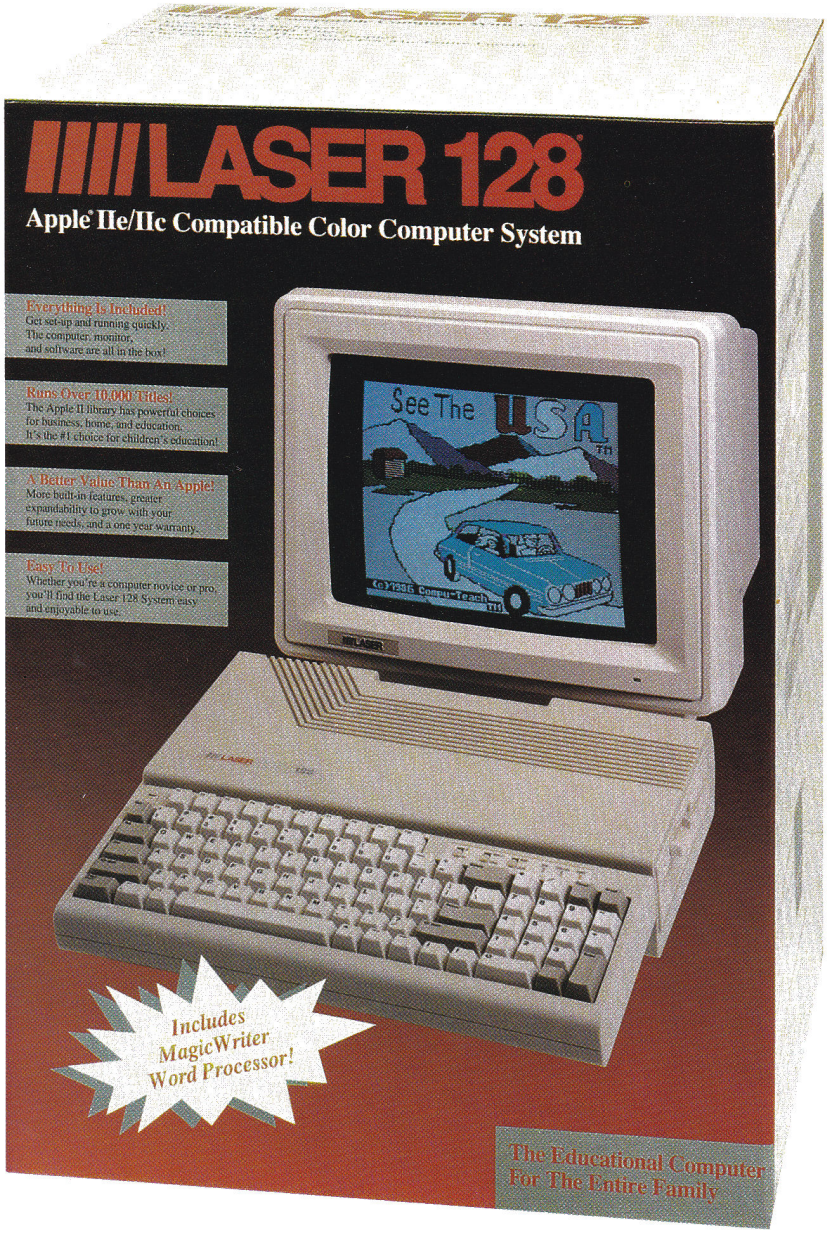
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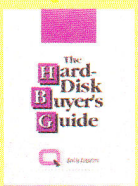
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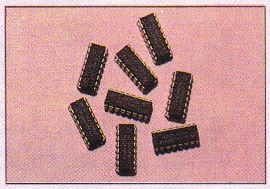
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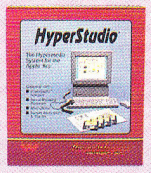
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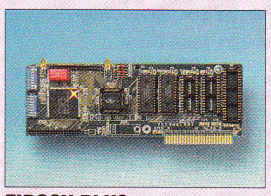
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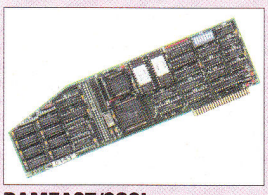
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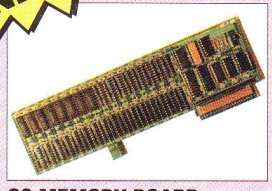
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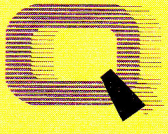
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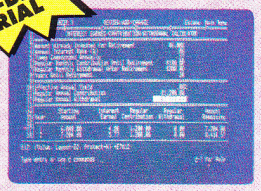
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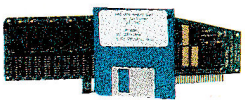
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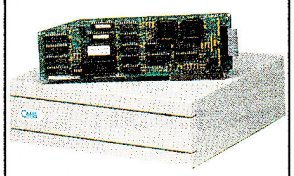
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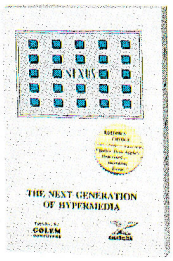
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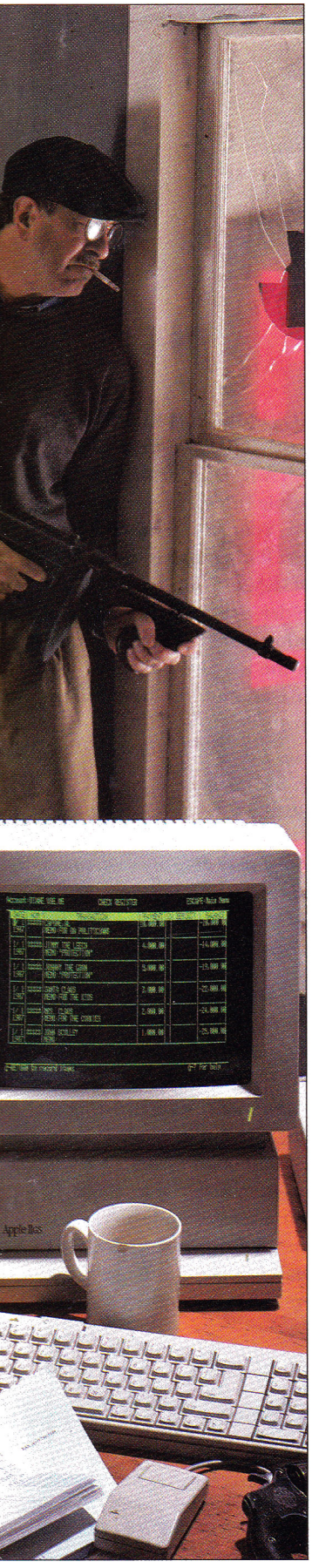
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MARCH

1991 Vol. 9 No. 3

Articles

66 A New Approach to Personal Finance
Smart organization, and the right software package, can help you fend off your creditors — and the IRS. Give your Apple a cut of the action — keep track of your money each month and you'll make out like a bandit year round.

77 Apple II to Mac and Back
Yes, you can take it with you — your collection of documents, spreadsheets, and data, that is. It takes some planning and a little ingenuity, but switching between your II and your Mac gives you access to the best of both Apple worlds.

85 Print Shop Graphics: A Triple Threat
Print Shop images can add pizzazz to your documents — but do three formats mean triple the graphics options or triple the technical problems? A good translation program can point you in the right direction.

88 Hard-Disk Drives Made Easy: Off the Beaten Track
Knowing the ins and outs of formatting and partitioning can help you preserve your data and manage your Apple system more efficiently.

Columns

AppleWorks in Action • *Ruth Witkin*
Word-Processing Wonders 94
Dress up your documents with headings, tabs, and line spacing — AppleWorks 3.0's formatting features offer a wide array of options.

Bridging the Gap • *Gregg Keizer*
Swap 'til You Drop 100
Share, exchange, hand it over: Remember those childhood lessons and you, your II, and your Mac will make a productive team.

Press Room • *Cynthia E. Field*
Marking Time 104
How time flies! Keep it under control with your own Publish It! calendar.

Learning Curve • *David Thornburg*
Test Case 112
As long as our top priority is simply "cost effectiveness," any attempt to reform our educational system is doomed.

inCider's View
will return in the April issue.

Departments

Letters to the Editor 8

What's New 11

Apple Clinic
Cracking the Code: Take Control, Renumbering BASIC 14

Reviews
Where in Time Is Carmen Sandiego?, TimeOut TextTools, College Cost Explorer & College Planner, PlayWrite: The Talking Puppets 16

Hints & Techniques
Streamline It: HPLOT Data Reader, Clean It Up, Ampersand POKEs 114

Editors' Choice
Space Ace 120

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LETTERS TO THE EDITOR

Preventive Medicine

ALTHOUGH *INCIDER/A+* IS GOING to add coverage of Macintosh products, I'm going to keep my subscription — I want to support the Apple II as long as I can. I think *inCider/A+* is just doing what it needs to do to survive. As I watch a shrinking *inCider/A+* it's become obvious that third-party hardware vendors are disappearing, and new software is coming out for MS-DOS and the Mac, but not for the Apple II. (Two years ago these products would have come out for the Apple II first.)

The only bright spot for the Apple II is the education market; school systems have a tremendous investment in Apple IIs and software. With the Mac LC, Apple seems to be making a bid for this last market. (The pricing, however, is a bit off for this scheme to work well.) So where does this leave *inCider/A+*? The company's other Mac publication is a high-end magazine aimed at the big-bucks folks, the corporate users. Where do the rest of us fit in? Nowhere — and that's what I think *inCider/A+* is betting on. It's going after the lost soul, the hacker, the home user. It won't be the Mac IIfx user — I know I can't afford programs that retail for $400 or laser-printer-equipped systems that cost more than $5000. If anything, I'll be the guy who'll buy that new Duet card and put it into my GS and run both Mac and GS software (if and when it's available). [See November's "What's New," p. 17.] Then if I have to switch over to the Mac I'll probably buy a Mac Classic or SE/30. (I might go for an LC, too, if the price ever comes down to a reasonable level.) I say, "Go for it, *inCider/A+*." You'll survive and I'll still have someplace to go to get Apple II advice. Otherwise, I suspect you'll go the same way as *A+* and all those Commodore magazines I used to see seven years ago.

Cal Ranger
America Online subscriber

Corrections

In the November 1990 "Skeletons" story ("Tech Notes," What's New, p. 17), Cecil Fretwell's zip code should be 50702.

In our December 1990 review of Senseless Violence II: You Use, You Die (Game Room, p. 38) we listed Pangea Software's address incorrectly. The correct address is 10918 Kirwick, Houston, TX 77024. Also, this shareware product is available through user groups and online services, not from the authors. The authors of Senseless Violence II are Brian Greenstone and Gene Koh (not Dave Triplett, as stated in the review).

Also in December 1990, insert the following line into the "IIc Plus Speed" program listing (Apple Clinic, p. 22):

```
145 POKE L+1,4 : CALL L :
      REM Unlock the accelerator
```

In the February 1991 Apple Clinic add the following line to the "Ejecting Disks" program listing (p. 28):

```
200 DATA 96,3,1,15,3,4,0,0,0
```

More on Clicks

IN THE NOVEMBER APPLE CLINIC question titled "Disk-Drive Clicks" (p. 22), Josh Ash asks why the 5.25-inch drive on his Apple IIGS clicks every time he uses the Finder. Your answer, while correct was a bit severe. Rather than removing the file APPLEDISK5.25 from the SYSTEM /DRIVERS folder, select the file icon and icon information from the *Special* menu, then click on the inactive box. An *x* will appear in the box, and the drive will no longer be active.

James Murray
11045 South St. Louis
Chicago, IL 60655

Our thanks to James Murray and many others who wrote regarding this issue. Don't forget that you'll have to restart your system for the change to take effect. — *eds.*

Survey Says . . .

LOOKING AT THE COMPUTER industry as a whole, it's interesting to see that there's a low level of participation by women. Although theories for this "gender gap" exist, most are undocumented.

I've begun an extensive study on women and computers. I'd appreciate hearing from any female *inCider/A+* readers who would be interested in completing a survey for this study.

Peggy Cole
Box 161775
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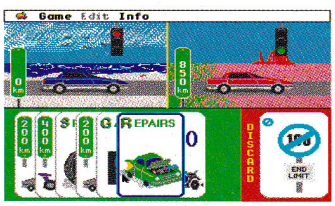
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Public Domain Software



GS110 Milestones 2000: This reliefware game by Dr. Ken Franklin is great for younger children (and older ones as well). Based on an old French card game, you have to play mileage cards to advance your own auto while stalling your opponent with flat tires and accidents. Get this disk and a green light to GO! Only $3.50.

IIGS Games

GS105 Space Clusters: This game is a clone of Gaxalian. Use a joystick to shoot the invaders before they can swoop down and destroy your ship. A fast-paced game.

GS45 Two Shareware Arcade Games: Orbizone is an outer space shoot 'em up arcade game. In CHIPS and Dips, the player must roam the screen collecting objects.

GS103 & GS104 Cosmocade: On the first disk, you must Journey to Calibus in a fast-paced arcade style game. Part two is called Naxos. A joystick and 768K is required. This is a shareware game.

GS88 PicMix: This program turns any SHR graphic into an on-screen jigsaw puzzle.

GS79 Plunder!: Escape the treasure room without being blown to bits by the bombs.

GS111 Columns & Antetris: Two great variations of the popular Tetris game.

GS112 Arkanoid II Levels & Cheat: This disk contains several new levels and a super cheat program for use with Arkanoid II by Taito.

GS72 Cartus Primus Card Game: This disk contains card games for cribbage, pinochle, gin rummy, hearts, pitch, euchre and sheepshead.

GS95 Mini Prix: A grand prix car racing game from France. Race a Formula 1 Lotus.

IIGS Sound & Music

GS53 SoundSmith: This shareware program is the hottest music program available for the IIGS. Plays up to 14 tracks.

GS54, GS55, GS56, GS57, GS66 & GS97 SoundSmith Song Disks: Six full disks of SoundSmith music files. Order one or all 6.

GS94 Modulae: If you liked Nucleus, then you'll love this sound and graphic demo program which really shows off the IIGS.

GS63 HyperStudio Sound Effects: A collection of sounds in ACER format which are just right for use with *HyperStudio*.

HyperStudio Stacks

All HyperStudio Stacks require Roger Wagner's HyperStudio program version 2.1.

HS08 HyperSpace: Two educational stacks that teach about our solar system and man's attempts to explore it.

HS10 & HS11 Williamsburg Travelware: Take a tour of colonial Williamsburg with this two-disk HyperStudio stack.

HS13, HS14 & HS15 Star Trek Stack: A complete encyclopedia of facts about Star Trek: The Next Generation TV series.

HS18 & HS19 A Capitol Experince: Travel to the Washington D.C. and visit the White House, Capitol building and other historic places.

HS20 & HS21 Dinosaur Stack: Learn all about dinosaurs with this excellent two-disk stack. For each type of dinosaur this stack shows the relative size, a map showing the geographic distribution, some textual information and three scanned pictures.





GS106 Hodge Podge Shop GS Graphics: An all-new collection of over eighty multi-color graphics for use with *Print Shop GS*. This disk is shipped with a sheet showing all the graphics on the disk. Copyright (c) 1990 Big Red Computer. Only $3.50.

IIGS Graphics

GS07, GS08, GS29, GS35, GS77 & GS78 Graphics, Fonts and Borders for Print Shop GS. Six completely different disks for use with *Print Shop GS*. Each disk contains at least 72 graphics and all but GS35 also contains borders and fonts. A sheet showing what is on each graphic is shipped with the disk. Each disk is only $3.50.

GS100 Holiday Print Shop GS Graphics. Our best selling multi-color graphic disk for use with Print Shop GS. Contains Santas, Easter bunnies, Valentines and much more.

GS107 Yet Another Fractal Program: This program allows you to create Mandelbrot, Julia, Dragon or Biomorph fractal graphics. It is very easy to use and contains many help screens. You can limit the size of the fractal to be generated and the number of iterations so that full-color fractals can be generated in as little as 15 minutes. There are also many pre-generated graphics on the disk so you can see how they look.

GS48 GIF Graphics: 75 colorful graphics in GIF format plus an all-new IIGS graphic utility program to view or convert them.

GS59, GS64, GS67, GS73, GS74, GS86, GS87 & GS98 Super Hi Res Clip Art: These 8 disks contain clip art graphics that we either converted from the Mac or scanned in on the IIGS. They're great for use with *AppleWorks GS* or *HyperStudio*.

GS15 & GS31 320-Mode Color Screens: These two disk contain 320-mode full color graphics which are for IIGS paint programs.

GS40 Fractals & Animations: This disk contains 11 programs that create animated computer graphics or fractal displays.

GS49 Star Trek Montage: A collection of SHR graphics based on Star Trek.

GF04 Billboard Fonts: A collection of GS-type fonts for use with most GS programs and SuperFonts. These are large-sized fonts which work great for newsletter headlines.

GS96 3200-Color Graphics: See the full potential of the IIGS with this slide show of 3200-color SHR graphics.

GS43 World's Best Art: Scanned SHR reproductions of the works of Degas, Botticelli, Monet, Dali, Da Vinci, Wyeth, and Lautrec.

IIGS Utilities

GS47 GS/OS Goodies: Our all-time best selling disk. This disk contains over 20 brand new desk accessories including D.T. Painter, Screen Saver & GS Catalog. It also has IconEd and SCSI Utilities.

GS83 Customize GS/OS: Load fonts and desk accessories on the fly, plus A2.FX, Finder.Patcher, Instant Icon and RunQ.

GS99 Twilight Screen Saver: This shareware CDev is a completely modular screen saver which operates under the Graphic Control Panel. This is a must-have program for all IIGS owners.

GS76 Productivity Disk: This disk is loaded with useful tools including Write-It!, a desk accessory which is a complete word-processing program.

GS93 IIGS Telecommunications: If you own a modem, you need this disk. It contains the GS-verison of Shrink-It plus a host of other telecomm programs.

K301 DB Master 1.0.1 3.5" Version: A complete shareware database management system for the Apple IIe, IIc or IIGS.

GS62 Desk Accessories: Included on this disk are DA's that allow you to format a disk, copy and view files, control an ImageWriter printer, preview fonts and locate files on your hard disk. Plus a Tetris-like NDA game.

GS32 FontAsm: This is the best shareware GS-font editor available. Plus it comes with several new fonts.

GS14 Sound Studio: This program allows you to play and manipulate digitized sounds.

GS22 UtilityWorks: This shareware program has the ability to load, save, and print any type of SHR graphic, text file, AppleWorks WP file, icon file, GS-font file and much more. A very useful program.



Taito Closeout: We've purchased the remaining inventory of Apple II games from Taito and are offering them at special reduced prices. This includes the best-selling new Apple IIGS game called Rastan. In Rastan, you are a legendary young warrior and must slay gargoyles, dragons and a slew of wretched creatures. This program has the best animation and sound effects of any IIGS game.

TA62 Rastan GS 24.00
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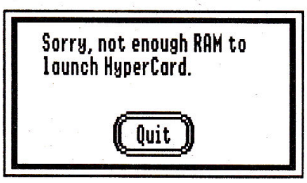
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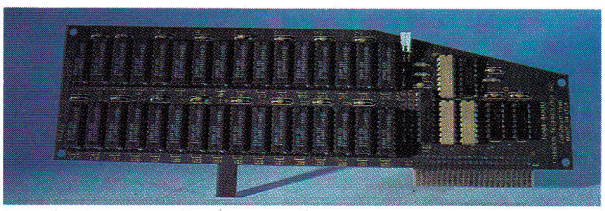
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HyperCard IIGS Needs RAM

Apple IIGS Owners
Are you planning to use HyperCard GS? Do you use memory-intensive programs like AppleWorks GS, GraphicWriter III or HyperStudio? Would you like to create stacks with sound and/or graphics? Has that message "Not Enough Memory" been popping up with alarming regularity?

Apple IIe Owners
Do you use programs like AppleWorks with Timeout, Publish It 3, BeagleWrite, Tutor tech or BusinessWorks? Have you been suffering through accessing your Timeout applications from disk instead of loading them into RAM at startup? Would you like to add graphics to your Publish It! documents or Tutor tech stacks?

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WHAT'S NEW

edited by Paul Statt

THE BEST APPLEFESTIVITIES THE BEST

THE BEST THE BEST THE BEST THE BEST

While the big news at AppleFest in Long Beach, California, last December was the introduction of HyperCard IIGS (see February's feature "The Apple II Culture Reborn," p. 37), the Apple II community also saw the first annual Apple II Achievement Awards, presented by Apple Computer. The big winners at the ceremony were Roger Wagner and HyperStudio. (See box at right.)

Matt Deatherage, the widely known Apple engineer who acted as master of ceremonies at the Long Beach Museum of Art, noted that "even though Apple's direction for the II hasn't been clear, and that's made it a rough year for many of our developers, these folks have produced some fantastic work."

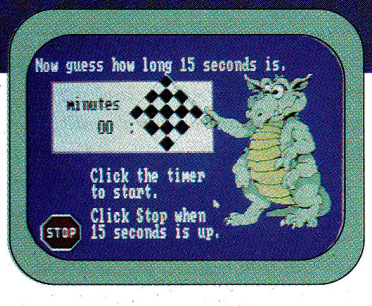
The award for best hardware of the year went to Apple Computer for the Apple II High Speed SCSI Card; the honors for best software of the year were given to Roger Wagner Publishing for HyperStudio 2.1.

Roger Wagner, president and founder of the company that bears his name, also received a special Apple II Individual Achievement Award recognizing his outstanding contribution to the Apple II community. Roger Wagner was modest — even if his necktie wasn't — in accepting, saying that the Individual Achievement prize "should be an award to the entire Apple II community."

"We were flattered and extremely honored," said Garland Buckingham, vice-president of Roger Wagner Publishing. "As Roger said at the presentation, we feel that these awards should go to every Apple IIGS owner as well as to us. Our vision of adding value and usefulness to Apple II computers goes far beyond HyperStudio." — **P.S.**

- **Best Shareware Program** to Andy Nicholas for ShrinkIt
- **Best Educational Software** to Lawrence Productions for Katie's Farm
- **Best 8-bit Apple II Software** to InSync Software for ProTerm 2.2
- **Best 16-bit Apple IIGS Software** to Roger Wagner Publishing for HyperStudio 2.1
- **Best Innovation** to CV Technologies for RAMFast SCSI Card
- **Best Multimedia Achievement** to Roger Wagner Publishing for HyperStudio 2.1
- **Best Development Tool** to Simple Software Systems for Genesys
- **Best Debugging Aid** to Apple Computer for GSBug v1.5
- **Best Apple II Periodical** to Resource Central for *A2-Central*
- **Best On-Line Service** to Quantum Computer Services for America Online

INTEGRATED LEARNING



Schools that use both Apple IIGS and Macintosh computers will be glad to hear the news that Jostens Learning Corporation (6170 Cornerstone Court East, San Diego, CA 92121-3710, 619-587-0087) has introduced a **K–8 Basic Learning System** that features nearly 2000 lessons in reading, mathematics, and language arts. If you use a Macintosh file server, you can run the lessons concurrently on Macs and Apple IIGSes.

The K–8 Basic Learning System, as with all Jostens systems, is a comprehensive supplement to an entire curriculum. All lessons at each level and in every subject emphasize learning strategies and higher-order thinking skills. You even can correlate them with basal texts and standardized tests, as well the goals of a teacher, school, or district. The product's Reading Curriculum Plus meets the recommendations of many national associations of reading teachers, and its Mathematics Curriculum meets the standards of many similar groups of math instructors. Schools that share Macs and Apple IIGSes will also want to consider the benefits of Jostens' Instructional Management System. If you use a Macintosh as a file server, this product will give you the power to plan the instructional program for an entire school, implement it, and monitor its progress. Using the familiar Macintosh interface, point at the part of the school that interests you, and you'll receive information. You could access, for example, student records from the "office," instructional materials from the "media center," or letters from your "mailbox."

Contact Jostens for information on pricing and availability, 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: The APA receives many phone calls from distraught AppleWorks users with important files that have become unreadable. Special attention toward careful saving and backup of valuable AppleWorks files pays dividends for the prudent user. A faulty save or saving a corrupted file over a good file can destroy many hours of input and irreplaceable data. The cause of file corruption is usually unknown and difficult to trace — a power surge, static, a defective disk drive or disk, a "gremlin" in a patch, or even a bug in AppleWorks itself. Experience indicates that corrupted file saves are most common when marginal disk space is available.

Develop a strategy to secure data when working on your important files that are periodically updated. The APA suggests that while working on these files, you rename them on the desktop by adding a numerical suffix to the filename. Then save to a working disk or directory separate from your storage volume. Save each time with the filename's numerical suffix incremented so that you don't overwrite the most recent version. At the end of the session reload the final version into AppleWorks from the working volume. Once assured that your updated file is sound, rename to its original filename and save, replacing the original file on your storage disk. Then leave a duplicate file, known to be good, on your working disk.

Keeping third copies of your more important files on a "vault" disk is a good idea. Veteran users maintain an adequate supply of freshly formatted disks ready for extra file saves. Occasional hardcopy printouts of data are extra insurance against serious information loss.

If you do experience a corrupted file without adequate backup, all is not always lost. Complete file recovery is often possible. At minimum, you may be able to recover raw data by loading into the AppleWorks word processor as if it were an ASCII (TXT) file. **RepairWorks**, from Q-Labs, Inc., and **Change-a-File**, by APA member Harold Portnoy, are programs that repair most corrupted AppleWorks word-processor and database files. If recovery of your damaged file or its data remains unsuccessful, contact a file-recovery expert via the APA.

Sound file-save and backup strategies take a little extra time and discipline, but the consequences of corrupting a file without adequate backup can incur considerably more time lost (not to mention your valuable data). Remember Murphy's Computer Law: "Lost data occurs in direct ratio to the period of time since the last file or disk backup."

AW Enhancements: **Time-Out FileMaster**, from Beagle Bros, Inc., by APA member Randy Brandt, works within AppleWorks to facilitate most file and disk housekeeping chores — and you don't have to leave AppleWorks to use a dedicated ProDOS utility program.

FileMaster includes utilities for disk formatting, duplication, erasure, comparison, renaming, or listing files. Also included are file utilities for copying, comparison, locking and unlocking, renaming, deletion (including empty directories), filetype change, and clearing of backup bits.

AW Macros: Here's an autosave macro that will accomplish much of what we've suggested in the accompanying "AW Tip." Ample disk space should be available when using this macro routine. It requires TimeOut UltraMacros v3.1.

```
T:<all msg ' Enter interval of autosave in minutes  (1-60) ' :
   $0 = getstr 2 :                          { store user's input }:
   Interval = val $0 :                      { convert to numeric }:
   if I > 60 then rpt : endif :             { 60 min is enough }:
   SA-1>!                                   { to main routine }—

1:<asr :
   $0 = time24 :                            { get current time }:
   $1 = left $0, 2 :                        { store hour }:
   $2 = right $0,2 :                        { store minute }:
   Hour = val $1 :                          { convert to numeric }:
   Minute = val $2 : M = M + I :        { Convert and add interval }:
   if M > 59 then H = H + 1 : M = M - 60 : endif : { past the hour }:
   if M < 10 then M = 10 : endif :          { kill 0-9 - to much code }:
   if H > 23 then H = 0 :  endif :          { handle midnight }:
   msg ' Next AutoSave at ' + str$ H + ':' + str$ M + '  —
         SA-X Cancels '
:wake sa-2 at H:M>!                         { sets alarm macro }—

2:<asr : keyto 13 :                         { waits for Return key }:
   oa-n : sa-. : left : oa-ctrl-w :         { increments file number }:
   left : sa-3 : rtn :                      { #9 to #0 }:
   Type = peek $c6b :                       { check filetype }
   if T = 1 then esc : endif :              { for ADB name change }
   oa-s : sa-1>!                        { saves - repeats process }—

3:<asr z = peek #curschar :            { handles file #9 increment }:
   if z > 185 print "0" : endif>!        { and non-numbered files }—

X:<all oa-ctrl-N : Msg ' AutoSave Cancelled ' >!
```

AW Personality: APA member Robert McClelland, from Beaumont, Texas, uses an MS-DOS machine at work as a petroleum engineer, but finds the Apple II environment more suited to his personal needs. Active in Apple user groups, he has spent many a midnight-to-dawn session composing macros. His Beaumont Software Company publishes a popular collection of no-nonsense macros called **Soup Up Classic**. Bob can easily be encouraged to take a break from the keyboard for a chess game, though, or a good ping-pong match.

APA News: **Don Aquilino** (of **Alpha Check** fame) has released **DeskWorks** and **LetterWorks**, which include easy access to rolodex, notepad, and other helpful accessories. **Dave Gair** has been teaching school since September and has built a collection of teaching aids for both BASIC programming and AppleWorks.

APA members contributing to this month's notes include Don Aquilino, Randy Brandt, Dave Gair, Bob McClelland, Gary Morrison, Mark Munz, and Harold Portnoy. Templates, macros, and documentation for tips described in this column are available on 5.25-inch disk for $4 shipping. Include the *inCider/A+* issue date with your request. For information contact the APA, 6531 Lexington Avenue, Los Angeles, CA 90038, modem apa@pro-apa.cts.com (213) 463-9289, or voice (213) 469-9916.

CHANGING ADDRESS

Apple II Developer Technical Services at Apple Computer in Cupertino announced recently two new AppleLink group addresses for the exchange of information among Apple II developers and programmers at Apple and around the world.

One address, **AII.TECH$**, will have a technical focus; the other, **AII.NEWS$**, will be for general purposes. Apple encourages all AppleLink users to subscribe to one or both addresses. Subscribers will find all discussions on the two new boards in their AppleLink mailboxes. If you prefer not to sift through all that mail yourself, Apple will do it for you by placing regularly updated archives of discussions on AppleLink, America Online, CompuServe, and GEnie. AppleLink users who want to subscribe merely have to send a request to **AII.ADMIN** on AppleLink.

AppleLink is an on-line service available to qualified developers, user groups, dealers, and others with a close relationship to Apple Computer. For more information, contact Apple Computer at 20525 Mariani Ave., Cupertino, CA 95014, (800) 776-2333. — **P.S.**

GLOBAL ISSUES

A company called PC Globe, Inc. (4700 South McClintock, Tempe, AZ 85282, 602-730-9000), has earned praise for its electronic atlases of the world and the United States, called PC Globe and PC USA, available for IBM PCs and compatibles only. But evidently PC Globe, Inc., has made the connection that great educational software should run on the greatest educational computers, and therefore has released its first Apple II products, **GeoQuiz** and **GeoPuzzle USA**.

GeoQuiz ($49.95), for the Apple IIGS only, combines a world atlas of maps with a gazetteer of geographical information in a number of entertaining games. The emphasis is on information — economic data such as GNP and currency as well as area and population. It's a neatly programmed game, evidently of French origin — its authors are Xavier Schott, Jean-Pierre Curcio, Nathalie Merino, and Luc Serard. The origin of GeoPuzzle USA ($39.95) is very clear — it was written by John Tomchay and John Schappert for Eclat Microproducts, and was reviewed in inCider/A+ in November 1990 (p. 80). Carol Holzberg wrote that Geographic Jigsaw, now called GeoPuzzle USA, "consists of four activities . . . that reinforce basic skills . . . [with] game-like challenges enhanced with colorful graphics and sound effects." Some of her concerns, such as an inability to print, are answered by GeoPuzzle USA; others, such as an inability to save games, are unchanged. The Apple IIGS version looks clearer than the Apple IIe/IIc version; the games are otherwise identical. — **P.S.**



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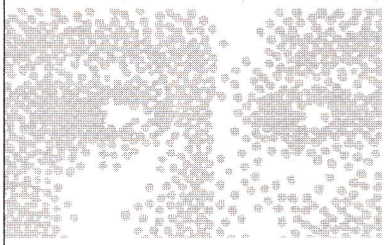
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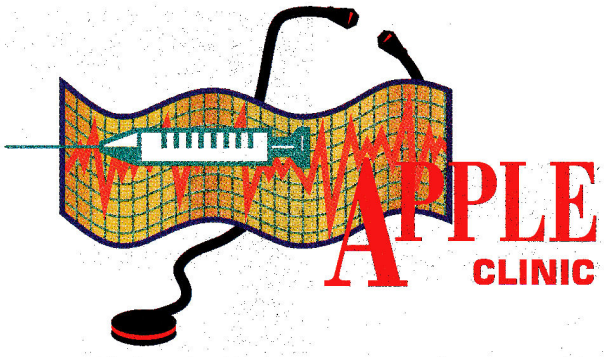
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CRACKING THE CODE

With a BASIC program you can determine what's up with your Applesoft control characters — as well as what's down, right, and left.

By CECIL FRETWELL

TAKE CONTROL

WHAT APPLESOFT BASIC control characters determine the use of the up, down, right, and left arrow keys on the Apple II?

John F. Logan
Cody, WY

The BASIC program in the accompanying ***Program listing*** *will tell you the codes for any key. RUN it and press a key, such as the up arrow, to determine its code. We don't use an INPUT statement to read the keystroke, because so-called editing keys, such as the up, down, left, and right arrows, are trapped by the INPUT code and are never passed to your program.*

Program listing. Applesoft BASIC character codes.

```
100 PRINT "WAITING FOR KEY ";
110 IF PEEK (49152) < 128 THEN
    110: REM WAIT FOR KEY
120 C = PEEK (49152) - 128:
    REM GET KEY PRESSED
130 PRINT C: REM SHOW CODE FOR KEY
140 IF PEEK (49249)  >= 128 THEN
    PRINT "OPEN APPLE"
150 IF PEEK (49250) >= 128 THEN
    PRINT "CLOSED APPLE"
160 POKE 49168,0:
    REM KILL KEYBOARD STROBE
```

If you want to control the cursor with PRINT statements, CHR$(8) moves the cursor left, CHR$(31) moves it up, CHR$(28) moves it right, and CHR$(10) moves it down. Make sure you use the semicolon (;) when necessary to avoid moving the cursor to the beginning of the next line after you issue the desired cursor control command.

RENUMBERING BASIC

I'D LIKE TO RECOMMEND to my fellow *inCider* readers Apple Computer's *BASIC Programming with ProDOS* manual, which comes with the company's ProDOS BASIC Programming Examples disk.

The documentation is well written and presupposes a fair degree of computer intelligence on the user's part. It even includes a section for the amateur programmer, called *APA* (Applesoft Programmer's Assistant, p. 227), containing many excellent aids such as the Renumber program, which cuts and pastes listing lines automatically so that they're in correct numerical order.

Jack C. Bush
Fernley, NV

I've relied on APA so much that when I work with any Applesoft BASIC program, I nearly can't function without it. The manual and disk (part number A7Z0015) are available from APDA (Apple Programmers and Developers Association, Apple Computer Inc., 20525 Mariani Avenue, MS 33-G, Cupertino, CA 95014-6299).

The price in the summer 1990 catalog is $29.95. You can order by phone by dialing (800) 282-2732 in the United States; (800) 637-0029 in Canada; or (408) 562-3910 if you're calling internationally.

The following is a list of the full power of APA (from p. 228 of the manual): automatic line numbering, turning off automatic line numbering, renumbering a program, putting a program on hold, merging two programs into one, deleting remarks from a program, displaying control characters, suppressing control characters, calculating a program's length, producing a cross-reference listing, converting decimal to hex and hex to decimal, and clearing the APA program from memory.

To add temporary APA commands to ProDOS BASIC, boot BASIC, then run the APA program (–APA). The dash is Applesoft's "smart" run command. It determines a program's file type and then RUNs, BRUNs, or EXECs it as necessary.

APA commands are especially handy because you can type them into your program or use them in immediate execution just like regular BASIC commands. The only problem is that if you reboot your Apple, you must reload the commands.

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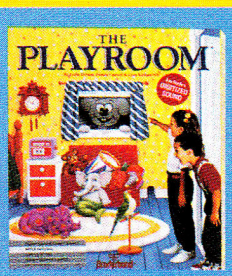


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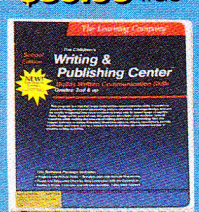
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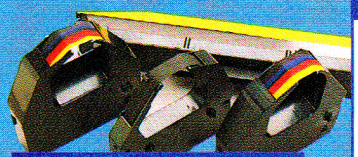
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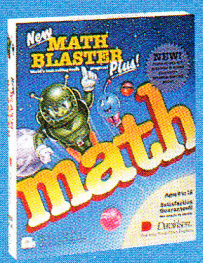
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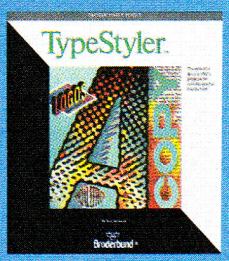
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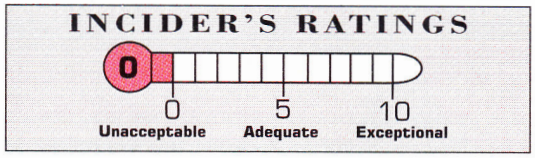
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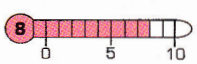


WHERE IN TIME IS CARMEN SANDIEGO?

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With V.I.L.E. criminals on the loose once again, it's not surprising that reports of disappearing artifacts are increasing at an alarming rate. Carmen's hired thugs (including the notorious Justin Case, Minnie Series, Russ T. Hinge, Lynn Gweeny, and Sybil Servant) are wreaking havoc on the centuries. They've looted the *Bhagavad-Gita* from India (900 A.D.), lifted a samisen from Japan (1566), and nabbed the *Magna Carta* from England (1215). Gang members have even made off with the Hohokam Native American village of Snaketown (13th century), India's Peacock throne (1629), and Mao Tse Tung's Chinese pajamas (1949). Only a super sleuth can stop these international time-traveling renegades. Maybe you're the one the Acme Detective Agency is looking for.

As one of the volunteer gumshoes you'll investigate crimes, capture criminals, and retrieve stolen booty. You'll even receive an "Acme Chronoskimmer" to travel back and forth in time, searching for clues to crack each case. In your travels, you'll acquire a wealth of historical, cultural, and geographical information.



Time-travel with Carmen and her gang.

Activate the time-warp sequence, launch the Chronoskimmer, and get ready to roam the globe. Carmen Sandiego is alive and well, but in hiding. Hurry up — you have only a limited amount of time to catch this thief.

Like its predecessors — Where in the ➪

Photography by • Ed Judice

We don't recommend plucking your Vulcan™ off a table and dragging it along the ground.

But it's nice to know you could.

October 30, 1990

Gentlemen:

I use my Apple IIGS with a Vulcan and an AE A/D converter at professional waterski tournaments to measure jump distances. I wish to commend you on the durability of your Vulcan Hard Drive.

I was using the computer at the U.S. National Waterski Championships in August when a gust of wind picked up the canopy under which we were operating. Wires running to my system were attached to the canopy and when the canopy blew away, it pulled the computer with the Vulcan off the table and onto the ground, dragging it along the ground some twenty feet. I was actually in the process of writing data to the hard disk at the time.

Even though the incident pulled many of the attaching wires out of the computer, no damage occurred to the computer or the hard drive. I subsequently verified all of the data on the hard drive and found no errors and no bad or damaged blocks in either ProDOS or MS-DOS (I use half my storage for my PC Transporter's MS-DOS files and half for ProDOS).

Needless to say, I am very grateful for a soundly built and well-engineered product.

Sincerely yours,
Roger Dilling
Milledgeville, Georgia

We hope you never drag your hard disk through the dirt, but can appreciate the engineering required to make the above letter possible. Until recently, if you wanted a hard disk for your Apple, you had to add an outdated, external box to your desktop clutter. Now, with Vulcan™ on the scene, you have an internal to consider. One that's lightning fast, clean, powerful and affordable.

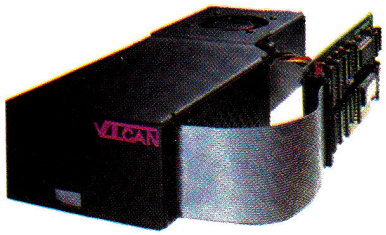


A glance at the other computer manufacturers; IBM, Compaq, Dell, Mac, tells you something. They're all very different systems, but all come with internal hard disks (it's hard to even find a Mac these days without an internal hard disk). The reason? Internals are the latest advance. The modern storage solution. They become a transparent part of your system, and in the case of Vulcan, actually enhance the rest of your system.

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Incider/A+ Magazine put it simply in their "Best of the Best" Holiday Shopping Guide: *"The best internal hard disk 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".* Vulcan incorporates the most popular standard protocols for a hard disk and includes an ultra-fast 16-bit data bus controller, not the less expensive 8-bit others use. And since Vulcan is fully compatible with our PC Transporter, you can create ProDOS or MS-DOS storage space, in addition to GS/OS, DOS 3.3, CP/AM or Pascal 1.3. No



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World, Where in the USA, and Where in Europe — Broderbund's Where in Time Is Carmen Sandiego? combines colorful animated graphics, music, and sound effects with exciting fast-paced adventure challenges. The software encourages youngsters to investigate crimes by doing research. Kids develop problem-solving strategies, while they take notes and find answers to perplexing puzzles.

Where in Time succeeds because it's both amusing and educational. Kids don't mind learning historical facts when it helps them win the game. In fact, the thrill of tracking down crooks motivates players to read the game's excellent 1300-page reference book, the *New American Library Desk Encyclopedia*. Youngsters eagerly pore over the encyclopedia's pages in search of character clues that pinpoint a bandit's identity and reference clues that help them zoom in on a criminal's hiding place. Reference clues provide factual details about historical events, famous personalities, and cities, as well as information about countries, cultural artifacts, and foreign languages.

A GOOD CROWD

As with other Carmen Sandiego programs, Where in Time detectives know they're on the right track when they see suspicious-looking characters sneak across the screen. If time runs out before they can apprehend the criminal, Acme's chief terminates the chase and places the case in the unsolved-crimes file. Players must be careful to obtain a warrant for a suspect's arrest before confronting the criminal. If a detective comes face to face with the crook without paperwork in hand, the thief will escape.

Time travelers secure a warrant by entering character clues into an evidence database. These clues identify a criminal's sex, hair color, and eye color, and pinpoint the crook's favorite artist and author. When there's enough information in the database, detectives can apply for a warrant. The evidence computer checks character information against criminal files — if it finds a match, it issues a warrant. If not, players must interview additional witnesses to collect more clues.

Detectives begin as Time Cadets. If they solve a case without running out of time, they win promotion to the rank of Time Patroller. Additional successes move them further up the ladder to Time Investigator, Time Detective, Ace Time Detective, and finally to Super Time Sleuth. Players who solve all crimes at the level of Super Time Sleuth secure a place of honor in the program's Hall of Fame. Games become harder at successive levels — the program provides less time to find the crook and the clues become more ambiguous.

TAKE TIME

Where in Time travels through 1500 years of history, stopping in 12 countries during four different time periods. It offers 16 possible suspects and dozens of crimes to solve. Detectives may save a game in progress and resume play at the same spot next time. The duty roster has room for 24 detectives. Once you're listed, the program keeps a record of crimes you've solved to make sure they don't repeat in future games.

Where in Time has many strengths — most importantly, the game is easy to play. Experienced Carmen Sandiego sleuths will recognize the familiar point-and-shoot interface. Novices will appreciate the way on-screen instructions make program operation a breeze.

Although kids can control the software with keyboard, joystick, or mouse input, mouse control is by far the best way to play. The program defaults to the mouse automatically when it detects the device installed. You can also play with or without sound. With the sound turned off, youngsters can run the program in a classroom without disturbing others.

Where in Time does have a few character flaws. Players have to move quickly to beat the clock. The program lacks a pause-game feature, so in effect it penalizes youngsters for taking time to interpret clues. If youngsters could stop the clock, they wouldn't hesitate to read more information in the encyclopedia or think up other puzzle-solving strategies.

Where in Time Is Carmen Sandiego? is designed to keep youngsters entertained as it teaches world geography and history. Because it's not a typical arcade drill-and-kill activity, teachers will appreciate the program's value as a supplement to conventional textbook instruction, and parents will appreciate the program's emphasis on research and deductive reasoning.

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

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- If you transfer ASCII files from a Macintosh SE to an Apple IIGS via Apple File Exchange, you'll love *CR Stripper* — the utility that strips or adds carriage returns to a highlighted block of text. (AppleWorks' *Find/Replace* command can't strip the returns from ASCII text files.) Simply use AppleWorks to open a word-processing file, format the document with left and right margins equal to zero, and select the item *CR Stripper* from the TimeOut menu. When the job is complete, reformat the document with appropriate margins.
- If you need to index a printed document, the *Analyst* utility creates a list of all words in a designated word-processing file, and tells you the number of times you've used each word. Analyst has no problem compiling word lists from the sample TimeOut files included on the applications disk, but if you use the utility to create a word list on a 28K file, the application may crash.
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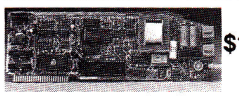
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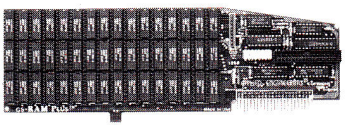
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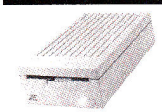
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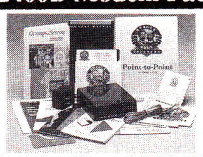
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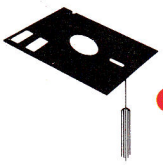
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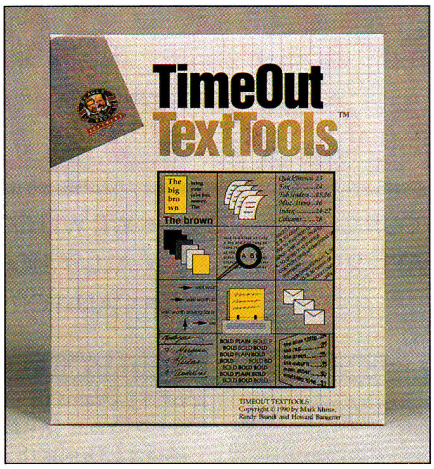
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REVIEWS



Enhancing word power with TextTools.

add or delete words and phrases before Indexer sets to work. After Indexer calculates page breaks, it asks, "Are you lazy?" If you answer yes, the utility will generate an index automatically that includes every occurrence of each word on the list. Answering no directs Indexer to show you each word in context, with the option of including or ignoring highlighted text. Then the program places all listed words and phrases with their respective page numbers into the Clipboard. When you make a new file, copy Clipboard contents to the new document and save the file.

• *TOC Generator* lets you create a table of contents for any AppleWorks word-processing file by embedding appropriate markers (Option-SM) in the file, identifying specific TOC entries (such as chapter numbers, chapter titles, topic headings, subsections, figures, and tables). When TOC Generator compiles a document's contents page, it places the information on the Clipboard; you then copy its contents wherever you want TOC to generate the table. The finished contents page will print complete with dot leaders and perfectly aligned columns of text.

• Team up TextTools' *QuickStyles* with the AppleWorks program and you can create style sheets with up to 127 print formatting options, including information that specifies headers, footers, left and right margins, line spacing, indentations, tab rulers, and bullets. Save any style sheet as a TimeOut application and you can call it up from the TimeOut applications menu.

• TextTools' *Glossary* application lets you insert boilerplate text, such as addresses, salutations, and other repeated phrases. It supports embedded printer commands, such as boldface type, underlining, date, and time.

• *QuickTabs* lets you configure up to 20 custom AppleWorks tab rulers using a powerful ruler editor.

• *MarkMerge* offers enhanced mail-merge flexibility by simplifying the job of printing personalized form letters or adding database information to an AppleWorks word-processing file.

• *MultiPrint* lets you print up to 100 word-processing files in one batch. It also lets you link those files for continuous numbering up to page 512. If you ever need to print a multichapter document, this utility will come in handy.

• *CopyBlock* copies text onto text you've highlighted, making it easy to lay out multicolumn pages.

• *SuperFind* lets you call up and replace a variety of printer options or embedded commands. For example, you could call up SuperFind to search for all instances of *left margin 1.0* and replace them with *left margin 1.5*. Or, you could convert every boldface marker to underline.

NO SURPRISES

TimeOut TextTools' most important feature is its ability to let you access the utilities from within AppleWorks. As with all Beagle Bros' TimeOut utilities, you don't need to quit AppleWorks before calling the applications into operation.

If you've installed other TimeOut applications, TextTools offers no surprises. Its installation program modifies AppleWorks automatically, so that you can integrate additional TimeOut utilities into the program; it then copies TimeOut TextTools applications to the disk you designate. (Be sure to work only on a backup copy of AppleWorks. Never modify the original AppleWorks disk.) Once installed, you can call up the TextTools menu within AppleWorks by pressing Open apple-Escape (OA-Escape). After selecting the desired utility, you can perform required tasks by issuing appropriate keyboard commands. When you complete a task, press Escape to return directly to the AppleWorks desktop. There's no need to reboot.

TimeOut TextTools breathes life into AppleWorks because it handles functions

AppleWorks neglects. You may not have to add all TextTools applications to your TimeOut menu repertoire, but the ones you do will make the word processor more powerful. And after all, if your computer is powerful you don't have to work so hard.

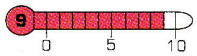
Carol S. Holzberg, Ph.D.
Shutesbury, MA

COLLEGE COST EXPLORER

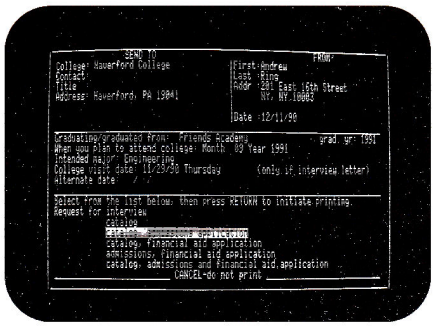
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or change dollar amounts, the program updates the calculations and presents new totals immediately. By presenting graphs of data on many United States colleges, this program gives you financial advice in a form you can understand. And if you're unfamiliar with some of the program's terms, a simple keystroke will bring up an excellent glossary, the explanations and definitions in which seem comprehensive.

If you're a prospective college student, you'll find College Cost Explorer helpful, too. Scan through its list of colleges and accompanying database of information, then highlight the schools located in a specific geographic location or those that provide an area of study that interests you. See how they stack up financially: The program shows the cost of attending for resident and nonresident students, then breaks down the figure into categories such as tuition and fees, books and supplies, transportation, and personal expenses. (Some of these values are facts, but others, such as transportation costs, are estimates.)

Next, the program provides a financial-aid profile that lists the percentage of students who receive financial help in the form of scholarships, grants, loans, or work-study programs. If you're a member of a minority group or if you're affiliated with a particular alumni or religious organization, you can find out whether the institution awards grants based on these qualifications.

Some colleges and universities award grants for high academic standing, musical or artistic talents, and athletic or leadership abilities, too. You can even see whether the institution of your choice waves tuition or other fees for senior citizens, minorities, college employees, unemployed parents, or children of alumni.

Finally, you can find out whether the college or university will let you pay fees by credit card or in installments, or whether it offers prepayment discounts or allows deferred payments. As you explore the options for payment, the program will help you decide whether you want to pay from your current income, borrow in full, borrow and save, or save in full. (If you can afford to sock away a portion of each paycheck into a separate savings account, the latter is probably the best method.)

Even though you must take inflation into account, this program provides an excellent start on financing a college education.

COLLEGE PLANNER

Once you've "secured" the capital to pay for a post-secondary education, you can start the process of choosing the college or university that fits your needs. Thanks to College Planner, you can simplify this time-consuming and often stressful process. This program will help you assemble and organize up-to-date information about a select group of colleges. Unlike College Cost Explorer, this program isn't a database; instead it's a shell you fill with data.

To use College Planner, just enter information regarding the institutions you're considering into two full screens. Each screen divides the information into four sections. You can type the name and address of the college or university as well as the name of the person to whom you

Continued on p. 108

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A Learning Society

By Bernie Gifford, Vice President of Education, Apple Computer

Children, it's often said, are our most valuable resource. In an age that combines scarcity with ecological awareness, we must tap as much of every resource as we can today, but must also be careful to renew our resources for tomorrow. Our schools can't afford to "lose" a single child — each one is too precious. Apple can help. Apple's commitment to education — a commitment that goes back more than a decade — has never been greater and its vision never clearer.

Apple's vision is a society in which all are learners — young people, grown people, older people, persons of different ethnic and cultural backgrounds, people with disabilities — and the learning doesn't stop just because they happen to have left school.

Apple technology can make that vision real. We imagine a "learning society," in which accidents of birth won't keep a gifted young woman from studying calculus because no one at her rural high school is qualified to teach it; won't prevent her grandfather, retired after 50 years of manual labor, from trying his hand at Spanish; and won't discourage a boy who can't see from learning to love Shakespeare. In short, Apple sees no boundaries.

Educational technology is no longer confined to the classroom. Networking and telecommunications, as well the growing acceptance of personal computers in the home, are changing the way we view computers as educational tools. Apple's goal is to empower every individual to learn throughout his or her lifetime.

What can Apple do to make the technology available to every individual? What does Apple mean when it says it must "make computers accessible"? Everyone must have the means to use a computer — both money and time. In the obvious financial sense, every person, and every school, must have the ability to buy a powerful computer of the highest quality with plenty of software available for it.

Apple's commitment to education has never been greater and its vision never clearer.

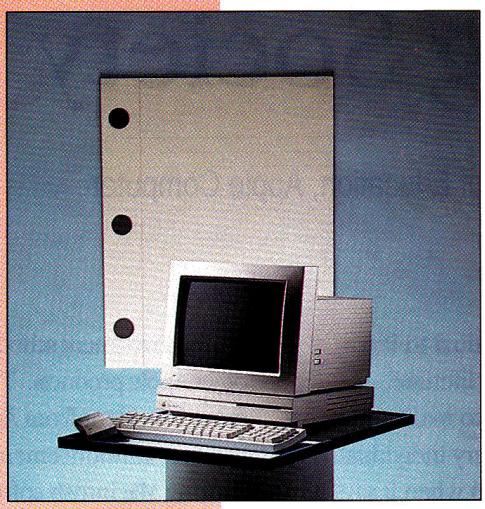
Apple addressed this need with the Mac Classic, our first Macintosh computer with a suggested retail price of less than $1000, and with the Mac LC, the first low-cost color Macintosh. The price/performance ratio of the Apple IIe and the Apple IIGS also continues to be a bargin for educators. These entry-level machines are of particular importance for educators, because they mean that Apple's newest technology, as well as tried-and-true technology, is available even to schools with limited budgets.

To make computers useful to teachers and students at all levels, Apple products are designed to be consistent. Products are designed to take advantage of new technologies, while also protecting the investment schools have made in other Apple products. That commitment is evident from Apple's recent product announcements. The LC runs existing Macintosh software and, with the addition of the Apple II Card, can run almost all of the thousands of applications designed for the Apple IIe. School administrators and teachers can enter into a partnership with Apple confident that as times change and technology evolves, Apple will continue to actively support its customers.

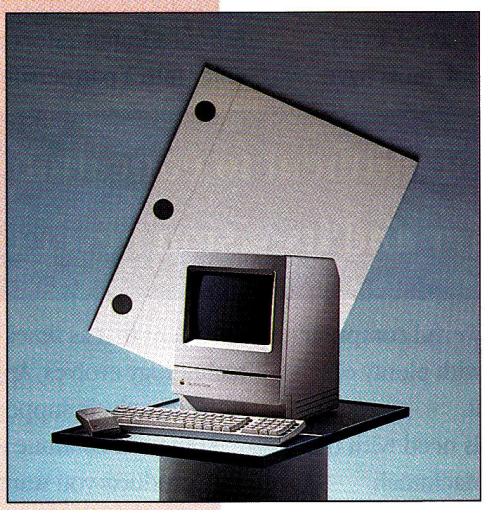
Apple will continue to produce the new products you want, while providing solutions that also protect your investment in Apple computers and software. Apple technology will advance educational technology while maintaining consistency, which makes computing accessible to individuals. This consistency also serves to protect your investment in Apple computers.

Apple's vision is of a world in which children, our most precious commodity, are a "renewable resource" — in which children can continue to grow and learn as they grow older and as times change. Apple technology is also renewable. In times of change, the ability to adapt to change is one of the few skills worth keeping. ❑

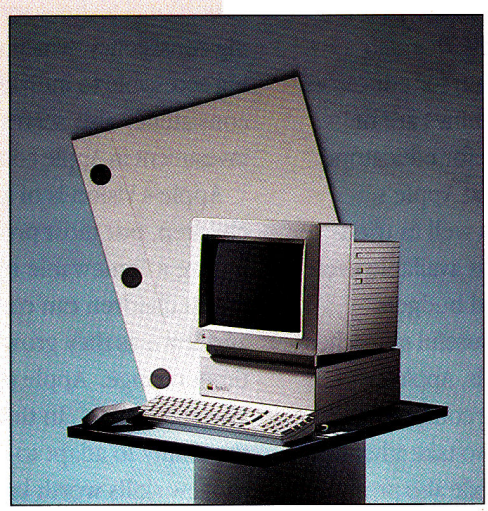
The Mac LC



The Mac Classic



The Apple IIGS



Doing What You Do Best

The choices just got harder. Not long ago, the phrase *Apple II* was synonymous with *educational computing*. But since the introduction of the most affordable Macintosh machines ever — the Macintosh Classic, LC, and IIsi — a teacher's nod can't automatically go to the Apple II. Now you have two decidedly different computer choices for the classroom.

What to do, what to do? You need to make intelligent buying decisions for your class or your school, decisions based on need, on software, on price, and on value. The Macintosh isn't the Apple IIe, nor is the LC the Apple IIGS. Each computer, whether a Mac or an Apple II, does what it does best.

APPLE IIE

If all your software comes from the vast library of classic 8-bit Apple II programs, from Davidson's Math Blaster and Sunburst's Muppets on Stage to MECC's Oregon Trail and Claris' AppleWorks 3.0, the Apple IIe is still a smart and inexpensive pick. Your dollars stretch further when you buy Apple IIes than if you buy IIGS machines or Macs. You can equip more desktops with a computer, or use what's left over to purchase printers or a larger selection of software. An Apple IIe is the most affordable Apple II workstation on an AppleTalk network.

APPLE IIGS

Great graphics and great sound mark the Apple IIGS as the most impressive machine in the Apple II family. Not only does the IIGS run 8-bit Apple II programs — with no extra card required — but it also lets you dip into the 16-bit software well to come up with such sophisticated programs as Seven Hills' GraphicWriter III or Claris' AppleWorks GS. If speech, sound, or music is your design, then the IIGS tops even the Mac. Preschool programs like Stickybear Alphabet talk to tykes, while music-

Apple computers represent both tradition and evolution in educational technology. The Apple IIe and IIGS support thousands of existing programs, while the Mac blazes a path into the '90s.

making software such as Music Studio lets older children compose and play their creations on the computer. Don't forget the dazzling color you get with the Apple IIGS, either. Paint programs that turn the screen into an electronic palette abound. If you plan on sticking with Apple II software, but want more power and more software selection, then the Apple IIGS fills the bill.

MACINTOSH CLASSIC

With a suggested retail price of $999, the Macintosh Classic is the most affordable Mac ever. Period.

It's small and comes with a black-and-white monitor, but the Classic opens the door to Macintosh software, enough of a reason to consider it for the classroom, dorm room, or family room. Developers are rapidly adding outstanding educational software to the already-heavy shelves that feature such productivity and business software as Microsoft Works and Quicken. (See "Macs March Along.")

Right now, though, the Mac Classic makes an excellent, and low-cost, writing workstation. With packages such as MacWrite II, even elementary-school kids can pound out reports, assignments, and stories on the Macintosh. The Classic's smart for simple desktop-publishing chores, too. And because it's Apple's least-expensive computer (even the IIe costs more when you include a monitor and a disk drive), you'll be able to expand your AppleTalk network much faster and further with Classics. The downside? Your Apple II software won't work on the Classic.

MACINTOSH LC

If you want the best of both worlds, the future of the Macintosh and the past and present of the Apple II, the Macintosh LC is the right choice. Unlike the Classic, the Macintosh LC can run 8-bit Apple II software — all you need is the $199 Apple IIe Emulation Card. That huge collection of Apple II programs won't go to waste if you invest in a Macintosh LC.

Roughly three times as expensive as the Classic (see the accompanying price-comparison chart), the LC earns its keep by bringing Macintosh color to kids' desks. For many educators, that alone seals the LC deal. But the LC has more going for it than just color. It's also about twice as fast as the Classic, includes built-in sound input (which will become an integral part of more educational programs as the months go by), and can easily be rigged with an internal hard-disk drive. That hard disk, along with the LC's fast 68020 microprocessor, makes this computer a terrific AppleTalk network file server.

To bridge the gap between the Apple II and the Macintosh you need the LC. In the blink of an eye, it can transform itself from an Apple II act-alike running AppleWorks to a powerhouse Macintosh running HyperCard 2.0. All in color.

Apple's upped the ante and complicated educators' lives by creating the Macintosh Classic and LC. No one said it would be easy.

But more choices mean more opportunities for putting the power of the computer to work in the classroom. New software expands the quality of electronic learning, and hurries the schoolhouse into the 21st century.

The choices may not be easy, but they are exciting. ❑

COMPARED THE COMPUTERS

	CPU	Color Monitor	Drive
Apple IIe	$829	$399	$329
Apple IIGS	$1149	$599	$399
Mac Classic	$999	n/a	n/a
Macintosh LC	$2499	$599	n/a

(All prices are suggested retail and reflect current basic configuration.)

Success Profile

Keith Gall

Gus A. Stavros Enterprise Institute/Enterprise Village, Largo, Florida

You know something's going on when fifth-graders ditch their Nikes and insist on dressing up for school. But all you have to do is visit Enterprise Village, an experience in economic education supported by the Largo, Florida, business community and staffed by the Pinellas County school system, to figure out why preteen boys would want to wear power ties and girls would be equally eager to dress for success.

"It's just like real life," says Keith Gall, manager of the Village. Housed in an 18,000-square-foot building and set up like a shopping mall, Enterprise Village boasts some 19 different storefronts, each sponsored by a local business, such as Century 21 Real Estate, Blockbuster Video, Barnett Banks, and McDonald's.

On a typical day more than 100 students come to the Village to hone business and computing skills developed in the classroom. Before visiting Enterprise Village the students learn, among other things, how to apply for a job and how to enter personal information into a database. Teachers act as personnel directors, assigning students to various positions in the Village.

Once "at work" in their Village businesses, the children perform the same kinds of activities real businesspeople do. Clerking at Eckerd's pharmacy entails ringing up sales, for instance, while working in the Better Business Forms print shop means using Apple IIgses (and The Print Shop or Certificate Maker software program) to produce banners and forms for other Village stores. The Village newsroom publishes an eight-page paper each day. After fledgling reporters write articles with AppleWorks 3.0 on Apple IIgses, their graphic-arts counterparts prepare paste-ups with illustrations created on a Mac II.

Young workers deposit the $15 or so in Enterprise Village wages they earn into their accounts at the make-believe Barnett Bank. The bank is staffed by school-aged tellers and data-entry clerks who mouse around with a HyperCard-based accounting system running on a Mac SE. The children can visit Village stores during their breaks and write checks from their accounts to purchase goods such as T-shirts or videotape rental certificates donated by the sponsors.

Gall's eventual hope is to computerize all the facility's businesses, but for now he's gratified that children leaving Enterprise Village take with them a deeper understanding of economics and the role computers play in the real world.

The Cooperative Spirit

All too often, perception colors reality. For years, people had the impression that the Apple II and the Macintosh mix as well as oil and water. The II's place was in the classroom. The Mac belonged in the office, people said.

Not true. Not even close. The Apple II and the Macintosh are simply two paths through the same educational territory. More and more, these paths parallel each other. Sometimes they even meet and merge.

The Apple II and the Mac can coexist and cooperate in the classroom, peaceably, without either computer giving up its best traits. With the right software you can put a Mac Classic and an Apple IIe, a Mac LC and an Apple IIgs, side by side in the same room and have students switch machines without getting confused. All you need is software that comes in versions for both the Mac and the II.

Such software, though similar in function and operation from Apple II to Mac, typically takes advantage of each computer's strengths. No crude translations here. Instead, Mac versions make use of that machine's higher video resolution and faster processor to effectively give you a new program. What follows is only a sampling of the act-alike Apple II and Macintosh software that's available.

Carmen Sandiego

Few programs excite kids' sense of adventure like Broderbund's Carmen Sandiego series, entertaining educational programs that teach geography. In search of clever thieves, kids sleuth their way around the world, the U.S.A, and Europe, collecting clues at each stop in the chase. They then use an included reference work — Where in the World Is Carmen Sandiego? offers an almanac, for instance — to plot the criminals' flight and beat them to the next city. Apple II and Mac versions of Carmen play identically, though Carmen on the Mac is in black-and-white. The most recent mystery in the series, Where in Time Is Carmen Sandiego?, takes kids through time as well as across continents, and is also available for both the Apple II and the Macintosh.

Publish It!

Publish It! 3, the acknowledged leader in Apple II desktop publishing, comes in Macintosh flavors, too: Publish It! and Publish It! Easy.

A full-featured desktop-publishing program, Timeworks' Publish It! is nevertheless so easy to use that students can write, design, lay out, and print newspapers and other school publications themselves.

Publish It! 3 on the Apple II and Publish It! Easy on the Mac are the most alike. You lay out publications by creating *frames*, box-like forms that hold text or graphics. You can wind text around graphics, lay out multi-column pages, and print to either a

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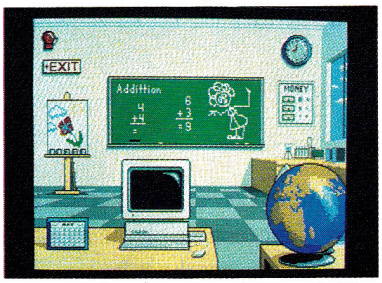
Call us about our New MAC LC Programs

ANNOUNCING . . .

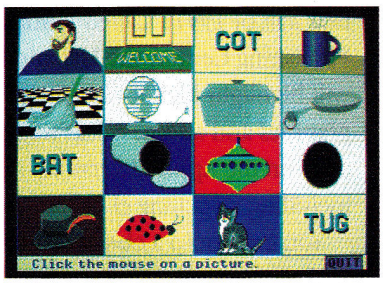
3 more GS programs that STAND UP and SHOUT!

Talking Schoolhouse *now* has 18 programs that take full advantage of the Apple IIGS with real human voice and super high-res graphics. No speech board is required.

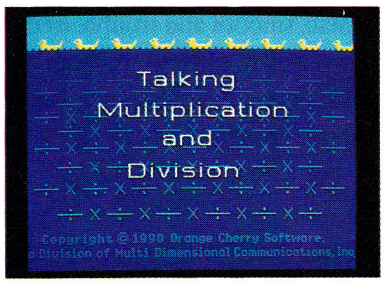
Our 3 Newest Programs . . .



Talking Classroom offers a thrilling assortment of multisensory learning activities in the areas of time, money, science, map, and calender skills.



Talking First Words uses voice and animation to introduce children to nouns and verbs.



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.

The suggested retail price for each program is $49, or $59 for the School Edition (with backups). To order or obtain information contact your dealer or call (800) 672-6002.





Toll Free Hotline (800) 672-6002

ORANGE CHERRY/TALKING SCHOOLHOUSE SOFTWARE
Dept. I, P.O. Box 390, Pound Ridge, NY 10576

Circle 237 on Reader Service Card.

At first glance, the Apple II and the Macintosh look like dramatically different computers. However, a more careful look reveals that the two systems complement one another and offer educators a well-rounded computing environment.

dot-matrix or a laser printer. Publish It! 3 for the Apple II lets you import AppleWorks files, while Publish It! Easy accepts most Mac word-processor formats. The next version of Publish It! Easy, available this spring, should foster the Apple II-Macintosh cooperative spirit even more, since it will let users open Apple II Publish It! 3 files on the Macintosh without losing formatting information.

Make the transition from Mac to Apple II, from II to Mac, smooth and trouble-free.

Alge-Blaster

This classic educational game from Davidson teaches the basics of algebra, and then some. Middle-school and high-school students will have no trouble switching between an Apple II and a Macintosh when Alge-Blaster is on the screen.

Five activities offer hundreds of equations and other exercises and problems, including translating word problems to algebraic expressions. Alge-Blaster covers everything from integers to equation solving. You can even add your own algebra problems to meet your students' needs.

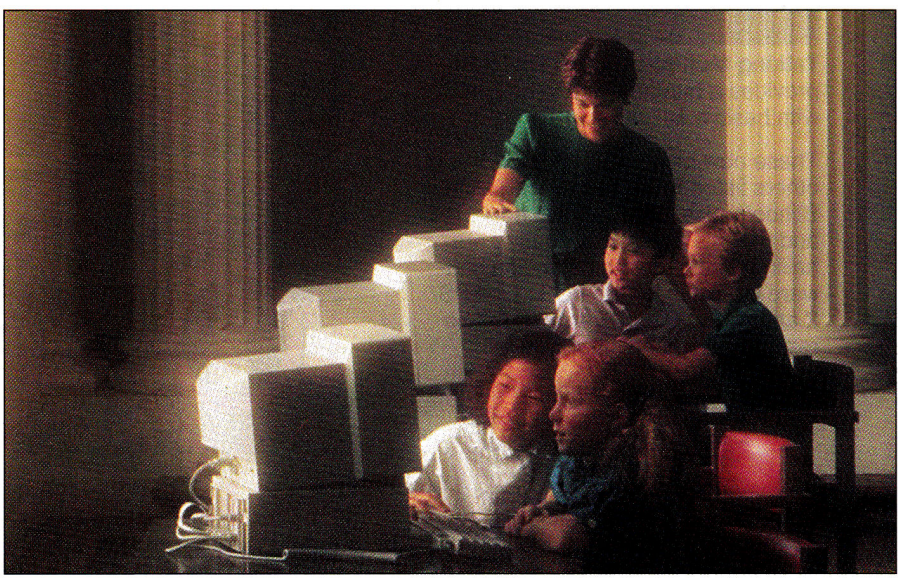
With the Macintosh version now seen in vibrant color on machines such as the LC, Alge-Blaster looks — and works — much the same on both Apple II and Mac systems.

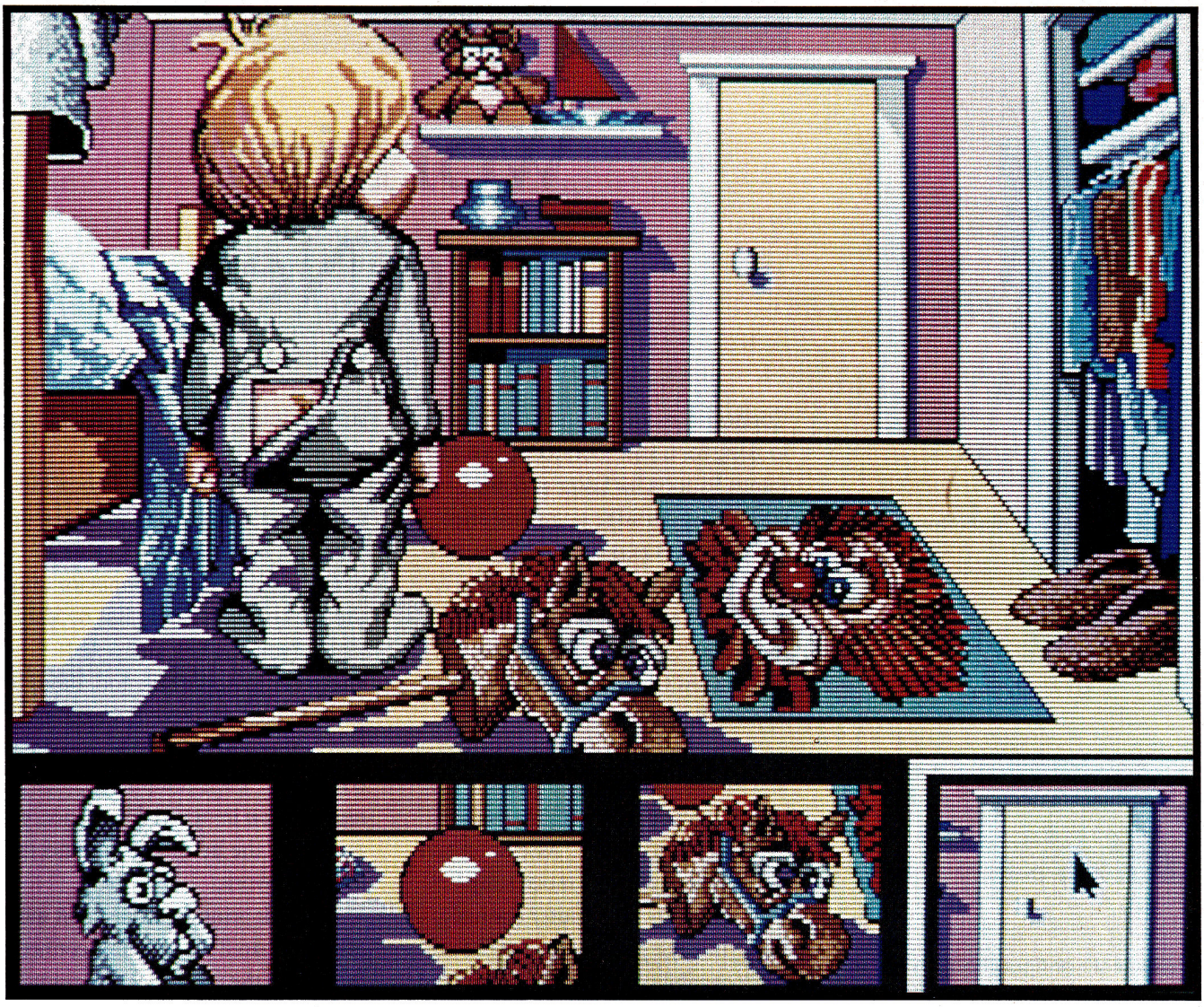
Children's Writing and Publishing Center

The Learning Company's best-seller is perfect for schoolkids who want a simple, easy-to-use program that helps them publish short newsletters and reports. Children's Writing and Publishing Center eases kids into desktop publishing and gives them plenty of graphics to punch up their publications. On an Apple II, Children's Writing and Publishing Center's easy-to-use interface lets youngsters concentrate on the message, not on how to run the software.

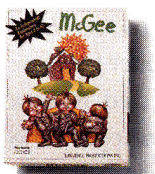
The Learning Company is currently working on a version for the Macintosh, scheduled for release in the first half of 1991. Called Writing and Publishing Center, the Mac model will highlight higher-resolution graphics and add new features never seen on the Apple II version, including a spelling checker.

You can equip a classroom with both Apple II and Macintosh computers, and make the transition from Mac to Apple II, from Apple II to Mac, smooth and trouble-free. With work-alike software on both machines, kids don't have to spend time learning how a program works. They can just spend time learning. ❑





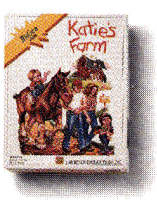
Look ma, no words!



Reading is not a prerequisite to fun–or to learning with *McGee,*™ *Katie's Farm,*™ and the new *McGee at the Fun Fair.*™ They are unique, NO WORDS™ software designed for 2-6 year old children. Your child can use McGee alone with a computer.

McGee is self-motivating fun. The format is simple, lively and encourages children to interact and explore. Each program incorporates animation and digitized sound, with graphics from a child's perspective, adding just the right amount of humor and choices as your child may select.

The McGee series has received rave reviews. But, we think the self-confidence your child builds with the computer is what is really great in this non-competitive format. And, considering tomorrows' software based world, what a better time than now–and what better way to start than with McGee? Call **1-800-776-0450** for the name of your nearest dealer or to order your McGee programs direct for $39.95 each.





The McGee programs are available for Macintosh® 512E/Plus/SE/II (with color), Apple IIGS, Amiga, and IBM/Tandy machines.



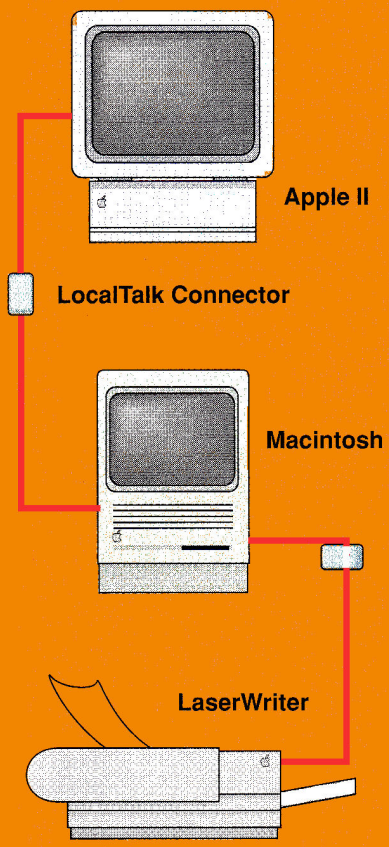
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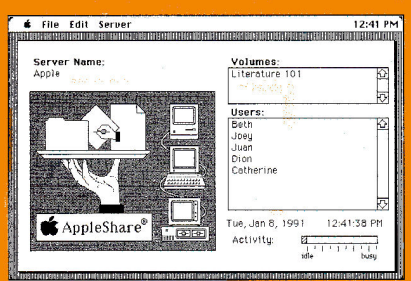
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Working The Net



In its simplest configuration, an AppleTalk network lets you share a laser printer. But that's just the tip of the connectivity iceberg.



With AppleShare running the network, teachers and students can share data and applications software.

Connections count — just ask anyone looking for a job. Connections make things happen far faster and more surely than if you're going it alone.

Computers need connections, too. Link Apple II and Macintosh computers and the sum greatly exceeds the parts. Classroom cooperation is guaranteed when you assemble an AppleTalk network.

If you think *network* means all work and no net, or if your only image is one of tangled wire and impossible software, don't worry. Assembling an AppleTalk network is much simpler than most other computer connections, in large part because of the network capability built into all Macs and Apple IIGS computers. Affordable cabling, understandable software, and plug-in connectors make AppleTalk the perfect network for the classroom.

Make It Simple

The simplest AppleTalk network won't let you share files or run software from a central computer, but it still makes your school life easier. If your class or computer lab has more than one computer, you can use AppleTalk to share costly peripherals such as laser printers, CD-ROM drives, and scanners.

All you need are several LocalTalk Connector Kits, the $75 packages that include a 6-foot length of cable and a connector. Plug one connector into the back of every Apple IIGS or Macintosh (you can link an Apple IIe computer to AppleTalk, too, though that requires an Apple II Workstation Card), then snap the cable into the connector. Each computer, called a *workstation* in network parlance, can use any of the peripherals connected to the network.

Network printing is only a bit more involved than if the printer is connected directly to the computer. To print on an AppleTalk-linked LaserWriter NT from an Apple IIGS running AppleWorks GS, for instance, you first bring up the Control Panel desk accessory (on a Mac, you'd use the Chooser), then double-click on the LaserWriter icon and select the printer from the list. Now you're connected, ready to print. Select *Print* from AppleWorks GS' *File* menu, then watch the pages slide out of the printer.

With an AppleTalk network connected, you can set up the laser printer in a central location, a lab or media center perhaps, then tie in computers from several classrooms for even more productive printer sharing. (This works best if you use the LaserWriter for final

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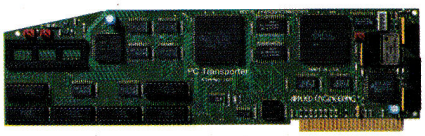


Shop both sides of the software aisle.

You've been there, right? You walk into your computer store and find exactly the software you want - on the wrong side of the aisle. The IBM side. Now for a fraction of the cost of an IBM clone, your Apple II has the power to run virtually all MS-DOS programs.

And your Apple IIGS, IIe or II+ will run those programs at more than *three times the speed* of an IBM XT. Run Lotus 123, dBASE III PLUS, Symphony, Microsoft Works, Flight Simulator and thousands of other titles you can't get for your Apple II!

Works with your Apple's peripherals. PC Transporter was designed to take full advantage of the Apple-compatible peripherals you already own. So you won't need an extra printer, monitor, mouse, modem or hard disk. They can all be used for either MS-DOS or ProDOS. And you can switch back and forth instantly, even transfer files from ProDOS to MS-DOS and back again.



Your Apple-compatible peripherals and PC Transporter not only work together, you get faster operation and better quality graphics, since your Apple analog monitor is sharper than IBM-standard digital monitors.

PC Transporter works as a universal disk drive controller, enabling your Apple or AE 3.5 Drive to run MS-DOS or ProDOS and to shift instantly between the two. If you need 5.25 MS-DOS capability, our optional 5.25 IBM format drives enable you to access 5.25 MS-DOS disks and will also store ProDOS.

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Easy to install and use. PC Transporter was designed by the experts so you don't have to be one to use it. We include clear, understandable installation instructions, pre-boot software and even an installation video to help.

The do-everything computer. Turn your Apple into a fast, powerful tool that'll change the way you think about shopping for software. And know that Applied Engineering stands behind PC Transporter with a full one-year warranty. Then get out there and start shopping both sides of the aisle!

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Networking can range from hooking up two computers to use one laser printer to sharing files and applications among dozens of computers. Apple's AppleTalk network offers a wide range of easy-to-use and affordable connectivity options.

drafts only; for convenience and savings, each classroom should be equipped with an ImageWriter II for printing everything else.)

Serve You?

For more cooperative possibilities, you'll have to spend more money and more time. An AppleTalk network can do more than simply share printers if you put a *file server* on the line.

Any Macintosh with a hard-disk drive will do as a file server, the computer that manages the network and stores all the software and files the network's users require. The bigger the hard-disk drive and the faster the Macintosh's microprocessor, the more software you can make available and the faster files transfer and applications load to each computer on the network.

Apple IIGS and IIe computers connect to this full-blown AppleTalk network via a built-in AppleTalk port or through an Apple II Workstation Card, respectively, and link to the file server through the same LocalTalk cabling. All you do is include the Macintosh file server on the network, then install AppleShare on the server's hard-disk drive. AppleShare is the software that establishes, runs, and manages the network. AppleShare lets you set up folders, both public and private, for storing and retrieving files; it also makes it possible for users to run network-compatible software such as AppleWorks Multi-User or MacWrite II.

Whatever your school connections, AppleTalk can plug you, your students, and your computers into a working network.

Once up and running, the network works wonders if you're mixing Macs and Apple IIs. A student writing with AppleWorks 3.0 on a network-connected Apple IIe, for instance, creates a prose masterpiece, then sends it to the file server over AppleTalk, posting the file in the teacher's folder. The teacher then calls up MacWrite II, which can open AppleWorks word-processor files directly. The teacher makes comments and corrections, saves the file in AppleWorks format (MacWrite does that, too), then puts it in the student's folder, where it can be retrieved and reviewed: computer cooperation at its best.

Low-Cost Macs, Low-Cost Network

Most of the expense in setting up an AppleTalk network is in the file server. That's another reason to applaud the introduction of the lower-priced Macintosh Classic, LC, and IIsi computers.

Though the Macintosh Classic is no speed demon, it fills the file-server requirement nicely if your network is small — say, six to ten computers. A Macintosh Classic with a hard-disk drive costs less than $1500, much less if it's purchased on a school-district or state educational-discount plan.

The Macintosh LC makes an even better file server. Its 68020 microprocessor runs rings around the Classic's 68000, speeding up file transfers and trimming the time it takes to load programs from the server. Since you can't currently use the file server for anything else (Apple's working on a new version of AppleShare that lets you use the file server just as you do any other workstation), you can cut your network expenses by using a black-and-white monitor with the LC.

Whatever your school connections, AppleTalk can plug you, your students, and your computers into a working network. For full cooperation between the Apple II and the Macintosh, there's nothing better. ❑



Hitch your wagon to a frontier adventure!

What was it like to travel 2,000 rugged miles across the frontier on the Oregon Trail? MECC's new interactive computer simulation ***Wagon Train 1848*** is a cooperative-learning adventure that puts kids "in the shoes" of 19th-century pioneers.

How did wagon trains make decisions? Cross rivers? Replace dwindling supplies? Students traveling the trail via Macintosh "wagons" will face these questions as they head for Oregon's fertile Willamette Valley.

To survive mishaps and other random events, students must work together. They will have to solve problems and carefully monitor the health and safety of everyone in the wagon train. They may encounter friendly Indians and other emigrants who want to trade goods. ***Wagon Train 1848*** also features exciting graphics and sound, plus an electronic guidebook with information on geography, climate, and wildlife.

Wagon Train 1848 is easy to use and works with two or more Macintosh computers networked via AppleTalk. Hard disks are optional. Up to 30 computers can join the wagon train. It's a whole new way to learn with technology—and each other!

Available in March 1991. For more information, call MECC at 800/228-3504, extension 549.



mecc

For the love of learning.

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Call 800/228-3504 or 612/481-3500. In Minnesota call 800/782-0032.

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Success Profile

Donna Heiner

Living and Learning Resource Centre, Lansing, Michigan

The Living and Learning Resource Centre is an organization that literally stops traffic — or so it seems when drivers listening to the Centre's public-service announcements on the car radio pull off the freeway and phone the agency to seek additional information. "We've even gotten calls from grocery stores," laughs Donna Heiner, director of the facility (601 West Maple, Lansing, MI 48906, 517-487-0883). "Shoppers hear our PSAs over the loudspeaker system and then use phones at the front of the store to call us."

What is it about the Living and Learning Resource Centre that compels people to interrupt the task at hand and drop a dime in a pay phone? Simply put, the statewide agency is committed to sharing information about microcomputer-based assistive technology for special-needs students.

It's not unusual for the Centre to field some 200 calls each month from parents, physicians, and insurance-company representatives as well as teachers and therapists. (Modem users can also reach the Centre via its America Online ID: LLRCPIAM.)

Heiner and her staff also conduct teacher tours to demonstrate how adaptive hardware devices, such as large-screen monitors, the Echo II speech synthesizer, TrackBall, TouchWindow, Muppet Learning Keys, PowerPad, and a wide assortment of keyboard-alternative switches can interact with educational software to foster independence.

The Centre also serves as a practicum site for student teachers from Michigan State University's special-education program, and assists people who drop in to copy programs from its 500-disk public-domain software library. But perhaps the most gratifying of the services offered by the Resource Centre are the consultations staff members conduct with special-needs children and their parents, teachers, and therapists.

Citing a recent example, Heiner describes a 15-year-old boy from a local school whose cerebral palsy and visual impairment prevented him from using an off-the-shelf keyboard and monitor. "We put him on an Apple IIGS with a switch and a 26-inch monitor," Heiner explains. "Then we ran a program called Interaction Games; it lets people play games together. Because he was an older student, we chose Concentration — and he beat me. It was absolutely great!"

The power of a PSA to stop traffic is impressive enough. But it's the ability of a dedicated staff to open new avenues of achievement for special-needs students that gives parents and teachers pause.

How to Get Along

Apple II and Macintosh computers can live together and work together in the classroom. Nowhere is it written that the Apple II and the Macintosh are mutually exclusive machines that must be kept apart for fear of some spontaneous chip combustion.

Together, these computers offer far more than the sum of their parts. One links to an enormous collection of software accumulated over years of use; the other launches you and your students toward the 21st century.

Getting computers to get along sometimes isn't much easier than getting different people to work together. But with these ten strategies, you can nurture the cooperative spirit of the Apple II and the Macintosh.

1. Look for Software That Shares

All software is not created equal. If you want consistency in your classroom, use programs that have versions for both the Apple II and the Macintosh. They may not work exactly alike, but their similarities will outweigh their differences, and make the transition from Apple II to Mac (and back) a snap for the kids.

2. Connect, Connect, Connect

You can guarantee cooperation by building an AppleTalk network in your class or school. Set aside one Macintosh as the AppleShare file server, then connect the other computers — Macintosh or Apple II — with LocalTalk cabling and the computers' built-in AppleTalk connector. (Remember that a IIe needs an Apple II Workstation Card.) The file server runs AppleShare, software that lets you use network versions of software like AppleWorks and MacWrite II on multiple workstations simultaneously. Even more important, though, is AppleShare's ability to transfer files and documents from one user to another.

3. Write for Your Life

As a writing tool, there's little that compares with a personal computer and a good word-processing program. AppleWorks and MacWrite II make it possible for even the youngest schoolkid to write, edit, and rewrite with ease. And since word-processing files are by far the simplest to transfer from Apple II to Mac, or Mac to Apple II, mixing machines in writing labs and classroom centers presents few problems.

4. Borrow the Printer

It's just good sense to share a laser printer. Since five to six ImageWriter II printers equal the price of one

Sometimes it's not easy to get along. Like rival siblings, the Apple II and the Macintosh display obvious differences; however, they also boast inherent similarities in design and philosophy that make it easy for the two to coexist — even thrive — in the same environment.

Personal LaserWriter NT, link six to eight computers to one printer and you're ahead of the game. Best of all, the results are stunning, and you can mix and match machines all you want. All Macintosh and many Apple IIGS packages print in PostScript, a page-description language used by Apple laser printers. And AppleWorks output, though not in fancy fonts, comes out of a laser printer clear and clean.

5. A Touch of Color

The Macintosh Classic may not have a color screen, but that shouldn't keep you from creating color art. As long as you have an Apple IIGS and a copy of SuperConvert, a IIGS graphics-file conversion utility marketed by Seven Hills Software, you can turn black-and-white Macintosh artwork into bright GS vistas. The secret is .GIF, a graphics file format that CompuServe made popular.

6. Telecommunicate

Set up an electronic bulletin board (BBS) to make it easy for students and teachers to send files, share information, and even keep up with homework during an extended illness. To a bulletin board, all computers are alike — it won't make any difference whether you send a text file from an Apple IIe or a GS, or read messages with an Apple IIc Plus or a Mac LC.

7. Homeward Bound

Just because there are Macs in the classroom doesn't mean you have to have one at home, too (though it helps). Keep pounding out assignments, reports, and more on your homeworking Apple II, then tote the AppleWorks file to school, where you run it through Apple File Exchange on the Macintosh. Once the file is on the Mac, load it into a word processor, add clip-art graphics, and print it in an attractive font.

8. Don't Ask Too Much

Don't expect the Apple II to measure up to the Mac in desktop-publishing prowess. And don't kid yourself into thinking that the Mac can match the Apple II yet when it comes to depth on the educational-software shelf. Use each computer for what it does best.

9. Don't Ask Too Little

On the other hand, push the machines you've got for all they're worth. You can produce good-looking newsletters and reports on an Apple IIe with desktop-publishing software. And look for Macintosh educational software that shows its colors, literally, on the LC.

Push the machines you've got for all they're worth. You can produce good-looking newsletters and reports on an Apple IIe with desktop-publishing software.

10. Rest in Peace

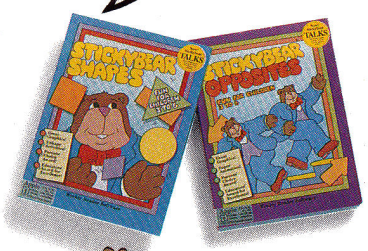
When a computer outlives its usefulness, retire it from the classroom. If it's not being used — perhaps because a more powerful computer has replaced it or you've switched to software that demands more memory — don't just let it gather dust. Pass along your Apple II Plus computers to the kindergarten class or donate the IIGS computers to the music department when you buy Macintosh LCs. ❑

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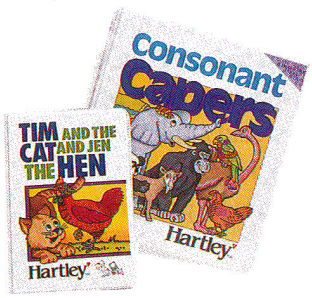
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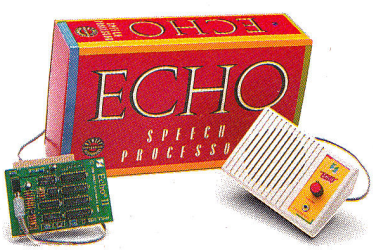


edmark® corporation

(800) 426-0856

While there are a few programs that use the Apple IIGS® built-in voice capability, for most of the Apple II family "talking software" it is still necessary to use an Echo Speech Processor.

These six leading software companies have helped the Echo® become the voice standard for educational computing. Call the telephone numbers listed above to find out more about these great programs.



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Hypermedia: All Together Now

Hypermedia's not just another chic '90s buzzword that the experts bandy about. It's a slick ensemble composed of Apple computers, peripheral hardware, interactive software, and — most important of all — teachers and students.

Even in its simplest configuration, hypermedia lets the modern educator choreograph text, graphics, video, and sound in ways you may not have imagined possible with a personal computer. Thanks to software such as Apple's HyperCard for the Mac and IIGS and HyperStudio (also for the GS) from Roger Wagner Publishing, you and your students can design audio-visual databases, explore living atlases, write branching mystery stories, develop historical time lines, test scientific models, or create multimedia pen-pal postcards — with no prior programming experience required.

HYPERLANGUAGE

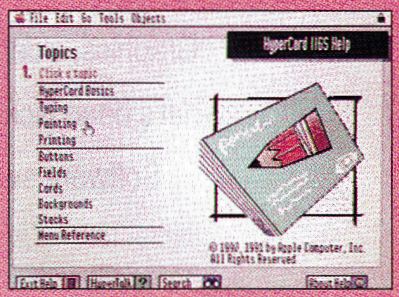
Like economics or chemistry, hypermedia has a jargon all its own, but its vocabulary's simple to grasp: It stems from your everyday teaching experience. Take a typical lesson outline, for instance. In hyperdialect, your topic and its associated subtopics become a *stack* and *cards*, respectively.

A class outline's subtopics are often richly detailed. That's why hypermedia authoring software gives you multiple ways to express those facts and figures. However, unlike the traditional index cards that contain words — and maybe a few doodles — hypermedia cards can literally sing and dance. All you have to do is push the right "buttons."

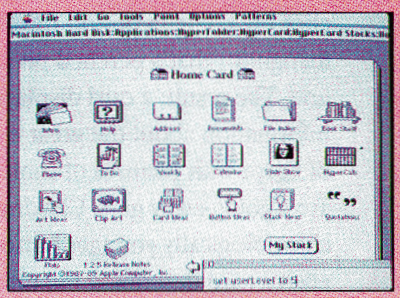
In fact, cards in a hypermedia stack often sport a variety of these "hot spots" that control actions that you, as the author, orchestrate. A student might click the mouse on a "Continue" button in order to flip to the next card in the lesson, for instance. Or he or she might click on an icon (a picture of an object) to take off on a different but related subject. When he or she is ready, the student clicks on an appropriate button on the ancillary card to return to the initial pathway.

Buttons perform other actions besides just linking cards, though. In a music-theory stack, for instance, a student could click on a woodwind icon to listen to an oboe soundtrack played through the computer's speaker. Or he or she might click on a button that activates a laser disc- or CD-ROM-based software sequence featuring an instrumentalist playing Mozart's *Oboe Concerto in C Major* — with full orchestral accompaniment played

Continued on next page.



HyperCard IIgs



HyperCard for the Mac



HyperStudio for the IIgs



Tutor-Tech for the IIe/IIc

Graphics, video, and sound have existed on the personal-computer scene for years. What's been lacking is a conductor to orchestrate how these technologies work together. Software such as HyperCard may be the tool educators have been waiting for.

through external stereo speakers wired to a multimedia workstation.

In a history stack, students could click on a date (a button traveling incognito) that's perched on a time line. The result: a card displaying information about the great pyramids of Egypt with pictures of some of King Tut's going-away gifts. Clicking on a chronologically younger button might elicit a card describing the care and feeding of the Lunar Module. Other buttons might "pop" quiz questions and keep score automatically.

A distinct button species is used to cue animated sequences designed with computer painting tools. Pulsing arteries and contracting heart muscle help students grasp the concepts of fluid dynamics far better than a flat textbook page can. Moreover, hypermedia patients — remember those poor frogs we sacrificed in the name of biology? — need never die: Youngsters can repeat an animated sequence, or any other aspect of the lesson, as often as necessary to reinforce its implications.

No question about it: Stacks, cards, and buttons are where it's at in the 21st-century classroom. But can the average, already-overworked classroom teacher really harness this power without taking an extended sabbatical? You bet.

TOOLKIT BASICS

Depending on the computer hardware you already use — or plan to acquire — at least four software programs make hypermedia authoring and exploration a snap: HyperCard, HyperCard IIGS and HyperStudio for the Apple IIGS, and Tutor-Tech and HyperScreen for the IIe, IIc, and IIc Plus.

Can the average, already-overworked teacher harness the power of hypermedia without taking an extended sabbatical?

Each program boasts different strengths. But no matter which hypermedia authoring system you use, one thing's a given: You don't need to learn any complex computer language to create your stacks. Thanks to Apple's graphical user interface with its pull-down menus and friendly dialog boxes, hypermedia authoring software is even more basic than BASIC. If you can click a mouse, you can begin designing custom courseware.

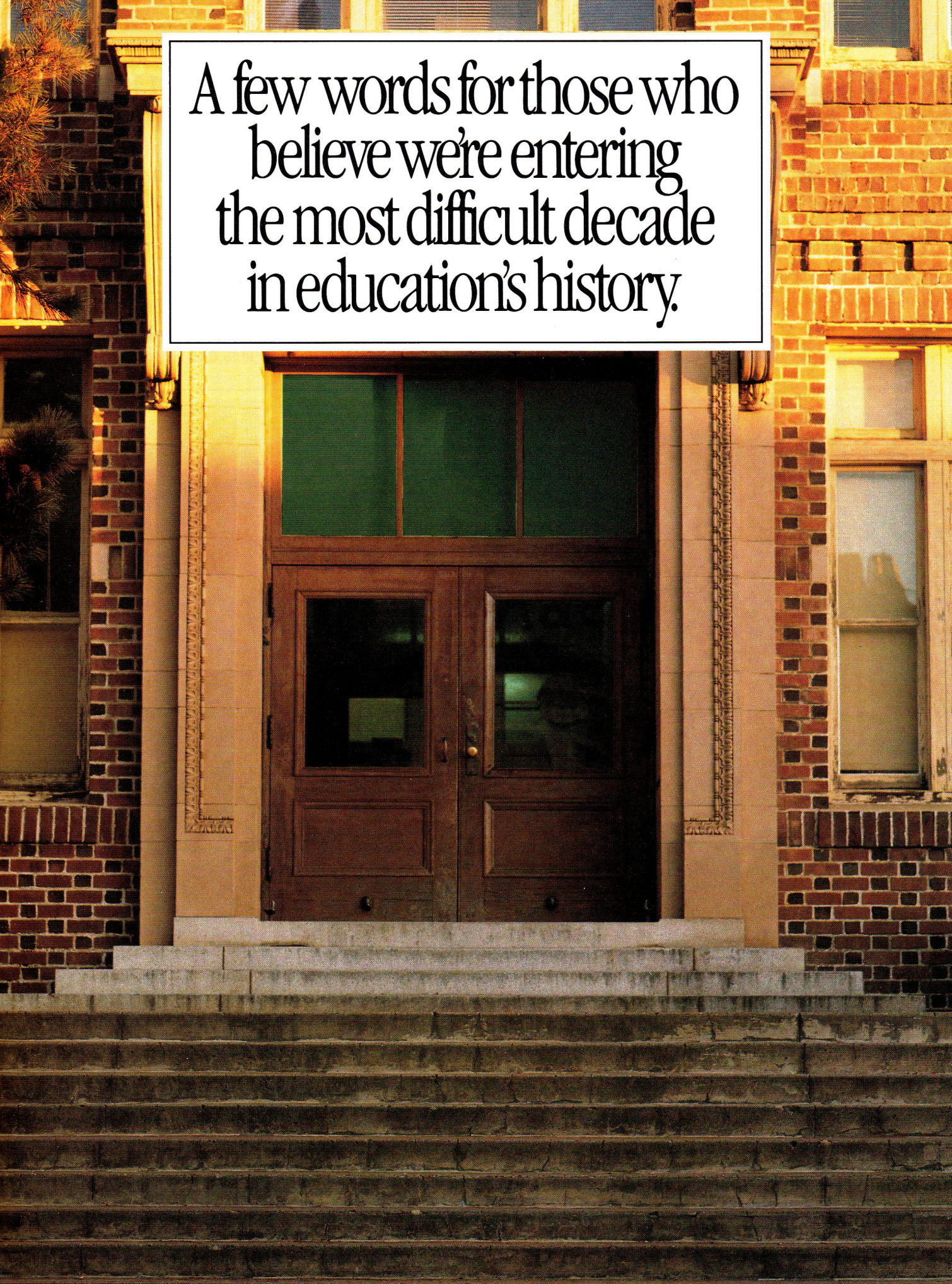
As easy as the implementation is, planning your stack is still key. If you've been teaching awhile, you've probably already done the hard part: selecting a topic, dividing the lesson into subtopics, and fleshing out the subtopics with relevant information.

Consider, in theory at least, the kinds of embellishments that might help enhance your lesson's impact. Among the possibilities: clip art or original computer paintings; computer-based animation; transitional special effects such as wipes, fades, or dissolves; stills (single frames) or sequences from a videocassette recorder (VCR) or videodisc player; sound effects, CD-quality music, and even the human voice.

Virtually all hypermedia authoring packages come with a host of ready-to-use graphics and sound files to get you started, but no hypermedia product offers every text, graphics, or sound tool you might eventually need. For that reason, you may want to explore how word processors, paint programs, music software, and so on can round out your multimedia construction kit.

Most hypermedia authoring systems can import text that's been previously cleaned up with a word-processing program's spelling checker.

Continued after insert section.



A few words for those who believe we're entering the most difficult decade in education's history.

Hope. Optimism. Excitement. Opportunity.

At Apple, we understand that the challenges of the 90s are formidable indeed.

But we've been around schools long enough to know that educators are second to none in dedication, imagination and resourcefulness. And that if you provide them with the right tools, they'll find a way to teach just about anything to just about anyone. Consider all they've taught us about computers:

How they can help teachers turn students from passive observers into active participants.

How they can help change a teacher's role from that of a distant lecturer to mentor and facilitator.

How they can help students of different capabilities and backgrounds work at their own pace, according to their individual learning styles.

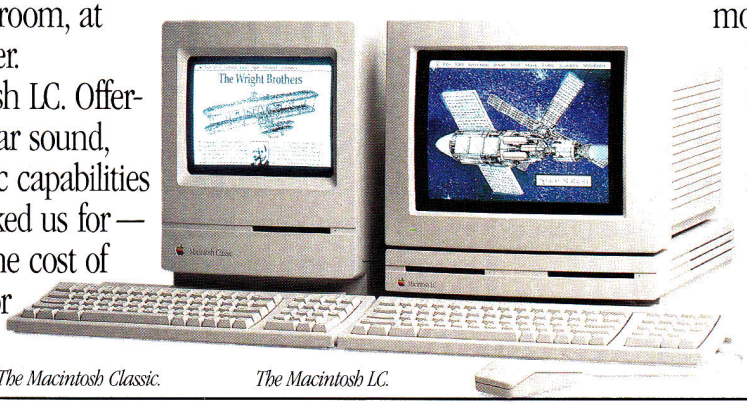
We've listened. We've learned. And, once again, we're putting our experience to work by introducing three new personal computers that deliver the power,



flexibility and value schools need today:

The Macintosh® Classic.® A complete system that brings the graphic, intuitive Macintosh way of working into the classroom, at our best price ever.

The Macintosh LC. Offering the spectacular sound, color and graphic capabilities teachers have asked us for — at a fraction of the cost of any previous color Macintosh.



The Macintosh Classic. *The Macintosh LC.*

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Three new computers that reflect the single most important lesson teachers have ever taught us:

Don't focus on the problems. Focus on the potential.

Adopting a new school of thought doesn't mean abandoning an old school.

When it comes to moving a classroom forward, it's very important that no part of it gets left behind.

So we designed the new Macintosh computers to work as well with Apple® II and other computers as they work with each other. That way, you can have all the benefits of Macintosh technology without jeopardizing any of your previous investment in computers and software.

Every Macintosh personal computer comes with sophisticated networking capabilities built in. These capabilities make it easy for you to link all your personal computers together — in a classroom, through-



out a school or even across an entire school district.

You can build a Macintosh network and easily connect all your Apple II or MS-DOS computers to it. Or, if you already have a network in place, you can quickly integrate Macintosh. Either way, you'll be able to share files and send electronic mail between desks or classrooms.

If you don't have a network and don't need one right now, you can simply exchange information between Macintosh and your other computers on a standard 3½" floppy disk. Because the SuperDrive™ built into every new Macintosh will automatically recognize what kind of computer it came from.

We've even designed an optional Apple IIe card that will let you run over 10,000 Apple II educational programs on a Macintosh LC (in addition to hundreds of Macintosh educational programs and thousands of Macintosh personal productivity and business programs).

In fact, everything about the new Macintosh computers was designed to give you the most flexibility you've ever had. So you can not only protect your previous investment.

You can also make it more valuable.



Never before have teachers faced so many challenges, or had so many chances to offer them.

At Apple, we've spent years working hand in hand with the leading developers of educational software to create hundreds of new educational programs, designed specifically for Macintosh.

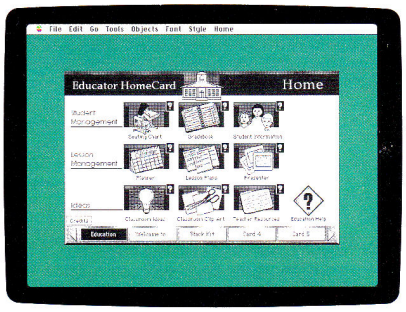
Programs that utilize the unique graphic, sound, interactive and collaborative-learning capabilities of Macintosh to help teachers motivate, stimulate and inspire in new and exciting ways.



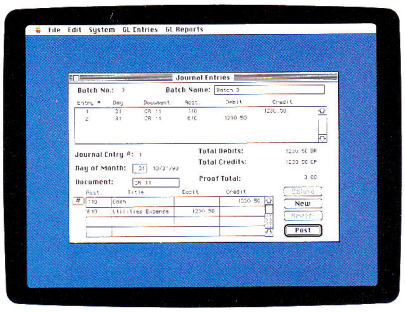
Wagon Train 1848 *from MECC encourages cooperative learning and decision making on a simulated journey across the Old West.*



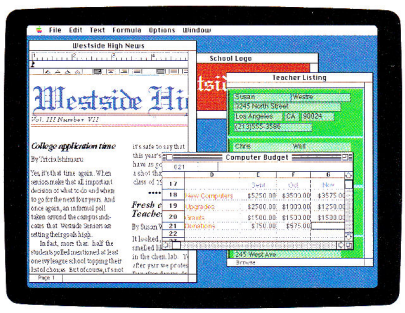
English Express *from Davidson and Associates uses multimedia technology to teach English to limited-English proficient students.*



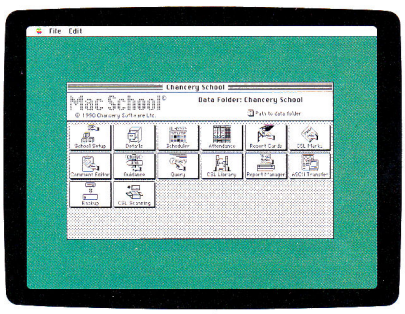
Educator HomeCard *from Intellimation uses HyperCard 2.0 to help educators plan and organize their classroom agendas.*



Students get hands-on business experience with Automated Accounting for the Microcomputer *from South-Western Publishing.*



SmartWorks *from Leonard Development Group combines 8 programs in 1 and lets students use existing AppleWorks® files, too.*



With Mac School *from Chancery and a Macintosh network, administrators can run an entire school right from a single desktop.*

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Programs that meet the highest standards of any educational software available. Many designed and tested by educators themselves.

Programs that just aren't the same on any other kind of computer.

From advanced graphic simulations that make it very easy for students to visualize the most complicated physical phenomenon.

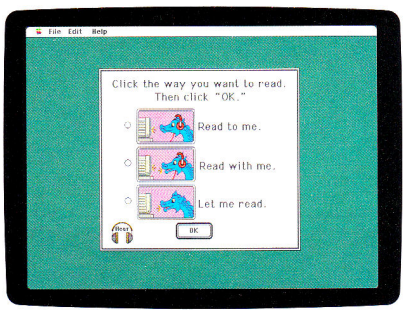
To simple interactive tools that encourage preschoolers to explore and experience new environments.

Plus, as many teachers have already discovered, they can create personalized software solutions using innovative tools like HyperCard.® A unique approach to not only managing information, but also to customizing it to fit the particular needs of an individual student or classroom.

Which means there's really no end to what you can do on a Macintosh.

And best of all, although these programs cover hundreds of subjects at every level of learning, they all work in the consistent, intuitive way that makes a Macintosh, well, a Macintosh.

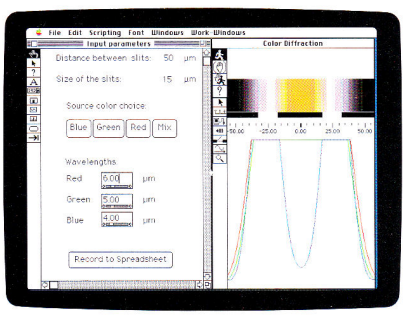
So teachers can spend less time learning about computers. And more time using them to teach.



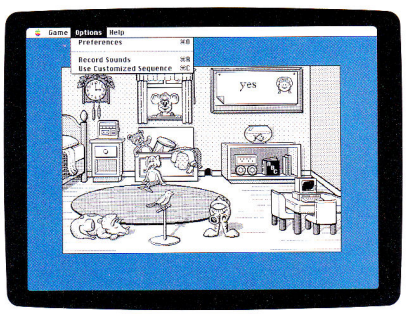
The Primary Integrated Language Arts Program *from Jostens Learning helps teach reading through listening, speaking and writing.*



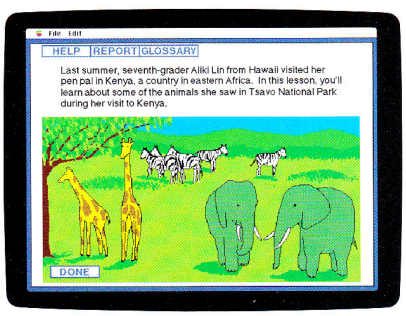
Programs like Math Shop *from Scholastic Software make solving math problems easier by putting them in a real world context.*



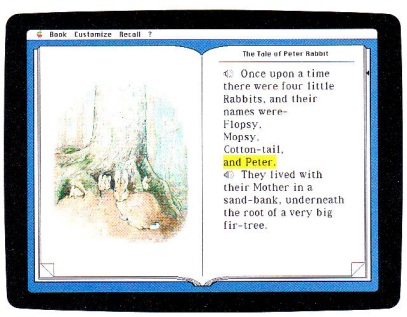
Physics Explorer *from WINGS for learning is one of a series of experiment-based courseware packages for the physical science curricula.*



With interactive software like Playroom *from Broderbund, very young learners explore a new and stimulating environment.*



Readers' Workshop *is one of the 26 instructional systems from CCC* doubling achievement rates at the K-adult levels.*



The Tale of Peter Rabbit *is one of the Discis Books from Discis Knowledge Research that brings reading to life.*

*numbers: MECC (800) 228-3504, ext. 549; Intellimation (800) 3IN-TELL; Leonard Development Group (904) 464-0016; Davidson and Associates (800) 545-7677; South-Western Publishing Company (800) 543-7972; Chancery (604) 685-2041; Jostens Learning (800) 521-8538; WINGS for learning (408) 438-5502; * Computer Curriculum Corporation (800) 227-8324; Scholastic Software (800) 541-5513; Broderbund (800) 521-6263; Discis Knowledge Research (800) 567-4321.*

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You'll see why so many educators have discovered the words hope, optimism, excitement and opportunity to be synonymous with one other word.

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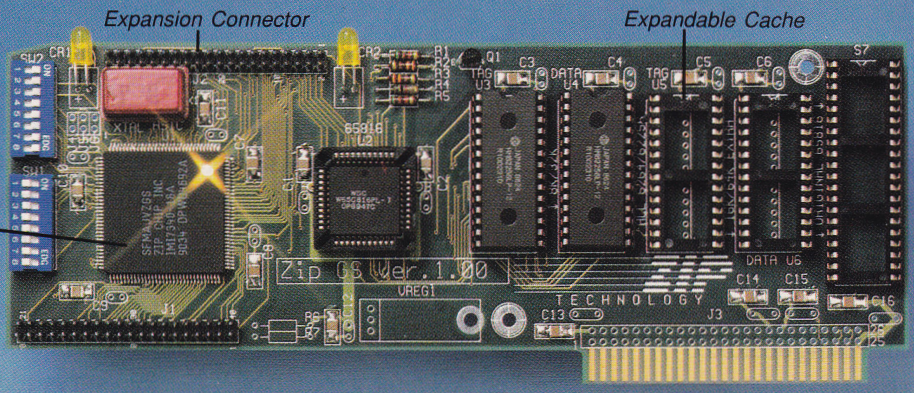


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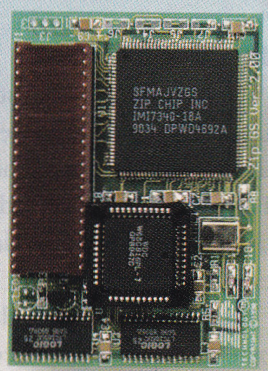
Apple IIe, IIc and II GS



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II GS

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If you are not satisfied with the performance of your ZIPGS, simply return it in its original box within 30 days of purchase for a prompt refund.

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Model 1600	*Zip GSX Accelerator 8 Mhz/16K Cache Memory*	*$325*	*$259*
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Circle 189 on Reader Service Card.

Hypermedia continued.

If you'd like to design custom button icons and original backgrounds for your cards, you'll relish working with a full-featured paint program that makes it easy to perform touchups on digitized or scanned images, too.

If you're a musician — or would like to be — consider using dedicated music software to compose original music for your stacks or to write variations on classic themes. At least one hypermedia authoring system lets you record "real time" sound effects, including human speech, through a microphone and sound-digitization circuit board that's easily installed inside your computer.

Because software's only half the story, take a hardware inventory before embarking on your first courseware authoring adventure.

Not surprisingly, external speakers can make a dramatic difference in a lesson's impact — remember, this is the MTV generation. The Apple II Video Overlay Card for the Apple IIe and IIGS genlocks (merges) pictures from a videodisc player or VCR with the hypermedia stack running on your computer screen. Not only does the Video Overlay Card let you capture images from videodisc and tapes, it also lets you superimpose computer-generated graphics over the video image.

HYPER HOW-TO

Once you've collected the software and hardware you need, you're ready to launch the hypermedia authoring software. Pull down the appropriate menu or otherwise activate the function that places a blank card on the computer screen. Want to add a graphics background or a fancy border to the card? Simply choose the appropriate program options.

Draw a text field, size it with the mouse, and drag the field into place. Now enter that compelling prose. Because hypermedia programs are graphics-based, you can experiment with a nearly endless variety of typefaces, sizes, and styles on each card.

Select the program's "import clip art" feature to dress up a card with predesigned illustrations, scanned artwork, or digitized photos. Or use a program's built-in graphics tools to draw custom illustrations directly on the card. Add a linking button, peel off another blank index card from the program's invisible electronic stationery pad, and you're ready to incorporate even more text and graphics elements into your growing lesson stack.

Hypermedia programs offer a choice of visual transitions that can make your presentation run like a professional slide show. And creating special-purpose buttons for animation, video, or sound effects is as straightforward as adding transitions: Just check off your choices in pop-up dialog boxes. In some cases, you may need to write short "scripts" to control peripheral devices such as videodisc players. These mini-programs are composed of easy-to-remember, mnemonic, or almost-like-English commands that turn selected card buttons into automated remote-control devices.

What makes this revolutionary technology truly soar are the teachers who are already creating custom applications for classrooms and computer labs.

THE SECRET'S OUT

Hypermedia's here to stay. But what makes this revolutionary educational technology truly soar is the multitude of teachers who are already creating custom applications for classrooms and computer labs.

Your school probably already has some of the tools you need to begin developing hypermedia applications of your own. With a Macintosh or Apple II computer and the right software, the possibilities are nearly endless. Although creating educational courseware that appeals to students with diverse learning styles looks like a monumental challenge, no one has to know how easy it really is. ❑

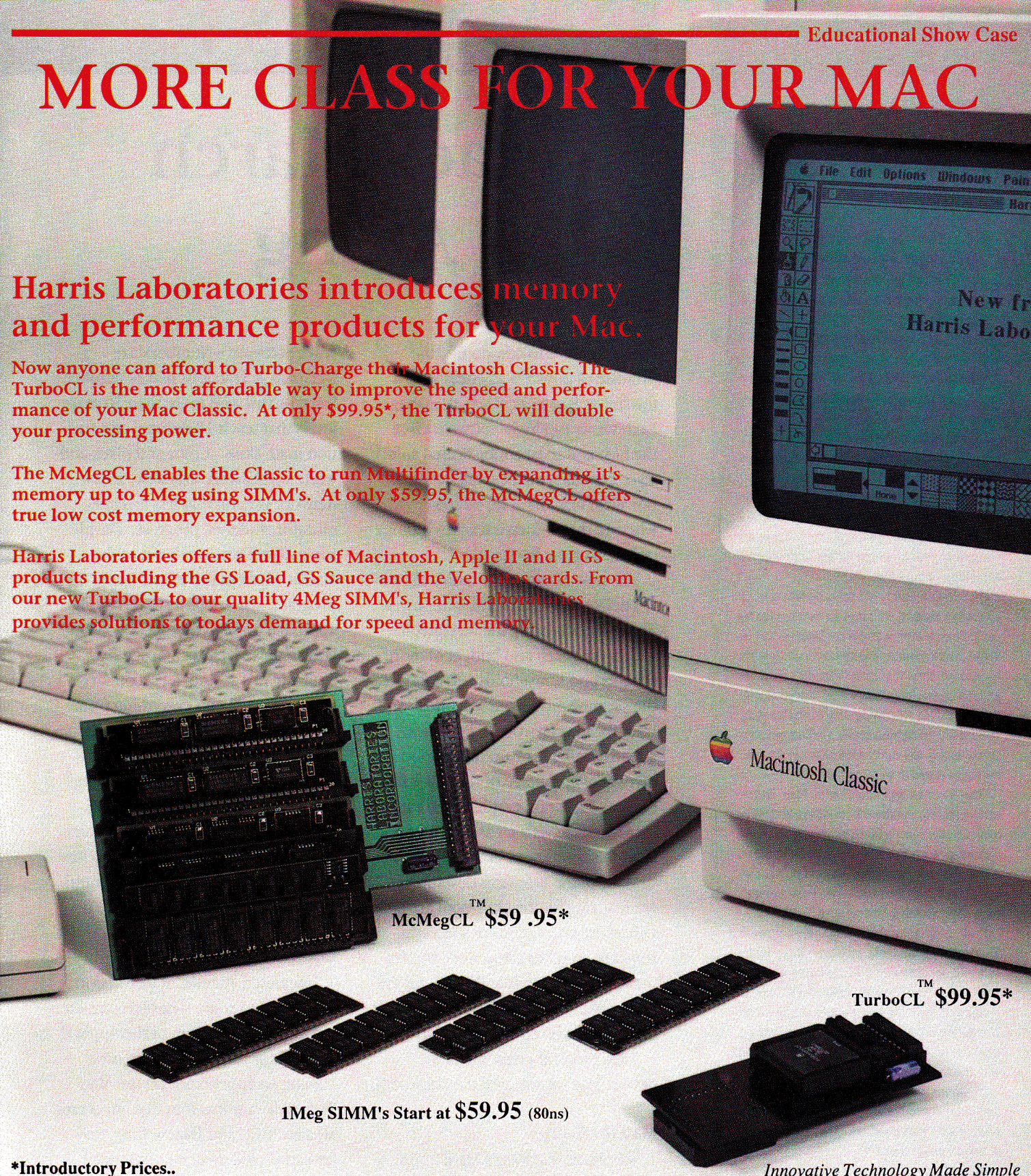
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Success Profile

Tom Plati

Shrewsbury High School, Shrewsbury, Massachusetts

Teachers in a suburban New England town are quietly planting the seeds of a new American Revolution. This time the revolution's in education — and it's happening in Shrewsbury, Massachusetts.

"My job is to set the vision," says Tom Plati, coordinator of educational technology for the Shrewsbury public school system. Translating that vision to the classroom has meant investing in some 20 Apple IIs, 150 Macintoshes, and more than a dozen videodisc players.

As early as kindergarten, children begin to learn some life-enriching lessons: that communications skills are fundamental to success in any field, that the trick is knowing how to locate the information you need, and that the best teachers aren't human vending machines dispensing facts, but coaches encouraging you to use the tools at your disposal to reach your potential.

Plati recalls the story of a second-grade special-education student who was so hyperactive he couldn't write even a single sentence — that is, before Apple computers were introduced into his classroom. Now, thanks to "excellent teachers and the proper tools," says Plati, the youngster has finished his 11th Dazzle Draw illustrated story. The second-grader who couldn't write a sentence is now writing well-constructed paragraphs — and saying he wants to be an author.

"That's not an exception," adds Plati. Before writing reports, middle-school kids gather information from Grolier's CD-ROM encyclopedia and videodiscs such as GTV and Animal Pathfinders. "We believe very sincerely," says Plati, "that we can't teach kids the facts — we have to teach them how to think for themselves."

Their high-school experience empowers Shrewsbury's students with even more tools, including sophisticated CD-ROM-based materials such as Facts on File and the Reader's Guide to Periodical Literature. And it's not unusual to find eighth-graders and freshmen alike performing database searches on line by telecommunicating with Dialog Information Services.

"When the students look up a topic like AIDS, they also get information about Ronald Reagan's hearing aid," Plati chuckles. "They quickly learn to narrow things down."

Every curriculum area, it seems, has been touched — and transformed — by the revolution brewing in Shrewsbury. Whether they teach biology, social studies, art, or English as a second language, teachers in Shrewsbury, says Plati, can't imagine going back to "the old ways."

Macs March Along

When it comes to computers, the promise of power is as enticing to a teacher as it is to a corporate manager. Each wants top-flight software. But the best and most sophisticated software demands the best and most powerful machines, no matter whether that software teaches biology or balances the books.

The new Macintosh Classic, LC, and IIsi deliver on that promise of power. These models bring the Macintosh within the reach and budget of more schools and households. To complete the promise, you need Macintosh software for the classroom. Packages already available or under development take advantage of the Mac's ease of use, of its great graphics and intuitive interface, as well as the color and built-in sound input in the LC and IIsi.

Many of the programs developers are readying for the classroom are new. Others are adaptations of successful software on other computers, such as the Apple II or the IBM PC. All put the power of the Macintosh in the hands of the people who count: schoolkids.

Take a look at just some of the newest Mac software for the classroom.

Mad for Math

Scholastic Software's Math Shop, Math Shop Jr., and Algebra Shop help children of all ages master the intricacies of mathematics, from basic problem solving through equations to square roots and factoring. Great Wave Software's NumberMaze Decimals & Fractions makes number learning fun with more than 70 maze levels that teach 18 decimal and fraction math skills. Color and black-and-white versions are available, as is a network version that lets teachers monitor students' progress. Davidson's Alge-Blaster makes it to the Macintosh from the classic Apple II program, and keeps its entertaining approach to first-year algebra. Scott, Foresman's Macintosh programs, available this spring, let secondary-school students do everything from measure and modify geometric shapes with GeoExplorer to conduct statistical analysis with StatExplorer. And kids will want to try out Milliken's Math Sequences, which features real-sounding human speech and teaches addition, subtraction, division, multiplication, and more on the Mac.

Coursework & Curriculum

Integrated systems of instruction are crucial to some schools' computer use. Long the domain of the Apple II, curriculum software sets are now making an appearance on the Mac. Two early entrants into this important area are CCC and Josten, both well-known providers of computerized learning systems. CCC's Instructional System offers 26 courses in the core areas of math, science, reading,

Continued on next page.

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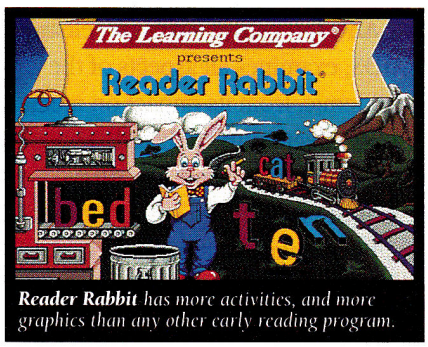


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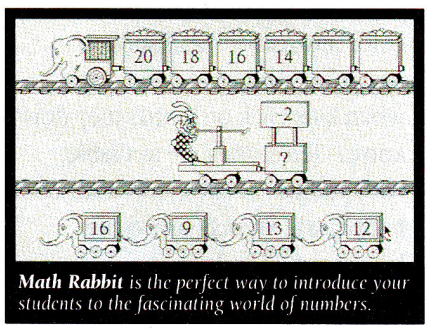
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Applications

The Apple II boasts a software library with thousands of top-notch educational programs. The introduction of the new low-cost Macintosh, however, is also attracting the attention of software developers.

language arts, and computer literacy, and includes nearly 3000 hours of instruction for primary and secondary schools. Children learn at their own pace and teachers can even customize lessons for individual instruction.

Josten's Basic Learning System now features 1800 full-color lessons in math and reading on the newest Macintoshes. And Josten has two more Mac learning systems slated for May release: the Learning Management System for creating individual instruction and an integrated language-arts program for K–3 readers and writers.

Study Up

Get ready for the SATs with Davidson's new Your Personal Trainer for the SAT, a study aid for this crucial college-entrance exam. After the test, high-school seniors can run Heartbeat Software's MacLife 3.0, a guide to colleges and universities that shows photos from some college campuses.

Publish or Perish

Schools subsist on paper. It's no wonder that publishing programs often top educational-software sales charts. Macintosh desktop-publishing packages such as Timeworks' Publish It! Easy, Scholastic Software's Springboard Publisher, and Broderbund's BannerMania are on shelves now and are cranking out newspapers, yearbooks, and banners. Planned programs for 1991 include The Learning Company's Writing & Publishing Center, a Mac adaptation of the popular Apple II program, and Pelican's Pelican Publisher, another entry-level program that's perfect for the classroom.

Get Scientific

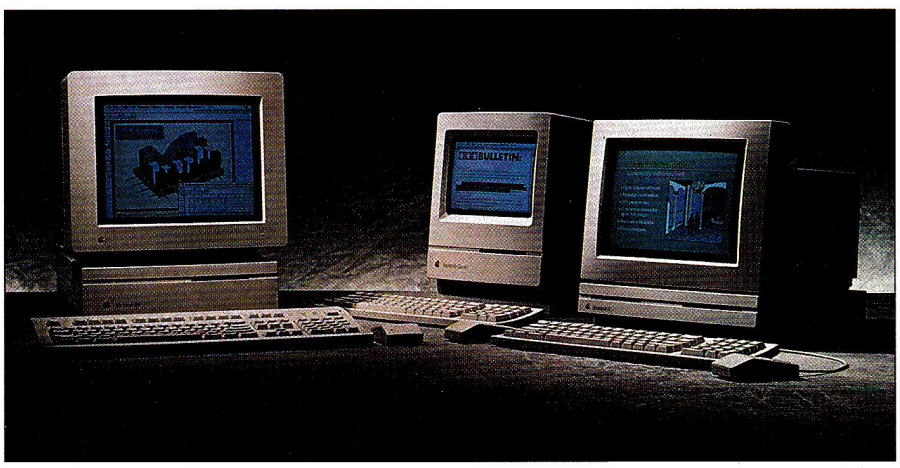
To keep pace with advances in science, high-school classes need a Mac as much as they need Bunsen burners. Recent science-software releases only reinforce that need. Wings for Learning's Physics Explorer simulation and four accompanying modules let students scrutinize the physics of gravity, harmonic motion, waves, and the human body. Interactive Physics, from Knowledge Revolution, now adds color to its hands-on approach to Newtonian physics experiments.

Laser Guided

Laser videodiscs and CD-ROM discs open up new vistas to both teachers and students. You can combine these cutting-edge educational technologies with the Mac today, and present fascinating lessons to your class.

ABC Interactive's newest release, AIDS, examines all aspects of the epidemic, from its impact on medicine to its effect on the afflicted. Like other ABC Interactive products, AIDS includes HyperCard stacks for the Mac.

Discis takes a different tack, putting classic tales like Cinderella and Peter Rabbit on its Discis Books. These CD-ROM discs, complete with full-color illustrations and spoken narration, even give definitions when kids click on words they don't know. Ten stories are available, with additional tales (and translations to Spanish, French, and other languages) to follow. ❑



The newest members of the Mac Family: the IIsi, the Classic, and the LC.

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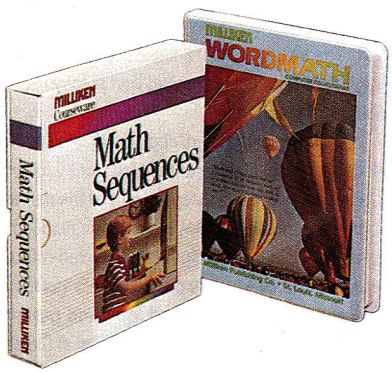
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Make Mine A Mac

Success Profile

Michael Hoy

San Juan Elementary School, San Clemente, California

"We all remember the handprint we made in clay in kindergarten," says Michael Hoy. "Today when students use computers to create a HyperCard stack or design a videotape, that's the new clay handprint, drawing new pictures in children's minds about themselves and their futures."

Hoy sees firsthand how crucial it is for students to enjoy visions of a positive future: He's principal of California's San Juan Elementary, a school where classes are populated largely by students who've emigrated from nearby Mexico or the more distant lands of Central and South America.

On the bright side, Hoy says, "We're fortunate we're dealing with only two languages, as opposed to many schools that have to deal with 20 or more." Yet Hoy's school faces the dual challenge of using technology to empower Hispanics while reassuring the Anglo community that the school can offer opportunities for learning not found elsewhere.

"On the Mac," Hoy explains, "we use the Spanish version of WordPerfect, which has Spanish pull-down menus." Students use option-key commands to generate Spanish-language characters on the computer screen. "Last year," he continues, "we used the Apple IIgs, the Video Overlay Card, and HyperStudio to create a couple of videotapes that aired over local public-access [TV] channels."

One videotape was based on the holiday classic "'Twas the Night Before Christmas." Working in pairs, students first read the story and then designed illustrated panels with HyperStudio to create decorative borders and to type the story's text. The youngsters translated the story from English to Spanish and typed that version at the bottom of the screen.

To produce the videotape for TV meant the students had to film the completed panels, dub in Christmas music, and step in front of the camera at the appropriate moment to read their respective lines in English or in Spanish. The ten-minute tape aired for two weeks during Christmas vacation and reportedly thrilled kids and parents alike as they watched the credits roll by at the end of the film.

Using technology this way is just another way of "holding up the hoop of high expectations," says Michael Hoy. "We encourage the students to aim high, and we always say, 'We know you can do it!' "

The Apple II and the Macintosh work together remarkably well in and out of school. That cooperative spirit will grow stronger as the Mac becomes more important to educators and more common in the classroom.

But there are some things that the Macintosh — because of its powerful microprocessor, its copious memory, and its third-party developers — can do that an Apple II computer simply finds impossible. Much of what the Macintosh can do that the Apple can't depends on software unlikely to make the move to the II.

Here are two classroom applications unique to the Mac.

You Too Can Mold Worlds

SimEarth, a fascinating simulation that lets you play with planets, is a one-of-a-kind Macintosh program. Created by Maxis, the company that developed SimCity, a successful city simulation, this planet maker is so much fun that you and your class may forget it's also educational.

SimEarth includes several worlds to remake, from Mars and Venus to Earth of the present and Earth of the prehistoric past. Or you can work with a new world that SimEarth builds for you.

As planetary overseer, you have complete control over climate, life forms, even natural disasters like volcanoes, earthquakes, and tidal waves. SimEarth encourages you to experiment with the planet's every aspect. You can literally move mountains (or entire continents), raise and lower the level of the oceans, place plant and animal life, and promote the development of civilization when higher life forms appear. Shower the world with meteors and see the results. Increase the surface or ocean temperature and then watch what happens to life on the planet. Or take an inhospitable world and transform it over centuries or eons.

Because SimEarth is so easy to use — you work with your world by pointing the mouse and clicking — schoolkids can immediately play with their planet. And since times flies by in the simulation, you quickly see the results of your tampering. Cause and effect become clear, even to youngsters. SimEarth works on both monochrome and color Macintoshes.

SimEarth gives you an almost instant understanding of the interactions that shape a planet. In a time when ecological studies are so important, a program like SimEarth may be enough reason to consider a Mac for the classroom.

Predict the Weather

Accu-Weather Forecaster, another unique Macintosh program, puts the power of Accu-Weather, the weather

Anything a Mac can do an Apple II can do . . . . Not really. Thanks to a faster processor and other powerful traits, there are some things for which the Macintosh is simply better suited. Some programs for the Mac you'll never see on an Apple II.

service used by television stations and major newspapers, in the hands of your students. With stunning graphics and TV-like images, Accu-Weather Forecaster is an interactive, entertaining way to learn more about meteorology, track storms as they develop, and try your hand at weather forecasting.

Weather-forecasting software exists for the Apple II (National Geographic's Weather Machine is an outstanding software-telecommunications package), but Accu-Weather Forecaster's TV-quality graphics, flexibility, and in-depth data make weather studies even more dramatic on the Mac.

You use a modem, the computer add-on that lets the Mac communicate with other computers over the phone, with Accu-Weather Forecaster. You or your students simply select the information you want, from recent lightning strikes and satellite cloud-cover photos to contour-colored maps showing the jet stream, precipitation, and temperature. You even get to choose the National Weather Service reporting stations you want data from, letting you customize forecasts to include sister schools around the state or the nation. Once set, Accu-Weather Forecaster automatically dials the Accu-Weather database, downloads the information you requested, and then quickly breaks the connection to save you time and money.

The radar maps, satellite photos, and charts that Accu-Weather Forecaster downloads and creates are dazzling, and nearly as impressive as those you see on television. Accu-Weather Forecaster is one of the most interesting teaching tools around, and makes a Mac computer a welcome addition to any class.

Dozens of other Macintosh packages provide new learning opportunities.



Mac Has the Momentum

There are dozens of other Macintosh packages that provide new learning opportunities not available on the Apple II. MECC's Wagon Train 1848 uses an AppleTalk network to stress teamwork as kids plan, outfit, and lead an Oregon-bound wagon train. The Macintosh version of Broderbund's Playroom, a collection of word and number activities, lets preschoolers add sound with the Mac LC's and IIsi's sound-in capabilities. And ABC News Interactive's AIDS laser disc and HyperCard combination informs and educates young people with the help of a Macintosh. ❑

Bring It On Home

Success Profile

Sandra Cooper

Community School District 27, Queens, New York

Take children from disparate backgrounds and mix with generous numbers of Apple computers. Fold in a team of dedicated teachers and you'll have a recipe for multicultural awareness much like the one Sandra Cooper formulated for Community School District 27 in New York.

Several years ago, Cooper, the district's director of technology, devised a plan to bridge the literal and figurative gap existing between two schools in the New York City borough of Queens. Some 15 miles apart, the two schools are separated geographically by Jamaica Bay and a toll bridge. "Normally," says Cooper, "these children would not have the opportunity to know one another."

Worse, the children at the two schools would seem to have little in common. One school serves poor minority students who for the most part live in low-income housing, while the other school's a "League of Nations," according to Cooper, who rattles off names like Ecuador, Taiwan, Pakistan, and Romania the way other teachers might name streets in a neighborhood.

Using networked Macintosh computers in their respective classrooms, kids at the two schools track individual interests with a FileMaker II database. They write family histories with the MacWrite word processor. Then they share their creations via modem and MicroPhone II telecommunications software.

Early in the year, students download the personal data file sent by their counterparts at the sister school and learn how to use the database program's find function to look for things they have in common, such as favorite school subjects and best-liked animals. As time progresses, students begin to write pen-pal letters and share information about themselves and the holidays, traditions, and songs of their cultures. Just last year the two schools' seemingly distinct "community of learners" collaborated to write and publish a recipe book.

"Did you know there are at least 20 different ways to cook rice from 20 different countries?" Cooper teases. She quickly turns serious, adding, "Our district is so culturally diverse we needed ways to get people together. If children come together, parents will, too."

With all due respect to rice, it wouldn't be inaccurate to say that the main ingredient in Cooper's recipe for success is her conviction that "all kinds of kids can succeed with computers."

A personal computer in the family room helps kids handle homework, write reports, and study up on troublesome subjects. As a learning tool, an Apple II or Macintosh computer in the home can be even more important than the machines at school. After all, there's no waiting line at the computer in the den.

The links between the Apple II and the Macintosh extend into the home, too. Just because your child's school uses Macintoshes doesn't mean you can't buy an Apple II for the home, nor does it mean that you can't do some serious studying on the household's Mac while your children pound on Apple IIs in class. With the right software, your kids can ignore the machine and concentrate on getting the homework and home learning done.

XTNDed Apples

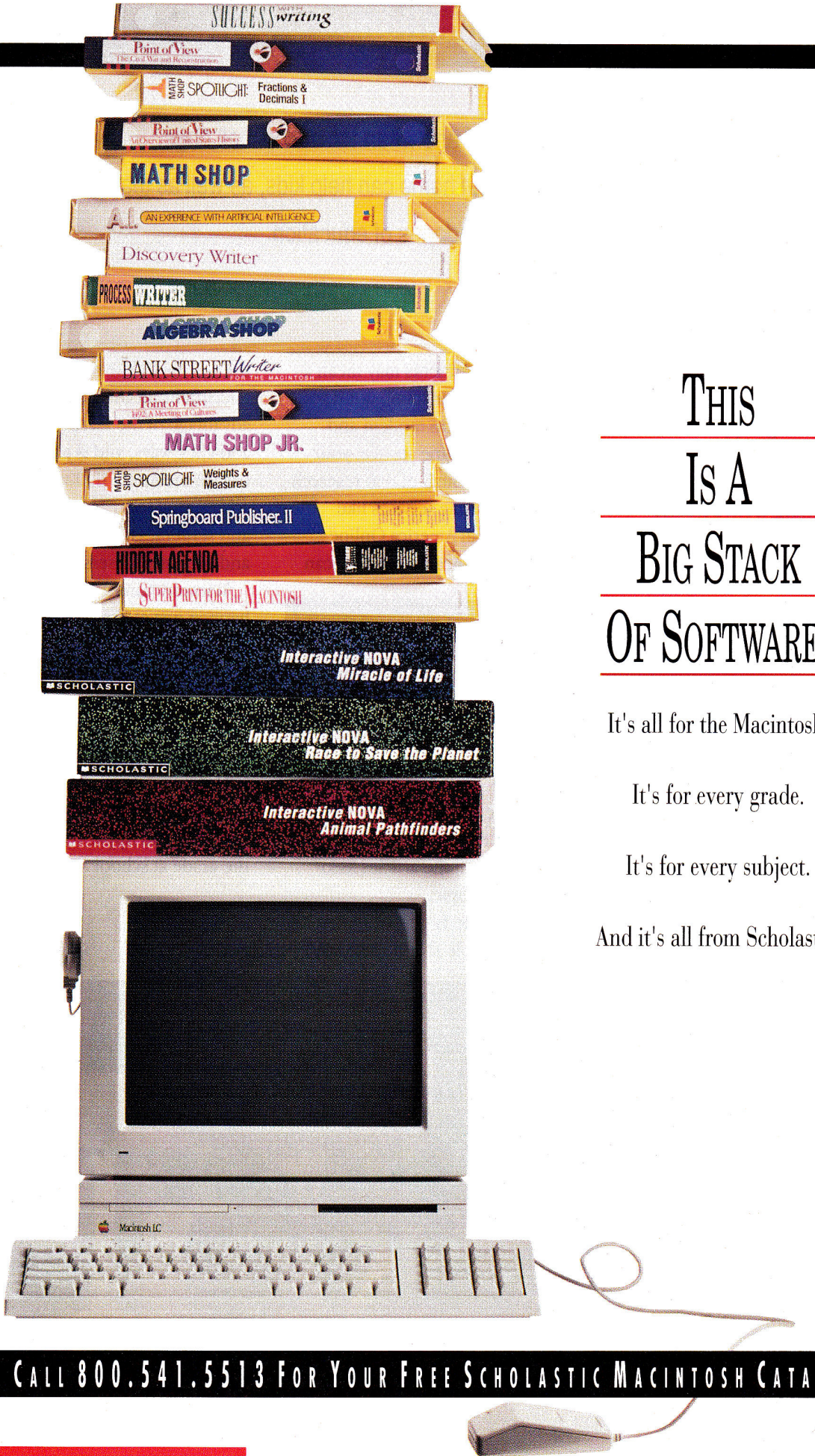
Although you don't need to stock your home-software learning library with the same programs your child uses in school (sometimes it's simply not appropriate, as when the software is closely tied to other classroom materials or is just one part of an entire curriculum package), many educational developers have Mac packages available or are are rushing them to market. If your child loves Where in the World Is Carmen Sandiego? on the Apple IIe at school, for example, you can support that interest even if you have a Mac in the family room — Carmen comes in Mac flavors, too.

But if your hardworking student uses the home computer to write reports and complete assignments, it's easy to make the Apple II-Mac home-school connection work. Claris, Apple's software arm and publishers of such programs as AppleWorks 3.0, AppleWorks GS, MacWrite II, and MacDraw II, created and supports *XTND*, a software technology that, when included in Macintosh programs, lets you open and save files from other applications without losing any formatting information.

Schools with AppleTalk networks that use MacWrite II can best handle XTND and file sharing between Apple II and Macintosh programs. Kids can write their reports and compositions at home with AppleWorks or AppleWorks GS, then stuff a disk into their book bag. Once at school, they stick the 3.5-inch disk in a GS drive and send the file to the network's file server. Finally, they run MacWrite II from the server, open the file, and complete their work on the Mac, picking up just where they left off at home. No time wasted, no work lost.

Even if there's no network, home-based Apple IIs let kids get a head start. Rather than put files on a

Continued on next page.



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An Apple II or Macintosh computer at home can help kids, as well as teachers, expand the boundaries of education.

network, kids can run their AppleWorks or AppleWorks GS word-processing files through Apple File Exchange (AFE) on the Macintosh to turn them into Mac-usable documents. All formatting, from boldface text to headers and footers, is kept, and can be opened with MacWrite II.

Don't limit your thinking to a traditional school day. Education is ongoing.

And if you have a Mac at home, the integrated package Microsoft Works is a smart software pick for schoolkids. They can bring home 3.5-inch Apple II ProDOS disks containing AppleWorks word-processing, spreadsheet, and database files, then use a nifty translator called Works-Works to transform them into Microsoft Works-compatible files with AFE.

Online for All, All Online

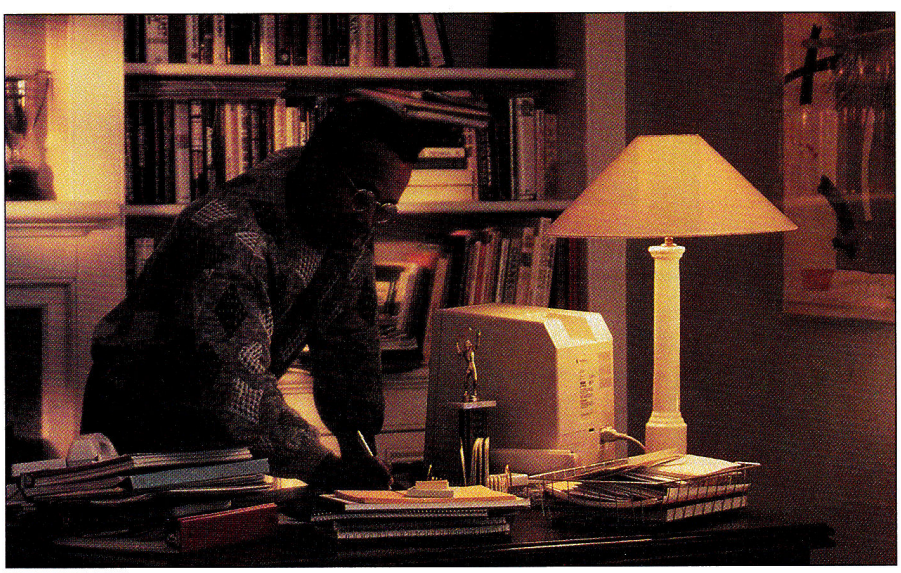
Online services like CompuServe, GEnie, America Online, and Delphi provide a smorgasbord of information for children hitting the books at home with a computer. Best of all, online services really don't care if you're connecting with an Apple IIe or a Macintosh LC.

Research assignments may mean a trip to the library for some, but if you have a computer and modem and subscribe to an online service, your children can do much of that research from home. Online services like CompuServe and America Online feature Grolier's Academic American Encyclopedia. Kids looking for information on the British Empire, for example, can simply type in that phrase and see all the articles associated with the topic.

America Online is unique in that it's dedicated to Apple II and Macintosh users. This online service's special telecommunications software takes advantage of the Macintosh's point-and-click ways, and is almost as easy to use on the Apple II. Even elementary-school students can conduct research and send messages to other Apple II and Macintosh users.

Telecommunications doesn't happen just at home, though. Schools are exploring interesting on-line ideas of their own, such as 24-hour bulletin boards where teachers and students post messages and kids turn in homework from a sickbed.

Don't limit your thinking to a traditional school day. Education is ongoing, and Apple IIs and Macs make the grade at school and at home. ❑





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Tomorrow's Classroom Today

Success Profile

Mike Smith

Meigs Magnet School, Nashville, Tennessee

If any public school in the United States is wired for success, it's Meigs Magnet School in Nashville, Tennessee. For nearly the past decade, computer coordinator Mike Smith has helped transform this three-story Civil War-era former gunpowder factory into one of the nation's premier middle schools. Thanks in part to a quarter-million-dollar federal-government grant, a half-mile of 22-gauge twisted-pair wire now wends its way through those old brick walls and energizes the school's networked computer system.

Perhaps to no one's surprise, Meigs' hardware inventory reads like a computer teacher's wish list, with 65 Macintoshes, 50 IIGSes, 27 IIes, 11 IIcs, half a dozen Apple IIIs, and a variety of peripheral devices, including scanners, laser printers, and videodisc players.

The school's software catalog is equally impressive. Among the products used on a daily basis are AppleWorks 3.0, HyperCard, ClassWorks, Operation Frog, Oregon Trail, Science Toolkit, Number Munchers, GTV, and MacWrite — not to mention a whole arsenal of administrative programs from Chancery Software Ltd.

Of course, Meigs' student body isn't exactly unremarkable either: Of 11 Merit Scholars graduated from the local high school last year, nine were Meigs Magnet School graduates.

No doubt about it: Mike Smith loves what technology does when it's placed in the right hands, and he's adamant about giving credit for the school's success to the teachers with whom he works. "Computers are literally integrated into every area of the curriculum at Meigs and 100 percent of our faculty use them," he says matter-of-factly. "Moreover," Smith adds, "every teacher teaches 30 minutes longer [each day] at no extra pay to accommodate the students."

This level of commitment to "21st-century education" helps explain Meigs' popularity with area parents and their gifted children. According to Smith, the school can serve only 575 of the most academically advanced students from the 120 schools in Davidson County. Nearly 2000 youngsters are on Meigs Magnet School's waiting list.

It's little wonder that high achievers like these would be attracted to a school where — despite differing educational objectives — the wrestling coach and the principal, the Latin teacher and the band conductor, the art instructor and the chemistry teacher, have something very special in common: Apple computers.

Technology in the classroom once meant filmstrip projectors and scratchy records reciting foreign-language lessons. Now it means powerful computers like the Apple IIGS and the Macintosh LC, and state-of-the-art software like HyperCard 2.0 and HyperCard IIGS.

Today's schools live on technology's high ground. When combined with other electronic teaching tools — laser discs, CD-ROM, and telecommunications, to name just three — computers open new worlds of learning to anyone who can point a mouse cursor and click a button. The result? Exciting new opportunities that inspire kids in the classroom and give them the power to blaze their own paths through the jungle of learning.

Apple II and Macintosh computers share the spotlight when it comes to bringing cutting-edge technologies to the classroom. Both have valuable software and hardware additions that give teachers, students, and parents a peek into the classroom of tomorrow.

Gee, TV

GTV has more than just a passing acquaintance with its sound-alike, MTV. Both show up on the small screen, both hit kids where they live, and both put sounds and sights together for action-packed messages. The difference? GTV: A Geographic Perspective on American History appears only in the classroom.

A collaboration of The National Geographic Society, the state of California, Lucasfilm Ltd., and Apple Computer, GTV is a videodisc-based program that teachers can easily integrate into their lesson plans as is. When paired with an Apple IIGS or a Macintosh, though, GTV becomes a student-driven research tool and authoring system.

Two videodiscs contain two hours of full-motion video, 1600 still pictures, and 200 maps. Divided into 40 chapters, the on-disk images can be used immediately to launch American history and geography lessons and discussions. Or the IIGS or Mac can be connected to a laser-disc player, giving kids and teachers editing control over the material. In minutes, kids can combine photographs, video, and sound to produce original multimedia shows on almost any aspect of our country's history.

GTV on the Macintosh uses HyperCard for easy entry into the video bounty of GTV discs. Navigating from one section of GTV to another is as simple as clicking a button on the Mac's screen. The IIGS version, though not based on HyperCard IIGS, is just as easy to use.

Student-produced lessons can be striking. At Forestville High School in Forestville, Maryland, history teacher William Hay showed a class of at-risk,

Continued on next page.

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CD-ROM drives, videodisc players, full-motion video, and telecommunications have replaced overhead and filmstrip projectors. While educators aren't ready to trade in their textbooks, they're buying into the benefits of advanced technology.

nonacademic-track students how to use GTV and asked them to prepare accounts of life during the Industrial Revolution. These short shows, narrated by the students themselves, are poignant and revealing, yet brutally honest about conditions the underclass endures.

Textbooks may never disappear from the classroom, but they won't be the only easy source of information.

Apples Link Up

Kids Network provides another sneak peek into the classroom of the 21st century. The basics are basic enough: Several modules that give kids in grades 4–6 hands-on practice in the scientific method. With titles like Acid Rain, Weather in Action, What's in Our Water, and Too Much Trash?, the Kids Network modules ask young scientists to take measurements and make observations. There the similarity with traditional science experiments ends.

Kids Network, a program developed by the National Geographic Society for the Apple IIGS (funded in part by a grant by the National Science Foundation), depends on a telecommunications network to link student research teams from across the country and from nearly 20 foreign countries. Data is collected by these teams, then shared with the help of the Apple IIGS, a modem, a phone line, and the Kids Network online connections. And as kids share their scientific findings with other classes on the network, they also share information about their culture and customs.

Students also learn that Earth is a very small place. With Acid Rain, for instance, they compare rainwater acidity from sites worldwide, then transmit their data to a working scientist at the National Oceanic and Atmospheric Administration, who analyzes the information and helps the students come to conclusions about its causes and effects. The classroom of tomorrow is one without walls, where information isn't found just in textbooks or even just in school.

Megabytes on Demand

Yet another portent of the future of educational technology is the continued growth of CD-ROM on the Macintosh and the Apple IIGS. Here the Macintosh clearly has an edge, because of informative learning tools like those from Voyager. (Its new Igor Stavinsky: The Rite of Spring, for example, provides HyperCard stacks that analyze and comment on this classic ballet, as well as on the composer's life.)

CD-ROM discs, which are physically identical to the audio CD discs you listen to at home, can hold more than 500 megabytes of information in the form of text, images, and sound. CD-ROM is a natural medium for exhaustive reference works like encyclopedias and dictionaries, though new applications, such as Bright Star's Kaika, a Japanese-language tutor that calls on spoken samples of the language to help students master the tongue, are emerging.

Textbooks may never disappear from the classroom, but with CD-ROM and computers like the Macintosh and the IIGS, they won't be the only easy source of information.

Apple II and Macintosh machines are going to help make the transition from filmstrip projectors to full-motion video happen. They let kids control not only some of what they learn, but how they learn it as well. ❑

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For this review, we looked at five home-finance packages, one AppleWorks investment template, and eight tax-preparation programs. (Last month's AppleWorks in Action column, "The Taxman Cometh," p. 60, also includes a tax-calculation template.) Which one is right for your particular financial situation? If all you need is some help filling out those dreaded IRS forms, see the accompanying **Table** ("Tax Time") first for a list of features each tax package offers. If you decide that you want a more comprehensive management program, the wealth of options you'll find there can help you get organized and stay on top of all that record keeping.

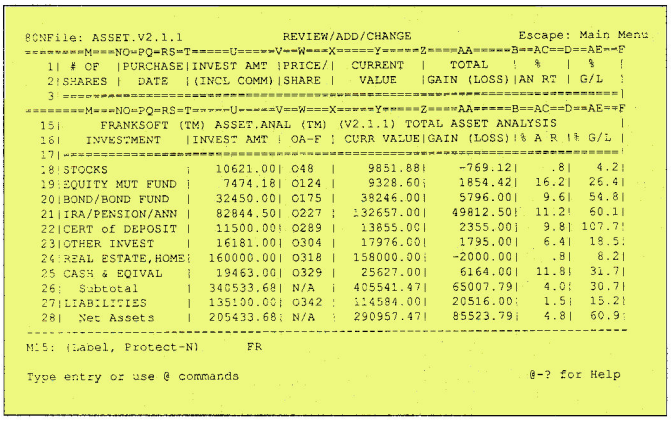
To start with, most of these programs let you create a budget, record your checks, print checks on special forms, balance bank statements, keep track of regular transactions (in or out), divide your money into separate accounts (*Groceries*, *Phone Bill*, *Utilities*, and so on), and print reports by category, such as *Payments*, *Assets*, and *Tax-Deductible Items*. More advanced packages may also have retirement- and savings-planning sections, or financial calculators that can help you wade through such intricacies as loan amortization and return on investment. (See the accompanying glossary, "Money-Management Basics," for a list of some of the more esoteric terms you'll encounter.)

One caveat before we look at the unique features of individual programs: When it comes to finance software, bigger isn't always better. If you're not a serious investor ⇨

By CAMERON CROTTY

Photography * Ed Judice Camera Operator * Eva Zoledziewski

for instance, don't buy a program with a large portfolio module. Multiple features such as double-entry accounting, asset analysis, and stock/investment tracking are neat, but if you don't need them, trying to figure out how to use them can drive you crazy. And from a purely monetary standpoint, why pay for something you aren't going to use? If you subscribe to the "time is money" school of thought, you'll save both by purchasing carefully.



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@CNFile: ASSET.v2.1.1          REVIEW/ADD/CHANGE              Escape: Main Menu
========M===NO=PQ=RS=T=====U=====V==W==X=====Y=====Z====AA=====B==AC==D==AE==F
   1| # OF  |PURCHASE|INVEST AMT |PRICE/|   CURRENT    |    TOTAL    |  %   |  %   |
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  15|      FRANKSOFT (TM) ASSET,ANAL (TM) (V2.1.1) TOTAL ASSET ANALYSIS      |
  16|   INVESTMENT   |INVEST AMT | OA-F | CURR VALUE|GAIN (LOSS)|% A R |% G/L |
  17|=========================================================================|
  18|STOCKS          |  10621.00| O48  |   9851.88|    -769.12|    .8|   4.2|
  19|EQUITY MUT FUND |   7474.18| O124 |   9328.60|    1854.42|  16.2|  26.4|
  20|BOND/BOND FUND  |  32450.00| O175 |  38246.00|    5796.00|   9.6|  54.8|
  21|IRA/PENSION/ANN |  82844.50| O227 | 132657.00|   49812.50|  11.2|  60.1|
  22|CERT of DEPOSIT |  11500.00| O289 |  13855.00|    2355.00|   9.8| 107.7|
  23|OTHER INVEST    |  16181.00| O304 |  17976.00|    1795.00|   6.4|  18.5|
  24|REAL ESTATE,HOME| 160000.00| O318 | 158000.00|   -2000.00|    .8|   8.2|
  25|CASH & EQIVAL   |  19463.00| O329 |  25627.00|    6164.00|  11.8|  31.7|
  26|  Subtotal      | 340533.68| N/A  | 405541.47|   65007.79|   4.0|  30.7|
  27|LIABILITIES     | 135100.00| O342 | 114584.00|   20516.00|   1.5|  15.2|
  28|  Net Assets    | 205433.68| N/A  | 290957.47|   85523.79|   4.8|  60.9|
-------------------------------------------------------------------------------
M:S: (Label, Protect-N)      FR

Type entry or use @ commands                                  @-? for Help
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Asset Analysis

Long learning curves raise another question: If using the program properly will force you to make radical changes in your daily or weekly habits, how likely are you to stay with the program? The probability that you'll stick to a plan is inversely proportional to the difficulty of maintaining it. If this is your first stab at organized home finance, think carefully about exactly what you want your software to do, and how much time you want to spend updating your data.

Before you purchase your program, and certainly before you start tapping keys, sit down and read the manual carefully, keeping your own financial situation firmly in mind. But don't worry — you don't need a degree in accounting to use any of these packages. With a little patience, anyone can master the fundamentals of computerized home finance.

CHECK IT OUT

Alpha Check Plus is an extension of ACTAsoft's basic **Alpha Check** checkbook program. Although it runs with AppleWorks 3.0, it isn't a template; you install Alpha Check Plus on your AppleWorks disk as *TASK.SYSTEM*, or through Beagle Bros' TimeOut system, and it functions as an integral part of your AppleWorks program. If you're looking for a relatively simple transaction- and ledger-based program, this one could easily meet your needs, especially if you're already comfortable with AppleWorks. In addition, though, Alpha Check Plus supports both single- and double-entry accounting, and its ability to generate custom reports makes it ideal for small-business applications. If you make and sell candy or baked goods, for instance, you can create a report on how much and what kinds of items individual vendors buy, or track how much you spend on ingredients.

ACTAsoft also publishes add-ons for business. **Payroll Plus** fills out a payroll check automatically, complete with all the proper deductions, including Social Security and federal and state taxes. **Reports Plus** uses your Alpha Check Plus data to produce a statement of operations and a balance sheet, among other calculations.

GOOD MANAGEMENT

Of the packages reviewed here, MECA's **Managing Your Money** is arguably the most complete, and certainly the slickest available for the Apple II. Beyond the

Money-Management Basics

Account. A record of related financial transactions (Groceries, Utilities, Credit Cards, Checking, for instance).

Amortization. Gradual reduction of a loan or other obligation by making periodic payments of principal and interest.

Asset. Nearly anything you own that's worth something in dollars and cents. Your computer, your car, your savings account, and your house are all obvious examples. A loan you make to another party, even though he or she hasn't repaid it yet, is also an asset.

Dividend. A share of funds or profits distributed to stockholders or policy holders.

Double-entry accounting. A standard system of bookkeeping in which every transaction is entered twice — once as a debit and once as a credit. For instance, if you write a check for your groceries, it's recorded as a debit (subtracted) in your Checking account and as a credit (added) in your Groceries account. This system provides an extremely detailed report of where your money comes from and where it goes.

Equity. The total value of an asset minus any liabilities against it. If you owe $30,000 on a $100,000 house, you have $70,000 in equity.

Interest. Percentage fee you pay to borrow money, or that a bank or other financial institution pays you on your deposits. Periodic **compound interest** is computed on the sum of the original principal plus accrued interest to that point.

Investment. Asset purchased with the expectation that it will increase in value (appreciate).

Liability. A debt you owe to another party — the mortgage on your house, the loan on your car, or the $10 you owe from last week's poker game.

Principal. Amount of a loan, debt, or investment, excluding interest. When you take out a loan, you borrow the principal.

Reconciliation. Checking your account figures against a statement sent to you by a bank, credit-card company, or other institution.

Transaction. Financial action such as a cash payment, a bank deposit, or a check received or written.

Tax Time

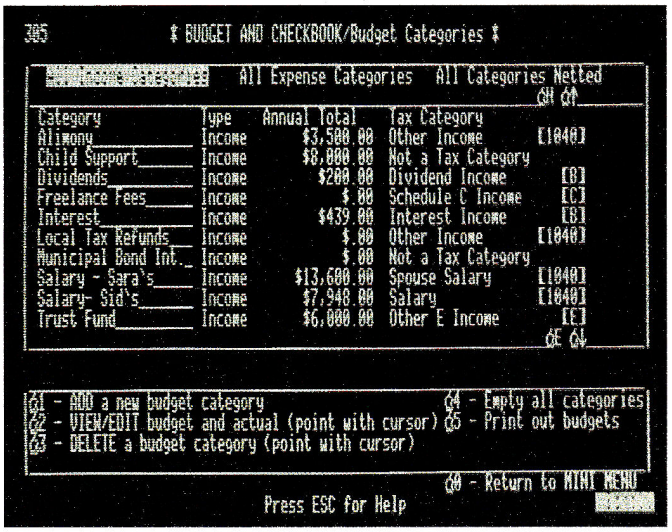
Tax-only packages can work either for or against you, depending on what you need. Those of you who always know where your receipts are will probably want only a program to ease the burden of those devilish IRS calculations. (If you haven't transcended the "shoebox" stage, you might want to invest in a package that will help you keep track of your money for the whole year.) Some tax packages are just electronic extensions of IRS forms with built-in calculators, but the really good ones lead you through the forms you need and rephrase those cryptic questions. TaxSmith for the Mac even comes with a built-in conscience, asking you whether you have documentation for your deductions. While these programs are no substitute for an accountant or a tax lawyer if you've got complex questions, most people will find that the software can at least provide accurate preliminary reports, if not IRS-ready documents, particularly if you also consult the tax-law help lines many companies support. Note that time constraints as we were going to press prevented us from including one popular package, 1040Works, in the table below, but it does appear in the Product Information box on page 71.

	KFS	MIT	ST	TCMND	TP	TS	TC90	TSF
AW template	●							●
Tax guide		●	●		●			
1040	●	●	●	●	●	●	●	●
1040A		●	●			●		
1040EZ		●	●					
1040ES		●		●	●			
A	●	●	●	●	●	●	●	●
B	●	●	●	●	●	●	●	●
C	●	●	●	●	●	●	●	●
D	●	●	●	●	●	●	●	●
E		●	●	●	●	●	●	●
F		●	●	●	●	●		
R		●	●	●	●			●
SE	●	●	●	●	●	●	●	●
2106	●	●	●	●	●	●	●	●
2119	●	●		●	●		●	●
2210	●	●			●			
2441	●	●	●	●	●	●	●	●
3468		●			●			
3800		●			●			
3903	●	●	●	●	●		●	●
4562	●	●	●	●	●		●	●
4797	●	●			●			
4972	●	●			●			
5329	●	●						
6251	●	●	●	●				●
6252		●			●			
8582		●			●			●
8606	●	●			●			●
8615	●	●	●	●	●			
8814		●	●					●
Prints on 1040		●	●	●	●			●
Prints on others		●		●				●
IRS-approved printouts	●	●	●		●			
Help line	●	●	●	●		●	●	●

Key

AW = AppleWorks
KFS = KFS/Tax
MIT = MacInTax
ST = Swiftax
TCMND = Tax Command
TP = Tax Preparer
TS = Tax Spreadsheet
TC90 = TaxCalc-90
TSF = TaxSmith Full
Form 1040 = individual income-tax return
Form 1040A = simplified individual income-tax return
Form 1040EZ = shortest individual return, no deductions
Form 1040ES = estimated tax
Schedule A = itemized deductions
Schedule B = interest and dividend income
Schedule C = profit/loss from business or profession
Schedule D = capital gains/losses
Schedule E = supplemental income
Schedule F = farm income and expenses
Schedule R = credit for elderly and disabled
Schedule SE = Social Security self-employment tax
Form 2106 = employee business expense
Form 2119 = sale/exchange of principal residence
Form 2210 = underpayment of estimated tax
Form 2441 = credit for child and dependent care
Form 3468 = investment credit
Form 3800 = general business credit
Form 3903 = moving expenses
Form 4562 = depreciation and amortization
Form 4797 = gains/losses from sales/exchanges
Form 4972 = tax on lump-sum distribution
Form 5329 = Individual Retirement Account and retirement-plan taxes
Form 6251 = alternate minimum tax
Form 6252 = installment-sale income
Form 8582 = passive-activity loss limit
Form 8606 = nondeductible IRA contributions
Form 8615 = tax for children under 14
Form 8814 = parent's election to report child's interest and dividends

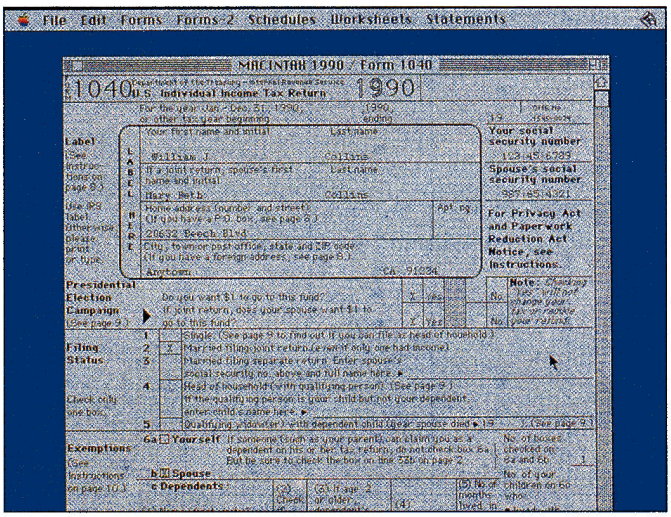
standard personal-budget module, the program is organized into nine interactive "chapters," including record keeping and planning for stocks and investments, a



Managing Your Money

comprehensive tax estimator with 20 different forms, a reminder calendar you can also use as a personal time-management tool, and even a template to help you prepare for your child's college expenses.

Once you've bought the software, you can sign up



MacInTax

for *Managing Your Money Better*, a handy quarterly newsletter filled with financial tidbits from Andrew Tobias, a widely known consultant who has lent his name to the package.

Unfortunately, using this program to its full potential requires a greater understanding of accounting than most people have. For instance, deciding when you should place an expenditure in an expense account and when you put it in a liability account can be particularly confusing — just ask any Accounting 101 student! If you have the patience to explore this package, the rewards will be substantial. But be forewarned — this program is no kiddie playground.

SMARTEN UP

Smart Money, from Sierra On-Line, is another double-entry-style program, but one that comes across as a little less imposing than Managing Your Money — and it's certainly less expensive. You begin by creating accounts and categorizing them as assets, liabilities, income, and expenses; the well-written manual, with glossary included, simplifies this task. After you've completed your accounts, the emphasis shifts to the transaction module, where you enter money spent on a day-to-day basis. Smart Money leads you by the hand through the process of making sure that the proper amounts go into or come out of the right accounts. In the Macintosh version of the program, on-screen prompt sentences explain how to respond to the question at hand.

In addition to Smart Money's main functions, the package also includes a calculator and a graph module, which provides visual representation of your finances. While graphs are rarely as accurate as pure numbers, they're often easier to understand, and thus more effective.

Sierra guarantees satisfaction and improved efficiency or your money back. That feature alone is worth a second look, because, as we noted above, success in financial planning usually depends on how well you adhere to your plan. Does Sierra know something we don't?

A QUICK BUCK

Want to automate your checkbook and find out where your money goes? Not worried about comparing profit-and-loss sheets with Donald Trump? Don't need all that fancy stuff? **Quicken**, from Intuit, is appropriately titled. It's available for both the Apple II and the Mac, and is just right for the home-finance novice. In addition, the Mac version can export data directly to SoftView's **MacInTax** program; the Apple II version exports to the **AppleWorks** spreadsheet, greatly increasing its reporting power.

Usually, one of the most difficult parts of setting up new accounts is trying to remember all the places you spend money, especially if you aren't particularly organized in the first place. The beauty of Quicken's system is that you won't have to try to think of all those places — most of them are already listed on screen (in three categories labeled *Home*, *Business*, and *MacInTax*) when you create a new file, and you can add more as you need. Admittedly, there's a certain lack of "what-if" features — Quicken concentrates on where your money has gone instead of where it's going to go. It keeps track of your repeated transactions, but you can't project a budget for the month or year ahead.

MORE FOR YOUR MAC

MacMoney is the one Macintosh-only financial program we examined, and its publisher's name, Survivor

Software, is appropriate. It's not as flashy as Managing Your Money, it's not as friendly as Quicken or Smart Money, but it gets the job done, and it includes some neat features. Our personal favorite is *Budget Bar Graphs*, available directly and instantly from the *Graph* menu: At a glance, you can see how far you overspent or underspent for a month or a year.

Unfortunately, setting up a budget is nowhere near as easy — you have to open the *Categories* window and then select a category for which to create a budget. Finding the actual *Budget* window takes some searching — when we tried it, it wasn't until we clicked on *Enter Balances* that all became clear. (Of course, this was after we heartily ignored our own manual-reading advice!) This program includes some excellent features, but they're tucked away in what might seem like odd places. Persevere, though, and you'll find MacMoney a powerful tool.

PLAYING THE MARKET

After all the talk about simple home-finance programs that can make sure you pay your car loan on time or deduct the correct amount for charitable contributions, here's a truly powerful program for the serious investor. **Asset Analysis** version 2.1.1 is an AppleWorks spreadsheet template (Microsoft Works or Excel if you're using the Mac version). It's unique in that it reports certain input errors within the template via a series of @IF statements. For instance, if you entered the number of shares of stock you purchased but forgot to the price, *ERROR* appears in the *Current Value* column, signaling you to examine the error-checking section for a number that will indicate what you've done wrong. This feature can be especially helpful if you want to set a cap on your investments or build in other protective limitations for yourself.

BANK ON IT

You've got no problem remembering where your money's coming from, but how do you know where it all goes? "Financial planning" doesn't have to mean searching through a shoeboxful of tiny slips of paper at tax time. Invest in a home-finance package — what better way to make your Apple earn its keep than by balancing the family budget and keeping your creditors at bay? Now, there's an offer you shouldn't refuse. ❑

CAMERON CROTTY IS AN ASSOCIATE EDITOR AT *inCider/A+*. SPECIAL THANKS TO MICHAEL FLEMISTER, ASSISTANT PROFESSOR OF CURRICULUM AND INSTRUCTION AT OHIO UNIVERSTY FOR HIS RESEARCH AND COLLATION OF PRODUCT INFORMATION.

PRODUCT INFORMATION

Alpha Check Plus, $68
Alpha Check 3.1, $49.95
update to Plus $15
plus $2.50 shipping
Payroll Plus, $39.95
Reports Plus, $29.95
ACTAsoft
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Woodland Hills, CA 91364
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(818) 786-9730
Apple II: AppleWorks required

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Rock Island, IL 61201
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(309) 788-7664
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$27.95 5.25"
(includes $2 shipping)
$15.95 annual update
$30.95 3.5"
(includes $2 shipping)
$18.95 annual update
128K Apple II

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(800) 624-8742
$59.95
Macintosh/Apple II

Smart Money
Sierra On-Line
P.O. Box 485
Coarsegold, CA 93614
(209) 683-4468
(209) 683-8989 customer service
(800) 326-6654 orders
$79.95
Apple IIgs

Swiftax
Timeworks Inc.
444 Lake Cook Road
Deerfield, IL 60015-4919
(708) 948-9206
$69.95
$35 annual update
128K Apple II

TaxCalc-90
Perfect Solutions Software
12657 Lake Breeze Drive
West Palm Beach, FL 33414
(407) 790-1070
(800) 726-7086
$41.95 5.25" (includes shipping)
$44.95 annual update
$44.95 3.5" (includes shipping)
$27.95 annual update
48K Apple II

Tax Command
Practical Programs Inc.
735 North Water St.
Suite 704
P.O. Box 93104
Milwaukee, WI 55203
(414) 272-7269
(800) 776-7047
$59.95
$30 annual update
64K Apple II

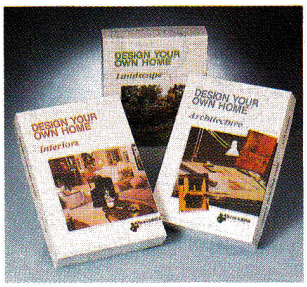
Tax Preparer
HowardSoft
1224 Prospect St.
Suite 150
La Jolla, CA 92037
(619) 454-0121
(800) 822-4TAX
$250
$79 annual update
64K Apple II

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Long Beach, NC 28465
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$19.95 Family
($15 former 1040Works users)
$5 annual update
$49.95 Full
($25 former 1040Works users)
$25 annual update
$74.95 Pro
($37.50 former 1040Works users)
$37.50 annual update
Apple II: AppleWorks (except AWGS)
Macintosh: Excel 2.2

Tax Spreadsheet for the Apple II
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St. Louis, MO 63126
(314) 961-2052
$19.95 plus $2 shipping
$10 annual update plus $2 shipping
48K Apple II

1040Works
1040Works X (256K required)
National AppleWorks Users Group
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Canton, MI 48187
(313) 454-1115
$29.95 each plus $3 shipping
update to 1990 $19.95 plus $3
includes green-bar paper for IRS
Apple II: AppleWorks templates
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IRS-acceptable output

Programs, Peripherals



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Programs Plus Price.....$47.
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Programs Plus Price.....$37.

ACCELERATORS /RAMCARDS

American Micro Research (Micro Sci)
80/64E 80 Column 64K Card *(IIe only)* .....49.
Apple Computer
Apple IIe Enhancement Kit .....58.
Apple IIe Extended 80 Col. Card....89.
Applied Engineering
GS-Ram Plus 1MG .....189.
GS-Ram Plus 2MG .....268.
GS-Ram Plus 3MG .....318.
GS-Ram II 1MG .....139.
GS-Ram II 2MG .....189.
GS-Ram II 4MG .....313.
GS-Ultra 1MG .....189.
GS-Ultra 2MG .....253.
GS-Ultra 512K .....163.
PC Transporter (768K) .....259.
PC Transporter Installation Kit GS ...37.
PC Transporter Installation Kit IIE ...29.
Ram Express II 1024K .....174.
Ram Express II 256K .....141.
Ram Express II 512K .....156.
RamFactor 1MG .....238.
RamFactor 512K .....189.
RamWorks III 1MG .....201.
RamWorks III 256K .....133.
RamWorks III 512K .....156.
TransWarp Accelerator *(GS)* .....257.
TransWarp Original Accelerator .....89.
ViewMaster 80 *(II+)* .....124.
Z-Ram Ultra 2 1MG .....253.
Z-Ram Ultra 2 256K .....176.
Z-Ram Ultra 2 512K .....208.
Z-Ram Ultra 3 1 MG .....319.
Chips
Chips Set 256K 120 or 150 NS ....23.
CV Technologies
GS Memory Board .....89.
Harris Labs
GS Load 256K *(3 pack)* .....69.
GS Sauce 1MG .....132.
GS Sauce 2MG .....169.
GS Sauce 4MG .....259.
GS Sauce Card "O" K *(GS)* .....75.
Zip Technology
Zip Chip 4 MHZ .....98.
Zip Chip 8 MHZ .....148.
Zip Chip Model 1600 *(GS)* .....249.

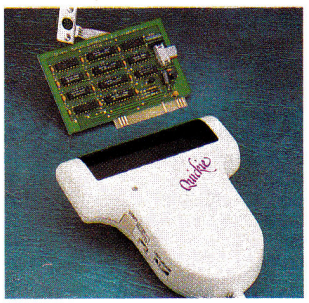
ACCESSORIES

Advanced Gravis
Advanced Gravis' Joystick *(AP & GS)* .....39.
MouseStick ADB *(GS)* .....59.
Apple Computer
Apple Mouse IIc .....78.
Apple Mouse IIe .....118.
Disk Controller Card .....68.
Extended Keyboard ADB .....175.
Video Overlay Card .....428.
Applied Engineering
Audio Animator *(GS)* .....174.
Conserver *(GS)* .....75.
High Output Power Supply .....59.
IIGS Heavy Duty Power Supply .....77.
Sonic Blaster *(GS)* .....95.
TimeMaster .....77.
Transporter Keyboard .....100.
CH Products
Flight Stick .....46.
Mach II Joystick .....25.
Mach III Joystick .....31.
Roller Mouse ADB *(GS)* .....83.
I/O Design
Imageware II Case Black, Navy, Platinum .....45.
ICMS, Inc. MousePen ADB .....89.
Kalmar
Kalmar Roll Top 3.5 *(holds 135)* ....26.
Kalmar Roll Top 3.5 *(holds 45)* .....14.
Kalmar Roll Top 3.5 *(holds 90)* .....21.
Kensington, Inc.
A/B Box .....63.
AntiGlare Filter GS .....34.
Apple Security System .....33.
Mouse Pocket *(Reg. or ADB)* .....8.
Mouseway *(MousePad)* .....8.
Turbo Mouse *(Reg. or ADB)* .....108.
Printer Muffler 80 .....47.
Printer Muffler 80 Stand .....22.
Space Saver Printer Stand .....19.
System Saver *(Platinum or Beige)* ..58.
System Saver GS .....68.
Universal Copy Stand .....22.
Universal Printer Stand .....19.

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*"Advertised price" does not include typographical errors on the part of other vendors or prices that do not reflect higher shipping costs, credit card charges, or membership fees. Final judgement remains with the manager on duty.

Koala Technologies
Koala Pad Plus w/Graphics Exhibitor .....79.
Kraft
Floppy Disk Notcher .....4.
Kraft Universal 3 Button Joystick *(IIe, IIc)* .....29.
Laser Computer Inc.
Laser 128 2 Slot Expansion Box....55.
Lynn Products
Cables *(Specify)* .....13.
Lynx Computer
Turbo Trackball *(GS)* .....59.
Maxell
Maxell 3.5 DS, DD *(10)* .....14.
Maxell 5.25 DS/DD .....9.



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Littlemouse APlus .....78.
Littlemouse ADB .....78.
MousTrak
MousePad 7"x9" Size .....8.
MousePad 9"x11" Size .....9.
Northgate Computer Systems
OmniMac Ultra Keyboard *(IIGS)* .....94.
Orange County Speaker
OCS 2-40 *(Stereo Amplifier)* .....125.
RC Systems
Double Talk .....183.
Ribbons
ImageWriter Ribbons available in orange, purple, black, blue, brown, green, red, yellow, silver, or gold ....4.
ImageWriter II-4 Color Ribbon .....9.
ImageWriter Rainbow Pack *(6 Colors)* .....19.
ImageWriter Ribbon-Black *(6 pack)* 19.
Sony
Sony 3.5 DS, DD *(10)* .....12.
Sopris
Imagewriter II Case Navy, Platinum .....42.
Street Electronics
Echo II *(AP & GS)* .....99.
Targus
Imagewriter II Case Black .....44.

APPLE COMPATIBLE COMPUTERS

Apple Computer
IIGS Computer 1MG CPU .....845.
Laser Computer Inc.
Laser 128 800K 3.5"Drive w/Controller .....199.
Laser 128 Cables *(Parallel, Serial, RGB or Modem)* ..13.
Laser 128 Computer .....325.
Laser Amber Monitor .....88.
Laser 128 Mouse .....44.
Laser 128 System w/Amber Monitor .....385.

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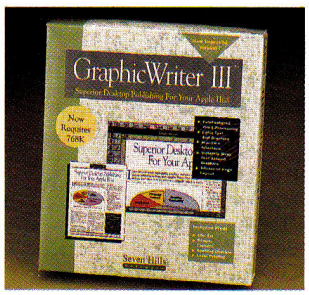
Laser 128 System w/Color Monitor .....495.
Laser 128EX Computer.....369.
Laser 128EX II Computer *(3.5)*....429.
Laser 128EX II Computer *(5.25)* ..399.
Laser RGB Monitor .....215.

BACKUP UTILITIES

Alpha Logic
LockSmith v6.0 .....33.
Apple Computer
GS/OS v5.0.2 *(GS)* .....39.
Central Point Software
Copy II Plus v9.0 .....25.
Glen Bredon
Dos.Master .....23.
Pro Command .....23.
ProSel 16 *(3.5)*.....53.
ProSel 8 *(5.25)*.....36.
Vitesse, Inc.
Salvation: Deliverance *(GS)* .....29.
Salvation: Exorcisor *(GS)* .....24.
Salvation: Bakkup *(GS)*.....29.
Salvation: Renaissance *(GS)* .....29.
Salvation: Wings *(GS)*.....49.

BUSINESS SOFTWARE

Abracadata
Everybody's Planner .....49.
Actsoft
Alpha Check Plus.....34.
Alpha Check v3.1.....26.
Beagle Brothers
AW v3.0 Companion .....27.



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Beagle Bros. Clip Art 1 *(GS)*.....26.
Beagle Bros. Desk Accessories *(GS)*..36.
Beagle Write .....45.
Beagle Write Desk Accessories or Font Pack 1 or 2 .....26.
Beagle Write Font Lib. 1 *(GS)* .....31.
Beagle Write Picture Manager .....25.
Beagle Write *(GS)*.....57.
GS Font Editor or Program Writer...29.
Outliner for Appleworks 3.0 .....41.
Superfonts Activity Guide .....29.
Timeout Decision Pak *(Graph, SpreadTools & SideSpread)* .....88.
Timeout Graph .....49.
Timeout MacroEase.....23.
Timeout Performance Pak *(DeskTools I, II & PowerPack)* .....65.
Timeout QuickSpell.....41.
Timeout ReportWriter .....45.
Timeout SideSpread, FileMaster, or DeskTools .....32.
Timeout Style Pak *(SuperFonts, Thesaurus & FileMaster)*.....65.
Timeout SuperFonts .....41.
Timeout SuperForms.....39.
Timeout TextTools.....29.
Timeout Thesaurus, DeskTools II or PowerPack .....29.
Timeout UltraMacros or SpreadTools .....34.
Big Red Software
Labels, Labels, Labels .....22.
Broderbund
Bank Street Writer Plus *(AP or C+)*...47.
Claris
Apple Works v3.0 .....**SPECIAL** 168.
Apple Works *(GS)* v1.1 .....**SPECIAL** 192.
Intuit Quicken v1.0 .....37.
Manzanita
BusinessWorks Bundle AP & GS *(Sys. Manager, G/L, A/P, A/R, Inventory)* .....248.
BusinessWorks Payroll *(AP & GS)* ..98.
Meca Software
Managing Your Money v4.0 *(AP & GS)*.....88.
Micca Soft
Invoicer w/A/R & Sales Tracking/Inventory.....125.
Milliken Publishing Medley *(GS)* ...74.
Nolo Press Will Maker v3.0.....33.
Seven Hills Software
Graphicwriter III *(GS)*.....**SPECIAL** 72.
Sierra On-Line
Smart Money *(GS)*.....45.
Stone Edge
DB Master Professional *(AP & GS)*.....179.
Timeworks, Inc.
Art Portfolio 4 in 1.....69.
Graph It!.....43.
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Publish-It v3.0 *(AP & GS)* .....84.
Swifttax .....45.

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Symbols and Slogans, Education Graphics, Font Pack 1 or 2 *(AP & GS)*.....25.
WordPerfect Corp.
WordPerfect *(AP or GS)* .....104.

COMMUNICATION SOFTWARE

Applied Engineering
ReadyLink.....57.
Beagle Brothers
Point-to-Point.....58.
TimeOut TeleComm.....41.
Compuserv
Compuserve Membership Kit .....23.
InSync
Proterm .....77.
Morgan Davis Group
ModemWorks.....29.
ProLine .....95.
Softspoken
Crossworks.....**SPECIAL** 67.

DISK DRIVES & HARD DISK SUB-SYSTEMS

American Micro Research (Micro Sci)
A.5 Half Height *(II+ & IIE)*.....129.
A.5C Half Height (IIC).....129.
A5 D Half Height 5.25" Drive *(IIGS Daisychain)*.....135.
AMR 800k Drive w/Controller .....215.
AS800k 3.5 Ext. Drive.....168.
GS Partner: Quick 20MB.....515.
GS Partner: Quick 40MB .....585.
GS Partner: Quick 60MB .....665.
Apple Computer
Apple 3.5 Drive *(GS & C+)* .....315.
Apple 3.5 Unidisk.....315.
Apple 5.25 Drive *(IIE, GS, C+)* ....248.
High Speed DMA SCSI Card .....105.
Unidisk 3.5 Controller .....58.
Applied Engineering
AE 3.5" Drive.....198.
AE High Density Drive *(GS)* .....239.
AE 5.25" Drive.....112.
Controller Card for 3.5" Drive *(IIe or II+)* .....58.

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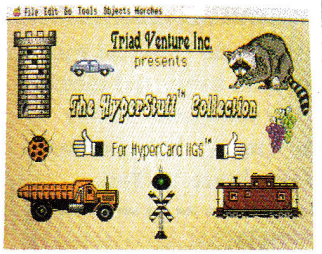
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Transdrive 360K Dual Drive .....289.
Transdrive 360K Single Drive .....185.
Transdrive Additional Drive *(for TD single)*.....109.
Vulcan 100 Meg *(AP or GS)*.....1279.
Vulcan 20 Meg *(AP or GS)*.....498.
Vulcan 40 Meg *(AP or GS)*.....648.

CMS Enhancements
20 MB w/SCSI II card.....459.
30 MB w/SCSI II card.....492.
60 MB w/SCSI II card.....569.
CMS 45 Removable w/A2S.....799.
Cartridge for 45 Removable .....99.
SCSI Rom Upgrade .....23.
MC20-Classic, IIsi.....280.
MC40-Classic, IIsi.....370.
MC100-Classic, IIsi.....610.

CV Technologies
Ramfast SCSI Card w/256K Ram..195.

Laser Computer Inc.
Laser 128 5.25 Disk Drive.....88.
Laser 800KB Drive .....175.
Laser 800KB Drive w/controller...205.
Universal Disk Controller.....44.

Omnishore
Sider D2 20MB HD.....419.
Sider D4/T 40MB HD .....789.

EDUCATIONAL SOFTWARE

A.E.C.
Spanish Vocabulary or Spanish Grammer.....16.
SPECIAL EDITION PRODUCTS WITH TEACHER'S GUIDES
Return of the Dinosaurs:
Teacher's Edition .....39.
Lab Pack.....68.
Super Lab Pack .....105.
Excel-A-Read:
Teacher's Edition .....39.
Lab Packs .....89.
Spanish or French Vocabulary & Grammar:
Teacher's Pack .....39.
Lab Packs .....74.

AEC Management Systems
Phonics .....31.
U.S. History .....16.
World History .....16.

Activision
Music Studio v2.0 *(GS)*.....43.

Advanced Idea
Audubon Wildlife Adventures: Grizzly Bears *(5.25)*.....32.
Audubon Wildlife Adventures: Whales *(5.25)*.....32.
Audubon Wildlife Adventures: Grizzly Bears*(GS)*.....38.
Audubon Wildlife Adventures: Whales *GS)*.....38.
Stars & Planets *(GS)*.....27.
Wizards of Words.....25.

Barron's
Computer SAT Revised Version.....32.

Britannica
Algebra 1: 1st & 2nd Semester.....46.
Algebra 1: 1st or 2nd Semester.....27.
Designasaurus or Revolution *(3.5)*..27.
Spellicopter.....22.

Broderbund
Geometry *(3.5)*.....49.
McGee or Katie's Farm *(3.5)*.....25.
Playroom .....25.
Playroom *(MAC)*.....29.
Science Tool Kit Module I or II .....25.
Science Tool Kit Master Module ....49.
Type!.....17.
Where in Europe is Carmen Sandiego? *(AP or C+)*...27.
Where in the USA is Carmen Sandiego?.....27.
Where in the USA is Carmen Sandiego? *(GS)* .....30.
Where in the World is Carmen Sandiego?.....25.
Where in the World is Carmen Sandiego? *(GS)* .....30.
Where in Time is Carmen Sandiego? *(AP or C+)* ..27.

Computeach
Stepping Stones 1 & 2 .....29.
Studymate-The Grade Booster *(3.5 or 5.25)* .....26.

Davidson & Associates
Alge-Blaster Plus *(AP or GS)* .....29.
Math Blaster Plus *(AP or GS)* or Grammer Gremlins.....29.
Math Blaster Plus *(GS)*.....29.
Read 'N' Roll.....29.
Reading & Me .....25.
Speed Reader II *(Consumer Version)* .....25.
Speed Reader II *(School Version)*...42.
Spell-It Plus *(AP or GS)* or Math Blaster Mystery *(AP or C+)* ..29.
Talking Math & Me *(GS)* or Talking Reading & Me *(GS)*.....29.
Word Attack Plus *(AP or GS)* .....29.
Word Attack Plus Spanish or French .....29.

Fisher Price
I Can Remember or Firehouse Rescue.....9.
Little People Bowling.....9.

Gametek
School Bus Driver or Chutes & Ladders.....9.

Grade Busters Corp.
Grade Busters 1, 2, 3 .....69.

Great Waves Software
Kidstime II *(GS)*.....22.

Learning Company
Magic Spells *(3.5 or 5.25)* or Gertrudes Secrets *(3.5)* .....22.
Math Rabbit *(3.5 or 5.25)* .....22.
Reader Rabbit *(5.25)* .....22.
Talking Reader Rabbit *(3.5)* .....32.
Think Quick *(3.5 or 5.25)* or Writer Rabbit *(3.5 or 5.25)*.....29.
Writing and Publishing Center *(3.5 or 5.25)*.....31.

MECC
Arithmetic Critters *(3.5 or 5.25)* ....22.
Calendar Crafter Home Edition *(3.5)*.....32.
Calendar Crafter School Edition *(3.5)*.....38.
Counting Critters *(3.5 or 5.25)* .....22.
First Letter Fun *(3.5 or 5.25)*.....24.
Fraction Munchers *(3.5 or 5.25)* ...24.
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Milliken Publishing
The Story Teller *(GS only)* .....32.
Mindscape
Crossword Magic .....33.
Orange Cherry
Addition & Subtraction, ABC's,
Speller, Clock or Money .....38.
Animals, Dinosaurs, Numbers,
First Writer, First Reader .....38.
Childrens Newspaper Maker *(GS)*...38.
Jungle Safari
or Talking First Words *(GS)*.....38.
School Bus, Alpha Chimp, Colors &
Shapes, Reading Railroad.....38.
Talking Multiplication &
Division *(GS)* .....38.
Talking Speller II *(GS)*.....38.
Pelican Software
Dinosaur Days .....21.
Sensible Software
Report Card II *(AP & GS)* .....37.
Sensible Grammar *(AP & GS)*.....59.
Simon & Schuster
Typing Tutor IV *(AP or GS)*.....26.
Software Toolworks
Mavis Beacon Typing *(5.25)* .....25.
Mavis Beacon Typing *(3.5)* .....32.
Mavis Beacon Typing *(MAC)* .....32.
Terrapin Logo Plus .....75.
TimeWorks, Inc.
Evelyn Wood: Dynamic Reader.....25.
Weekly Reader
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Bubble Ghost *(GS)* .....21.
California
or European Challenge *(GS)* .....15.
Cycles *(MAC)* .....31.
Grand Prix Circuit *(GS)*.....27.
Ishido *(MAC)* .....34.
Jack Nicklaus 1990 Courses *(GS)* ..15.
Jack Nicklaus Course Disk
Vol. 1 or 2 *(GS)* .....15.
Jack Nicklaus Golf *(GS)*.....31.
Jack Nicklaus Golf *(MAC)*.....35.
Mean 18 *(GS)*, Hardball *(GS)*, ...27.
Muscle Cars or Supercars *(GS)*.....15.
Stratego *(MAC)*.....31.
Serve and Volley *(GS)* .....25.
Test Drive II *(GS)* .....29.
Test Drive II *(MAC)* .....29.
Third Courier *(GS)*.....30.
Sky Travel *(AP & GS)*.....30.
Artworx
Bridge 6.0 *(AP or GS)*
or Strip Poker II *(GS)*.....25.
Kaleidokubes *(GS)* .....14.
BlueLion
Ticket to Hollywood or London .....25.
Ticket to Spain.....25.
Ticket to Washington D.C.....28.
Britannica
Gnarly Golf *(GS)*.....17.
Great Western Shoot-Out *(GS)* .....17.
JigSaw *(GS)* .....23.
Laser Force *(GS)*.....17.
Task Force *(GS)* .....23.
Broderbund
Ancient Art of War .....28.
Ancient Art of War at Sea.....28.
Centauri Alliance
or Jam Sessions *(GS)* .....30.
The Dark Heart of Uukrul .....30.
VCR Companion .....30.
Wings of Fury *(AP & GS)*
or Prince of Persia .....22.
ByteWorks Ugly Duckling *(GS)* .....25.
California Dreams
Tunnels of Armageddon *(GS)*.....26.
Vegas Gambler *(GS)* .....26.
Casady & Greene
Crystal Quest *(GS)*.....29.
Cinemaware
Star Saga 1 *(AP or GS)*
or Star Saga 2 *(GS)* .....32.
Compu-Teach
Once Upon a Time.....26.



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Once Upon A Time *(GS)*
or Once Upon A Time II *(GS)*.....33.
See the U.S.A. .....26.
Datasoft
Hunt for Red October *(AP or GS)* ...21.
Electronic Arts
Bards Tale *(GS)* .....14.
Bards Tale II.....14.
Bards Tale III
or John Madden Football .....31.
Block Out *(GS)* or Zany Golf *(GS)*...26.
Cartooners *(GS)*, Bards Tale II *(GS)* 20.
Earl Weaver Baseball.....14.
Instant Synthesizer *(GS)* .....32.
Marble Madness *(GS)*.....14.
Skate or Die *(GS)*.....14.
The Immortal *(GS)* .....32.
FTL Dungeon Master *(GS)* .....23.
GameTek
Double Dare or Press Your Luck .....9.
Infocom
Battle Tech .....19.
Journey .....19.
Interplay
Battle Chess .....27.
Battle Chess *(GS)*
or DragonWars *(AP & GS)*.....30.
Neuromancer *(GS)* .....14.
Interstel
Empire.....26.
Leisure Genius
Clue, Risk, or Scrabble .....26.
Lucasfilm Games
Maniac Mansion .....15.
Pipe Dream .....19.
Melbourne
Quarterback *(AP or GS)*.....14.
War in Middle Earth *(GS)* .....27.
Micro League Sports
Micro League Baseball
w/ General Manager & Stats.....24.
Micro Revelations
Xenocide *(GS)* .....28.
Microillusions Firepower *(GS)* .....21.
Microprose
F-15 Strike Eagle .....12.
Pirates *(GS)*.....28.
Miles Computing, Inc.
Questmaster .....22.
Questmaster *(GS)*.....26.
Mindscape
Balance of Power 1990 *(GS)*.....32.
Gauntlet *(GS)*.....12.
Hostage *(GS)*
or Captain Blood *(GS)* .....26.
New World Computing
Kings Bounty .....26.
Might & Magic .....18.
Might & Magic II.....32.
Polarware Transylvania 3 *(GS)* .....15.
Ready Soft Space Ace *(GS)* .....33.
Sierra On-Line
Gold Rush *(AP or GS)*
or Black Cauldron *(GS)*.....25.
Kings Quest I, II, III or IV .....29.
Kings Quest I, II, III or IV *(GS)* .....29.
Leisure Suit Larry *(AP or GS)*.....25.
ManHunter New York *(AP or GS)*
or Police Quest *(AP or GS)*.....29.
Mother Goose *(AP or GS)*.....19.
Space Quest
or Space Quest II *(GS)* .....29.
Thexder *(AP or GS)*
or Silpheed *(GS)* .....22.
Sir-Tech Software
Wizardry Trilogy *(includes I, II, III)* ..29.
Software Toolworks
Chessmaster 2100 .....26.
Chessmaster 2100 *(GS)*.....33.
Cribbage/Gin King *(GS)*.....27.
Keef the Thief *(GS)*.....14.
Life and Death *(GS)*.....33.
Spectrum Holobyte
Solitaire Royale *(GS)*.....20.
Tetris *(AP & GS)*.....23.
Strategic Simulations
AD&D Champions Krynn
or Overrun.....32.
AD&D Pool of Radiance .....30.
Curse of the Azure Bond *(GS)* .....33.
War of Lance
or Secret of the Silver Blade.....27.
SSG
Halls of Montezuma *(GS)* .....29.
Victory Software
2088: The Cryllan Mission:
The Second Scenario.....33.
2088: The Cryllan Mission *(GS)* ....33.
Secrets of Bharas.....36.
Walt Disney
Mickey's Crossword Puzzle Maker..25.

GRAPHICS PACKAGES

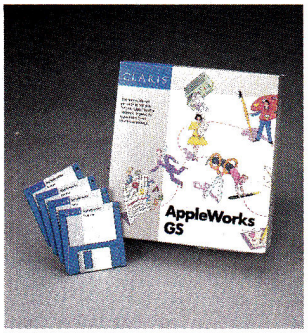
Abracadata
Architecture Library 1, 2, 3
or 4 *(AP or GS)*.....19.
Design Your Own Home:
Architecture *(3.5)* .....SPECIAL 47.
Interiors *(3.5)*.....SPECIAL 47.
Landscape *(3.5)*.....SPECIAL 47.
Architecture *(5.25)*.....SPECIAL 37.
Interiors *(5.25)*.....SPECIAL 37.
Landscape *(5.25)* .....SPECIAL 37.
Design Your Own Home: *(MAC)*
Architecture, Interiors, Landscape ...59.

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Suggested Retail GS.....299.
Programs Plus Price.....$192.

Design Your Own Railroad.....32.
Design Your Own Train.....32.
Electronic Drawing.....32.
Interiors Library 1, 2 *(AP or GS)*....19.
Landscape Library 1.....19.

Baudville
816/Paint.....42.
Award Maker Plus *(AP & GS)*.....28.

Beagle Brothers
Beagle Draw *(GS)*.....53.
Platinum Paint *(GS)*.....58.

Berkeley Geoworks
GEO Publish.....58.
GEOS V2.1, GEOCalc or GEOFile.....43.

Big Red Software
PS Lover's Utility Set *(3.5)*.....26.
PS Lover's Utility Set *(5.25)*.....26.

Broderbund
Bannermania *(AP or GS)*.....22.
Dazzle Draw.....37.
New Print Shop *(AP or C+)*.....30.
New Printshop Graphics Party *(AP)*..22.
New Printshop Graphics Party *(C+)*..19.
New Printshop Graphics Sampler Ed. *(AP)*.....31.
New Printshop Graphics Sampler Ed. *(C+)*.....19.
New Printshop School & Business Ed. *(AP or GS)*.....31.
Print Shop Companion *(GS Specific)*.....31.
Print Shop Graphics Library Party Edition *(GS)*.....22.
Print Shop Graphics Library Sampler Edition *(GS)*.....22.
PrintShop*(GS)*.....36.

Creative Pursuits
Clip-Art for Writing & Publishing Center Combo Pack *(AP)*.....48.
Holiday Disk *(AP)*.....20.
Nature Disk *(AP)*.....20.
People, Places Disk *(AP)*.....20.

Eclat
Fractal Explorer *(AP or GS)*.....26.

Electronic Arts
DeluxeWrite w/DeluxePaint II *(GS)*..26.

El Kassir Software
COLOR+ *(GS)*.....42.
Supergraphix II w/music *(GS)*.....52.

Orange Cherry
Super GS Award Maker.....49.

Roger Wagner
Graphic Exchange *(GS)*.....29.
Hyper Studio *(GS)*.....82.

Saddleback
My Paint *(GS)*.....32.

Seven Hills Software
Font Factory *(GS)*.....22.
SuperConvert *(GS)*.....22.

So What Software
Iconix *(GS)*.....26.

Spinnaker
Certificate Maker.....24.
Certificate Maker Library #1.....19.
Newsroom.....19.
Newsroom Clip Art Collection Vol. 1, 2 or 3.....14.

Triad Venture
GDL Graphic Disk Labeler *(GS v2.0)*.....25.
The HYPERSTUFF Collection:
Cliptunes.....**SPECIAL** 25.
Clipart Plus.....**SPECIAL** 25.

VersaCAD Corp.
CADapple *(3.5)*.....199.

MODEMS & MONITORS

Anchor Automation
2400E.....129.

Apple Computer
Apple Color Composite Monitor...325.
Apple GS Color Monitor.....454.

Applied Engineering
DataLink 1200.....95.
DataLink Express *(ext. 2400)*.....158.
DataLink Express w/MNP 5.....197.
DataLink Modem 2400B *(Int AP & GS)*.....159.

Hayes MicroComputing
Hayes 2400 SmartModem.....335.

Practical Peripherals
Practical Modem 1200 SA Mini.....80.
Practical Modem 2400 MNP.....219.
Practical Modem 2400 SA.....185.

Prometheus
Pro Modem 2400A Internal w/Software.....146.

Supra Corporation
SupraModem 2400 Plus.....149.
SupraModem 2400 *(Hayes Compatible)*.....99.

U.S. Robotics
Courier HST 9600.....599.

PRINTER INTERFACES

Apple Computer
Apple Super Serial Card.....105.

Applied Engineering
Parallel Pro.....74.
Serial Pro.....99.

Orange Micro
Grappler 9 pin.....79.
Grappler Plus *(AP & GS)*.....69.

SMT
Envoy.....53.
No Slot Clock.....29.
Print Tech II.....29.

Thirdware
Finger Print GSi verIII *(Includes Desktop Accessories-GS)*.....83.
Finger Print Plus *(Parallel, Serial, or ImageWriter II)*.....83.
Upgrade Kit *(FingerPrint I & II)*.....29.

Vitesse, Inc.
Harmonie *(GS)*.....29.

PRINTERS

Apple Computer
ImageWriter II.....455.

Brother
M1109-AP Printer.....179.

Hewlett-Packard
Deskwriter (requires Harmonie)....747.

SCANNERS AND SOFTWARE

Digital Vision
ComputerEyes *(GS)*.....195.
ComputerEyes *(IIE)*.....99.
ComputerEyes *(MAC II)*.....348.

Thunderware
Lightningscan *(GS)*.....194.
Thunderscan *(AP & GS)*.....148.
Thunderscan 5.0 *(MAC)*.....185.

Vitesse, Inc.
Quickie *(AP & GS)*.....**SPECIAL** 193.
Quickie Update.....80.

WestCode
Inwords.....77.

UTILITIES AND LANGUAGES

Absoft
AC/BASIC *(GS)*.....79.

ByteWorks
ORCA C w/Learn to Program.....119.
ORCA/DeskTop *(GS)*.....34.
ORCA/C *(GS)*.....79.
ORCA/Design Master *(GS)*.....49.
ORCA/Disassembler *(GS)*.....32.
ORCA/M Assembler *(GS) v2.0*.....65.
ORCA/Pascal *(GS)*.....80.
ORCA/Pascal w/Learn to Program..119.

Micol Systems
Micol Advanced Basic IIE.....59.
Micol Advanced Basic *(GS)* v3.0...89.

Morgan Davis Group
MD-Basic.....25.

Roger Wagner
Macro Mate *(GS)*.....35.
Merlin 8/16 *(AP & GS)*.....75.
SoftSwitch *(GS)*.....34.

Seven Hills Software
Disk Access *(GS only)*.....32.

So What Software
Call-Box *(GS)*.....69.
Disc Commander *(GS)*.....29.
Hyper Launch *(GS)* v3.0.....35.
Sonix *(GS)*.....34.

Zedcor
ZBasic v4.21.....39.

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APPLE II TO MAC AND BACK

Yes, you *can* take it with you — your collection of documents, spreadsheets, and data, that is. Switching between your II and your Mac gives you the best of both Apple worlds.

With the introduction of the Macintosh Classic and the LC, more and more Apple II users are thinking about adding Macs to their classrooms or dens. While you may not be able to run all your II applications on your Mac and you can't run any of your Mac applications on your II, the good news is that you can take a lot of your data with you. Until recently, exchanging data between Macintosh and Apple II computers has been a relatively neglected subject, except by a circle of programmers, hobbyists, and network administrators. It's clear that Apple IIs and Macs will coexist for many years to come and that if you have access to both systems, you'll be facing the challenge of Apple II/Mac file transfer and conversion.

Exchanging data between the two systems is surprisingly simple and is getting easier all the time, but it often seems to be a well-kept secret as far as Apple is concerned. Apple's official solution for using Macs and Apple IIs in the same

By Mike Markowitz

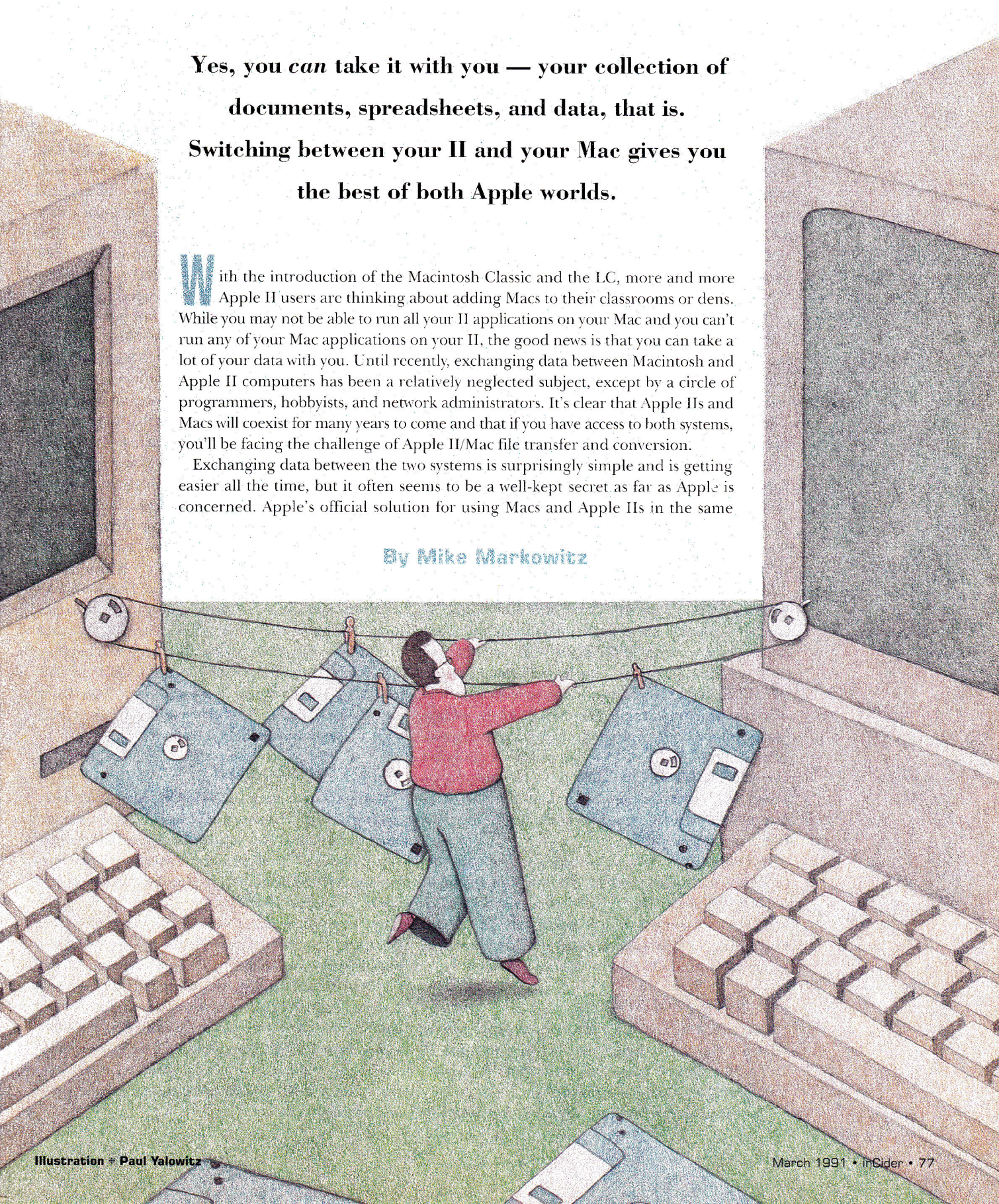


Illustration ■ Paul Yalowitz

APPLE II TO MAC AND BACK

environment is a rather expensive network, which makes the IIe or GS into a terminal attached to a Macintosh file server. This arrangement doesn't let you run Apple II software on the Mac or vice versa; the Mac file server's hard drive just stores the Apple II programs and files. But it does let Mac users access Apple II data and vice versa. (See "Connecting in the '90s," December 1990, p. 66, for more information.)

An AppleTalk network running AppleShare is a great solution for some people, but there are much simpler solutions with less-expensive requirements. In some cases you'll need a modem; in others, you'll need only a 3.5-inch floppy-disk drive. Let's take a look at some of the options for exchanging various kinds of files between Apple's two computer families.

ACCESSING YOUR DATA

What do the terms *file transfer* and *file conversion* mean? There are at least three different levels of connectivity between computers that use different operating systems.

Media access means that a computer's disk or tape hardware can read and write the physical data formats another computer uses. For example, the 3.5-inch floppy-disk drive in a Mac can read and write ProDOS and MS-DOS formats, but the standard 5.25-inch Apple II floppy-disk drive is physically incapable of reading or writing any of the MS-DOS formats used by IBM PCs and compatibles.

Data access means that a program running on one computer can read or write data in a format that's usable on another computer. For example, most word processors can read and write ASCII (plain text) files, regardless of the program or the type of computer on which they were created. In many cases, data transfer involves some loss of information. For example, Microsoft Excel, the leading Macintosh spreadsheet program, can't import an AppleWorks spreadsheet directly. But AppleWorks can save a spreadsheet in a format called *DIF (data-interchange format)*, which Excel can use. The problem is that DIF files save only the values in spreadsheet cells, not the formulas that created those values.

Application access means that one computer can run programs that were written for the operating system of another computer. That usually requires special hardware, like a coprocessor card, or special software. Applied Engineering's **PC Transporter** card, which lets an Apple II run many MS-DOS programs, is an example.

THE MODEM SOLUTION

With modems and the right telecommunications software, you can exchange data between an Apple II and a Mac almost anywhere in the world, if both computers have access to a phone line.

The most direct method requires coordination between sender and receiver. The receiving party sets his or her communication software to accept an incoming file. The sender makes sure the text file is saved on a disk the computer can access, and that both parties are using the same baud rate and the same file-transfer protocol, such as *XModem* or *Kermit*. *Protocols* are the rules that specify such things as the size of a chunk of data, or packet, how the beginning and end of a packet are indicated, and how the software will confirm that the data was received intact. The sender dials the receiver, and, when the connection is established, issues the appropriate "send file" command. The details vary according to your particular communications software. (See "Link Up With Telecommunications Software," May 1990, p. 50, for more information on individual programs.)

If both computers are in the same room, you can use a null-modem cable for a direct link between two communication programs, cutting the phone company out of the loop. For a GS connected to a Macintosh, the ImageWriter II cable will work.

One indirect method of modem communication (also called an *E-mail dead drop*) requires that both parties belong to the same on-line service, such as CompuServe, GEnie, MCI Mail, or America Online. You simply log on to your service and send your file as "electronic mail" to the user name of the intended recipient. The next time the recipient logs on, he or she will receive notice that incoming mail is waiting. The recipient can then download the file to disk and work with it "off line" (after hanging up). It's a convenient solution. The drawbacks are that the person with whom you want to communicate must belong to the same service you do, and that membership fees and connect-time charges can be steep.

In any case, putting your files into ASCII or DIF format for telecommunication strips out all the fancy fonts and formatting that make owning a Mac or a GS such a typographic delight.

TWO-STAGE TRANSFER

Oddly enough, using an IBM PC or compatible as an intermediary can be an effective way to transfer certain kinds of formatted files between an Apple II and a Mac — a number of excellent hardware/software products for Apple II-to-PC and PC-to-Mac file translation and conversion are available.

On the Apple II side, **Cross-Works** from SoftSpoken Company (reviewed in July 1989, p. 36) includes a multibranched cable that can connect any Apple II to any PC, plus software for both computers. Cross-Works converts AppleWorks word-processor, spreadsheet, or database files to a wide variety of formats compatible with standard MS-DOS applications. The actual conversion is always done on the PC, regardless of the direction of the transfer, to take advantage of greater speed and processing power.

APPLE II TO MAC AND BACK

On the PC-to-Macintosh side, **LapLink Mac III** from Traveling Software is a similar combination product, with cables that allow high-speed data transfer, and format translators for most popular word processors.

Because many Macintosh applications can open and work directly with files created by their MS-DOS counterparts, converting an Apple II file to PC-compatible form may be all you need to do.

SOFTWARE SOLUTIONS

Hidden away in the Macintosh System Utilities (shipped with every Mac) is a remarkable application called **Apple File Exchange** (AFE). Insert a ProDOS disk into the Mac drive, and AFE reads the directory and displays a scrollable list of files. Normally, only plain ASCII (text) and binary files are convertible. Select the files you want, click on the *Translate* button, and AFE writes the files as Mac text in a matter of a few seconds. AFE can translate in the other direction as well, converting Mac text files and writing them in ProDOS format.

If you're working with AppleWorks Classic files created with a version predating 3.0, the ASCII file you print to disk will contain extra carriage returns that mess up the appearance of your page. The Beagle Bros utility *AWP to TXT* included in **TimeOut PowerPack** takes care of that problem.

MacWrite II, published by Claris, includes an *XTND* (extended-command) file translator for word-processor files created in both AppleWorks Classic and AppleWorks GS. That means you can use Apple File Exchange to move a formatted AppleWorks document to the Mac (no ASCII step in between) and open it directly in MacWrite II, with all your tabs, underlines, and other settings preserved.

Claris has made its XTND technology available to other publishers, as well. For example, the Leonard Development Group's **SmartWorks** (reviewed in January 1991, p. 66) also reads AppleWorks files; the latest version of Timeworks' **Publish It! Easy** for the Mac, scheduled for a March release, reportedly will, as well. **Microsoft Works** (version 2.0 and later), one of the most popular integrated software packages for the Mac, can convert AppleWorks files to its own formats. If you have an AppleWorks spreadsheet, Microsoft Works can translate it and use it just as easily as a document created on the word processor. (See "Swap 'til You Drop," this month's Bridging the Gap column, p. 100, for more information on file-exchange solutions.)

IF YOU'RE MACLESS

Apple File Exchange is a great solution if you have a Macintosh handy, but what if you have an Apple II and a bunch of Mac-formatted disks with data you need to read? The GS/OS operating system is designed to accommodate *file system translators* (FSTs), utilities that can access "alien" file formats directly. The only one Apple has implemented, however, handles the High Sierra format used on CD-ROMs. The long-delayed translator for the Mac's hierarchical file system (HFS) is reportedly still under development.

While we're waiting for the official Apple solution, a useful little public-domain program fills the gap. It's called **A2FX**, by Chan Wilson. Only 23K in size, the program is written in assembly language. We saw a preliminary edition, but an enhanced version should be available early this year. A2FX is a simple menu-driven ProDOS 8 utility that can read data from Macintosh disks and transfer it to a ProDOS disk. It offers several options for dealing with the Mac's complex file structure, which divides a file into "data" and "resource" forks. For simple data transfers, the program works smoothly.

GS/OS introduced the Mac's bifurcated file structure (data and resource forks) to the Apple IIGS. **Resource Spy**, a program by Stephen Chick, converts certain Macintosh resources (icons and fonts) to useful Apple II formats. You'll need some degree of technical know-how to take advantage of this capability, though.

An unusual example of Mac-to-II transfer capability is provided by two file-compression utilities, **NuPak.IIGS** by Joshua Thompson, and **ShrinkIt** for the GS by Andy Nicholas. These programs can extract .SIT-type files created by StuffIt, a standard Macintosh utility widely used to compress files uploaded to on-line services and bulletin boards. Basically, a file-compression algorithm looks for repeating patterns in the file's code. For instance, *BBBB* would become *4B*, which, while incomprehensible to anything but the original compression utility, cuts the required storage space and data-transmission time in half. Compression and decompression of bulletin-board files save time and money for both the person uploading and the person downloading the file. Use Apple File Exchange first to put .SIT files on a ProDOS disk before extracting them.

GET THE PICTURE?

Macintosh graphics images come in a bewildering variety of formats (PICT, MacPaint, TIFF, and encapsulated PostScript, to name a few), as do Apple II graphics (single hi-res, double hi-res, two kinds of super hi-res, Print Shop, and so on). **Graphic Exchange**, a utility program available from Roger Wagner Publishing, converts many Apple II graphics formats to MacPaint documents. (Color-palette information is lost, as MacPaint is limited to monochrome bit maps.) A remarkable GS program called **SuperConvert** translates MacPaint, Atari ST, Commodore 64, and other graphics formats to various Apple II (8-bit) and IIGS formats. **Platinum Paint**, a new GS program from Beagle Bros (Editors' Choice, January 1991, p. 112), can import graphics in MacPaint format directly.

APPLE II TO MAC AND BACK

For object-oriented graphics (MacDraw or TopDraw) no II/Mac file-transfer solutions are yet available. On the Macintosh you can paste an object-oriented graphic (PICT format) into a document in MacPaint format, then convert it to an Apple II format, but that would leave you with just a bit map — no ability to select and edit individual objects.

For scanned or digitized graphics, the GIF (*graphic-interchange format*) standard lets Macs, PCs, and other systems exchange compacted picture files with color palettes, resolution, and proportions preserved relatively intact. To display GIF images on the Apple IIGS you need the program SuperConvert; a similar program for the IIe/IIc is **IIGIF**. If the GIF file was created on a Macintosh, there's an additional step that requires a program called **GIFStripper**, owing to the nonstandard way the Macintosh adds file-header information to the basic binary GIF data. These shareware programs are available from many Apple II user groups and leading on-line services.

SHARING HARDWARE

Another aspect of Mac/Apple II connectivity you shouldn't overlook is the growing commonality of peripheral devices. Most 800K external floppy-disk drives for the Mac and the Apple II are compatible (except for the UniDisk).

The high-density (1.44-megabyte) floppy disk Apple introduced with the Mac IIx can read and write MS-DOS disk formats as well as ProDOS. For other Mac models, a company called the **Engineering Department**, founded by four of the original Apple II engineers, has produced a little module that plugs into the external floppy-disk-drive port of the Mac and tells the internal 3.5-inch drive how to read, write, and format 720K MS-DOS disks. At press time, an Apple II ProDOS-compatible version of this module was under development. Applied Engineering has also promised an eventual 1.44-megabyte upgrade for its new low-cost **800K 3.5-inch external floppy drive** for the Apple II.

The original Macintosh mouse also works on the Apple IIc. (On the IIe it needs an adapter card.) In addition, most devices that work with the Apple Desktop Bus (ADB) on the Mac SE and the Mac II — mice, keyboards, joysticks, and so on — will also work on the GS. Apple's ImageWriter II printer and the mighty LaserWriter work on either system with the same cable. The GS and the Apple IIc Plus also use Mac-style ("mini-8 DIN") serial-port connectors. What that means is that Apple II owners who decide to trade up to a Macintosh can often retain a large part of their hardware investment, or simply share peripherals.

With a SCSI adapter card, an Apple II can use Macintosh external hard drives. A few vendors even provide formatting software that can create ProDOS and Macintosh "partitions" on a single hard drive, allowing two computers to share one drive — although not at the same time. (For more information on hardware solutions, see "Do You Need a Hard-Disk Drive?" March 1989, p. 47; "Which One to Buy?" April 1989, p. 47; "Do You Know Where Your Data Are?" May 1989, p. 54; "Bit by Bit," January 1990, p. 65; "The ADB Connection," February 1990, p. 51; "New SCSI Card," What's New, June 1990, p. 14; "A Hard Drive Is Good to Find," July 1990, p. 42; "Faster Than a Speeding . . . ," Editors' Choice, November 1990, p. 96; "Shopping for a System," January 1991, p. 61; "The SCSI Side of Life," February 1991, p. 47; and "Off the Beaten Track," this issue, p. 88.)

TWO FOR ONE

Software-based emulation, such as the highly successful **SoftPC** from Insignia Solutions, which lets a Mac run many MS-DOS programs, requires a lot of memory and processing power. One Macintosh program, **II in a Mac** from Computer Applications, claims to emulate an Apple IIe on the Macintosh, running Apple II programs as well as converting files to Mac formats. (See "II Links to Mac," February 1986, p. 8, and "II on a Mac," News Line, February 1986, p. 15.)

Apple's long-awaited HyperCard IIGS can, with the aid of HyperMover stacks, translate the command structure and convert and open HyperCard stacks developed on the Macintosh. That's probably as close as we'll ever get to "running Mac software" on an Apple II. Still, it's an impressive accomplishment. (See "HyperCard IIGS: The Apple II Culture Reborn," February 1991, p. 37, for more information.)

Systems in which two different microprocessors coexist under the same roof have until now rarely been successful; the most notable exceptions were the variety of Z-80 cards that let the Apple II run CP/M software. In the II/Mac world, Cirtech's proposed **Duet** card for the GS is a Mac coprocessor (see "Tech Notes," What's New, November 1990, p. 17), although at press time development of the card had been postponed indefinitely, owing to lack of marketing support for the GS, according to the company.

The new Mac LC's optional **II Emulation Card** runs 8-bit programs. It's a 65C02 microprocessor, with 128K of RAM and an integrated circuit for translating between the card and the Mac. The LC handles all input and output, except for a joystick/5.25-inch drive port, so theoretically you should be able to use all the printer, modem, ADB, video, and audio ports on the Mac. (See "Meet the Mac LC: What the Apple IIGS Should Have Been?" in the December 1990 issue, p. 40.)

IN THE HOPPER

The Apple Programmers and Developers Association (APDA) offers a **Cross Development System** that lets

APPLE II TO MAC AND BACK

programmers use the Macintosh to create programs in assembly language, C, or Pascal to run on the Apple IIGS. It's a complex family of software products that run in the environment of the Mac Programmer's Workshop.

Developers would like to be able to pay the high cost of programming new applications just once, and then translate the code automatically into machine-specific versions. Functional differences between the microprocessors of Apple II family (6502, 65C02, and 65816) and those of the Macintosh family (68000, 68020, and 68030), as well as their very different operating-system conventions, make this a remote dream, however.

Consider the machines' Toolboxes, for example — sets of routines embedded in each computer's ROM that handle text editing, graphics, windows, and disk input/output. The GS Toolbox is similar in many ways to the Mac's, but it isn't identical, so code written for one system has to be edited extensively, modified, and debugged to ensure that it has all the proper Toolbox calls for the other system.

The number of programmers who know both systems well enough to do that is small, and the declining market share of the GS means that there's little incentive for new programmers to climb the steep GS learning curve.

Another obstacle is the hare-and-tortoise disparity in performance between the two systems. To run efficiently, a program's code has to be carefully optimized for a specific machine. The Apple II is an 8-bit or 16-bit system running at 1 or 2.8 megahertz, while the Macintosh is a 32-bit system with clock rates ranging from 8 to 40 megahertz. A program that runs fast on a Mac, for example, could be agonizingly slow on an Apple II. On the other hand, a game with reaction-time parameters that make it challenging on an Apple II would become an unplayable blur on the Macintosh, unless the conversion includes careful fine-tuning of event timing, delays, and other factors.

Let's hope that future versions of GS/OS and the Macintosh operating system will provide important areas of convergence, making it easier to port programs as well as files and data across the gulf separating the two systems. Until then, spread the word about file conversion and take a look at some of the current products that can help you take advantage of the best of both Apple worlds. ❑

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MS/33G
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(800) 282-2732
$190

Cross-Works
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Raleigh, NC 27624
(919) 870-5694
$99.95

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A2-Central (US distributor)
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(913) 469-6502

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271 E. Hacienda Ave.
Campbell, CA 95008
(408) 446-1444

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Graphic Exchange
Roger Wagner Publishing
1050 Pioneer Way, Suite P
El Cajon, CA 92020
(619) 442-0522
$49.95

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Frontier Technologies
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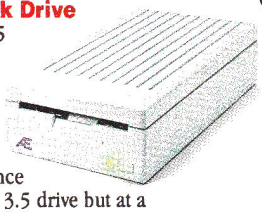
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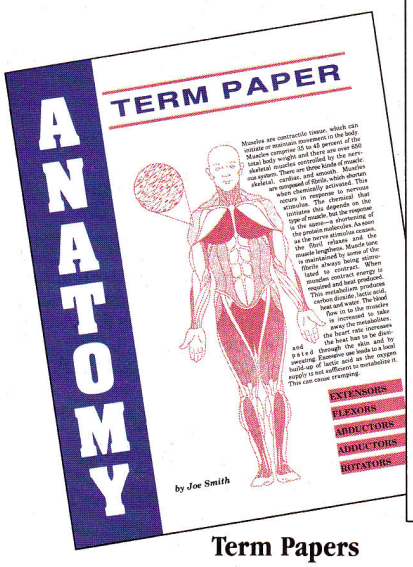
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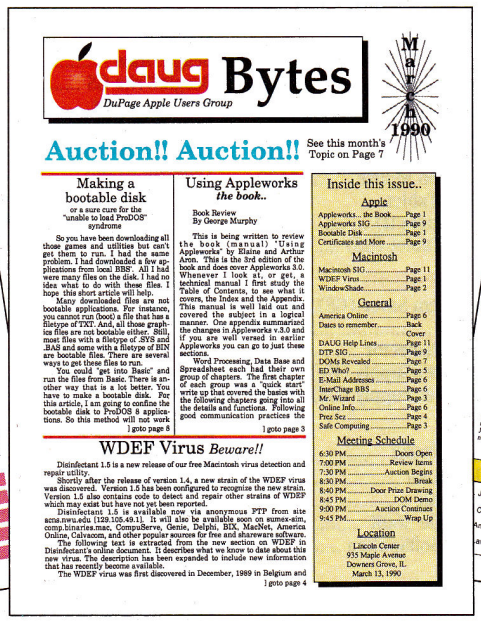


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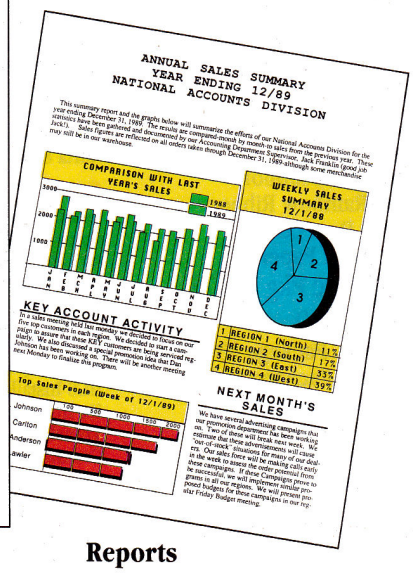


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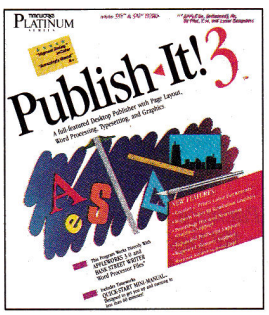
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Print Shop Graphics

A Triple Threat

Print Shop images can dress up your documents — but do three formats mean triple the graphics options or triple the technical problems? A good translation program can point you in the right direction.

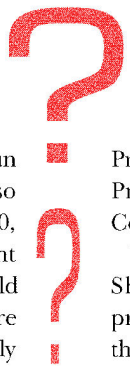


With three distinctly different formats — original, GS, and New — Print Shop compatible graphics images clearly demonstrate the power and versatility of Apple II software — but also the tangle of confusing technical detail sometimes inherent in that versatility. Although a number of desktop-publishing, presentation, and paint programs can import Print Shop graphics — whether those from Broderbund's own library or from third-party and public-domain collections — many recognize only one or two of the formats. (See the accompanying **Table**.) Let's examine the differences among them and talk about conversion possibilities, as well.

An *original* Print Shop graphic is a single-hi-res DOS 3.3 image on a 5.25-inch disk. In general, whenever a program claims to import Print Shop graphics and doesn't indicate a specific format, it's looking for original format. Some programs, however, require you to transfer the DOS 3.3 image to a ProDOS-formatted disk first. (See the **Table**.) If so, the program manual should explain the procedure; the Apple System Utilities disk that came with your computer is the usual means. Note also that Print Shop graphics supplied on 3.5-inch disks aren't in original format. By contrast, *Print Shop GS* graphics are super-hi-res ProDOS images, sold most often on 3.5-inch disks. You can transfer them to 5.25-inch disks if you prefer, though, as long as they're ProDOS formatted. ➪

By VICKI LEGUE

Illustration * Paul Yalowitz



The *New Print Shop* program was designed to run on IIe, IIc, and IIc Plus machines, although it also works on the GS (see Editors' Choice, October 1990, p. 96, and Reviews, January 1991, p. 34); New Print Shop graphics are single-hi-res ProDOS images, sold on both 5.25- and 3.5-inch disks. New graphics are sharper than original-format images. Currently, only two commercially available programs import New Print Shop-format graphics, however — The New Print Shop itself and Broderbund's Print Shop Companion IIGS.

What about upgrading among the three Print Shop formats? It's easy. The New Print Shop program disk includes a *Graphics Converter* module that translates original-type images into New format and enhances their resolution. The Print Shop

Table. Print Shop graphics formats and program compatibility.

Graphics Applications	Computer	Original DOS 3.3	Original Transferred to ProDOS	GS	New
Award Maker Plus	IIe/c/c+/GS	no	yes	no	no
CWPC	IIe/c/c+/GS	yes	no	no	no
Create a Calendar	II+/e/c/GS	yes	no	no	no
Designer Prints	GS	no	yes	yes	no
Designer Puzzles	GS	no	no	yes	no
Graphics Expander	II+/e/c/GS	yes	no	no	no
GraphicWriter III	GS	no	yes	yes	no
HyperScreen	IIe/c/c+/GS	yes	no	no	no
Mercury	GS	no	yes	yes	no
New Print Shop	IIe/c/c+/GS	yes	no	no	yes
Personal Newsletter	IIe/c/c+/GS	no	yes	no	no
Personal Publisher	IIe/c/GS	no	yes	no	no
Platinum Paint	GS	no	yes	yes	no
Print Shop	II+/e/c/GS	yes	no	no	no
Print Shop Companion	II+/e/c/GS	yes	no	no	no
Print Shop GS	GS	yes	no	yes	no
Print Shop Companion IIGS	GS	yes	no	yes	yes
Print Magic	IIe/c/c+/GS	yes	no	no	no
PrintMaster Plus	IIe/c/GS	yes	no	no	no
Publish It! 2	IIe/c/c+/GS	yes	no	no	no
Publish It! 3	IIe/c/c+/GS	yes	no	yes	no
Puzzle Machine Special Edition	II+/e/c/GS	yes	no	no	no
Slide Shop	IIe/c/c+/GS	yes	no	no	no
Super Story Tree	IIe/c/c+/GS	yes	no	no	no
SuperPrint I	IIe/c/GS	yes	no	no	no
SuperPrint II	IIe/c/c+/GS	yes	no	no	no
Super Sign Maker	IIe/c/c+/GS	yes	no	no	no
TimeOut Paint	IIe/c/c+/GS	no	yes	no	no
Tutor-Tech	IIe/c/c+/GS	no	yes	no	no
Utilities & Conversion Programs					
Art Converter	IIe/c/GS	yes	no	no	no
Graphic Disk Labeler	GS	no	no	yes	no
Graphics Converter	IIe/c/c+/GS	yes	no	no	no
Graphics Exchange	GS	yes	no	yes	no
GS Print Shop Lovers' Utility	GS	yes	no	yes	no
Labels, Labels, Labels	II+/e/c/GS	yes	no	yes	no
Original Print Shop Lovers' Utility	II+/e/c/GS	yes	no	no	no
New Print Shop Lovers' Utility	IIe/c/GS	no	yes	yes	yes
SuperConvert 3.0	GS	no	yes	yes	no

Companion IIGS program, a collection of software accessories (calendar and envelope printing and so on), includes a *Graphic Editor* module that lets you import images from each of the three formats and save them as GS or New. In addition, a number of third-party programs can convert Print Shop images in various formats to other Apple II graphics formats, such as double hi-res and super hi-res. (See the second section in the **Table** for a list of utilities that accept Print Shop images.)

Thanks to the GS' formidable graphics capabilities and advances in 8-bit software technology for the IIe/IIc, too, some fairly sophisticated hypermedia and desktop-publishing applications, along with accompanying detailed clip art, seem to be the hot trends in Apple II computing these days. Do Print Shop graphics still have a place here? The answer is a definite yes. For home, school, and small-business applications, the Print Shop advantage is easy importing, editing, and conversion. When you factor in their translation potential, Print Shop images are compatible with more programs than any other graphics format currently on the market. The long list of programs in the **Table** presented here is proof that developers recognize the adaptability of Print Shop formats. Get the most for your money — choose from thousands of Print Shop-format artwork pieces and try them with that new desktop-publishing or presentation-graphics package. They'll add pizzazz to your document — with a minimum of fuss. ❑

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Off the Beaten TRACK



Knowing the ins and outs of formatting and partitioning can help you preserve your data and manage your system more efficiently.

By Gary R. Morrison and Walker Archer

So you bit the bullet and bought a hard disk. You shopped, compared, and found the best model at the best price. The Macintosh drive was a bargain, so you settled on that one. Sure, you have an Apple IIGS, but you've been reading *inCider/A+* and know that's no problem. But when you opened the box, took out the drive, and attached it to your Apple High Speed SCSI card, nothing happened. What now?

You're the proud owner of a brand-new, low cost, high-powered hard-disk drive that's not packaged especially for the Apple II. It comes with configuration software for the Macintosh, but not for the Apple II. In fact, many Macintosh hard-drive manufacturers are unaware that their products might sell in the Apple II marketplace.

Fortunately, however, several options are available for IIe and GS owners who want to use a generic SCSI hard drive with their computers. We'll look at a number of software packages you can use with various hard drives, but first let's drop some jargon guaranteed to amaze and confuse your friends — and bring any party to a crashing halt.

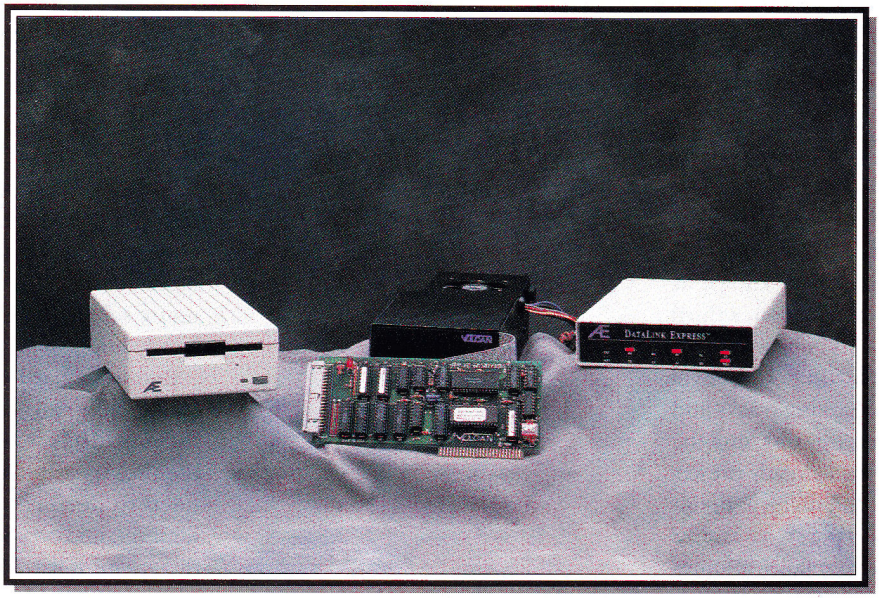
HIGH ROAD, LOW ROAD

Any disk you use with your Apple II or Macintosh computer must be *formatted* before you can use it for storing data. That's true for 5.25- and 3.5-inch floppy disks, and it's true for hard drives, too.

When you format a floppy on your Apple II, your computer actually does two things. First, the formatting software creates concentric *tracks* and wedge-shaped *sectors* (see the accompanying **Figure**) that divide the disk into areas called *blocks*. Track and sector markings serve as roads the operating system follows to find the blocks to store your files. Then once the disk is sectioned into blocks, it's ready to receive data. The formatting software writes an empty volume directory to the disk so that ProDOS can keep track of the data you store. The volume now has a name you've designated, such as */Data.Disk*.

Formatting a hard drive is similar, but two ⇨

Illustration * Chris Spollen



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different pieces of software normally perform the two tasks of "drawing lines" on the disk, also called *low-level formatting*, and "naming" it, known as *high-level formatting*. In addition, a third step — *partitioning* — fits in between low- and high-level formatting. Low-level formatting includes marking tracks and sectors, just as with a floppy disk, and the process destroys any data already present on the disk. Partitioning involves dividing a disk that's larger than 32 megabytes into separate smaller volumes ProDOS can recognize. (If your drive is 32 megabytes or smaller you may not need to partition it.) A high-level or *system* format uses the tracks and sectors already on the disk; it doesn't destroy any data, but merely creates an empty volume directory and renames the disk, making it difficult, but not impossible, to use the old data. Let's look at this process in more detail.

A low-level format creates a number of tracks, which are divided into sectors. The information in these sectors is in blocks of 512 bytes each. You might think that the sectors would be spaced on the disk contiguously — in numerical order as sectors 1, 2, 3, 4, 5, and so on up to 16. Contiguous numerical order is called a *1:1 interleave*.

This arrangement isn't very efficient, however. As the computer reads data from the disk, it must also figure out where to place that information in memory. If it has to read data from sector 1 first and then sector 2, it doesn't have enough time to process the first block of data before reading the second; it won't read data from sector 2 until the second revolution, about one 500th of a second later. Failing to read a block is called "blowing a rev" (revolution), because it takes extra time for that sector to spin around again to the drive heads.

To speed up reading and writing, drive formats are designed with staggered sectors, such as 1, x, x, 2, x, x, 3, and so on — a *3:1 interleave*. (See the accompanying **Figure**.) With this layout, the computer can read data from the first sector and process it while the next two sectors pass by. When it's ready to read the next block of data, the second sector will be positioned beneath the drive's read head. Interleaving the disk's sectors improves the drive's efficiency.

"Track and sector markings are the roads the operating system follows to find the blocks to store your files."

The optimum interleave can enhance your drive's performance — but *finding* the optimum interleave for your drive is the tricky part. As one option, the formatting software in Chinook's **SCSI Utilities** selects the optimum interleave for you automatically, or you can run an interleave test to determine that and then select manually. (You'd have to put some data on your hard drive, set an interleave, time your data retrieval, try another interleave, compare times, and so on.) Once you've set an interleave, you can change it only by doing a low-level format, and that destroys all files stored on the drive. Because a low-level format is a lengthy process and deletes all data, trying every different interleave combination to see which is most efficient is inconvenient at best. Chinook's automatic selection feature comes in very handy here.

Because a hard drive has many more tracks and sectors than a floppy, low-level formatting is a lengthy process and requires special software. You may never need to perform a low-level format, however, and certainly not on a new hard disk, as most hard drives come delivered with a low-level format.

There may be times, however, when a low-level format is called for even if your hard drive has been installed correctly. If a computer virus infects your hard drive, for instance, you may decide to start all over from scratch rather than try to repair it. Get a second opinion from a reputable expert first — make sure it's indeed a virus on your drive before you "cure" it with a low-level format. A low-level format is as much a cure for a virus as cutting off your nose is a cure for the sniffles.

Or you may have to rejuvenate some of that low-level data you hardly ever use — precisely because you seldom need it. That seems ironic, but it makes sense when you consider that the data stored on your drive is after all only a series of

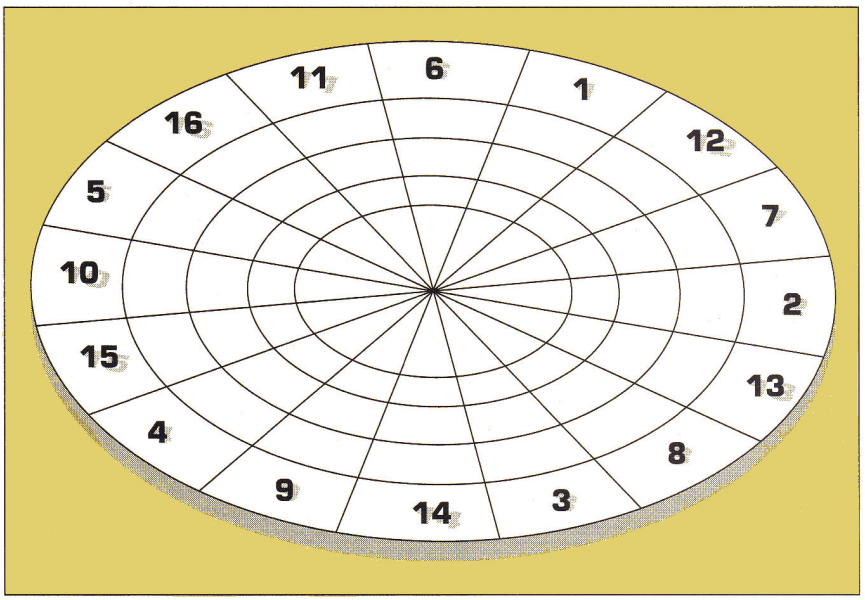


Figure. 3:1 interleave, showing tracks and sectors.

fragile magnetic pulses. They're at full strength when you write them originally to the hard-disk platter, but over a long period of time they grow weaker and weaker until they're no longer readable. When pieces of information on a hard disk decay this way, they're called *orphan bits* — data the drive can no longer read.

Because some pieces of data, such as your AppleWorks files or Tetris high scores, are written frequently to the blocks of the hard drive, chances are small that these bits will become orphans. A low-level format, however, writes only track and sector information, which is never written again unless you do another low-level format. If this information grows weak, you may lose all information contained in that block.

Although it can take several years for orphan bits to appear on a hard drive, simply doing another low-level format can fix it in a few minutes. (But remember to back up all your data first.)

Formatting a hard drive at the low level with Apple's **Advanced Disk Utility** (part of the GS/OS operating-system software that comes with your computer) is simple — you just select the drive and enter a volume name. Chinook's SCSI Utilities are also easy to use, and offer some additional features as well: a series of tests to determine the interleave (as noted above), times to read and write data, and a test for bad blocks. CV Technologies' **RamFast SCSI Card** can also do a low-level format of a hard drive. (See part 2 of this series, "The SCSI Side of Life," February 1991, p. 47, and Editors' Choice, November 1990, p. 96, for more on RamFast.) In addition, a number of shareware programs do low-level formatting on SCSI hard drives. (Check your favorite on-line service and your local user group for information.)

If you've been forced to reformat your disk at the low level and are now ready to rename it, keep in mind that ProDOS won't allow a high-level format on a volume larger than 32 megabytes; if you need to partition your disk, you must do so after a low-level and before a high-level format. On an Apple IIGS, you can use Apple's Advanced Disk Utility to partition your hard drive (and do a low-level format). If you have an Apple Revision C or **High-Speed SCSI Card** (see "The SCSI Side of Life," February 1991, p. 47, and "New SCSI Card," What's New, June 1990, p. 14, for details), Chinook's SCSI Utilities as well as the utilities that come with these cards can partition your hard disk (and do a low-level format, as noted above).

"You may have to rejuvenate some of that low-level data you hardly ever use — precisely because you seldom need it."

More commonly, all you'll have to worry about after installing your hard drive is naming it. There's just one glitch, though: Some hard disks come directly from the manufacturer already preformatted at the high level for a Macintosh — in *HFS (hierarchical file structure*, the Mac directory structure) instead of in ProDOS. A simple high-level format under ProDOS may be all you need to do to make the disk readable on your Apple II — you shouldn't need to do a low-level format.

Simply "renaming" the disk, however — doing a high-level format — doesn't always work, because HFS allows partitions larger than the 32-megabyte ProDOS limit. If one of the partitions on the hard disk is larger than 32 megabytes, you'll also have to repartition.

A number of popular utility packages on the market — **EasyDrive**, **ProSel**, **Copy II Plus**, and the **Finder** among them — include modules for partitioning a hard drive, and most also perform the high-level format for each partition automatically. (Apple' Advanced Disk Utility as well as the Chinook and RamFast SCSI utilities also offer high-level formatting. Only if neither renaming nor partitioning works should you attempt a low-level format, though.) Let's examine this critical step in more detail.

DIVVY IT UP

Partitioning on an Apple II is necessary only when your drive is larger than 32 megabytes, but it can be helpful no matter what size drive you have. You may want to store your applications on one partition and data on a second, for instance, with maybe a third partition for GS/OS files only; with this arrangement, you need to back up only the partitions containing data. (Don't back up your data on another partition of the same disk, though.)

Selecting partition sizes is a matter of personal preference, although you may want to make the partition holding your applications larger than the others. Once you've formatted and partitioned your disk, you can install your system software and copy your applications and data files to the appropriate partition.

Apple's Advanced Disk Utility makes partitioning particularly easy. Selecting the drive brings up a screen listing existing partitions by name, along with a chart showing their size, and buttons to delete, add, change, or partition the disk. Highlight one of the partitions and move a slider to adjust its size. When you've added all the partitions you'll need and selected appropriate sizes, click on the *Partition* button to carry it out and format the drive (high level).

Chinook's SCSI software asks you the number of partitions you want and creates that number, all of equal size, automatically. You can then select each one to change the default name of the partition and adjust its size. On the IIe, you use the open-apple/up-arrow key combination for 1-megabyte increments, the up arrow for 128K chunks, and the spacebar for 1K increments. On the GS, the utility provides a slider for size determination, as well as buttons for adding, deleting, or selecting partitions. When you've decided on volume names and partition sizes, select *No Further Revisions* or the *Partition* button and the software writes the partition map to disk.

CV's RamFast SCSI software, built into ➪

the read-only memory (ROM) of the RamFast card, is more convenient to use, but also a bit confusing. Unlike other SCSI cards, RamFast uses two data tables on the hard drive: the SCSI partition table, plus its own configuration table, containing information about the way the card partitions its on-board random-access memory. It's important to remember the difference between the two: Hitting Open apple-S saves the RamFast table to the hard disk (harmless), but Open apple-P saves the SCSI partition table (potentially disastrous, as it wipes out your programs and data). Fortunately, the RamFast software includes safety prompts to let you back up if you hit the incorrect sequence accidentally.

To change partitions with the RamFast card, use the arrow keys to highlight the partition and select the volume name and size. You can change the increment of the partition by 1, 100, or 1000 bytes by pressing the open-apple key in combination with the left or right arrow. The up- and down-arrow keys change the partition size. Pressing OA-P writes the partition table to disk. Remember, partitioning a hard disk erases all your programs and data.

If you already have data on your hard disk you may be wondering how to restore your files to a partition of a different size if you used an *image-backup* program — one that takes an exact "snapshot" of your data, fragmentation and all — such as those included with ProSel or EasyDrive.

"A simple high-level format under ProDOS may be all you need to do to make a Mac disk readable on your Apple II."

Let's say you have a 46-megabyte hard disk with two partitions of equal size — 20 megabytes, for instance. What if you wanted to take advantage of the full drive by creating one 26- and one 20-megabyte partition?

You'd restore the first volume's 20-megabyte backup to the 20-megabyte second partition and duplicate it with a file-copy program to the new 26-megabyte partition, then restore the second volume to the second 20-megabyte partition. If you want to change partition sizes but must restore data to a partition of the same size, keep at least one partition the same size as your original volume.

A WORD TO THE WISE

Remember: You can put any SCSI hard drive to work as an Apple II hard drive — but you may need to perform two different types of formatting, plus some partitioning. To recap, if ProDOS won't recognize your SCSI hard drive after installation, check the following points carefully:

1. Examine the cable connections first. Make sure cables are plugged in tightly and the power is on. Read the drive's documentation to find out whether you need a *terminator*. (Because you can chain SCSI devices, each one has to have an "in" and an "out" port. A SCSI terminator goes into the "out" port of the last device.)
2. If your hard drive is smaller than 32 megabytes, boot your system from a floppy disk and try to do a high-level format.
3. If your drive is larger than 32 megabytes, partition the drive. Because most partitioning software also performs a high-level format, nothing else should be necessary except to install the operating system.

Like building a driveway to your home through the woods, a low-level format writes tracks and sectors on your disk. A high-level format — more like a sign that identifies your house, which you can change in a moment — is something you can do with any Apple utility software: It simply writes a blank volume directory on the drive. You may never need to bulldoze that new driveway, but if your disk is badly infected with a virus or overrun with orphan bits, it's good to know the resources are out there to help you manage your system and meet your data-storage needs. ❑

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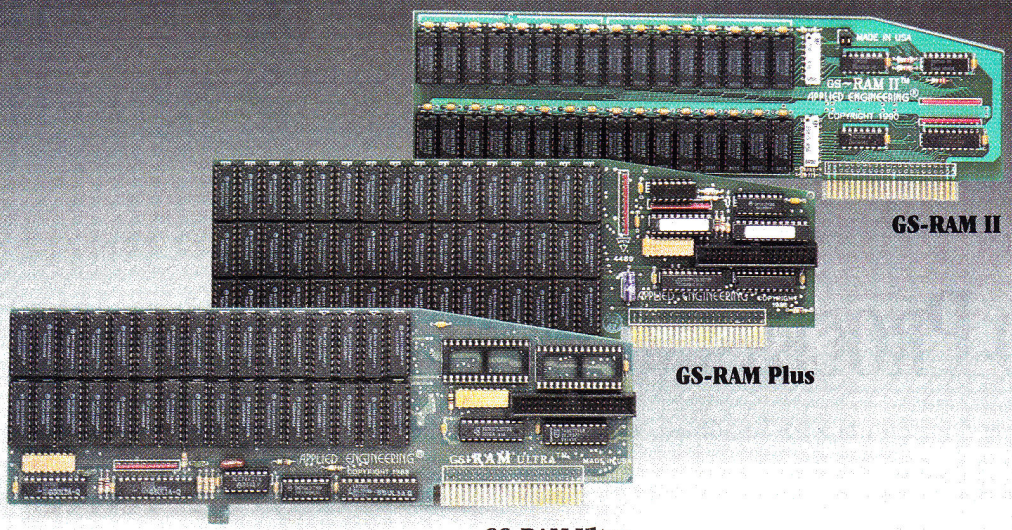
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GARY R. MORRISON IS AN ASSOCIATE PROFESSOR IN THE DEPARTMENT OF CURRICULUM AND INSTRUCTION AT MEMPHIS STATE UNIVERSITY, WHERE HE TEACHES COURSES IN INSTRUCTIONAL DESIGN AND TECHNOLOGY. HE'S THE AUTHOR OF THE PROGRAM *REPAIRWORKS*, PUBLISHED BY QUALITY COMPUTERS, AS WELL AS *THE APPLE II HARD-DISK PRIMER*, PUBLISHED BY NAUG, THE NATIONAL APPLEWORKS USERS GROUP. WALKER ARCHER IS MANAGER OF SOFTWARE DEVELOPMENT AT QUALITY COMPUTERS, AND HAS BEEN WORKING WITH APPLES SINCE 1980. HE'S THE DEVELOPER OF THE PROGRAMS *EASYDRIVE* AND *RAMUP*. GARY MORRISON AND WALKER ARCHER ARE ALSO THE AUTHORS OF AN ON-LINE COURSE IN C PROGRAMMING FOR THE GS. WRITE TO THEM C/O *INCIDER/A+*, 80 ELM STREET, PETERBOROUGH, NH 03458. ENCLOSE AN SASE IF YOU'D LIKE A PERSONAL REPLY.

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Dress up your documents with headings, tabs, and line spacing — AppleWorks 3.0's basic layout and formatting capabilities offer a wide array of options for designing notices, ads, and brochures.

By RUTH K. WITKIN

YEARS AGO I WORKED FOR A COMpany that built *character generators* for the television broadcast industry. These snazzy computers put titles on the television screen — sports statistics, news crawls, end-of-program credits, and the like. One of my marketing brochures serves as the example in this month's column. For an idea of what the three-page layout looks like, see **Figure 1**. I've modified my original text to show off some of AppleWorks 3.0's new and interesting word-processing features (listed in **Table 1**), many of which you'll be using in this session.

Start up AppleWorks, create a new word-processor file, and name it **WONDER**. The *Review/Add/Change* screen appears with the cursor in line 1 column 1. **Figures 2**, **3**, and **4** contain text, line numbers, and "blots" where you press Return. I put lots of white space between lines to cut down on typing, yet still give you enough pages to warrant a header.

Focus: Page Header. Press OA-Z to keep the blots visible as you work. Also, as you work compare your screen to the **Figures** to make sure they're the same. Now create margins above and below the text and a header to print the same information at the top of every page: Press OA-O to bring up the *Printer Options* screen. Type **TM** and press Return. Type **1** and hit Return again. Now type **BM** and press Return. Type **1** and hit Return. Notice the margin descriptors that appear at the top of the screen.

Next, create the header: Type **HE** and hit Return. Instantly, AppleWorks enters *Page Header* and *Page Header End* descriptors with an empty line between them. That empty line will hold header text, in this case the name of the piece, date, and page number. You can have as many text (or blank) lines in a header as make sense, and even insert format codes there. ***TIP:*** *Where you insert the header descriptor in the document determines where the header text prints. To print the text on the first and following pages, insert the descriptor at the beginning of the document before any text. To delay printing until the second page, insert it below the first line of text on the first page or at the top of the second page after a page break.*

The same principle applies to footers (*FO*). Insert a footer descriptor before any text on the page where you want the footer text to print. To delay printing until the second page, insert it after the first line of text on the first page or at the top of the second page. ***TIP:*** *If you're working with both a header and a footer, start both on the first page by inserting the header descriptor above the footer descriptor. Start a footer on the first page and a header on the second page by inserting the header descriptor below the footer descriptor.*

Hit Escape to return to the document. Now, with the cursor on line 4 (below *Page Header*), press Control-R to right-justify the header contents. In line 5, type **ARGUS IV Marketing Brochure** and press Return. (*ARGUS IV* is a pseudonym.) In line 6, print today's date: Press OA-O, type **PD**, hit Return (AppleWorks inserts a caret), and hit Escape. Press Return again.

In line 7, type **Page** and hit the spacebar once. Have AppleWorks print the page number: Press OA-O, type **PP**, hit Return (AppleWorks inserts another caret), then Escape. ***TIP:*** *Even though carets control a variety of formats, they all look alike on the screen. To see which caret does what, you need only place the cursor on the caret and look at the message at the bottom of the screen.*

The header is also the place to insert blank lines to separate header text from flowing text: Press Return three times to insert three blank lines, which will start the text on each page four lines below the page number.

Focus: Line Spacing. When single spacing is too tight for your text and double or triple spacing is too, well, spacy, you have another choice — one-and-a-half-line spacing. ***TIP:*** *Normal spacing prints text at 6 lines per inch. AppleWorks lets you print at 8 lines per inch, which by itself causes dense text. Combined with double spacing, though, it prints text with more interrow space than single spacing and less than double spacing — visually appealing in many circumstances.*

Move the cursor to line 12 column 1. Press OA-O, type **LI**, hit Return, type **8**, and hit Return again. Now type **DS** and hit Return. As long as you're in the *Printer Options* screen, center the text you're about to type: Type **CN**, hit Return, and hit Escape. You can now see the three new descriptors.

Entering Text. To get you off to a running start, here's our step-by-step guide to➪

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- Super Serial Card "Front End" for highest software compatibility (unlike some competitors)
- Adaptive equalization and descrambling
- Hardware configuration for DSR and DCD
- PC Transporter (MS-DOS) compatibility
- FCC certified designs

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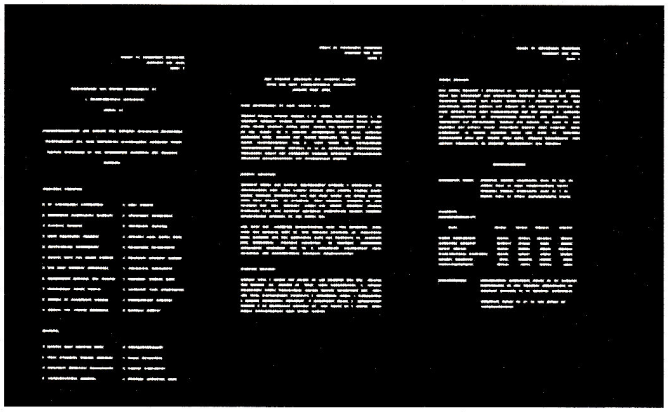


Figure 1. Layout of marketing brochure.

entering the first few lines of text. If you make a typo, press the delete key to back up the cursor.

Line 15. The title consists of three lines of boldface text. Press Control-B to invoke the *Boldface Begin* caret. Type **INTRODUCING THE FOURTH GENERATION OF** and press Return to move the cursor to line 16. In AppleWorks 3.0, boldface continues until you turn it off, unlike earlier versions that canceled it at the end of the line.

Line 16. Type **A DISTINGUISHED FAMILY . . .** and hit Return to move the cursor to line 17.

Line 17. Type **ARGUS IV** and pause a moment. ***TIP:*** *You can start and stop boldface with the shortcut key, Control-B, providing both the beginning and ending carets are in continuous text — that is, not separated by a Return (blot). If you start boldface, then want to stop it several lines down, AppleWorks wrongly inserts another* Boldface Begin *caret.* One way around this is to enter a *Boldface End* code via the *Printer Options* screen, so press OA-O, type **BE**, hit Return, then Escape. (You can also play a game with AppleWorks, inserting a start caret, then a stop, then deleting the start caret. You'll see how to do this later.) Now press Return three times. The cursor moves to line 20.

Line 20. Type the paragraph in **Figure 2** that starts with *State-of-the-art . . .*, pressing the spacebar only once between sentences. At the end of the paragraph, press Return four times to insert three blank lines. The cursor moves to line 27.

Line 27. Press Control-N to remove the centering and return the text to normal (that is, left-justified). Move the cursor to line 28.

Line 28. Press Control-L to invoke the *Underline Begin* caret. Type **STANDARD FEATURES** and press Control-L to end underlining. You don't have to go into the *Printer Options* screen here, because start and end codes are in continuous text — in this case, on one line. Now hit Return twice to end the paragraph and move the cursor to line 30.

Focus: Text Tab Ruler. The rest of the text on this page is in two bulleted columns. The double line at the top of your screen is laced with less-than signs (<), each one indicating a tab stop. You want a single jump from one column of the document to the next, so create a tab ruler: With the cursor on line 30 column 1, press OA-T to bring up the *Modify Tab Stops* screen. Type **C** to create a new tab ruler. (You can see the cursor blinking away on the first character in the double line at the top of the screen, with its position — *Column 1* — shown at the bottom right.) The easy way

```
File: WONDER                    REVIEW/ADD/CHANGE              Escape: Main Menu
 =====<====<====<====<====<====<====<====<====<====<====<====<====<====<====<===
 1 --------Top Margin:  1.0 inches
 2 --------Bottom Margin:  1.0 inches
 3 --------Page Header
 4 --------Right Justified
 5                                  ARGUS IV Marketing Brochure□
 6                                                           ^□
 7                                                    Page ^□
 8□
 9□
10□
11 --------Page Header End
12 --------Lines per Inch: 8 lines
13 --------Double Space
14 --------Centered
15           ^INTRODUCING THE FOURTH GENERATION OF□
16                 A DISTINGUISHED FAMILY...□
17                        ARGUS IV^□
18□
19□
20 State-of-the-art and always the leader. Unmatched technical
21 performance. Now with exclusive operational features never
22  before available in any electronic graphics and titling
23                          system.□
24□
25□
26□
27 --------Unjustified
28 ^STANDARD FEATURES^□
29□
30 --------Tab Ruler
31 o^27 Nanosecond resolution^        o^Slow reveal□
32 o^Versatile multi-font library^    o^Automatic centering□
33 o^Instant italics^                 o^256-Color palette□
34 o^True character overlap^          o^Visible safe title area□
35 o^See-through characters^          o^All-black characters□
36 o^Varied roll and crawl speeds^    o^Flexible storage system□
37 o^Ten font loading positions^      o^Automated animation□
38 o^Background stripes and solids^   o^Vertical record mark□
39 o^Adjustable video window^         o^Built-in disk duplicator□
40 o^Choice of character edging^      o^Instruction screens□
41 o^Insert and delete controls^      o^Modular design□
42□
43□
44 ^OPTIONS^□
45□
46 o^Camera font compose unit^        o^Colorizer/keyer□
47 o^Full function second channel^    o^RS232 interface□
48 o^Multiple videodisc transports^   o^Remote keyboards□
49 o^Right-to-left writing^           o^Foreign language sets□
```

Figure 2. Draft text and formats, first page.

to create this tab ruler is to start from scratch, so type **N**. Instantly, all tab stops disappear.

Press Right Arrow until the cursor reaches column 3, and type **L** to insert a left tab (a less-than sign). Now hold down Right Arrow and watch the column count at the bottom right of the screen until the cursor reaches column 35; type **L** again, then reach column 37 and type **L** one more time. Press Escape to return to the text. This tab ruler will control all tab stops from here to the end of the document or until AppleWorks encounters a different tab ruler.

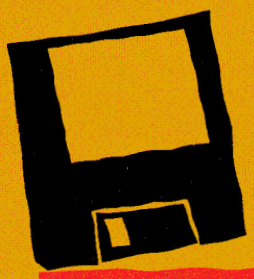
Now enter the items in both columns of text: With the cursor on line 31 column 1, type a bullet (a lowercase **o**) and press Tab. Type **27-nanosecond resolution** and hit Tab again. Type another bullet, press Tab, type **Slow reveal**, and hit Return. The cursor moves to line 32 column 1.

Referring to **Figure 2**, continue entering both columns of features and options the same way, paying careful attention to line numbers and blots. Before and after the *OPTIONS* title, press Control-L to get underlining. Pause when you're done, with the cursor in line 50 column 1. ***TIP:*** *Pressing OA-Tab inserts a space tab in your document instead of a true tab character. The cursor jumps to the next tab stop just as if you pressed Tab, but uses spaces to get there. If you later change the settings on the tab ruler, space tabs remain where they are.*

One of the AppleWorks 3.0 shortcut keys lets you start a new page without going through the *Printer Options* screen, so press Control-P to insert a *New Page* indicator. Then press OA-S to store the first page of the brochure on disk.

More Text and Formats. You'll be on your own for a while now ⇨

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To keep yourself heading in the right direction, refer to **Figures 3** and **4** for text and formats and to **Tables 1** and **2** for shortcut keys and caret meanings as you create the second and third pages of the *ARGUS IV* brochure. It's a lot of typing, but knowing that you're enhancing your word-processor skills and expanding your AppleWorks knowledge should give you an extra boost.

You can use shortcut keys for all format indicators except *Lines per Inch* (line 51) and *Single Space* (line 52). To insert these indicators, press OA-O, type the proper two-letter codes (and, for lines per inch, the number of lines), and hit Escape to return to the text.

Pause after entering the *Unjustified* indicator in line 121. We'll start the specifications together. But first, press OA-S to store everything you've done so far on disk.

Focus: Indented Text. Most specification titles in this brochure are followed by text wrapped around to a deep indent: The first line is at the left margin and the rest of the paragraph starts *x* number of characters away. It's the reverse of standard text, where the first line starts *x* number of characters from the left margin and the rest of the paragraph is at the left margin.

Your cursor should now be in line 122 column 1. Press OA-O, type **IN**, and hit Return. Type **18** (the depth of the indent) and hit Return again. Press Escape to return to the text. ***TIP:*** *To get uniform indents, add three characters to the length of the longest title (or number or "bullet"). For instance, if your longest title is 16 characters, make the indent 19 characters (as it is here); if a paragraph is numbered* 12*), make the indent 6 characters; if it's numbered* XIII.*, make the indent 8 characters, and so on.*

Another Tab Ruler. The tab ruler you created earlier was unobtrusive as you typed ensuing text. Now you need a tab stop between specification title and wraparound text, so create a new tab ruler: Press OA-T and type **C**. Type **N** to remove existing tabs, and hold down Right Arrow until the cursor reaches column 19. Type **L** and hit Escape.

Referring to **Figure 3** and the **Tables**, enter the *CHARACTER SIZE* spec: Insert an underline code, type the title, insert another underline code, press Tab, and type the paragraph text, ending with another Return. Now hit Return twice more, enter an *Underline Begin* caret in line 130 column 1 (note that the *Underline End* caret doesn't occur until line 147 column 12), type the next title **— PHYSICAL CHARACTERISTICS:** — on lines 130 and 131, and hit Return twice. The cursor should now be in line 133, another tab ruler.

This new tab ruler controls the placement of the titles above the columns of numbers. It has few similarities to the other tab rulers, so start from scratch again: Press OA-T and type **C**. Type **N** to remove existing tabs and hold down Right Arrow until the cursor reaches column 5. Type **L**, hold down Right Arrow to move the cursor to column 25, and type **L** again. Continue this way, entering left tabs in columns 34, 42, and 52, then hit Escape to return to the text. The cursor is now in line 134 column 1. Press Tab and type **Unit**. Press Tab again and type **Depth**. Continue tabbing and typing titles until you type **Weight**, then press Return twice to move the cursor to line 136.

Shortcut Keys	
Boldface on/off	Control-B
Underline on/off	Control-L
Center	Control-C
Full-justify (Justified)	Control-F
Right-justify	Control-R
Left-justify	Control-N
Start new page	Control-P
Cursor-Movement Keys	
Move to start of line	OA-, (unshifted OA-<)
Move to end of line	OA-. (unshifted OA->)
Printer Options Screen (OA-O)	
Double Space	DS
Create footer (multiline)	FO
Create header (multiline)	HE
Lines per Inch	LI
Print Date	PD
Print Page Number	PP
Print Time	PT
Single Space	SS
Other	
Delete character under cursor	OA-Delete
Print specific pages	OA-P
Create tab ruler	OA-T
Verify spelling	OA-V

Table 1. New options and significant features in AppleWorks 3.0.

```
50 --------New Page
51 --------Lines per Inch: 6 lines
52 --------Single Space
53 --------Centered
54           ^THE ALL-NEW GRAPHICS AND TITLING SYSTEM□
55            WITH THE MOST UNFORGETTABLE CHARACTERS□
56                      YOU'VE EVER SEEN□
57□
58□
59 --------Justified
60 ^WIDE ASSORTMENT OF FONT STYLES & SIZES^□
61 □
62 Crisp, clean, gently curved - in Serif and Sans Serif - in
63 lights, medium, bolds, scripts, and decoratives. Slant them,
64 abut them, overlap them, edge them, see through them - all
65 at the touch of a single keystroke. The FONT LIBRARY
66 contains font styles and sizes designed for high quality
67 video presentations and a full range of programming
68 applications. Fonts contain up to 92 displayable characters,
69 including upper and lowercase alphas, numerics, punctuation,
70 symbols, circumflexes, and diacritical marks.□
71 □
72 □
73 ^ACTION GRAPHICS^□
74 □
75 Picture this. Two boxers silhouetted against a brilliant red
76 background. They move slowly toward each other. Gloved fists
77 meet, jabbing furiously. One man goes down, the other stands
78 with arms raised in victory. "The Winner" flashes on the
79 screen. You can produce these and other unusual action
80 graphics with the PROGRAM SEQUENCE CONTROLLER (PSC), another
81 outstanding feature of the Argus IV.□
82 □
83 PSC lets you retrieve pre-composed text and graphics from
84 disk and display them in the desired sequence at extremely
85 high speeds. You can precisely time the duration of display
86 and intervals between displays to achieve automated
87 animation effects. PSC is a versatile production tool
88 designed for wide-ranging creative applications.□
89 □
90 □
91 ^INSTANT ITALICS^□
92 □
93 ITALIC puts a whole new slant on the picture and can triple
94 the number of styles in your font repertoire. A single
95 keystroke gives individual words, entire messages, and even
96 the most complicated graphics a 14-degree slope - instantly.
97 A second keystroke produces a 28-degree slope - instantly.
98 ITALIC - an exclusive feature of the ARGUS IV - gives your
99 video compositions that extra punch.□
```

Figure 3. Text and formats, second page.

Focus: Number-Tab Ruler. The next element is another tab ruler. This one's different because it deals primarily with numbers, aligning some at a decimal point and right-aligning others. With automatic alignment, you'll never have to guess where to start a number. All you do is type.

To create this tab ruler, press OA-T and type **C**. Type **N** to clear existing tabs, hold down Right Arrow until the cursor reaches column 28, and type **D** to insert a decimal point. Now hold down Right Arrow to reach column 37, type **D** again, move to column 45, and type **D** once more. Move to column 57, type **R** to insert a greater-than sign (>) indicating a right tab, and press Escape.

Your cursor is now in line 137. Referring to **Figure 4**, type the text and numbers, tabbing from one column to the next. After you finish, press Return three times to reach line 145. Pause a moment.

Focus: Copying Formats. The next two format indicators — *Indent* and *Tab Ruler* — are identical to the pair in lines 122 and 123. ***TIP:*** *Instead of starting from scratch, you can use the clipboard to copy existing indicators. Place the cursor on line 122 column 1 and press OA-C. Type* ***T*** *to highlight the* Indent *indicator, press Down Arrow to highlight* Tab Ruler, *and hit Return. Move the cursor to line 145 column 1, press OA-C, and type* ***F*** *to copy from the clipboard.*

```
100 --------New Page
101 ^COLOR PALETTE^□
102 □
103 The COLOR PALETTE - standard on Argus IV - lets you choose
104 from 256 character and background colors. Activate one easy
105 keyboard command and ARGUS displays a color grid of all
106 available tints, tones, and shades on the monitor screen. To
107 make things even more interesting, you can design a variety
108 of  backgrounds in multi-color stripes and solids. All
109 character and background colors are stored as part of the
110 message and retain their original values upon recall. This
111 abundance of color coupled with the ease of loading
112 selections from the color grid into memory encourages the
113 utmost creativity in message composition and design.□
114 □
115 □
116 □
117 --------Centered
118                         ^SPECIFICATIONS^□
119 □
120 □
121 --------Unjustified
122 --------Indent: 18 chars
123 --------Tab Ruler
124 ^CHARACTER SIZE:^^Maximum single character size is 420 TV
125                   lines high by 14.3 microseconds wide.
126                   Minimum single character size is 4 TV
127                   lines high by 0.224 microseconds wide.□
128 □
129 □
130 ^PHYSICAL□
131 CHARACTERISTICS:□
132 □
133 --------Tab Ruler
134 ^   Unit^                Depth^   Width^  Height^   Weight□
135 □
136 --------Tab Ruler
137 Logic Controller^        20.5"^   19.0"^  20.25"^    80lbs□
138 Videdisc Chassis^        16.25"^  19.0"^   9.6"^     45lbs□
139 Power Supply^            23.5"^   19.0"^  8.75"^    105lbs□
140 Alphanumeric Keyboard^   13.0"^   17.5"^  6.85"^     20lbs□
141 Remote Keyboard^          9.0"^   12.75"^ 6.55"^      9lbs□
142 Colorizer/Keyer^         14.0"^    9.0"^  1.75"^      7lbs□
143 □
144 □
145 --------Indent: 18 chars
146 --------Tab Ruler
147 ENVIRONMENT:^^    Temperature operating range is 40 degrees
148                   Fahrenheit to 100 degrees Fahrenheit (5
149                   degrees Celsius to 38 degrees Celsius).□
150 □
151 ^                 Humidity range is 5% to 95% (with no
152                   condensation).□
```

Figure 4. Text and formats, third page.

Now place the cursor on line 147, type **ENVIRONMENT:**, and press Control-L to end the underlining. Press Left Arrow. Hmm. AppleWorks, forgetting that underlining has proceeded since line 130, enters another *Underline Begin* caret! What to do? Trick AppleWorks! ***TIP:*** *Press Control-L again to enter an* Underline End *caret, then press Left Arrow and OA-Delete to erase the* Underline Begin *caret. Simple. (When you faced this problem earlier, you inserted the* Underline End *caret from the* Printer Options *screen. This way's faster.)*

You're in the home stretch now. Press Right Arrow and Tab to jump to the text. Referring to **Figure 4**, type the temperature paragraph. In line 151, press Tab before typing the humidity sentence. Now press OA-S to store the brochure on disk.

Printing the Piece. Here's the fun part — seeing all your work on paper — so turn on your printer. Press OA-P, confirm *Beginning*, select the printer (or type a printer number, then Return), and confirm one copy. When the printer stops, you have three pages' worth of brochure copy.

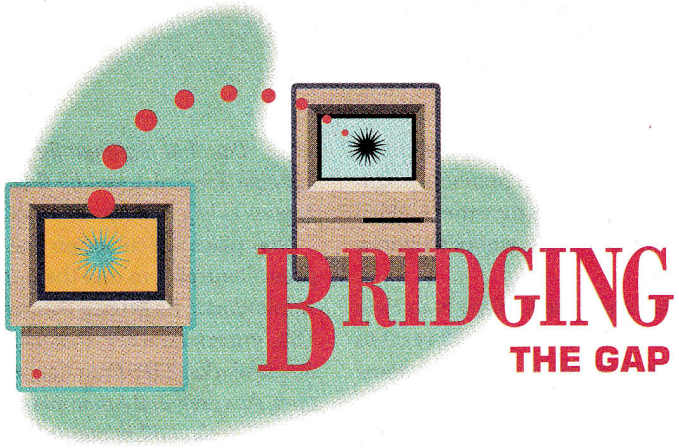
Two excellent products — Page Preview from Beagle Bros' Time-Out DeskTools package and Thirdware's FingerPrint GSi card — made preparing this example much easier. Page Preview showed on screen how text would look when printed; whenever I changed something, I could check the effect quickly. FingerPrint let me produce **Figure 1**, the pages as seen via Page Preview.

This session's given you hands-on experience with some of the nifty features of the AppleWorks 3.0 word processor. There's much more, so do some exploring on your own — for instance, check your spelling with OA-V, then print a specific page of this brochure (OA-P, then *Page to Page*). You're bound to be delighted. ❑

CONTRIBUTING EDITOR RUTH K. WITKIN IS THE CREATOR OF THE TEMPLATE/HANDBOOK SERIES *SUCCESS WITH APPLEWORKS* (*INCIDER*, IDG COMMUNICATIONS) AND *RUTH WITKIN'S BEST NEW APPLEWORKS TEMPLATES* (QUALITY COMPUTERS). WRITE TO HER AT 5 PATRICIA STREET, PLAINVIEW, NY 11803. PLEASE ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A REPLY.

Line	Column	Caret
Second Page		
54	1	Boldface Begin
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60	1	Underline Begin
60	40	Underline End
73	1	Underline Begin
73	17	Underline End
91	1	Underline Begin
91	17	Underline End
Third Page		
101	1	Underline Begin
101	15	Underline End
118	23	Boldface Begin
118	38	Boldface End
124	1	Underline Begin
124	17	Underline End
130	1	Underline Begin
147	12	Underline End

Table 2. Text and formats for second and third pages of ARGUS IV brochure.



SWAP 'TIL YOU DROP

Share, swap, exchange, hand it over: Remember those lessons from kindergarten, and you, your Apple II, and your Mac will make a productive team.

By GREGG KEIZER

WHEN YOU WERE GROWING UP, your parents probably told you to share your toys. Even if you didn't always do what you were told, you most likely learned that you got more in return when you weren't so miserly. In adult life those lessons still ring true: Whether you're nice to the neighbor who owns that tall ladder or you split the last piece of chocolate cake with your spouse, what goes around generally comes around.

Sharing computers isn't quite so simple, though — especially if your home, home office, and computer lab feature an electronic mishmash of Apple IIs, Macs, and PC-compatible computers. Getting them to share may seem as tough as talking a 5-year-old into giving up that last stick of gum. But these machines, Apple IIs and Macs in particular, *should* be able to swap work with no sweat — and thanks to some software solutions, they *can* share their possessions and their files. One of the simplest and least expensive ways to bridge the gap between Apple's two platforms is to swap 'til you drop.

XTNDING BRIDGES

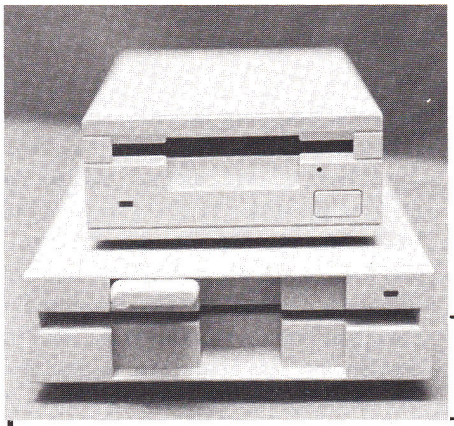
Claris' *XTND* technology, a set of specialized code and development tools, makes seamless file sharing possible on the Mac. With XTND tools in the hands of applications developers and integrated into their software, Mac owners can use a number of third-party file translators to open and save nearly any kind of document within an XTND-compatible application. Although Claris created XTND with Mac-to-Mac, Mac-to-PC, Mac-to-NeXT, and other high-level links in mind, you can apply it to the Apple II just as easily.

MacWrite II is one such XTND-compatible application. When you install this word processor you place a folderful of file translators in the System folder on your Mac's hard disk. Then, when you run MacWrite II and select *Open*, *Save*, *Save As*, or *Insert File* from the *File* menu, you're in sharing paradise. To open an **AppleWorks** word-processing file, for example, simply choose *Open*, make sure the *Show* box lists *AppleWorks* or *All Available*, then double-click on any AppleWorks file. (See **Figure 1**.) The AppleWorks document appears, as if by magic, on your Macintosh screen with its formatting intact. No more re-creating character styles, tab settings, paragraph formats, or margins. Complete your editing, perhaps print to a LaserWriter connected to the Mac, then save the document in any of several Macintosh word-processor formats, such as *Microsoft Word*, *Microsoft Works*, *WordPerfect*, *WriteNow*, *MacWrite*, *MacWrite II*, and *Acta 3.0*.

You can even save a MacWrite II document back to AppleWorks — just pull down the *File* menu, choose *Open*, and select *AppleWorks 2.0* from the list of translators. When you load the document into AppleWorks (it'll load into AW 3.0), its formatting and organization remain untouched. If you use AppleWorks 3.0 but don't have a font utility such as TimeOut SuperFonts installed, however, the Mac fonts will revert to the AppleWorks default font on screen. If you use AppleWorks GS, or AppleWorks 3.0 with a font utility installed, the program's ability to match the Mac font depends on whether or not the AppleWorks font code is exactly the same as the Mac font code.

As noted, MacWrite II includes translators for both AppleWorks and AppleWorks GS, so you can open word-processing files from either package. You can even use MacWrite II as a file-translation intermediary if you want to shift Apple II word-processing documents to a PC; MacWrite II includes XTND translators for both WordPerfect and Microsoft Word. Open an AppleWorks GS document in MacWrite II, then save it as a WordPerfect file for the PC.

Although Claris has the jump on using Apple II-related XTND translators, other programs, including Leonard Systems' integrated package **SmartWorks**, are using XTND to let you open and save Apple documents in a Macintosh application. DataViz, a Macintosh software developer best known for its **MacLinkPlus/PC** file-transfer and translation utility for Mac-to-PC-and-back connections, inventories more than 100 XTND file translators, including several for moving database, spreadsheet, and graphics files from Macs to PCs — but none for Apple II applications. According



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to a DataViz spokesperson, "We don't have translation paths for Apple II programs, but that's not to say that this wouldn't be a possibility in the future."

With Apple II-to-Mac-and-back file sharing a potential problem for hundreds of thousands of users who want to mix machines at home, work, and in the classroom, companies such as DataViz will realize quickly that there's a market for Apple II application XTND translators.

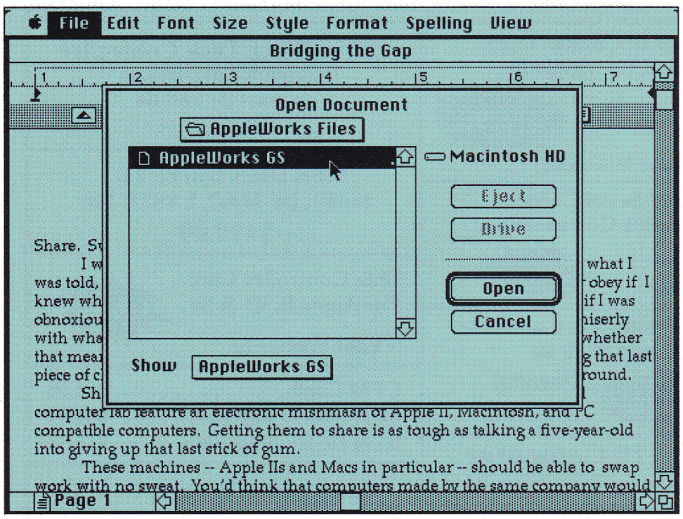


Figure 1. MacWrite II uses XTND to access AppleWorks files.

THE CATCH

XTND sounds like the miracle Apple II and Macintosh users have been waiting for, but there's a small catch. All this loading and saving files in various formats — AppleWorks and AppleWorks GS included — sounds great until you remember that first you've got to get these files to the other machine. Files just don't leap off an Apple IIGS 3.5-inch disk into the Mac or from a Mac's disk to an Apple IIe.

The Claris XTND concept assumes, at least in large part, that your computers are connected appropriately. If you work on an AppleTalk network, with AppleShare running on a Macintosh *file server* (the computer that's equipped with a hard-disk drive and contains the software that runs the network), moving files between Apple IIs and Macs is slick and simple. AppleShare, the AppleTalk network-management software, makes allowances for file sharing. Every user on the network gets his or her own folder for storing files and a place for others to deposit files they want to share. You can set up general folders, too, that everyone on the network can access.

After you've saved an AppleWorks file to the file server's hard disk, you can put a copy in another user's folder, effectively telling AppleShare to transfer the file for you. That user can then open the file with AppleWorks or with an XTND-compatible package such as MacWrite II, and find the document with its formatting intact, ready to revise or print if you like.

An AppleShare-run network is your best bet for shifting and sharing files between the Apple II and the Mac. If you plan on mixing machines and making the process as painless as possible, assemble a network. It's not that hard — and since the introduction of the Mac Classic and LC, it's much more affordable; the major expense of any AppleTalk network is the file server. Although the Classic is no speed demon, it can run a small AppleTalk network nicely. A school could link six to ten machines, Apples and Macs, in a network, then make them available for file sharing and swapping chores.

Even in an all-Mac school, such a network should include at least one Apple II, so that kids with IIs at home can bring AppleWorks-written reports, compositions, and assignments to school, then transfer the material to the file server and move them to MacWrite II for final editing and printing. Students can even "hand in" assignments over the network.

If you don't work on an AppleTalk network, swapping files with formatting intact from Macs to Apple IIs or from Apple IIs to Macs is a bit more trouble. You can't simply stick a ProDOS 3.5-inch disk in the Macintosh drive and expect it to *mount* — make the disk's files visible on the Mac's desktop. (In fact, if you're not paying attention, you can erase the disk accidentally, because the Mac recognizes it as a foreign format and asks whether you want to turn it into a Mac disk.) Even the Mac's new FDHD SuperDrive, sometimes touted as reading ProDOS disks, can't mount such disks to the desktop. **System 7.0**, the long-awaited reworking of the Macintosh operating system, reportedly will make this procedure possible.

GOING IT ALONE

Networks aren't the only solution to the file-swapping problem. In fact, they're no solution at all if you're thinking about adding a Mac to your collection of home computers.

Although the Mac can't put a ProDOS disk on the desktop, with the help of **Apple File Exchange** (AFE) it can read files from one. Nearly hidden in the Macintosh System folder, AFE is a godsend for anyone who wants to move Apple II files to the Macintosh or Mac files to the Apple II.

AFE features two windows, one showing the active Mac floppy or hard disk, the other displaying the files on any 3.5-inch ProDOS disk you stick into the Mac's drive. (See **Figure 2.**) Select the Apple II files you want to transfer to the Mac, click on

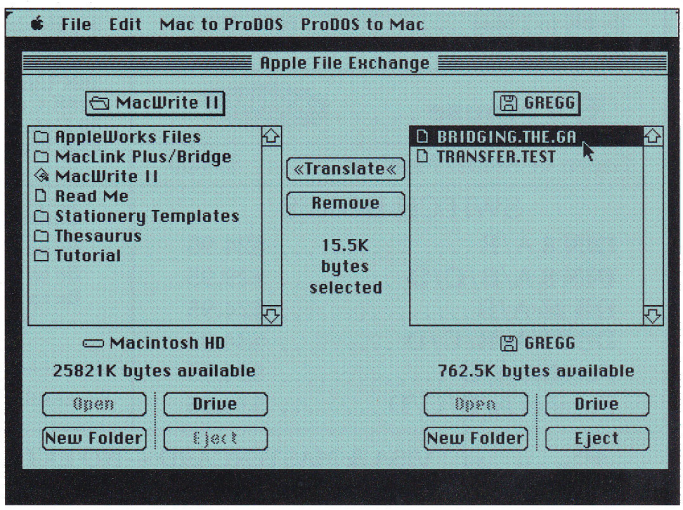


Figure 2. Apple File Exchange lets you transfer files between the II and the Mac quickly and simply.

Transfer, and zip . . . the files land on the Mac's disk. When you use this utility in combination with MacWrite II's XTND translators, Apple File Exchange works wonders.

If you work at home on your Apple IIGS and write with AppleWorks GS, slap together a report and punch it up with several fonts in various sizes and styles.

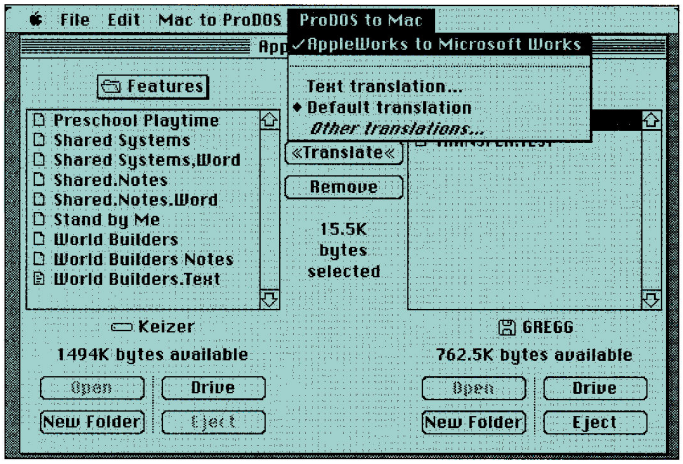


Figure 3. Works-Works Transporter in action.

Then set tabs with the ruler to make sure the table's contents are aligned and change margins several times to emphasize passages. (In other words, create a typical AppleWorks GS document.) Now save the report to a ProDOS-format 3.5-inch disk, stick the disk in your pocket, and head for the nearest Mac.

Fire up Apple File Exchange, then put the ProDOS disk in the Mac's drive. A list of the disk's files appears in the box on the right. Make sure *Default translation* is the only checked selection under the *ProDOS-to-Mac* menu, click on the filename *REPORT*, then click on *Transfer*. A bar appears to show you the translation's progress, and within seconds the AWGS file is on the Mac.

Now call up MacWrite II, select *Open*, and double-click on *REPORT*. MacWrite II's AppleWorks GS XTND translator kicks in to transform the file from AWGS to MacWrite II. When the report appears on screen, its font styles and sizes, as well as everything from tab settings to footers, margins to line spacing, are just as you created them on the GS. You may have a little cleanup to do, but it's negligible. For an Apple II/Mac bridge that costs next to nothing, you can't beat the Apple File Exchange/AppleWorks/MacWrite software combination.

WORKS WORKS, TOO

If you're a fan of **Microsoft Works**, the Mac's most popular integrated package, here's good news — you can make AppleWorks word-processing, spreadsheet, and database files work on the Macintosh, too.

You'll need Apple File Exchange and an AFE file translator called **Works-Works Transporter**. Created by Microsoft, version 2.0 of Works-Works translates AppleWorks (up to and including AW 3.0) word-processing, spreadsheet, and database files to Microsoft-format documents. All formats, formulas and fields are left intact — run Microsoft Works and load any of these former AppleWorks files and you'll find it complete and ready to use.

To swap Apple II files with Microsoft Works, put a copy of the file translator into the AFE folder, then run Apple File Exchange. The AppleWorks-to-Microsoft Works selection is checked automatically. (See **Figure 3**.) Just translate any AppleWorks file according to the standard AFE process.

Works-Works is available on most on-line services, free for the downloading. If you don't subscribe to an on-line service, your local Apple dealer or user group may have copies. Unfortunately, AppleWorks GS users can't take advantage of Works-Works; the process works in only one direction, Apple to Macintosh — you can't shift Microsoft Works files to AppleWorks. Still, it's a great (and relatively unknown) way to swap files.

SWAPPING IN THE FUTURE

Swapping files between Apple IIs and Macs is getting simpler, and promises to become even more important as more Macs mix with Apple IIs in schools, homes, and businesses. Claris' XTND technology, while working only on the Macintosh (a sore point with diehard Apple II owners) links these two systems with little effort.

But will something similar to XTND technology ever run on the Apple II? After all, wouldn't that make sharing and swapping with the Mac even easier for Apple II users? "I sense that the compatibility is one-way," says Steve Carlton, AppleWorks GS product manager at Claris Corporation. "The growth seems to be in the direction of the Mac." That's obvious, if from nothing else than the phenomenal success of the Macintosh Classic and the tremendous excitement educators are expressing over the LC's color and sound capabilities.

Even with the Macintosh crowding into traditional Apple II strongholds such as the classroom and home, an Apple IIe, IIc Plus, or IIGS won't be totally isolated. Not when we remember the lesson of our youth: Share and share alike. ❑

GREGG KEIZER HAS BEEN USING APPLE IIS SINCE 1983 AND WAS THE FOUNDER AND EDITOR OF *COMPUTE!'S APPLE APPLICATIONS*, A BIMONTHLY PUBLICATION. WRITE TO HIM AT 614 LINDEN STREET, SHREVEPORT, LA 71104. ENCLOSE AN SASE IF YOU'D LIKE A REPLY.

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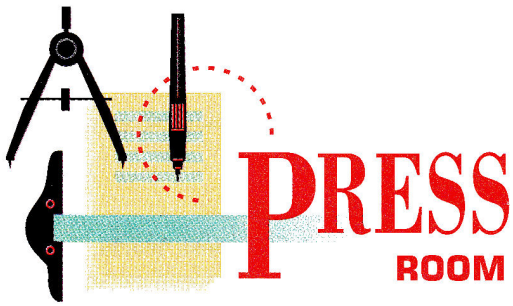
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MARKING TIME

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By CYNTHIA E. FIELD, Ph.D.

IF THE NUMBER OF SELF-HELP books on the subject is any indication, getting organized and staying that way is a top priority for many of us. Add to social obligations the business and professional appointments we have to keep, and it's no wonder many of us are hopelessly addicted to a pocket, desk, or wall calendar.

One Austin, Texas, public elementary school uses an efficient homemade calendar to organize its administrative schedule. The principal's husband, Merrill D. Stevens, serves as the school's unofficial desktop publisher. Stevens, a retired U.S. Air Force officer and 16-year veteran educator, has created a host of school-related templates on his Apple IIGS, including a parent newsletter, administrative forms, and staff memos. One of his proudest accomplishments is the monthly calendar template used to create the sample from last year's events shown in **Figure 1**.

Replicating the template is a breeze if you use Timeworks' Publish It! 3, but you should also be able to copy the calendar's features with analogous functions in other desktop-publishing programs.

Start up Publish It! 3 and work in *Size to Fit* mode by pressing Open apple-4 (OA-4). Mentally divide the layout into two parts: a head and a body. The head of the calendar includes two graphics frames, a large *Month* and smaller *1990* text frames, and seven text frames containing the names of the weekdays. The body of the calendar consists of text frames for all possible days in any given month.

Stevens used Publish It! 3's *Custom Guides* option in the *Special* menu to create grids to assist him in laying out his design. He used a standard 8.5-by-11 page size and inches as the unit of measure. These values are the program defaults. If you want to confirm or change them, pull down the *Page* menu and select *Set Page Size*. Then pull down the *Special* menu and pick *Select Unit Measure*.

To duplicate Stevens' grid, choose *Select Guides* from the *Special* menu, click on the *Custom Guides* radio button, and enter the following information into the *Select Layout Guides* dialog box: *Left 0.250*, *Right 0.250*, *Top 0.300*, *Bottom 9.250*, *Column Spacing 0.050*, *Row Spacing 0.050*, *Number of Columns 7*, *Number of Rows 6*. Click on the *OK* button when you're finished.

Make sure the *Snap to Guides* option in the *Special* menu is checked; this feature makes the grid "magnetic," so that it attracts objects to a predefined matrix. Now switch to *Show Full Size* mode by pressing OA-1. Select the text tool and draw the Sunday box in the lower-left grid region that's 0.25 inch from the left margin and about 1.5 inches from the top of the page. Refer to the accompanying **Table** to make sure the specifications for objects in your template match those Stevens used.

Using our **Table** is easy. Select an object with the pointer and press OA-M (or choose *Show Specifications* from the *Objects* menu). Into the *Show Specifications* dialog box edit the dimensions and click on the appropriate check boxes for attributes listed in the **Table**. Click on the *OK* button when you're finished.

Now select the *Sunday* box and press OA-C to copy it into the computer's memory. Press OA-V and, with the pointer, drag the duplicate into position next to the original. Paste five more copies and move them into position. Use OA-M to check specifications. To join the seven boxes, select the link tool, then click, in proper sequence, the *Sunday* box, the *Monday* box, and so on. After you've clicked on all seven boxes, click on the link tool icon in the tool palette to complete the chain.

Why bother linking frames when you're not writing a newsletter? According to Stevens, "Publish It!'s 16-article limitation cut short my first attempt at making a monthly calendar. I initially solved this problem by producing a four-page document. Page 1 included the top of the calendar and the day titles, page 2 the first and second weeks, page 3 the third and fourth weeks, and page 4 the fifth and sixth weeks. You can see that this method required running a single page through the printer four times. Misalignment was a constant problem. Now I link the day titles as an article, then the days of each week as an article to get a single-page document that sometimes comes close to — but hasn't yet exceeded — the 16-article-per-page limit."

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2	27	52	77	102	127	152	177	202	227	252	277	302	327	352
3	28	53	78	103	128	153	178	203	228	253	278	303	328	353
4	29	54	79	104	129	154	179	204	229	254	279	304	329	354
5	30	55	80	105	130	155	180	205	230	255	280	305	330	355
6	31	56	81	106	131	156	181	206	231	256	281	306	331	356
7	32	57	82	107	132	157	182	207	232	257	282	307	332	357
8	33	58	83	108	133	158	183	208	233	258	283	308	333	358
9	34	59	84	109	134	159	184	209	234	259	284	309	334	359
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17	42	67	92	117	142	167	192	217	242	267	292	317	342	367
18	43	68	93	118	143	168	193	218	243	268	293	318	343	368
19	44	69	94	119	144	169	194	219	244	269	294	319	344	369
20	45	70	95	120	145	170	195	220	245	270	295	320	345	370
21	46	71	96	121	146	171	196	221	246	271	296	321	346	371
22	47	72	97	122	147	172	197	222	247	272	297	322	347	372
23	48	73	98	123	148	173	198	223	248	273	298	323	348	373
24	49	74	99	124	149	174	199	224	249	274	299	324	349	374
25	50	75	100	125	150	175	200	225	250	275	300	325	350	375

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4	29	54	79	104	129	154	179	204	229	254	279	304	329	354
5	30	55	80	105	130	155	180	205	230	255	280	305	330	355
6	31	56	81	106	131	156	181	206	231	256	281	306	331	356
7	32	57	82	107	132	157	182	207	232	257	282	307	332	357
8	33	58	83	108	133	158	183	208	233	258	283	308	333	358
9	34	59	84	109	134	159	184	209	234	259	284	309	334	359
10	35	60	85	110	135	160	185	210	235	260	285	310	335	360
11	36	61	86	111	136	161	186	211	236	261	286	311	336	361
12	37	62	87	112	137	162	187	212	237	262	287	312	337	362
13	38	63	88	113	138	163	188	213	238	263	288	313	338	363
14	39	64	89	114	139	164	189	214	239	264	289	314	339	364
15	40	65	90	115	140	165	190	215	240	265	290	315	340	365
16	41	66	91	116	141	166	191	216	241	266	291	316	341	366
17	42	67	92	117	142	167	192	217	242	267	292	317	342	367
18	43	68	93	118	143	168	193	218	243	268	293	318	343	368
19	44	69	94	119	144	169	194	219	244	269	294	319	344	369
20	45	70	95	120	145	170	195	220	245	270	295	320	345	370
21	46	71	96	121	146	171	196	221	246	271	296	321	346	371
22	47	72	97	122	147	172	197	222	247	272	297	322	347	372
23	48	73	98	123	148	173	198	223	248	273	298	323	348	373
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READER SERVICE INDEX

Reader Service		Page
40	Abracadata	109
103	Alltech Electronics Co.Inc	110
*	Apple Computer Inc.	41,48
*	Applied Engineering	CV4,17,24,33,93,95
87	Bible Research Systems	115
151	Big Red Apple	9
8	CDA Computer Sales	82,83
115	Chinook Technology	10
*	Claris Corporation	63
21	Co-du-co	117
154	Compu-Teach	61
252	Computer Enhancers	116
288	Computer Friends	109
134	Dayton Computer Supply	116
184	Digital Vision	13
220	Educational Resources	15
85	Fas-Track Computer Prods	19
67	FYI Publishing	116
84	Golem Computers	6
45	Harris Labs	51
88	Howardsoft	CV3
*	inCider	
	AppleWorks Gs Productivity Pak	97
	Back Issues	113
23	International Software	116
43	Island Computer Services	117
175	Laser Computer Inc.	CV2
46	Learning Company,The	53
44	LRO Computer Sales	111
139	MCE/Lawrence Productions	31
5	MECC	35
248	Memory Plus Distribution	101
244	Milliken Publishing	55
55	National AW User Group	117
173	New Science Prospects	116
271	Nikrom	115
237	Orange Cherry Software	29
35	P C Globe	20
59	Perfect Solutions Software	116
*	Preferred Computing	89
105	Price Busters	21
10	Print Shop Users Group	105
128	Programs Plus	72,73,74,75,76
269	Public Domain Exchange	108
136	Quality Computers	2,3,4,5
7	Ramco Computer Supplies	117
90	Roger Coats	65
185	S.A. Auteur Co. The	117
41	Scholastic	59
29	Shreve Systems	117
291	Softdisk	1
127	Softspoken, Inc.	115
18	Sports Software Assoc.	117
60	Springbranch Software, Inc	115
92	Street Electronics	38
36	Sun Remarketing	115
140	Timeworks	84
56	TMS Peripherals	13
50	Tom Snyder Proucions	115
231	Tulin Corp	105
297	USA Micro	22
*	Utilico	116
17	VMC Marketing Technologies	115
189	Zip Technology	49

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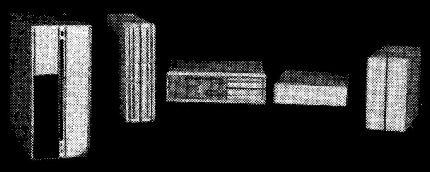
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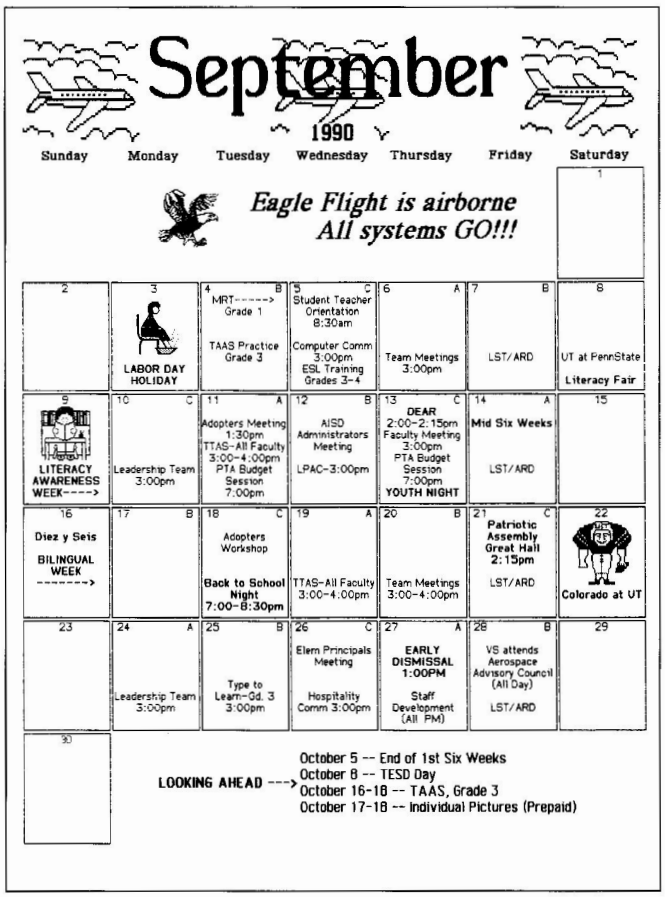


Figure 1. Completed calendar.

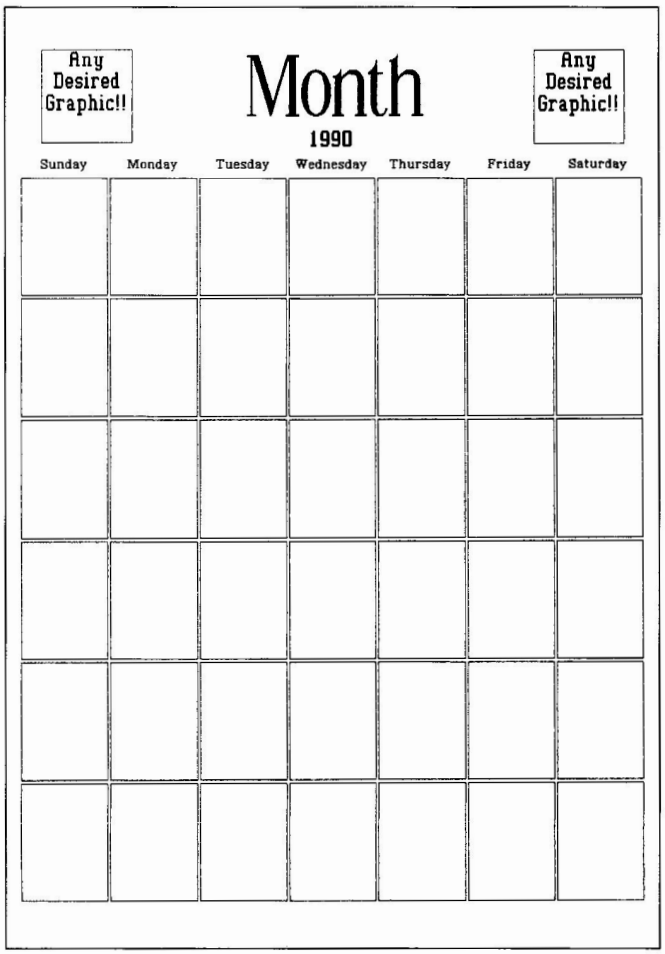


Figure 2. Blank calendar template.

first frame in the chain. Pull down the *Page* menu and select *Center* justification mode. Choose a typeface from the *Font* menu, such as *12-point Desplaines*, type *Sunday*, then press the return key to move the cursor to the second text box. Type *Monday*, press the return key, then type *Tuesday*, and so on.

Select the names of the days by placing the I-beam before the *S* in *Sunday* and pressing OA-E (or use *Select to End* in the *Edit* menu). Pull down the *Font* menu and select *Bold*. Because you no longer need them, turn off *Snap to Guides* (pull down the *Special* menu) and click on the *No Guides* button in the *Select Guides* box.

Switch to *Show Half Size* mode by pressing OA-3 and rubberband a text frame to accommodate the name of the month. Create a custom-sized frame or follow the specifications in the **Table**. For dramatic effect, Stevens suggests using a large font such as *72-point Wilmette*. Insert the I-beam and type *Month*. You may have to enlarge the size of an existing text frame to accommodate large-sized fonts. To do so, select the frame and drag downward on a bottom corner handle.

After you create the *Month* box, do the same for the *Year* box. Stevens likes to use the 18-point Westwood font for the year. Note from our **Table** that he invoked Publish It! 3's "don't runaround" feature to prevent the *Year* box from clipping the name of the month. By the way, the twin graphics frames at the top of the calendar are among the features you're free to ignore when you customize this template. For now, though, try to make it similar to Stevens'; you can edit later. When you've finished with the top part, save it as *CALENDAR* or use another meaningful name.

The body of the calendar is easy to replicate. First, create a new custom grid with the following specifications: *Left 0.250*, *Right 0.250*, *Top 1.800*, *Bottom 0.500*, *Column Spacing 0.050*, *Row Spacing 0.060*, *Number of Columns 7*, and *Number of Rows 6*. Then activate *Snap to Guides*.

Now rubber-band a text frame that conforms to the specifications given in our **Table** for *Week 1: Sunday*. Click on the *Frame Border* radio button in the object's *Show Specifications* dialog box. Copy and paste six identical text frames and move them into position from *Monday* through *Saturday*, then link the seven days of *Week 1*. Place the I-beam in the first box, choose the *9-point Desplaines* or *10-point Deerfield* font, and press the return key until the cursor bumps up against the end of the *Saturday* box. (The program will beep.) Save the template in progress as *CALENDAR*.

Using the pointer, select as a group the text frames making up *Week 1*. Click on *Sunday*, then Apple-click on *Monday*, Apple-click on *Tuesday*, and so on. (Apple-clicking means to hold down the OA key while clicking with the mouse button.) Press OA-C to copy this first row of framed days, then press OA-V to paste the duplicate row representing *Week 2*. Using the grid and the specifications shown in the **Table** as guides, drag *Week 2* into place. Use the group copy-and-paste procedure to add rows for *Weeks 3–6*.

Object	Left Start	Top Start	Width	Height	Attribute
CALENDAR TOP					
Graphics Frames					
Left	0.500	0.258	1.072	1.109	
Right	6.455	0.258	1.072	1.109	
Text Frames					
Month	1.916	0.250	4.256	1.100	Transparent
Year	3.656	1.213	0.655	0.276	Don't runaround
Sunday	0.250	1.550	1.026	0.200	Transparent
Monday	1.326	1.550	1.026	0.200	"
Tuesday	2.404	1.550	1.026	0.200	"
Wednesday	3.481	1.550	1.026	0.200	"
Thursday	4.559	1.550	1.026	0.200	"
Friday	5.637	1.550	1.026	0.200	"
Saturday	6.715	1.550	1.026	0.200	"
CALENDAR WEEKS					
Text Frames					
Week 1					
Sunday	0.250	1.800	1.026	1.400	Frame Border
Monday	1.327	1.800	1.026	1.400	"
Tuesday	2.405	1.800	1.026	1.400	"
Wednesday	3.483	1.800	1.026	1.400	"
Thursday	4.561	1.800	1.026	1.400	"
Friday	5.638	1.800	1.026	1.400	"
Saturday	6.716	1.800	1.026	1.400	"
Week 2					
Sunday	0.250	3.259	1.026	1.400	Frame Border
Monday	1.327	3.259	1.026	1.400	"
Tuesday	2.405	3.259	1.026	1.400	"
Wednesday	3.483	3.259	1.026	1.400	"
Thursday	4.561	3.259	1.026	1.400	"
Friday	5.638	3.259	1.026	1.400	"
Saturday	6.716	3.259	1.026	1.400	"
Week 3					
Sunday	0.250	4.719	1.026	1.400	Frame Border
Monday	1.327	4.719	1.026	1.400	"
Tuesday	2.405	4.719	1.026	1.400	"
Wednesday	3.483	4.719	1.026	1.400	"
Thursday	4.561	4.719	1.026	1.400	"
Friday	5.638	4.719	1.026	1.400	"
Saturday	6.716	4.719	1.026	1.400	"
Week 4					
Sunday	0.250	6.179	1.026	1.400	Frame Border
Monday	1.327	6.179	1.026	1.400	"
Tuesday	2.405	6.179	1.026	1.400	"
Wednesday	3.483	6.179	1.026	1.400	"
Thursday	4.561	6.179	1.026	1.400	"
Friday	5.638	6.179	1.026	1.400	"
Saturday	6.716	6.179	1.026	1.400	"
Week 5					
Sunday	0.250	7.638	1.026	1.400	Frame Border
Monday	1.327	7.638	1.026	1.400	"
Tuesday	2.405	7.638	1.026	1.400	"
Wednesday	3.483	7.638	1.026	1.400	"
Thursday	4.561	7.638	1.026	1.400	"
Friday	5.638	7.638	1.026	1.400	"
Saturday	6.716	7.638	1.026	1.400	"
Week 6					
Sunday	0.250	9.098	1.026	1.400	Frame Border
Monday	1.327	9.098	1.026	1.400	"
Tuesday	2.405	9.098	1.026	1.400	"
Wednesday	3.483	9.098	1.026	1.400	"
Thursday	4.561	9.098	1.026	1.400	"
Friday	5.638	9.098	1.026	1.400	"
Saturday	6.716	9.098	1.026	1.400	"

Table. Specifications for monthly calendar (all dimensions in inches).

Link the days in *Week 2*, then insert the I-beam into its first box and press the return key until the cursor "hits the wall" at the end of the week. Repeat this linking and line-setting procedure for all subsequent weeks, and save your completed *CALENDAR* template. It should look similiar to **Figure 2**.

To create your first monthly calendar, substitute the name of the current (or any desired) month for the word *Month* in that box. If the year hasn't changed, leave it as is. Add an illustration by selecting a graphics frame and one of the *Import Picture* options from the *File* menu. If you want, you can resize an illustration using the same technique you used for the *Month* text frame earlier.

Next, determine the beginning and ending days of the month by consulting a standard calendar. Select and delete any day text frames you don't need. Because September 1, 1990, began on a Saturday, Merrill Stevens deleted the first six boxes and the last six boxes. He used the resulting spaces for supplementary text (*Looking Ahead* and *Eagle Flight*) and graphics (eagle clip art).

Now enter the dates. Switch to *Show Full Size* mode, place the I-beam in the first box, and type *1*. Press the down-arrow key until the cursor enters the second box, and type *2*. Press the down-arrow key until the cursor enters the third box, and type *3*. When you get to the end of the week, insert the I-beam into the first box of the next week and continue numbering as above.

Try to avoid pressing the return key in lieu of the cursor (or arrow) keys; it adds extraneous lines and forces information "downstream." If you do press it by mistake, don't panic when your layout appears wrong. Just use the delete key to remove those extra line spaces.

When you're ready to add information or graphics to the days of the month, insert the I-beam into a selected day's text frame and type the information you want to include. Stevens found that with the *9-point Desplaines* font he could fit nine lines of data (one for the date, eight for text). The *9-point Deerfield* font allows ten.

Stevens' template features center justification as the page standard. To switch to left justification for specified dates, select the date, pull down the *Format* menu, choose *Justification*, and click on the *Left* radio button.

When a monthly calendar is complete, save it as *CALENDAR .XXX*, where *XXX* is the first three characters in the name of the month. If you anticipate having more than a years' worth of calendars on a single data disk, you might add a suffix for the year.

During the design process, and especially before printing your calendar, use Publish It! 3's Preview feature by pulling down the File menu or pressing OA-K. This option gives a section-by-section view of what your calendar will look like when printed. For best printing results, use Publish It! 3's double-strike mode. You might consider emphasizing selected appointments or special events with color and using a four-color ribbon in an ImageWriter II printer. Photocopying is probably the method of choice for mass distribution of your calendar. Take note, administrators, teachers, business owners, club organizers, and teenagers trying to manage a heavy social schedule: Put those organizational books aside, and try this easy calendar instead. It may be all the help you need. ❑

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should address your correspondence. On the program's blank forms you can include information similar to that contained in College Cost Explorer, such as required tests, costs, and financial-aid statistics. You can even add notes that list, rate, and evaluate facts or impressions that may influence your decision.

Although this program helps you organize data, typing it can be time-consuming. If the program let you import data from either College Cost Explorer or one of The College Board's other programs, you'd save a great deal of effort.

That fact aside, College Planner has a couple of handy features. One is a calendar on which you can enter information critical to gaining admission. For example, the program posts the admission closing date automatically when you enter it on screen. (Teaching a prospective student to set up and meet deadlines before he or she matriculates is a valid lesson indeed.)

The program also includes a series of formatted and addressed form letters for any of the colleges in the database. Use them to request financial-aid forms and catalogues. Unfortunately, the salutation contains the full name of the person to whom you're sending the letter; the addressee will read "Dear Mrs. Rebecca Smith" instead of the usual "Dear Mrs. Smith." If you can live with the computer-letter format, the style probably won't damage your credentials. After all, the admissions department won't see these particular forms.

COMMON GROUND

As for technical details, you can load both College Cost Explorer and College Planner onto a hard disk. The programs aren't copy protected, so you should back up the program disks before beginning. The manuals are clearly written and easy to follow. By covering MS-DOS and ProDOS operating systems in alternating paragraphs, the documentation makes the directions easy to understand.

Both programs are written in Apple Pascal — a language that makes programming with windows smooth. The displays are crisp and seem to flip easily from one to the other. An excellent series of help screens are available at any point in the process. Neither program is a "full service" word processor (you must enter data manually), so a slow typist may outrun the ability of the system to accept the input. You may notice this quirk when you enter numbers on some of the cost charts — occasionally, the program may not record the last digit.

With a myriad of colleges and universities to pick from these days, College Cost Explorer and College Planner should hold a position of prominence in every school's guidance office and every parent's den. No matter how much planning it takes to secure that diploma, let The College Board's programs do the brunt of the work. With these products by your side, taking the first steps to choosing a college or university won't be as difficult.

Jerry D. Greer
Bedford, IN

PLAYWRITE: THE TALKING PUPPETS

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WELCOME TO THE WONDERful world of designer plays. PlayWrite, Sunburst's new play-construction kit, features Bravo Dog and Encore Cat in starring roles your kids themselves create. The software lets youngsters write dialogue, design sets, select backdrops, and script special effects. When a production is complete, children can see and hear their plays performed on screen.

Credit for much of PlayWrite's design belongs to Steve Ocko and Mitchel Resnick, the dynamic project directors (from MIT's Media Lab) responsible for the development of LEGO TC Logo. LEGO TC Logo encourages kids to write Logo computer programs that control the movements of LEGO brick constructions. Children begin with simple bricks and end up building complex creations, personalized with innovative ideas drawn from their own experience. Youngsters have fun with it because they create an environment filled with things they care about.

PlayWrite is similar to LEGO TC Logo in many ways. It consists of a finite number of building blocks, such as actors, sets, scenery, character expressions, and staged special effects. Kids can put them together in an infinite number of ways and have fun arranging "pieces" because the work setting encourages them to play. If they don't like constructions they've built, they can easily exchange one part for another. Sample plays and story starter scripts are included on disk as illustrations.

When PlayWrite opens on the computer screen, we see two modestly dressed actors (Bravo Dog and Encore Cat) on a non-descript stage. Kids begin by personalizing this environment. They choose costumes, backdrops, scenery, and character expressions. They bring actors to life by writing dialogue and adding special effects. Script writing becomes a labor of love rather than a meaningless chore, because children invest part of themselves in their character creations.

The GS user interface simplifies set construction. Kids select stage backdrops, costumes, and character expressions with the point-and-click of mouse operation. There are three stage floors, one of which suggests a grassy outdoor setting. You'll find seven scenic backdrops, some suggesting daytime, others set at night. Animal characters can be either happy or sad.

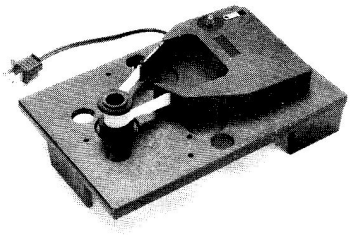
Clicking on an actor's head cycles through a variety of headware options (hats, crowns, punk hair, and so on). Each character can wear one of several different outfits. Youngsters decide what actors wear by clicking separately on the puppet's torso and feet. It's easy to go back and make changes.

After kids produce the set design and finalize the costuming, they begin to write a script. A large yellow arrow points left at Bravo, indicating that the first dialog they write will be spoken by this character. Kids type material into the script window at the bottom of the screen using the program's built-in text editor.

The editor offers limited word-processing functions. It features text wrap-around. Youngsters can erase unwanted characters by positioning the cursor to the right of the target text and pressing Delete. The script window has room for only three lines of text at a time. Kids can scroll through

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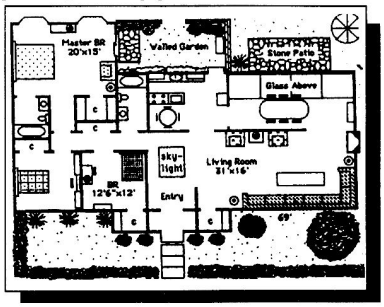
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dialog longer than three lines by clicking on the up- or down-arrow keys located to the right of the script window. To switch performers, kids merely have to press the Tab key or click on the large arrow in the center of the screen. The arrow flips direction (from left to right) and changes color (from yellow to blue). PlayWrite automatically inserts Encore's name into the script window and positions the text cursor next to Encore's name. The stage is now set for the child to write Encore's dialog.

PlayWrite lets kids punctuate their written scripts with special audiovisual effects. There are eight different effects from which to choose, including a drum roll, the sound of laughter, and a round of applause. Kids also can add stage directions, like opening or closing the curtain, or changing an actor's expression from happy to sad (and the reverse).

Special effects are chosen from the *Effects* menu at the bottom of the screen. The program automatically inserts the special effect into the script window and performs it during the show.

Plays written with PlayWrite have only two actors — initially, a male dog (Bravo) and a female cat (Encore). Playwrights don't consider the two-person cast a limitation, and your kids won't, either — they can even change actor name and gender by clicking on *Setup* at the top of the screen. A dialog box appears with room to enter new actor names (up to six characters each) and buttons that determine whether their characters are boys or girls.

Currently, there are several software programs that encourage kids to express themselves in writing. Many come with clip-art files so kids can mix text and graphics in a single document. The power of speech sets PlayWrite apart from these other applications. This program can read aloud any text a child writes. It uses First Byte's SmoothTalker speech synthesizer to convert written text to phonetic speech. The *Setup* menu lets playwrights choose an actor's voice speed and pitch. Kids aren't generally bothered by the "robotic" quality of the puppet's voice. On the contrary, they believe weird-sounding speech enhances the theatrical quality of the staged production. Youngsters tend to write dialog they want to hear performed. They click on *Say* in the command line at the bottom of the screen to listen to an actor speak. If a word isn't pronounced correctly, they can modify its spelling directly in the script window, or click on *Words* at the top of the screen to teach the computer how to say a word phonetically.

The software is designed for elementary school students (grades 1 through 6). Older children presumably write more elaborate scripts. Yet PlayWrite even encourages young children to express themselves with words, because phonetic speech doesn't "punish" writers for incorrect spelling.

Completed scripts can be saved to disk and printed with or without graphics. Files can be called up for viewing or revisions at any time. PlayWrite provides youngsters with all the tools they need to write, produce, and direct an electronic stage production. Isn't it time your child had the chance to play right with PlayWrite? ❑

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

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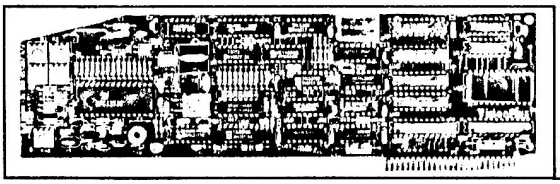
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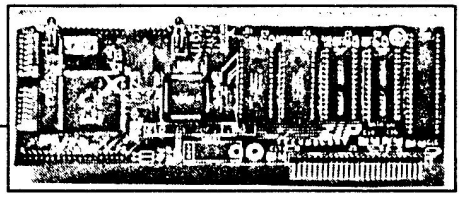
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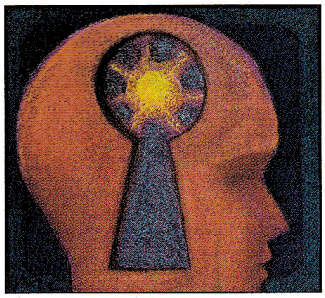
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TEST CASE

By DAVID D. THORNBURG, Ph.D.

As long as our top priority is simply "cost effectiveness," any attempt to reform our educational system is doomed.

TOM PETERS, NOTED MANAGEMENT consultant, syndicated newspaper columnist, and co-author of *In Search of Excellence*, says, "What gets measured gets done." That theory applies to education as much as it does to industry. In fact, in education, it might be more accurate to suggest that what gets tested gets taught.

Education today is undergoing a major reconstruction. More and more school systems are replacing textbook-based lectures with lessons that involve computers. Student projects in which teams build HyperCard or HyperStudio stacks on a variety of subjects, for example, are becoming common. Children are learning information that the traditional curriculum doesn't cover — and their level of enthusiasm is skyrocketing.

MEASURE FOR MEASURE

Even though students benefit from this kind of learning, our present testing system fails to conform and threatens to thwart this effort for change. When students must take tests based on textbook lessons rather than the information they've learned from those HyperStudio stacks, they test poorly. Then when educators get ahold of the test results, they conclude incorrectly that the new curriculum isn't effective, and they revert to rote lectures to improve student test performance.

Any restructuring of the curriculum requires an immediate change in the nature and content of the assessment tools used to measure the effectiveness of the program. Yet, all too often, we insist on measuring student achievement with tests that have little or no relevance to changes in our educational system.

NONE OF THE ABOVE . . .

The majority of the nationwide tests teachers administer are multiple-choice examinations in which students use a number-two pencil to shade circles or rectangles and register their answers. This kind of test allows no room for a student to explain his or her choice, but it's inexpensive to administer and score. Test scorers can feed the student's "bubble" sheets into a scanner and determine thousands of test results in minutes. We've become so used to this type of examination that many of us have become blind to its limitations.

Based on scores from these tests, we conclude that our nation lags behind in subjects such as math. In response to this gap, misguided school districts turn to integrated learning systems with the hope of improving their students' test scores. While students can achieve short-term improvement in scores by plugging themselves into a personal-computer cocoon and letting the learning-system software program them to answer the kinds of questions found on standardized tests, most youngsters' attitudes toward the subject suffer.

JUST THE FACTS?

If we design tests to treat students as repositories of disconnected facts, then integrated learning systems simply dump context-free information into students' minds — garbage in, garbage out. This software mimics the structure of the tests with little regard for helping students develop any meaningful relationship to the subject matter.

The development of an inexpensive grading technology (computer-scanned bubble sheets) has had far-reaching impact on our curriculum and on student attitudes toward learning. As long as our top priority is simply "cost effectiveness," any attempt to reform our educational system is doomed.

ANOTHER APPROACH

If we examine the function of our tests and take advantage of the modern technology sitting in most of our classrooms, this picture need not be so bleak. I believe that a school should administer only those tests that measure achievements the school system values. If a

school cares about dropout rates, for example, confirmation of student attitudes is more important than proof of a class' math ability. Also, tests need to let students display evidence of their thinking processes, not just their ability to produce an answer.

Consider the following exam question (taken from a new test under development): *Can you construct a right triangle with internal angles of 90, 60, and 20 degrees? Why or why not?*

One student stated correctly that the triangle couldn't be constructed, but explained his reasoning as follows: "This triangle can't be built because 20^2 plus 60^2 doesn't equal 90^2." In other words, the student saw three numbers and blindly applied the Pythagorean theorem, even though this response was totally incorrect. On a multiple-choice test, this student would have received credit, even though his math was severely flawed.

Of course, one argument against open-ended questions is that they can't be graded by machine. This point is correct, but perhaps it's time we put the student's knowledge ahead of the economics of test grading.

COMPUTERS TO THE RESCUE

If we're serious in our quest to track student performance in meaningful ways, what could be better than a portfolio of the student's work? At the end of 12 years, though, a portfolio consisting of a student's papers would be quite bulky, so why not save writing samples and other materials on disk? In addition to being more manageable than paper, disk-based portfolios let you find data quickly and make copies easily to give to colleges.

Imagine, for example, a HyperCard or HyperStudio stack for a class in which each card in the stack contains a digitized picture of a child. Next to this picture are three buttons — *My Goal, My Progress to December*, and *My Progress to June*. By clicking on each button, the user can hear the child's voice reciting his or her academic goals for the year, progress to the end of the semester, and progress to the end of the year. This presentation not only would be a wonderful tool to share with parents, but a permanent record of the student's achievements, too.

The academic domain could also utilize computer simulations of science experiments — students could interact with the simulation to produce a desired result. As youngsters complete the tasks, the computer could keep track of their choices and proficiency. This interactive use of technology provides immediate feedback and, except for the cost of the computer workstations, is economically viable for a wide range of subjects. The computer's ability to keep journals of student comments allows for open-ended assessments otherwise impossible with bubble-sheet tests.

Until we break away from our reliance on multiple-choice tests that fail to measure the skills we want our children to have, educational restructuring will fail, and we'll have failed the needs of an entire generation of children. ❑

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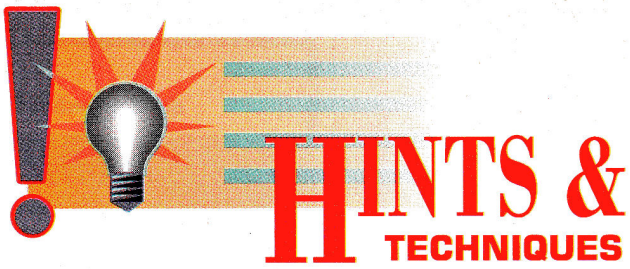
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STREAMLINE IT

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HPLOT DATA READER

By Willie Orton

SAVE YOUR FINGERS FROM typing *HPLOT* over and over again during those long graphics programs. Just type in and save the READ DATA routine in the accompanying **Program listing**; line 40 checks for the end-of-data flag (–999) in line 90, and keeps you from getting an OUT OF DATA error.

Program listing. HPLOT data reader.

```
10 DIM D(4)
20 FOR X = 1 TO 4
30 READ D(X)
40 IF D(X) = -999 THEN 80
50 NEXT X
60 HPLOT D(1) ,D(2) TO D(3) ,D(4)
70 GOTO 20
80 END
90 DATA 10,10,180,20,180,60, . . . ,-999
```

Write to Willie Orton at 1064 Ripple Avenue, Pacific Grove, CA 93950.

CLEAN IT UP

By Steven Reynolds

EVEN IF YOU'RE A COMPUTER wizard, your AppleWorks program probably has you stumped when it prints the first line of your document as either a garbled mess or as hard-to-read dots. Thanks to this technique, your days of frustration are numbered. Whether or not you're a computer ace, you can print professional-looking documents from top to bottom.

When you use the platen knob to roll paper manually up to the first line on which you want to print, you create a gap between paper and platen. When the pins strike the paper, the print either becomes smeared or the dots that comprise the letters become distinctly pronounced.

The next time you align the top edge of the paper with the red line on the paper guide, take the printer off line (push the select button so that its light turns off), and push the line-feed button to advance your paper to the point at which you want to start printing. This will ensure that the first line prints clearly.

The printer engine turns both the gears and the platen, and it's calibrated to advance the paper by precise fractions of an inch. Cranking the platen knob manually results in misaligned gears, paper, and an overall "looseness" in the system. The inaccuracy created by this method of alignment may seem slight, but when you consider that your printer must precisely place 160 or more dots in an inch, even a tiny error can result in smeared print. When your printer advances to the second line of the document, the system tightens up again, but it's already too late for that first line. Pressing the line-feed button activates the printer engine and puts everything "back in sync."

Write to Steven Reynolds at 1907 El Camino de la Luz, Santa Barbara, CA 93109.

AMPERSAND POKES

By Vincent Danzi

YOU CAN ASSIGN SOME OFT-repeated tasks to the ampersand (&) in Applesoft BASIC. POKE the values listed in the accompanying **Table** into locations 1013, 1014, and 1015. The ampersand will then have the corresponding function, which you can take advantage of either in immediate execution or while programming.

Table. New BASIC ampersand functions.

1013	1014	1015	Function
76	96	251	prints Apple hardware version
76	222	243	switches to hi-res graphics
76	242	243	clears hi-res screen
76	64	251	GR
76	47	251	TEXT
76	215	250	displays registers
76	132	254	NORMAL
76	128	254	INVERSE
76	92	253	rings bell & waits for carriage return
76	12	253	waits for keypress

Write to Vincent Danzi at 4 Miami Place, Hauppage, NY 11788.

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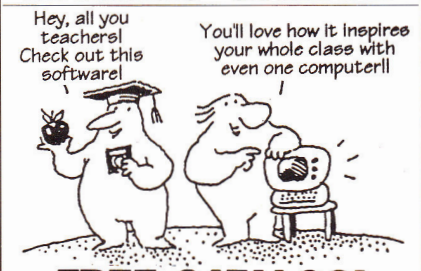
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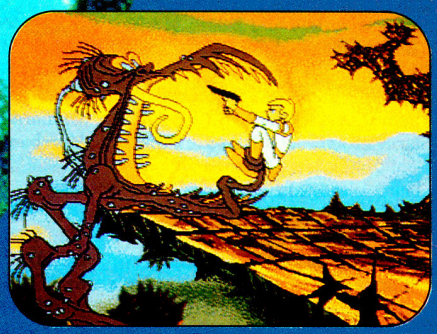
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EDITORS' CHOICE

SPACE ACE





We believe.

We have seen the light. We were utterly fascinated by xenomorphs pasted on our windshields in Xenocide, our hearts raced with Task Force, and we simply reveled in arcade-quality images as we played Arkanoid II over and over. But no more. We have forsaken all others as pale shadows of the potential power of GS graphics. We have seen that power, and its name is SPACE ACE.

Arcade hounds of the mid-1980s will recall the videodisc version of ReadySoft's Space Ace as a "wave of the future" that never quite caught on — kind of like calculator watches and arena football. With a joystick and an action button to guide your character through a series of animated scenes, playing this game was like watching a Saturday-morning cartoon. Although the scene changes were occasionally choppy, the Disney-style animation was entertaining, even if your hand/eye coordination wasn't up to par.

Space Ace for the Apple IIGS works admirably in translation. Never mind the sound (digitized but scratchy) — the story here is on the screen. The animation is smooth and maintains the true cartoon look of the original game. You'll see the evil Borf as he kidnaps Princess Kimberly and zaps you with his dreaded Infanto Ray. As Space Ace and his weak alter ego, Dexter, you must rescue Kimberly and foil Borf's dastardly plan to enslave the universe.

The story here is on the screen. But leave your lightning-fast reflexes and auto-repeat blaster fingers in the closet, boys and girls — this one's strictly memory and timing.

You'll use five keys on the GS' numeric keypad — up (8), down (2), left (4), right (6), and action (0) — to maneuver through nonstop attacks by Borf, robots, purple maze monsters, and the closest thing you'll ever see to a basselope outside Bloom County. Each scene focuses narrowly on the required moves, so you won't see much lead-in or follow-through. In a game where the main entertainment is watching the adventure unfold on screen, this bare-bones approach defeats the purpose. Because the program already consists of nine disks and takes a long time to load scenes, we understand the reasoning behind the company's decision to edit as closely as possible. But why go halfway? Why not make it a 10- or 12-disk game that could be labeled a classic as well as a breakthrough?

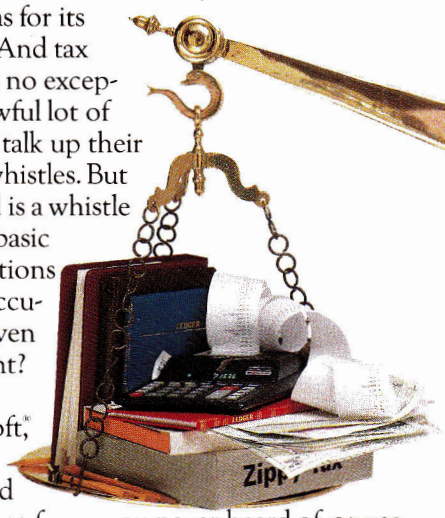
"At first, discovering the correct moves can be difficult, because many of the scenes are short," says Associate Editor Cameron Crotty. "But once you've read the descriptions in the manual and memorized the proper moves, the challenge drops to zero. That's a drawback of the genre, though, not a specific criticism of this game. If you liked Space Ace in the arcade, you'll probably like it at home." So find a dealer and take a look at these graphics images — they'll blow you away. Space Ace is available for both the Apple IIGS and the Mac for $59.95. For more information contact ReadySoft at 30 Wertheim Court, Unit 2, Richmond Hill, Ontario, Canada L4B 1B9, (416) 731-4175. ❑

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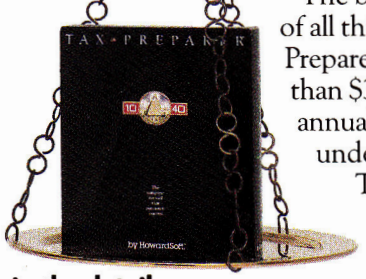
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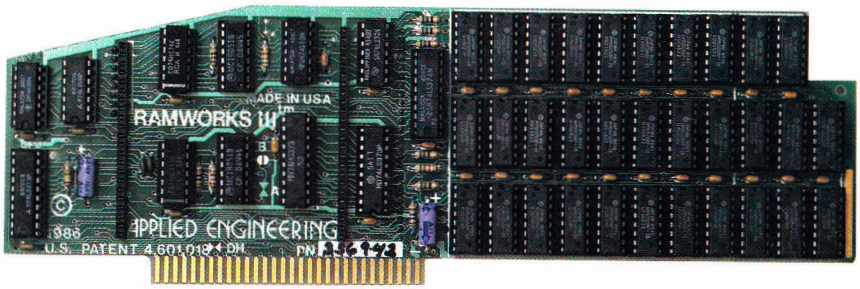
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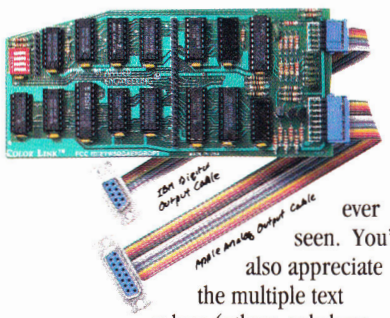
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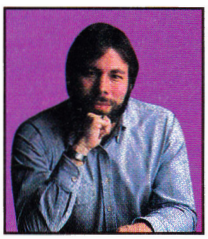
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The most friendly, most compatible card available. Using RamWorks III couldn't be easier because it's compatible with more off-the-shelf software than any other RAM card. But unlike other cards, RamWorks plugs into the IIe auxiliary slot, providing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

The ultimate in RGB color. RGB color is an option on RamWorks and with good reason. For only $129. it can be added to RamWorks, giving you razor-sharp vivid brilliance that most claim is the best they've



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



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

Steve Wozniak, co-founder of Apple

It's got it all.

- 15 day money back guarantee
- 5 year warranty
- Built-in super sharp 80-column display (U.S. Patent #4601018)
- Expandable to 1 MEG on main card (2 MEG expander available.)
- Automatic AppleWorks expansion up to 3017K desktop
- Accelerates AppleWorks
- Built-in AppleWorks printer buffer
- 100% compatible with all standard IIe software
- Compatible RGB option featuring ultra high resolution color graphics and multiple text colors with cable for both the new Apple and standard IBM-type monitors
- Self diagnostic software included
- Takes only one slot (auxiliary) even when fully expanded
- Socketed and user upgradeable
- Used by Apple Computer, Steve Wozniak and virtually all software companies.

RamWorks III with 256K	**$179**
RamWorks III with 1 MEG	**$269**
RamWorks III with 1.5 MEG	**$369**
RamWorks III with 3 MEG	**$549**
RamExpander + 1 MEG	**$180**
RamExpander + 2 MEG	**$260**
ColorLink RGB Option	**$129**

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