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JULY 1988

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The #1 Apple II Magazine

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AUGUST 20, 2087

Nothing could be worse than this god-forsaken, radioactive desert.

More Sniperdroids! All tracking me with them death glares. And them Uzis. They're weird trigger-twitchin' folks. I suspect it's them poisoning the water.

Or maybe it's those Leather Thugs. Heck, I don't know anymore. I heard they have a bunch of civilians cut off east of Ranger Center, which is where I'm headed. Hope not. They want me dead. Like every other mutant this side of Vegas.

The worst part is, I'm getting to be as bad as they are. You wouldn't believe some of the ways I've learned to kill. I hang out in sewers, and my best friend is a MAC 17 submachine gun.

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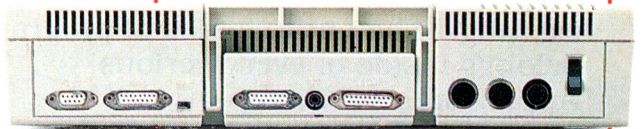
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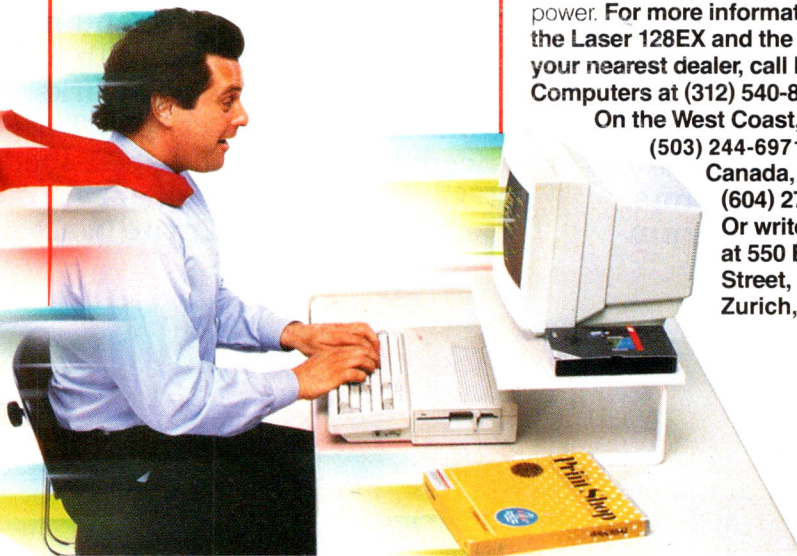
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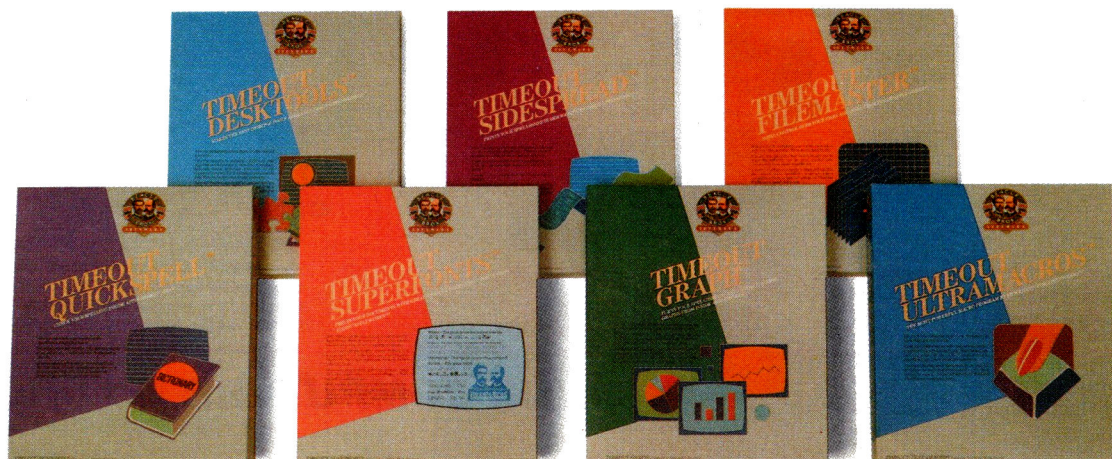
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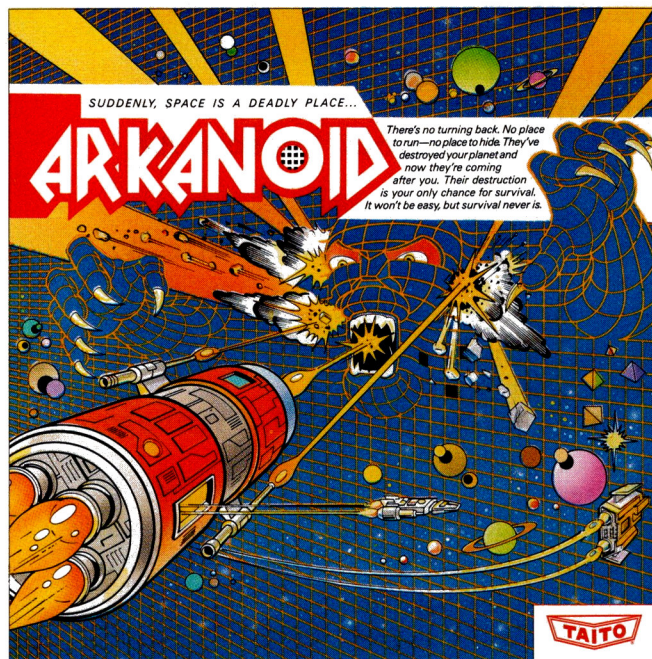
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SMALL-BUSINESS EDITOR CHARLES RUBIN
TELECOMMUNICATIONS EDITOR MICHAEL FISCHER
CONTRIBUTING EDITOR DAVID THORNBURG

ADVERTISING DIRECTOR DAVID J. EZEQUELLE
 (415) 378-5685
MIDWEST MANAGER THOMAS J. LUTZKE
 (312) 346-2600

EASTERN MANAGER THOMAS E. RICHARDSON
 (212) 503-5145
SOUTHWEST MANAGER CATHERINE DAVENPORT
 (213) 387-2100

NORTHWEST MANAGER SUSAN SCHLANGEN
 (415) 378-5699
ASSISTANT MARKETING MANAGER ALANE M. BOWLING

ADVERTISING COORDINATOR LISA BURCHARD
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EDITORIAL OFFICE 950 TOWER LANE, 18TH FLOOR
 (415) 578-9770
ADVERTISING/BUSINESS OFFICE FOSTER CITY, CA 94404

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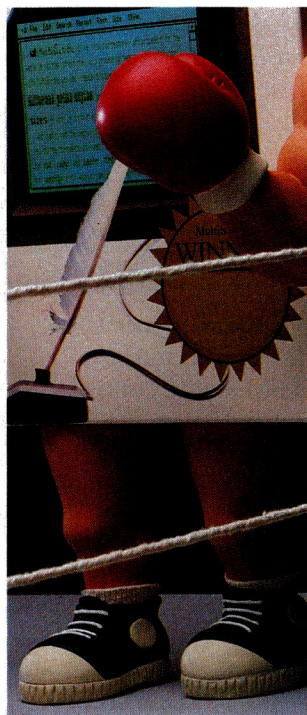
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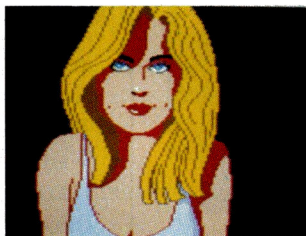
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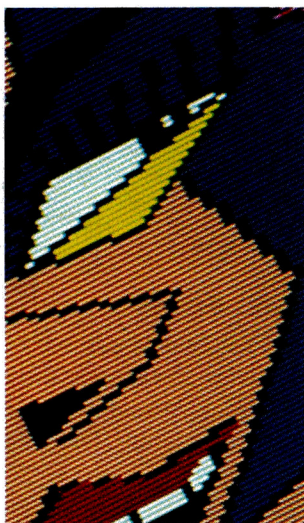
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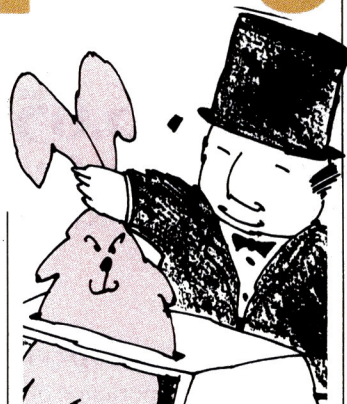
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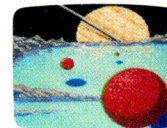
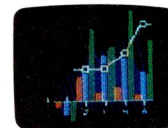
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CIRCLE 222 ON READER SERVICE CARD

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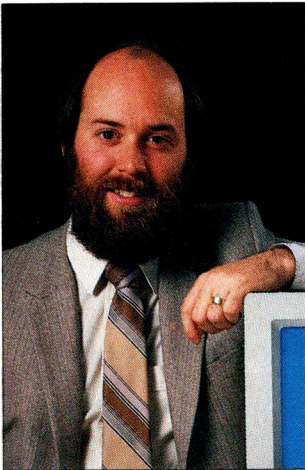
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I HAVE A DREAM

Summertime was made for relaxing in a comfortable chair on the front porch, sipping a glass of cool lemonade and whiling away the hours just thinking and dreaming of nothing in particular. It's nature's way of apologizing for winter snowstorms and Arctic winds, I suppose.

Not long ago, we convinced six of our best writers to focus their summer dreams on Apple II matters for a couple of weeks. We wanted to know what

they considered to be the ideal Apple II hardware and software configurations in their area of expertise. We allowed them no dreams of what might be—our

dreamers could consider only products available for sale now. We did allow them to dream that money was no object, however. (Education editor Jennifer Brawer promptly dreamed up a \$73,000 system!)

The results are now in, and you can read about them in this issue. Now it's time for me to dream, but I'm going to change the rules a bit. (Editors can do that.) I am going to dream about what the future might bring in the way of new hardware.

I dream of a faster GS on which superhi-res applications redraw the screen instantly. I don't want to be able to follow the progress of a redrawing operation line by line or object by object.

I dream of a GS graphics screen with 400 vertical lines instead of 200. It provides room for more items in pull-down menus and makes graphics look more attractive.

I dream of a GS with a built-in SCSI port identical to the one on the Macintosh to give me a wider selection of hard-disk drives.

I dream of a faster version of ProDOS 16 that handles disk caching. No more three-minute boot times, please. Having more tool sets in ROM would help here.

I dream of built-in stereo output on the GS.

I dream of a new IIC—a GS without slots (not a IIe without slots) with a built-in 3.5-inch drive. It also has a flat-screen display that you can read without squinting.

I dream of low-cost 3.5-inch disk drives. Since Apple wants users to abandon 5¼-inch drives, it should reduce the price of a 3.5-inch drive from

\$399 to \$199. If it would help, I could put Apple in touch with an Oregon company that has a good source for low-cost drives.

I want instant-draw on the IICs, a faster ProDOS 16, a built-in SCSI port on the IICs, and . . .

Finally, I dream that Apple will stop selling the Apple IIe. It's hard to believe, but people are still buying the IIe, even though the IICs runs almost all IIe software and is effectively less expensive. Without IIe computers on the market, sales of the GS would be even stronger, more software developers would write GS-specific software, and we'd consequently see a wider variety of applications.

I'm going to take another look at this list of dreams a year from now. If more than ¾ of my reveries have not been fulfilled, I'm going to buy a controlling interest in Apple (that's really a dream!), oust Sculley and Gassée, and order the engineers to make my dream machine now—sounds like the plot for a good adventure game.

Telecommunications Made Simple

Last month at the AppleFest in Boston, Apple officially announced its new on-line information service. It's

EDITOR'S PAGE

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Want the best, easiest-to-use & only 80 column RAM card on the market w/BATTERY BACKED-UP RAM options (unlike Ramworks III™), that save programs like AppleWorks for years — at the best price & most support? Buy Checkmate's **MULTIRAM RGB CARD™** from us! 100% compatible w/all 3rd party software/hardware, (RGB monitor not required) 80 columns/ Double Hi-Res! Direct substitute for Apple's 80 col card or Ramworks. **FREE APPLEWORKS EXPANDER/RAM DISK/RAM LOAD/& MORE W/EVERY CARD, 7 YR WARRANTY, 15 DAY MULTIRAM MONEY BACK GUARANTEE & FREE SOFTWARE UPDATES ONLY FROM US!** Schools & approved PO's welcome.

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MultiRam CX easily expands your llc to 640k and has a CX+ Piggyback to add another 512k (1152k total)! It's 100% compatible with all llc software/hardware & upgradable — all at about 50% less power than Z-RAM™. **SAME SOFTWARE & 7 YR WARRANTY AS ABOVE.**

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Cermetek 1200 internal modem lle/ll+/llgs	136.
(+ FREE Source & Compuserve subscription/ProTERM™ Setup Instructions)	
1200 Baud universal ext modem (llc/llgs/Mac/IBM. Cables \$21) ...	102.
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ProTERM Modem Software 2.0 (NEW — Best Modem Software)	77.

MultiRam gs RAM cards — 1/3 more RAM & about 1/3 less power than gsRAM™ — 2 megs, most versatile card with Memory Saver, 7 yr warranty, free software, less cost, less hype.

Ok MultiRam gs	127. NEW
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512k to 2048k MultiRam gs	Call. NEW
MemorySaver gs card	119.
(Battery protects most gs RAM cards — even Apples')	
MemorySaver Extender (more space & more cards)	38.

Ok Q RAM card lle (Ext 80 col + more — req 64k or 256k RAM)	79.
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CMS 20 meg hard drive w/SCSI card (llgs/lle)	659.
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Clockworks Clock (Thunder/Timemaster HO™ compat)	69.
14" RGB Monitor (llgs/lle/llc-Cables extra)	299.
llc or lle RGB monitor adapters/cables	Call
Copy II Plus 8.x (NEW—Best 3.5/5.25 Utility)	27.
Timeout Thesaurus/PowerPack/Macrotools/Desktools II — NEW	Call
Timeout DeskTools/Filemaster/Sidespread (ea)	36.
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CIRCLE 105 ON READER SERVICE CARD

EDITOR'S PAGE

called AppleLink—The Personal Edition, and our telecommunications expert, Mike Fischer, takes a close look at it in this issue.

Several other on-line services provide Apple II information, of course, but most of them send information in the simplest, and most boring, way possible—as lines of text. To maneuver through these systems, you must memorize arcane commands and type them.

AppleLink was developed to make life very simple for its users. It presents information in scrollable windows, and commands appear in pull-down menus.

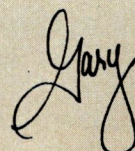
The interface will help Apple attract customers who would normally ignore telecommunications services because of perceived complexity and cost. A sizable customer base for AppleLink will be good news for modem manufacturers, and it may turn out to be good news for other on-line services as well. Once people get their feet wet on AppleLink, they'll probably start exploring GENIE, CompuServe, and the others too.

A New Face

Welcome, Owen Linzmayer, our new technical editor. A longtime user of Apple II computers, Owen understands these machines inside and out, so he will help us maintain our status as "The #1 Apple II Magazine." Owen is also an accomplished writer—look for incisive product reviews from him in upcoming issues.

Another Prize

I'm pleased to announce that yet another A+ personality—former editor-in-chief Fred Davis—has won a major writing award. Fred's July 1987 editorial, "The Great Look-and-Feel Debate," was recognized by the Computer Press Association as the runner-up in the Best Opinion or Editorial category of the CPA's third annual awards competition. +



GARY B. LITTLE/EDITOR

SKY TRAVEL



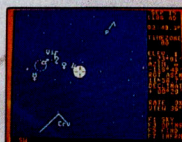
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Halley's Comet in the southern sky



Display of the planets centuries in the past

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FIRE POWER

Fire Power is an action packed arcade style tank battle game that features continuous shoot 'em up excitement! Plot your moves to become king of the hill and capture your opponent's flag while continually fighting off his endless attempts at yours! Features single, double and modem playability!



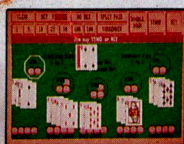
Helicopter patrols add another challenging dimension



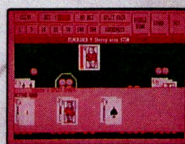
A successful rescue mission nears completion

BlackJack Academy

Everything you ever wanted to know about the game of BlackJack. For the novice learning, or the pro polishing skills, BlackJack Academy offers both high powered instruction and realistic game play. Develop your skills, and have fun playing BlackJack Academy!



Game in play



Split hands

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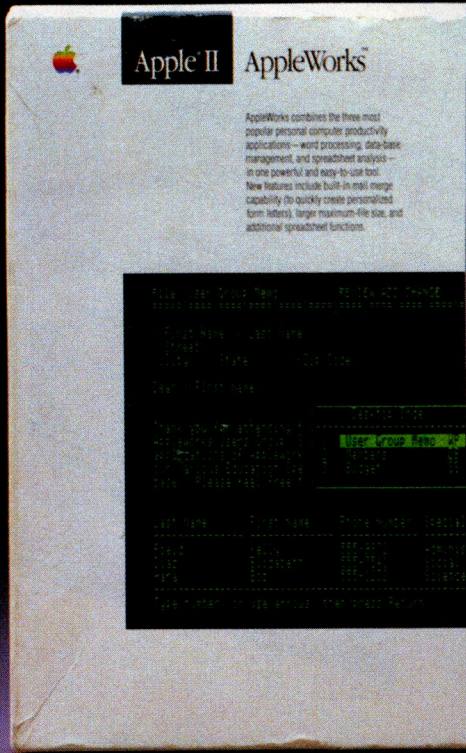
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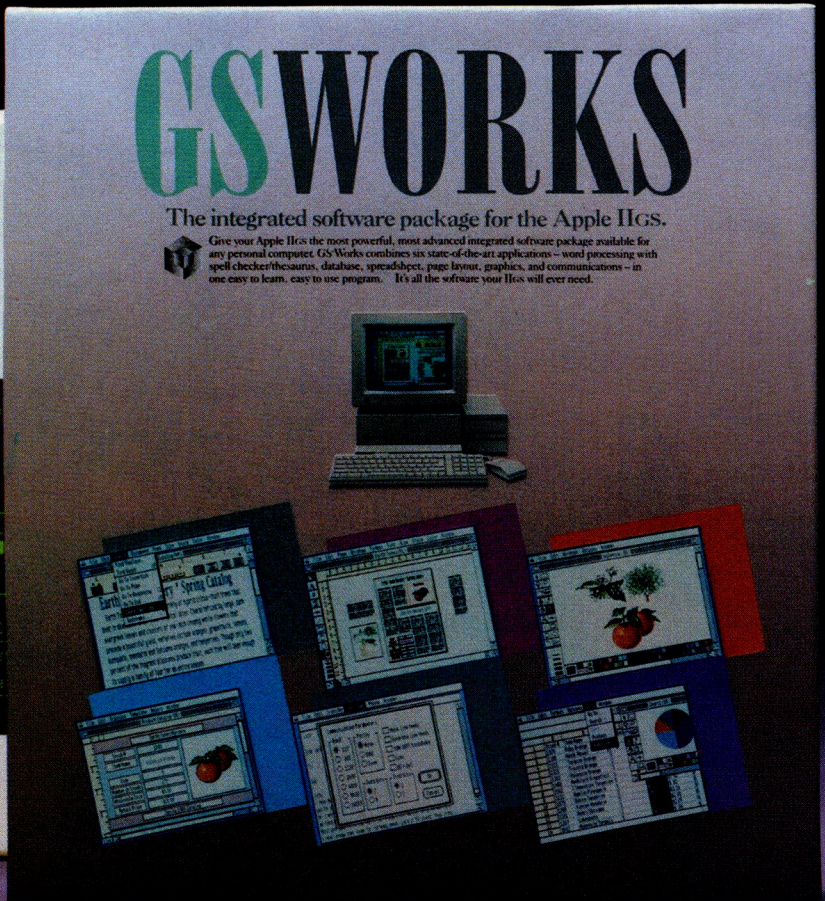
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sets a new standard
in personal computing.**



That was Then.



This is Now.

Introducing GSWorks. Think Of It As "AppleWorks gs."

In the beginning there was AppleWorks® for the Apple® IIe™, and it was good. Now there's GSWorks™ for the Apple IIgs®. And it's better.

Better because GSWorks is created especially for the IIgs. To take advantage of the speed, color graphics, and Mac-like interface of the IIgs.

Better because it improves on the three AppleWorks applications — word processing, database, and spreadsheet — with new features and dramatically increased power and sophistication. And adds the other three applications you need and use most — page layout, graphics, and communications.

Better because it combines these six productivity applications in a seamless, window-based environment. To give you an integrated package so advanced — yet so easy to use — that it has no equal on any personal computer. Not even Macintosh™ or IBM™.

Better because it's all the software you'll ever need for your Apple IIgs.

Upgrading The Three AppleWorks Applications . . .

GSWorks reads AppleWorks files as easily as it reads its own. So you can move from AppleWorks to GSWorks without missing a byte.

But GSWorks improves on the three AppleWorks applications by giving them all the features of true IIgs software. All GSWorks applications work the same way, using pull-down menus and WYSIWYG ("what you see is what you get") document display. Making GSWorks easy to learn, easy to use.

And each GSWorks application is so powerful, so complete, it could stand alone with the best IIgs software in its field.

Our high-powered word processor lets you create stylish documents using different fonts, print styles, and character sizes. With special features like automatic mail merge and the most advanced on-line spell checker/thesaurus ever available for an Apple II computer.

The versatile database lets you create forms, search and sort data, and print reports by just pointing and clicking. So you can keep track of even your most complicated information without complicated commands.

And for number-crunching, there's our mouse-based spreadsheet, with fast, intelligent recalculation and a host of number formatting features. And automatic color charting, when you want to make a splash with your figures.

. . . And Adding Three Of Our Own.

To give you *the* integrated software package for the Apple IIgs, we've added three new applications that fully exploit the advanced graphics, increased power, and enhanced communications connectivity of the IIgs.



Our state-of-the-art page layout application gives you the sort of desktop publishing power previously available only for Macintosh and IBM. To help you create professional-quality publications quickly and easily.

The GSWorks graphics application is revolutionary, combining the best features of draw and paint programs. With it, you'll have illustration capabilities never before available on a personal computer.

Finally, there's our communications application, connecting your IIgs to a whole world of on-line communications services. And letting you send and receive files from other computers.

What Integration Is All About.

What really makes GSWorks special is that it's much more than the sum of its parts. It's not just six great applications in a single box. It's six great applications in a single program.

Because GSWorks offers a whole new level of sophistication in integrated software. You can have all six applications on-screen at once. And open as many application windows as you need.

Move from one application to another by simply clicking on a different window. And move information between applications with a single movement of your mouse. Bring spreadsheet figures into a database file. Edit communications files with the word processor. Use the page layout application to combine graphics and text in polished multi-column documents.

So now that you've upgraded your Apple, upgrade your AppleWorks. To GSWorks. Because AppleWorks was then. And GSWorks is now.



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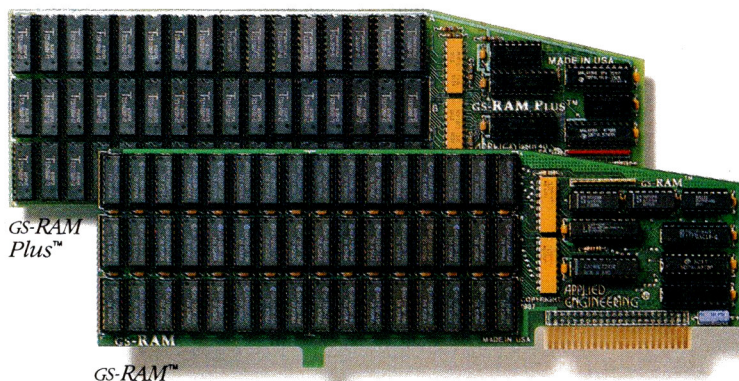
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CIRCLE 155 ON READER SERVICE CARD

For Those Who Want the Most. From Those Who Make the Best. GS-RAM™

Now expand the IIgs' RAM and ROM with up to 8 MEG of "Instant On" memory with the all new GS-RAM!



GS-RAM has an all new design. A design that delivers higher performance including increased speed, greater expandability, and improved software.

More Sophisticated, Yet Easier to Use

GS-RAM works with all IIgs software. In fact any program that runs on Apple's smaller memory card runs on the GS-RAM. But with GS-RAM you can have more memory, improved performance, and almost unlimited expansion capabilities. We've designed the new GS-RAM to be easier to use too—you don't have to adjust the size of your RAM disk every time you use a DMA device. No other RAM card with more than 4 banks of memory installed can make the same claim.

More than Just Hardware

Each GS-RAM and GS-RAM Plus includes the most powerful set of IIgs software enhancements available anywhere. In fact, our nearest competitor offers only a fraction of the invaluable programs that we include with each GS-RAM card. This software includes the most powerful disk-caching program available, the GS-RAM Cache. The Cache will make most of your applications run up to 7 times faster. Also included is a diagnostic utility that lets you test your GS-RAM by graphically showing the location of any bad or improperly installed RAM chips. And for AppleWorks users, we give you our exclusive Expander program that dramatically enhances both the capabilities and speed of AppleWorks.

Making AppleWorks Even Better

Applied Engineering's Expander program eliminates AppleWorks internal memory limits allowing it to recognize up to 8 megabytes of desktop workspace. You can increase the limits from only 7,250 lines to 22,600 lines in the word processor and from 6,350 records to 22,600 records in the database. The Expander allows all of AppleWorks, including print functions, to automatically load into RAM. The clipboard size will increase from 255 to 2,042 lines maximum. GS-RAM will automatically segment larger files so you can save them onto multiple floppies. And

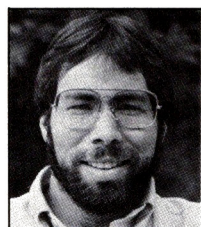
GS-RAM provides a built-in print buffer that allows you to continue working in AppleWorks while your printer is still processing text. You can even load Pinpoint or MacroWorks and your favorite spelling checker into RAM for instant response.

Grow by Kilobytes or Megabytes

We offer GS-RAM in two configurations so you can increase your memory 256K at a time (GS-RAM) or a megabyte at a time (GS-RAM Plus). Both are IIgs compatible and both come with our powerful enhancement software. GS-RAM can hold up to 1.5 MEG of 256K chips and GS-RAM Plus can hold up to 6 MEG using 1 MEG chips. And since both use standard RAM chips (not high-priced SIMM's), you'll find expanding your GS-RAM or GS-RAM Plus easy, convenient, and very economical. For further expansion, you can plug a 2 MEG "piggyback" card into the GS-RAM's expansion port for up to 3.5 MEG of total capacity. Or up to a whopping 8 MEG on GS-RAM Plus. If a GS-RAM owner outgrows 3.5 MEG, he can easily upgrade to GS-RAM Plus for a nominal charge.

Permanent Storage for an "Instant On" Apple

With our RamKeeper™ back-up option, your GS-RAM or GS-RAM Plus will retain both programs and data while your IIgs is turned off! Now when you turn your IIgs back on, your favorite software is on your screen in under 4 seconds! With RamKeeper you can divide your IIgs memory into part "electronic hard disk," and part extended RAM. Even change the memory boundaries at any time—and in any way—you want. Because



Steve Wozniak, the creator of Apple Computer

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

Applied Engineering has the most experience in the industry with battery-backed memory for the Apple, you are assured of the most reliable memory back-up system available. And in the world of battery-backed memory, Reliability is everything. That's why Applied Engineering uses state-of-the-art "GEL-CELL's" instead of Ni-Cad batteries (if Ni-Cads aren't discharged periodically, they lose much of their capacity). RamKeeper has about 6 hours of "total power failure" back-up time. That's 6 times the amount of other systems. But with power from your wall outlet, RamKeeper will back-up GS-RAM, GS-RAM Plus, or most other IIgs memory cards indefinitely. Should you ever have a "total power failure," RamKeeper switches to its 6-hour battery. When power returns, RamKeeper will automatically recharge the battery to full power. RamKeeper incorporates a dual-rate charger, status L.E.D.'s, and advanced power reducing circuitry. RamKeeper comes complete with battery, software, and documentation.

GS-RAM's Got it ALL!

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- No configuration blocks to set
- RamKeeper back-up option allows permanent storage of programs & data
- 15-day money-back guarantee
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GS-RAM with 256K	\$219
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GS-RAM Plus with 1-8 MEG	CALL
RamKeeper Option	\$189

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A+ MAGAZINE INVITES
COMMENTS FROM READERS.

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A+ MAGAZINE

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LETTERS TO THE EDITOR

is large and quite heavy, especially for a young child. It requires a lot of desk space adjacent to the computer or placement of the computer on the floor for sufficient space. The picture in your magazine shows a child sitting with it on the floor. Cute, but not practical.

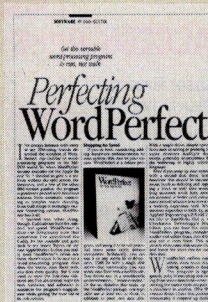
JUDITH ZORNBERG
BROOKLYN, NY

PRAISING WORDPERFECT

Dear A+: I read with interest the article on WordPerfect, also in the April issue of A+. I'd purchased a copy of the IIcs version 2.0 earlier this year, and, although I may never use all its capabilities, I find that some of its features are so useful that it has become my primary word-processing package.

Major reasons for purchasing WordPerfect were its thesaurus and the ability to spell-check a document without exiting from the program. Unfortunately, the spelling checker is painfully slow, but I agree with reviewer Dean Sluyter's assessment that WordPerfect Corporation's customer service is superb and trust that the company is working to accelerate the program's various operations.

A feature of the program that I have found valuable is the ability to define and redefine keyboard equivalents. You simply select the appropriate command from the Help menu and press either the open-apple or Option key, together with the desired alphanumeric key to define the equivalent. These definitions may be either temporary,



LEVITY ON TARGET

Dear A+: Your April "Spooflite" section had an otherwise quiet guy bellowing with laughter. What a refreshing change of pace!

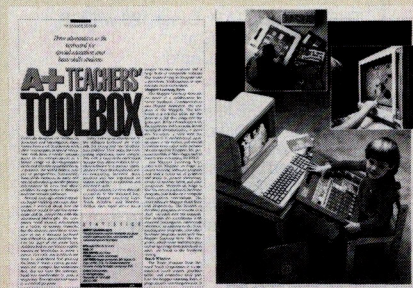
PAUL LUCCHESI
YORKTOWN HEIGHTS, NY

WONDERWORKER AND KIDS

Dear A+: The "A+ Teachers' Toolbox" article in the February 1988 issue was somewhat misleading. Teachers, as I'm sure you know, have only limited monies for the purchase of computer materials and equipment. An article aimed at teachers should highlight the positive and negative aspects of a product and, whenever possible,

make a judgment as to the best choice.

The author reviewed three early-childhood input devices, presenting them as equal, which they are not. What was most disturbing was her review of Wonderworker. Yes, the teachers' manual is very comprehensive, but Wonderworker, with its overlays, is not as easy to use as she stated. First, children need to exert a great deal of pres-



sure to activate their choices. When I tested the product with four-year-olds, most found it frustrating to use. The manual was obviously printed on an Apple ImageWriter, but Wonderworker allows you to print only on an Epson with a Grappler interface—a limiting option, to say to least. Last, the tablet

LETTERS

for one session only, or permanent. Using this feature, I have redefined many of the keyboard equivalents to match those of AppleWorks and now feel I have the best of both worlds.

DR. W.S. MARDIS
E. AMHERST, NY

DATABASE RECOMMENDATION

Dear A+: When our school district first discovered the many advantages of the personal computer, we invested in DB Master, Version Three, a database-management program from Stoneware. At the time, we felt blessed to have a database program that made our lives easier.

As personal computers and software technology changed, we saw many other database programs that

offered more, better, and faster. We continued to use DB Master, all the time wishing we had more, better, and faster programs (since we had so much information on disk, we had no choice).

In 1987 (since all good things come to those who wait), a new version of DB Master (Version 5) was introduced by Barney Stone of Stone Edge Technologies. Not only does this version fill our increased needs for database programs, but the technical assistance Stone and his representatives provide goes above and beyond what most software companies offer. All our database users have recently converted to Version 5, and all are completely satisfied with the product and the company's service.

If any of your readers are looking for a good database program, they should not overlook DB Master, Version 5.

RENEE MATTHEWS
CONEJO VALLEY UNIFIED
SCHOOL DISTRICT
THOUSAND OAKS, CA

VAPOR ADVERTISERS

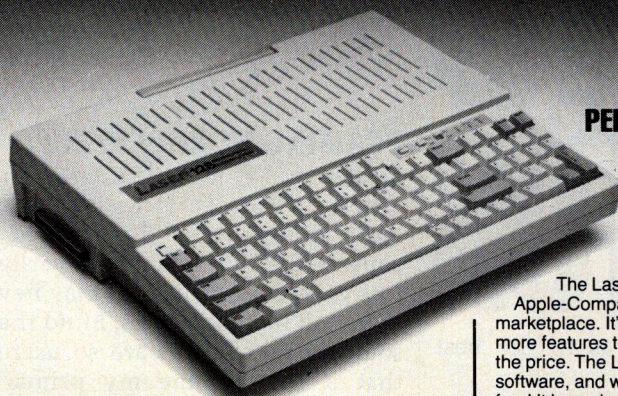
Dear A+: In response to Daniel Brownstone's concern, in your March 1988 issue, about the address of your advertisers that hide behind an 800 number, let me remind him that, for his own safety, he should understand that any advertiser that doesn't prominently display its address does not want its address known. I have found that, as a rule, it is best to avoid doing business with these advertisers. There are two reasons for them not to reveal their address: They either have nothing to deliver at the moment and are just advertising "vaporware," or they are out to rip you off.

Never do business over the phone with unknown vendors; it is risky. Always pay for mail-order purchases with a check. All legitimate businesses deal this way. The only exceptions are with proven vendors.

RALPH L. JONES
GARDEN CITY, GA

We'd like to make a comment here about methods of payment when you're buying mail-order. If you use a credit card rather than a check, the credit-card company will help you out if the goods never materialize or don't

YOUR LOWEST PRICE SOURCE FOR APPLE COMPATIBLE COMPUTERS



LASER 128 PERSONAL COMPUTER APPLE IIe/IIC COMPATIBLE \$395

(Includes 10 free software programs)

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

LASER 128 SYSTEMS

THE HERO: Laser 128 w/Monochrome Monitor . . . **\$479**

THE STAR: Laser 128 w/Monochrome Monitor and Star NP-10 Printer and Cable . . . **\$649**

THE SUPERSTAR: Laser 128 w/RGB Color Monitor and Star NP-10 Printer and Cable . . . **\$839**

New Laser 128EX Now Available

The Laser 128EX is a high performance Apple-compatible computer with all the features of the Laser 128, plus a triple speed processor and is internally expandable to over 1Mb. The Laser 128EX is 3 times faster than an Apple IIe or IIC and at only **\$499**

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LETTERS

work properly. If you pay by check, your check may be cashed long before you know there's a problem. The downside to credit-card payment is that your account can be charged weeks (or months) before goods are shipped, and then there's the rare possibility that your account number might fall into treacherous hands.

— Editors

DATABASE POSSIBILITIES

Dear A+: All the honors to Steve Miller for his article in the February '88 issue on preparing a tax-deduction database. I don't need it for deductions, but one look at his examples and I realized it was perfect for keeping track of dividend and interest payments from stocks, bonds, and mutual funds.

Up until now, I've been keeping track of things by using a spreadsheet with columns for each source, rows for dates, and @Sum at the bottom for running totals. After reading Miller's article, I set up a database with just five fields:

Date
Source
Amount
Type
Per Share

Using his examples for sorting and formatting, I can analyze every which way I want, in addition to having perfect records for income tax.

I've had a love affair with AppleWorks since the day I first put it into Drive 1, but I'd never thought of using the database module for this kind of record keeping and analysis. Nor had I ever thought of experimenting with the open-apple/G, open-apple/T, or open-apple/N commands in this module until now.

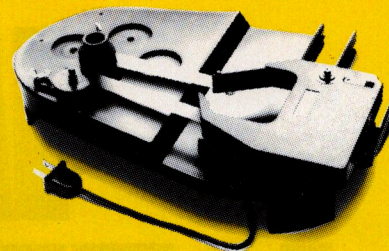
This article alone was worth the cost of a subscription to A+, including the additional cost for foreign mailing and the extra time it takes to get here. Let's have more articles like this one that show creativity and simplicity of use with AppleWorks.

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IMPROVE WITH A BRAIN

Stocks Plummet In Record Time!!! Could This Be The End Of Silverware?

In what appears to be a major setback for the electronic tool industry, the market closed down over one thousand points in combined issues of Consolidated Fork, SpoonTech, and Knives International yesterday. The adjustment was not entirely unexpected. Analysts, however, were taken aback by the severity of the downturn.

All three major utensil companies had been seeking to diversify in recent years, and all three had experienced major setbacks.

Fork's Folly
Consolidated Fork had invested heavily in their Electric Fork, a battery powered device which stabbed steaks repeatedly until it actually hooked into the meat. It failed in market testing, when tests revealed that clumsy people who dropped the fork risk serious injury.

Spoons Go South
SpoonTech also belied up after its heavy loss incurred after its diversification into the ladle field. Tim Galusha, Chief Operating Officer, commented, "We took our lumps for trying to deviate from our specialty. We built this company on teaspoons and tablespoons. It'll be a long time until we try this sort of trick again."

Blades Bottom Out
Knives International was the third victim of yesterday's session, closing at an all-time low of one eighth cent per share, down from \$154 earlier in the day. Analysts attribute their failure to the consumer rejection of their new toy, Switchblade Silverware, designed to give people any utensil they desire at the flick of a switch.

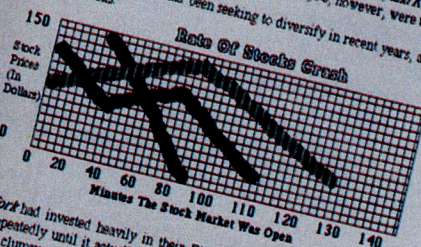
"It sure beats me," says Ross Boone, president and CEO of Knives International. "I thought we had a great product at a great price. I bet it was the computer traders that did us in. It certainly couldn't have been my fault."

Experts Ponder Future
Experts began to wonder if this would lead to an end of utensils for the mass public. Said expert Max Gontz, "With these three companies probably out of business, I can't conceive of anyone else being able to pick up the slack. I had to guess, I'd say we will all soon be going back eating with our hands."

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It's easy when you have the brains.

GEOS is a completely integrated environment that runs circles around every other operating system, mostly because it starts out a lot smarter. For example, it comes with a desktop file manager, three utility programs, four applications, five desk accessories, eleven fonts and, well, you get the idea. All of which opens your Apple II to all kinds of graphically-oriented applications, like writing, painting,

merging, desktop publishing, calculating and all that other fun stuff the more expensive Apples do.

There's even a set of pop-up desk accessories, like an alarm clock, a notepad and a calculator.

Now, you'd think it would take a rocket scientist to operate a system this smart, but with GEOS, all it takes is a point and a click of your mouse. Or touch of a joystick. Or a tap of a keyboard.

If your documents aren't winning any beauty contests, maybe your Apple IIe or IIc's problem isn't just cosmetic. Maybe what it really needs is a new brain. Like GEOS.

GEOS is the new graphic operating system that takes everything you do—including AppleWorks files—and makes them even better. Better looking. Better working. Better everything.

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Pretty easy, right?

Well, GEOS is easier on your eyes, too. Because the clear, sharp hi-res stuff you see on the screen is exactly what you get when it's all printed out.

Turn your ugly ducklings into prints charming.

Of course, the real beauty of GEOS is how it turns any word processing document into a work of art—in seconds. And you can do it because GEOS comes with a TextGrabber™ that's ProDOS compatible. You just pour in your AppleWorks, WordPerfect or MultiScribe text, and in less time than it takes to say, "Yikes! What a great looking document!," your text is converted into geoWrite™ 2.1, the What-You-See-Is-What-You-Get word processor that lets you center, justify, search and replace text, move blocks of copy, cut, paste graphics and select fonts of different styles and sizes right on the screen.

You still with us? Okay. Now get ready to squeeze your Apple for all it's worth.

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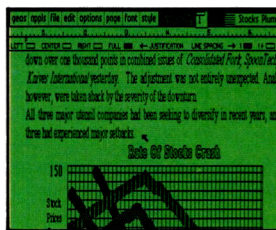
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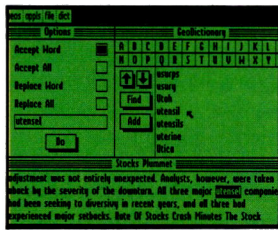
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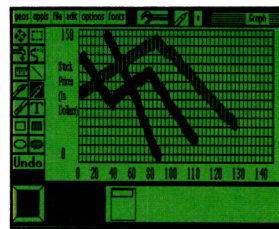
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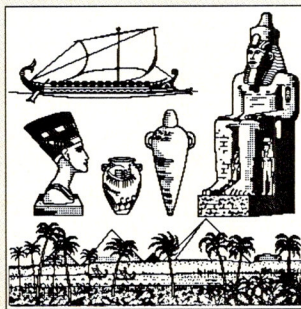
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NEWSPLUS

Desktop publishing from Springboard, an AppleWorks competitor for the IIgs, and other industry updates

OFF THE VAPOR LIST

At long last, Springboard Publisher has been released. According to Springboard chairman John Paulson, the company refused to cut any corners on the product, hence the delay in its re-



Local district exceeds averages
OF ROBERT JOHNSON

Washington-Carver School District

Notes from the Board

Washington-Carver School District

Volume III, Number 5 April 1988

Overall, grade 4 scores were slightly higher than the national average in reading comprehension, and Principal John Johnson said that the district's scores in grade 4 reading were higher than the national average in reading by 2 years and 8 months.

Grade 4 comparison

IN THIS ISSUE

Computer lab expanded
PFA meeting agenda
New kindergarten center opens

Page 2
Page 3
Page 4

lease. The long-awaited desktop-publishing program works on the IIe and IIc as well as the IIgs and offers word-processing, graphics, and page layout in an all-in-one package. From our first glance at it, it looks pretty slick.

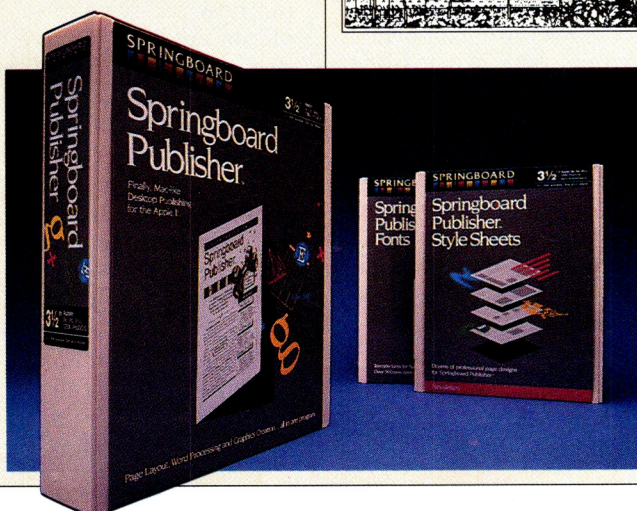
Publisher costs \$139.95 and is initially available in a 3.5-inch format, with a 5¼-inch version promised. Add-on products will include three clip-art disks that cost \$39.95 each; a \$29.95 font disk; a \$29.95 set of newsletter style sheets; and a \$39.95 LaserWriter driver. Watch for a detailed review real soon.

IN THE WORKS

Kevin Harvey, president of StyleWare, dropped by our offices the other day to show us a prerelease version of GSWorks, an integrated program for the IIgs. Although we don't usually like to talk much about prerelease software, we think GSWorks will be a product GS owners will want to know about, so we'd like to draw your attention to its planned August 1 release.

GSWorks will feature integrated word-processing, spreadsheet, and database modules (just like AppleWorks) and will open AppleWorks files right into the corresponding GSWorks applications. The other modules are paint, telecommunications, and page layout. The program allows you to open any of the modules at any time, no matter what other module you may be working in. Then you can combine data from separate modules in the page-layout section. As you would expect of a GS-specific product, it has a mouse/windows/icons interface.

At \$249.95, GSWorks is meant to compete with AppleWorks, which also retails for \$249. In fact, StyleWare is going after AppleWorks owners who want a GS-specific program that offers the same



NEWSPLUS

functionality and then some. AppleWorks owners will be able to get GSWorks for a reduced price of \$100. Details on the upgrade will follow.

SPA AWARDS

As Gary Little mentioned in his editorial last month, the Software Publishers Association (SPA) presented A+'s entertainment editor, Bob Lindstrom, the Best Software Reviewer Award at its Excellence in Software awards program. The award was one of three Journalism Recognition Awards the SPA presented this year for the first time. Not bad for the former classical-music critic of the *Portland Oregonian*!

The SPA also presented software awards in 25 categories. Among the winning programs available in Apple II versions were: Ancient Art of War at Sea (Brøderbund) for Best Action/Strategy Program and Best Packaging; Leisure Suit Larry in the Land of the Lounge Lizards (Sierra On-Line, Inc.) for Best Adventure or Fantasy/Role Playing Program; Decisions, Decisions Series (Tom Snyder Productions) for Best Middle or Secondary School Program; and Mavis Beacon Teaches Typing (Software Toolworks) for Best Home Learning Program.



BILLION-DOLLAR BABY

Gone are the days when Apple II sales carried the Macintosh. For a couple of years after the Mac's introduction in early 1984, the Apple II continued to bring in the vast majority of Apple Computer's sales dollars. Now the Mac is holding its own, and the Apple II is taking a back seat, revenue-wise. Still, the Apple II sales total is nothing to shrug off. According to a story in the *Los Angeles Times*, Apple's chief operating officer Del Yocam says that the Apple II accounted for \$1 billion in sales in the last fiscal year. That's a bit less than 39% of Apple's total sales for fiscal 1987, which came to \$2.66 billion. A billion dollars means a lot of Apple IIs.

BOSE PROMOTION

A new promotion from Bose Corporation allows you to receive one of four products free when you buy a Bose RoomMate speaker system along with either an Apple IIGs or Apple MIDI interface between May 1 and September 30. The four products you can choose from are Activision's The Music Studio 2.0; Electronic Arts' Music Construction Set; Great Wave's KidsTime II; or MDIdea's SuperSonic Stereo Card.

You can order a Bose RoomMate System by calling (800) 526-5313 or—in NJ—(201) 728-8080. To get your free music product, send proof of purchase of an Apple IIGs or Apple MIDI interface along with a

RoomMate proof of purchase and warranty card to Bose FREE Software offer, P.O. Box 8204, Beaverton, OR 97076.

GET RESOURCEFUL

Davidson & Associates now offers a *Teacher Resource Guide* that provides a quick overview of each of its educational products. The 170-page guide includes at-a-glance command references as well as assignment, record-keeping, and activity sheets. The guide is available free with the purchase of a lab pack or for \$19.95 separately.

SCHOLASTIC SERVICE

Scholastic Software has recently extended its warranty policy on its 100-plus educational titles. Scholastic customers can now receive a replacement for defective or damaged disks for free if they return the disk within 90 days of purchase. Thereafter, for the lifetime of the product, Scholastic will charge a \$10 handling fee for replacement. Previously, Scholastic offered the \$10 replacement for only ten months after purchase. For information, call (800) 325-6149, or (800) 392-2179 in Missouri.

NewsPLUS

ADVENTURES IN MATHLAND

In March 1987, David Thornburg's "Learning Curve" column covered the *Mathematics Framework for California Public Schools*. This document is the basis for the state's revision of the mathematics curriculum for grades kindergarten through 12 and places an emphasis on problem solving and creativity in teaching mathematics. Thornburg pointed out that textbook and software publishers would



probably be racing to create materials for the new curriculum.

Based on the new curriculum, Mindscape's Educational Division has recently announced *Adventures in Mathland*, a multimedia mathematics series for grades kinder-

garten through 6, funded in part by the state of California. The first two modules, which will contain software and guided off-line activities, will be available in September. The second modules for each level, and an optional videodisc, will come out in early 1989.

APPLEWORKS TEMPLATE CONTEST

TAWUG (The AppleWorks Users Group) has announced an AppleWorks Template Contest for its members. First-, second-, and third-place winners will be chosen in each of three categories: Database, Spreadsheet, and Word Processor. The contest will end September 1, and all template entries will be included on the next TAWUG disk release. Winners will be announced at a later date.

The first-place winner in each category will receive six TAWUG disks plus a box of ten blank 5¼-inch disks. The second-place winners will each receive four TAWUG disks, and third-place winners will receive two TAWUG disks.

For further information on the contest write to TAWUG, c/o Computer C.A.C.H.E., P.O. Box 37313, Denver, CO 80237-7313.

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- **Free-Form Database Manager** - Use with your word processor to create huge databases. Variable delimiter lets you build records of any size or form. You can even re-define records instantly, e.g., as sentence, line, paragraph, chapter, or entire file. Prints: all matches, last match, screen dump.
- **AppleWorks Utility** - Retrieves text from ALL TYPES of files. Breaks AppleWorks' category and record barriers. Ideal for databases of exam questions, real estate listings, writer's journals, bibliographies, recipes, contracts, lab diaries, genealogies, resumes, etc. Switch to/from FASTDATA Pro in 8 secs.

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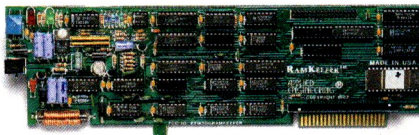
In about the time it takes to read this headline, you can have the Finder up and



Imagine. Turn on your IIgs and instantly the finder comes to life! All the speed and RAM power your IIgs was meant to have, packed into one, affordable "electronic hard disk."

Applied Engineering's RamKeeper.[™] A system that works like a hard disk, only better. It retains stored programs *and* data while your computer is turned off (like a hard disk), but gets up and running five times faster. RamKeeper is solid state, has no moving parts and, unlike a hard disk, has no heads to crash and no parts to wear out. And RamKeeper saves wear and tear on your disk drive, because you don't need it nearly as often.

RamKeeper even powers up to two



RamKeeper lets you keep programs and data in permanent, "electronic hard disk" memory. Turn your Apple IIgs on and you're ready to work.

memory cards *simultaneously* while your computer is off. And the battery backup we include keeps power to the boards, even during power failures.

Your programs and data remain stored in a permanently accessible state, always ready to run. Your computer waits for *you* . . . instead of you waiting for it.

Superior power backup.

RamKeeper comes complete with sealed Gel/Cell batteries for emergency backup in the event of a power outage. Gel/Cell's are by far the most reliable backup power source in this application. Unlike the Ni-Cads others use, Gel/Cell batteries don't lose capacity if not discharged periodically.

Our Gel/Cell pack gives you up to six hours of total power failure backup. And the sealed battery pack stays *outside* your computer case, where an unlikely leak won't ruin your computer circuitry.

RamKeeper uses a Switching Power Supply — the same technology used by Apple for the IIgs power supply. This design uses energy much more

efficiently to keep your Apple running cooler.

Powers two memory cards in the same slot.

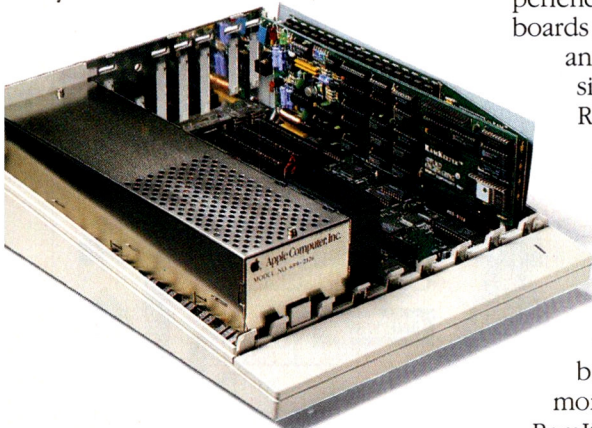
Have Apple's memory card, but now want the features of Applied's GS-RAM card? With RamKeeper, both cards act as one larger card. In one slot. Just attach one memory card to each side of RamKeeper and plug RamKeeper into the slot. And even with two cards, you can still keep slot 7 open with our optional Slot-Mover. All without changing the way either your memory card or your software now operate.

RamKeeper also works fine with only one memory card.

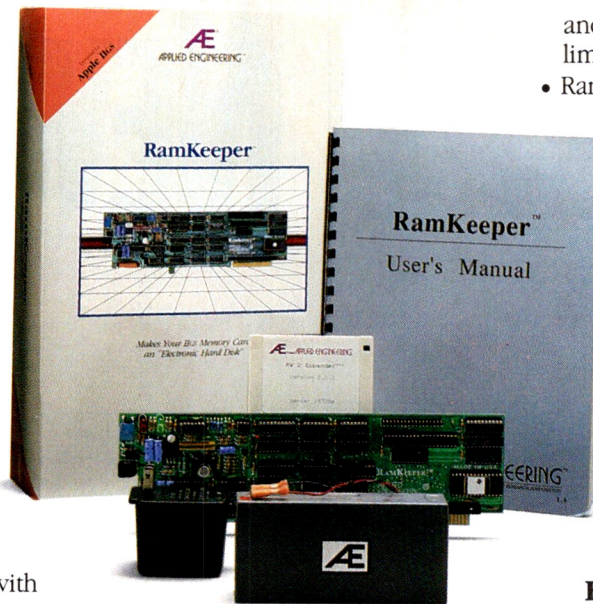
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RamKeeper powers up to 16 Meg. of memory. You can also mix and match different types of memory cards. For example, an Apple card that uses 256K RAM chips and an Applied Engineering card using 1 Meg. RAM chips. RamKeeper firmware automatically configures for two cards when the second card is installed. No need to manually move jumpers.

RamKeeper configures memory linearly to avoid memory gaps that can cause crashes. And *you* decide how much memory to devote to ROM and to RAM from the IIGS Desk Accessories menu. You can configure Kilo-bytes or Megabytes of instant ROM storage for your favorite programs. And you can change ROM and RAM sizes at any time without affecting your stored files.



RamKeeper is easy to install. Just plug it in. Even when you use two memory boards, you don't have jumpers. You can have two memory boards but use only one slot.



It all comes with RamKeeper ... board, Gel/Cell battery pack, easy-to-understand instructions, and Applied's powerful AppleWorks Expander software.

Protect from program crashes.

Reinstalling operating software is not fun. With RamKeeper you'll never have to. Since RamKeeper controlling firmware is in an EPROM, a program crash can't take out the operating software.

Verifies data security.

RamKeeper firmware uses optional startup checksums to verify that no data was lost while the power was off. The firmware also runs ROM and RAM memory tests without disturbing data on the card.

Significant differences.

Applied Engineering's longer experience with battery-backed memory boards shows in the way we designed and built RamKeeper. There are significant differences between RamKeeper and other systems:

- RamKeeper includes a Gel/-Cell battery for 6 hours of total power failure backup, others use the shorter-life Ni-Cads and charge extra for them
- RamKeeper has external battery storage, others have a more risky internal storage
- RamKeeper powers up to 16 Meg., others power only up to 8 Meg. maximum
- RamKeeper permits mixing and matching different memory cards

and chip sizes, others have more limited combinations

- RamKeeper automatically configures for two cards, others have manually-moved jumpers
- RamKeeper configures linearly to eliminate memory gaps, others don't
- RamKeeper includes EPROM-protected operating software, others use floppy installation
- RamKeeper's software expands AppleWorks internal limits, others don't
- RamKeeper includes disk-caching software, others don't

Free AppleWorks Enhancement software.

Applied Engineering's powerful AppleWorks Enhancement software comes free with RamKeeper. It's well worth the purchase price alone. Our software makes AppleWorks faster and far more powerful by eliminating internal memory limits. Word processor limits increase from 7,250 to 22,600 lines. Database limits increase from 6,350 to 22,600 records. Clipboard limits increase from 255 to 2,042 lines. Our software even automatically segments large files so you can save them on multiple floppies.

In addition, RamKeeper comes with the most powerful disk-caching program available anywhere. The cache tremendously accelerates access time to the Apple 3.5 Drive. Creating, in effect, a speed booster on top of a speed booster ... a potent combination that runs most applications up to *seven times faster*.

RamKeeper is proudly made in the U.S.A. and is backed with a five year parts and labor warranty. And a 15-day money-back guarantee.

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This system includes 512K of RAM required by most Apple IIGS Software and two drive formats for running both Apple II software and new 3.5 format software.

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Apple IIe 128K	649	Mach II Joystick-Plat	32
5.25 Disk Drive	229	Mach III Joystick-Plat	39
Uni/Duo Disk Controller	49	Flight Stick	52
3.5 Disk Drive	319	Checkmate	
Unidisk 3.5 (Ile/IIGS)	299	Memory Saver	129
Unidisk 3.5 Controller	59	CMS Hard Drives	
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Color Monitor Ile	299	20 Megabyte (85ms)	749
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Monochrome Monitor Ile	109	Stack Series:	
Monochrome Monitor (IIGS)	109	20 Megabyte (65ms)	689
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Desktop Mouse	72	Computer Eyes II	109
Ile Mouse	82	Computer Eyes IIC	209
Ile Mouse	129	Computer Eyes Color IIGS	209
Applied Engineering		Epic	
RamKeeper	145	2400 Internal	165
GS-RAM 256K	169	First Class Peripherals	
GS-RAM 512K	CALL	Cider Hard Drive 20	499
GS-RAM 1 Meg	CALL	Cider Hard Drive 40	649
GS-RAM 1.5 Meg	CALL	Kensington	
GS-RAM Plus 1 Meg	549	System Saver GS	79
GS-RAM Plus 2 Meg	CALL	Turbo Mouse ADB	89
PC Transporter 384K	395	Orange Micro	
PC Transporter 768K	595	ProGrappler	79
IIGS Installation Kit	45	Imagebuffer 64K	49
Ile Installation Kit	36	Imagebuffer 128K	69
Single 360K Drive	219	Grappler C/MAC/GS	79
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Datalink Modem	179	RamPak 4GS 512K	219
Ramworks III 256K	169	RamPak 4GS 1 Meg	CALL
Ramworks III 512K	CALL	RamPak 4GS 2 Meg	CALL
Ramwork III 1 Meg	CALL	Prometheus	
Colorlink RGB Option	105	2400 A Internal Modem	209
RamFactor 256K	209	MDIdeas	
RamFactor 512K	CALL	Supersonic	49
RamFactor 1 Megabyte	CALL	Digitizer	49
RamFactor Battery Backup	145	OctoRAM 256K	129
Serial Pro	125	OctoRAM 512K	175
Parallel Pro	69	OctoRAM 1 Meg*	285
Heavy-Duty Power Supply	59	OctoRAM 2 Meg*	475
Transwarp Accelerator	175	*Using 256 SIMM Modules	
AST Research		SMT	
Ramstack Plus 256K	109	No Slot Clock	39
Ramstack Plus 512K	CALL	Thirdware	
Ramstack Plus 1 Meg	CALL	Fingerprint GSi	62
VisionPlus	199	Thunderware	
Bose		ThunderScan	189
Roommate II	229	Monthly Special	
Central Point		GS Memory Card by Apple	
Central Point 3.5 800K	189	256K GS-Memory Board	99

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NEWSPLUS

UPDATE

■ Activision has announced the release of Music Studio 2.0, which has more than 15 new features, including more than 20 new digitized instruments. This new version also has real-time MIDI-in, so you can enter chords by using MIDI-equipped instruments as well as a mouse. New features of the program allow you to change tempo, volume, and key signature at any point during a song; play multiple songs with the "jukebox"; merge songs; insert measure bars; and change note duration.

The retail price for Music Studio 2.0 is \$99.95. Registered owners of The Music Studio can upgrade to Version 2.0 by sending in page 1 of their manual and a check to Music Update, Activision, P.O. Box T, Gilroy, CA 95021-2249. The check should be for \$13.50 (\$10 for upgrade; \$3.50 for shipping and handling) plus 6.5% sales tax for California residents.

■ FASTData Pro, which is a collection of file-searching and -management utilities from Fastfind that we mentioned in our AppleWorks cover story last April, has since been improved.

For example, FASTData Pro can now do high-speed searches through different types of files, including AppleWorks word-processing files. The new price is \$49.95. Phone Fastfind at (213) 590-4417 for more information.

■ StyleWare has released Clip Art Library for the Apple IIGs. This new clip-art collection includes graphics in four different formats: Apple Preferred, TopDraw, Apple's Pict standard, and the PaintWorks/Writer's Choice elite Paint.

The package retails for \$29.95 and is available from StyleWare, Inc., 5250 Gulfton, Suite 2E, Houston, TX 77081; (713) 668-1360.



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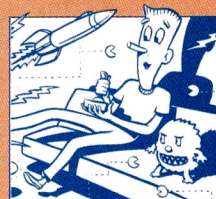
A+ decided to dream up dream systems for business, graphics, music, education, entertainment, and programming. To do so, we gave several of our domain editors an assignment: Tell us what components you would add to your Apple IIe, IIc, and IIGS to get maximum performance.

We also told our dream authors not to worry about price but to please keep reality somewhat in mind. Bob Lindstrom, for instance, wanted to add a \$100,000 synthesizer to his music system but took a more conservative approach and opted for some lower-priced MIDI devices, figuring that not too many A+ readers would be creating professional music systems with their Apple IIs. Jennifer Brawer,



though, gets away with a \$73,000 networked educational system because a lot of educators in our audience will build networks.

In the following pages, then, you'll see our domain editors' fantasies in print. All of our writers (except education) give you an Apple IIe configuration as well as one for the IIc and the IIGS. All products they've listed are real products, not imaginary or vaporous. All prices were current as of mid-April, so certain prices, particularly when it comes to add-on boards with memory chips, could be quite different when this issue hits the stands. Also, we've based our totals on suggested retail prices, so the real prices could be quite a bit lower. To contact the companies that make up our dream components, see page 60. We invite you to dream along.





ROBERT KOPECKY

The Dream MACHINE

COVER STORY BY CHARLES RUBIN

BUSINESS

IN CONFIGURING THE ULTIMATE Apple IIGS, IIe, and IIfx systems for business, I tried to satisfy four principal requirements: Security, storage, speed, and software access. Before I get into the dream systems themselves, I'll elaborate on these four musts in a business computer.

Security is important on any computer, but it's particularly important when the data you create is the lifeblood of your business. Ideally, a computer system should be bulletproof. It should be able to handle and store your data with complete safety, which means it should maintain a complete backup of your data, and it should be impervious to power failures, so the data you currently have in memory is also safe.

Storage is an obvious requirement. For any kind of small business that has a reasonable volume, the computer needs as much storage as possible. It isn't just data storage but also storage for programs, from AppleWorks (at about

WHAT \$18,000 AND CHANGE WILL BUY YOU

150K of disk space) to Manzanita's BusinessWorks accounting software (which occupies several megabytes). Once you begin accumulating software, you'll be surprised how fast your storage space fills up.

Speed is a desirable aspect of any computer, and it can really enhance business productivity. Most people want a computer to "think" as fast as they do.

Software access refers not only to a selection of powerful application programs but also to the various kinds of business data third parties provide on computer disks. Thousands of mailing lists, demographic databases, and other collections of information are available for busi-

ness uses, and your computer should be able to read as much of that data as possible.

Pursuing the Dream

I configured the dream business systems here without regard for price, but I did take into account the availability of the products I selected and the feasibility of using them together. There are many other ways to configure an Apple for business, but I chose these products because they come from well-known manufacturers and because they all work together without a lot of technical fiddling around.

You'll notice, for example, that most of the expansion cards I selected are from Applied Engineering. Other vendors make similar products, but Applied Engineering is the only company that makes all of the boards I needed, which made it easier to configure a system in which everything worked together. Businesspeople want to plug things in and get to work, and

these dream systems keep that goal in mind.

I describe the components of each Apple system in groups, as they address the four needs I have explained.

Security

I attacked the security problem from two different angles. The first security item on the list for all three Apple systems is an uninterrupted power supply (UPS), which maintains the supply of power to the computer in the event of a power failure. I chose the Data-Saver 200 UPS, which can sustain power to a fully loaded Apple II system for 15 minutes to half an hour and protects against power surges as well. Fifteen minutes is plenty of time to save your data to disk and shut down the system in an orderly fashion.

The second level of protection is a tape-backup system for the hard disks on the Apple IIGS and IIe systems. (Hard-disk drives are no longer manufactured for the IIc, and if they were, they would be incompatible with a tape-backup system anyway.)

The only manufacturer with an Apple II-compatible tape-backup system at this writing is First Class Peripherals (FCP), with its T6 tape system.

When you use it with a Macintosh, this unit can store 60Mb of data per tape cartridge, but its capacity is only 40Mb with Apple II systems because the data

writes to tape more slowly. The T6 tape backup comes with software that lets you automatically back up your hard-disk data.

Storage

The more storage you have on a business computer, the happier you'll be. At this writing, the largest hard-disk drive that works smoothly with a tape-backup system is First Class Peripherals' D4, a 40-megabyte model. FCP antici-

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THE FIRST SECURITY ITEM ON THE LIST FOR ALL THREE APPLE SYSTEMS IS AN UNINTERRUPTED POWER SUPPLY.

pates being on the market with a 90-megabyte hard-disk drive—by the time you read this article—that will also work with its tape unit. You could use the FCP T6 tape system to back up a hard disk from an-

systems are loaded with RAM. I got a 6Mb GS-RAM Plus card for the IIGS; a 5Mb RamFactor card for the Apple IIe; and a 1Mb Z-RAM Ultra 2 card for the IIc, which also includes a clock. The megabyte of RAM in the IIc allows for a nicely expanded AppleWorks desktop, so business users can create business-size spreadsheet and database files, and the oceans of RAM in the IIGS and IIe can also serve as a RAMdisk for storing programs.

Speed

There are a lot of ways to tackle the speed problem in an Apple II system. You can improve the processing speed, the speed of loading or accessing data files and programs, and the speed with which you regain control of the computer when you send a file to the printer. I'll work from the inside out.

The first step is to soup up the processor. You're out of luck with the IIc system until the Zip Chip

accelerator becomes available. I selected Applied Engineering's TransWarp accelerator card for the IIe, which can more than triple the system's data-processing speed. The IIGS's processor is already 2.8 times as fast as that of a standard IIe, so although it is not as fast as a TransWarp-equipped IIe, it is fast enough until somebody markets a IIGS-specific accelerator board.

A hard-disk drive provides faster access to

programs and data than do floppy-disk drives, but you can really get things moving with a RAMdisk. The megabyte of expanded RAM in my souped-up IIc is large enough to store one application program and leave room for a data RAMdisk. Running a program such as AppleWorks from RAM eliminates disk-access delays as different portions of the program become necessary, and you can save data to or load it from a RAMdisk almost in-

APPLE IIGS DREAM SYSTEM

Apple IIGS (Apple Computer)	\$999
AppleColor RGB Monitor with monitor stand (Apple Computer)	\$524
Apple 3.5 Drive (Apple Computer)	\$399
Apple 5.25 Drive (Apple Computer)	\$299
DataSaver 200 UPS (Cuesta Systems Corporation)	\$495
D4 40Mb hard-disk drive (First Class Peripherals)	\$795
T6 60Mb tape-backup system (First Class Peripherals)	\$895
LaserWriter IIINTX with two LocalTalk connector kits (Apple Computer)	\$6749
Microbuffer In-Line Serial, 1 Mb (Practical Peripherals)	\$707
768K PC Transporter with dual 360K TransDrive disk drives, 8087 math chip, and IIGS installation kit (Applied Engineering)	\$1436
GS-RAM Plus, 6Mb (Applied Engineering)	\$3139
MemorySaver (Checkmate Technology)	\$150
Trailblazer 19,200-bps modem (Telebit)	\$1345
System Saver IIGS (Kensington Microware)	\$100
AppleWorks 2.0 (Clariss Corporation)	\$249

TOTAL: \$18,281

other vendor, but that would require using an extra slot for the T6's controller card, and there aren't any slots to spare when I add all the other components to my dream IIe system.

The other side of the storage problem is RAM. At this writing (April), the price of RAM has roughly quadrupled from what it was six months ago, but fortunately for this dream system, money is no object: All three of the dream

stantly, as well.

On the IIe and IIGs, with their multiple megabytes of RAM, I chose Checkmate's MemorySaver (for the IIGs) and RamCharger (for the IIe) to supply permanent power to the RAM (Applied Engineering's RamKeeper, which is supposed to be like the MemorySaver, was not yet available when I wrote this article). These devices offer both AC and DC power to the extended RAM on the GS-RAM and RamFactor cards, maintaining the programs or data in them when you turn the computer off. With 5 or 6Mb of RAM to play with, you can load up these RAMdisks with several application programs each and still have room for RAM data storage.

Two other speed improvements that peripherals can facilitate are in printing and telecommunications. Nobody likes waiting for the printer to finish before being able to continue working with the computer, so I included a Microbuffer In-Line Serial printer buffer with 1Mb of RAM from Practical Peripherals. With a megabyte of buffered storage, you can send even the largest mail-merge jobs from AppleWorks to the buffer and get control of the computer back in no time.

As for the modem, it made sense to go for the fastest, since money wasn't a problem. I chose the Trailblazer modem from Telebit, a 19,200-bps modem that automatically adjusts itself to the speed of the modem with which it is communicating. Today, you won't be able to run much faster than 2400 bps, because almost nobody uses higher speeds than that, but with the Trailblazer, you'll be ready to move to faster transmission speeds

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YOU'LL BE.

chose one of each drive for all three systems (the IIC has a 5¼-inch drive built in, so I chose a UniDisk 3.5 as the external drive), because the drives will be used solely for moving data from floppies to the hard disk and for running protected programs.

A lot of business databases from third-party manufacturers come in MS-DOS format only, so I opted for the PC Transporter board from Applied Engineering in the IIGs and IIe systems. This board turns these Apples into a PC-XT clone on demand, so you can run MS-DOS software and read MS-DOS data disks.

Along with the PC Transporter, I chose dual, 360K IBM-format floppy-disk drives.

You can also plug an Apple 3.5 Drive into the back of the PC Transporter, so that the 3.5-inch Drive does not need its own controller on the IIe, and I saved a slot. This configuration also let me use an Apple 3.5 Drive on the IIe, instead of the older, slower UniDisk 3.5.

MS-DOS compatibility is not an option you'll use every day, but it is nice to have it when you want, say, a particular mailing list and the only flavor it comes in is MS-DOS. The PC Transporter has 768K of RAM on board, which

you can also use as an additional RAMdisk under ProDOS.

Displays and Printers

I chose the AppleColor RGB Monitor for the IIGs, naturally, but also for the IIe system. I was able to use the Apple RGB monitor with the IIe by purchasing the ColorLink option to go with the RamWorks III board I put into the IIe's auxiliary slot. The RGB monitor delivers much crisper text than do the IIe's monochrome or composite

APPLE IIc SYSTEM

Apple IIe (Apple Computer)	\$829
AppleColor RGB Monitor (Apple Computer)	\$499
DataSaver 200 UPS (Cuesta Systems Corporation)	\$495
RamWorks III, 64K, with ColorLink RGB option (Applied Engineering)	\$338
RamFactor, 1Mb, with 4Mb expander (Applied Engineering)	\$2818
RamCharger power backup (Applied Engineering)	\$189
Apple 5.25 Drive (Apple Computer)	\$368
Apple 3.5 Drive (Apple Computer)	\$399
D4 40Mb hard-disk drive (First Class Peripherals)	\$795
T6 60Mb tape-backup system (First Class Peripherals)	\$895
768K PC Transporter with dual 360K TransDrive disk drives, 8087 math chip, and IIe installation kit (Applied Engineering)	\$1426
ImageWriter II with Cut Sheet Feeder (Apple Computer)	\$850
Microbuffer In-Line Serial, 1Mb (Practical Peripherals)	\$707
Serial Pro (Applied Engineering)	\$139
TransWarp accelerator (Applied Engineering)	\$219
Trailblazer 19,200-bps modem (Telebit)	\$1345
Super Serial Card (Apple Computer)	\$139
System Saver (Kensington Microware)	\$90
Heavy Duty Power Supply (Applied Engineering)	\$69
AppleWorks 2.0 (Claris Corporation)	\$249

TOTAL: \$12,858

as the rest of the world adopts them. Incidentally, I chose the Serial Pro card from Applied Engineering as an interface for this modem on the IIe, because it costs the same as Apple's Super Serial Card but includes a clock.

Software Access

The Apple II series can run thousands of business programs, and the only requirement is the ability to read them and their data in both the 3.5- and 5¼-inch formats. I

color displays. With the IIC, I opted for Apple's 12-inch monochrome monitor. My printer of choice is the ImageWriter II with a sheet feeder for the IIC and IIC and the highest-quality LaserWriter—the LaserWriter IINTX—for the IIGS.

Accessories

Although you can't expand the IIC much internally, except for the RAM, you can outfit it for portability. To get the IIC ready for the road, I chose the Prairie Power Portable System battery pack and case, which delivers up to eight hours of portable power to the IIC. To round out the portable package, I added the C-VUE LCD flat-panel display, a Cigarette Lighter Adapter for powering the IIC from a car, and Migent's Pocket Modem to use for portable telecommunications.

The Dream MACHINE WITH ALL THE CARDS IN THESE SYSTEMS, YOU HAVE TO HAVE A FAN.

Another accessory I considered a must for the IIGS and IIC was the System Saver for the IIGS and IIC, from Kensington Microware. With all those cards in these systems, you have to have a fan, and the internal fan Apple sells for the IIGS can block one of its slots. Finally, the full complement of add-in boards for the Apple IIC necessitates a high-capacity power supply, which I obtained from Applied Engineering.

Software

The systems I have described, particularly the IIGS and IIC setups, can run most of the business software written during the past seven or eight years. These systems can store plenty of data safely, and they are faster at loading and executing programs than are most other computers. Soft-

APPLE IIC SYSTEM

Apple IIC (Apple Computer)	\$799
DataSaver 200 UPS (Cuesta Systems Corporation)	\$495
Z-RAM Ultra 2, 1Mb (Applied Engineering)	\$649
UniDisk 3.5 with Catalyst 3.0 (Apple Computer)	\$429
ImageWriter II with Cut Sheet Feeder (Apple Computer)	\$850
Microbuffer In-Line Serial, 1Mb (Practical Peripherals)	\$707
Trailblazer 19,200-bps modem (Telebit)	\$1345
Apple Monochrome Monitor (Apple Computer)	\$129
Prairie Power Portable System (ROGER COATS)	\$139
C-VUE LCD flat-panel display (ROGER COATS)	\$349
Cigarette Lighter Adapter (ROGER COATS)	\$25
Migent Pocket Modem (Migent)	\$159
AppleWorks 2.0 (Claris Corporation)	\$249
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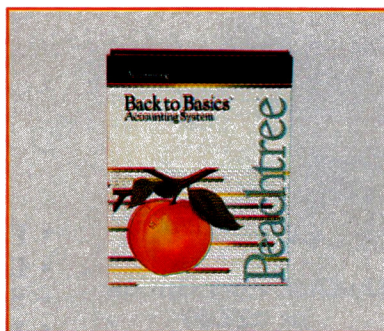
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ware-wise, each system would build on an AppleWorks base, probably aided by Beagle Bros' TimeOut Desk Accessories and other utility programs, and then grow to suit the needs of the individual business with accounting programs, advanced spreadsheets, desktop-publishing programs, advanced database programs, and so on.

Wish List

At the top of the list is far wider software support for AppleTalk, which would not only make the LaserWriter and other PostScript printers more useful but would also allow networking with other computers. I'd also like to see more software that works with the LaserWriter and Apple's new ImageWriter LQ.

The ImageWriter LQ is a 27-pin dot-matrix printer that has print quality nearly as good as that of the LaserWriter. It is also a terrific printer, especially when you load it up with a Cut Sheet Feeder, envelope feeder, and an expansion bin that lets you select between two types of paper automatically.

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AT THE TOP OF THE WISH LIST IS FAR WIDER SOFTWARE SUPPORT FOR APPLE TALK.

When software companies start to produce software that works with it, the ImageWriter LQ will be the ideal business printer for the IIe and IIfx.

Another wish that holds true for all of today's computers is a chip, operating system, and application software that directly addresses as much memory as you ever add to the system, period. The definition of "enough memory" is a moving target, to be sure, but it would be

nice if any software could actually directly use a 6Mb RAM card.

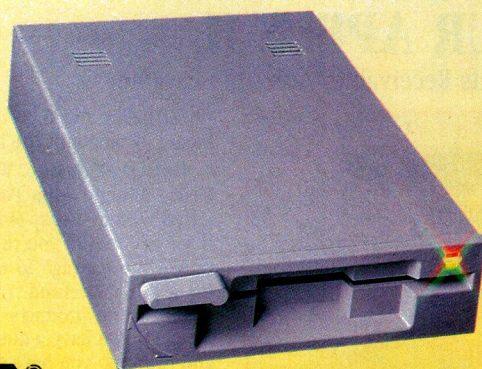
Another step up would be a professional-strength keyboard, like the Apple Extended Keyboard for the Mac (which also fits the IIGS), and software that took advantage of the array of function keys on such a keyboard.

Finally, the GS cries out for a dedicated graphics processor. You've seen a lot of beautiful colors on this computer by now, but every other machine that has graphics at this level has either a 32-bit processor or a separate graphics chip. Such a chip in the IIGS would give you the graphics you like, with speed comparable to that of other systems.

Still, the dream machines I've revealed here are available today, and, if nothing else, they show that the Apple II series is still the most adaptable group of personal computers around. **+**

A+ small-business editor Charles Rubin's book AppleWorks became available in an expanded second edition last fall. Rubin writes about computing for various publications.

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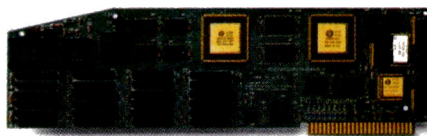
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For example, you can connect a 5.25 Applied Engineering 360K dual-drive system directly to the card. Then plug two daisy-chained Apple 3.5 Drives (not the Apple UniDisk 3.5) to the dual-drive system. For a fifth drive, use a ProDOS file as an IBM hard disk.

PC Transporter controls Apple and IBM compatible disk drives. It supports 3.5" and 5.25" MS-DOS and ProDOS formatted diskettes.



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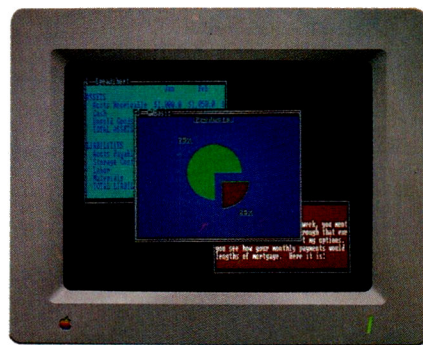
PC Transporter memory choices.

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768K	640K	759.00

Note: The IBM mode is 128K less because the PC Transporter uses 128K for system memory.

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IIe/II Plus Installation Kit	39.00
PC Transporter Accessories	
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IBM-Style Keyboard	139.00
(required for Apple II Plus.)	
IBM Keyboard Cable	34.00
Sony RGB Monitor	529.00
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(for use with Sony monitor)	
Digital RGB Cable	39.00
(for use with Sony monitor)	
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(included with IIGs Installation Kit)	
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PC Transporter produces better IBM graphics than IBM. Analog is sharper than digital. So with an analog RGB monitor, PC Transporter's CGA graphics and text are superior to IBM's digital display — even while running IBM software!

And, you can also use an Apple composite monitor in IBM text or graphics mode.

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The Dream MACHINE

COVER STORY BY BOB LINDSTROM

ENTERTAINMENT

AN APPLE GAME SYSTEM DOES NOT live by hardware alone. It also includes having the time and opportunity to enjoy all the newest entertainment software and then persuading someone to pay you for playing the games.

But that's *my* career, and I am not giving it up easily. Find your own computer magazine.

Seriously, we can share the dream by assembling the hardware, software, and those little extras that open up the vast world of Apple IIe/c/GS entertainment.

Apple IIe

For a decade, the Apple IIe has been the first choice of serious game players everywhere. Happily, the most common configuration is also the best for entertainment: an enhanced Apple IIe with 128K RAM, two 5¼-inch disk drives with a controller

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Apple IIgs, 512K (Apple Computer)	\$999
Two Apple 5.25 Drives (Apple Computer)	\$598
Apple 3.5 Drive (Apple Computer)	\$399
AppleColor RGB Monitor (Apple Computer)	\$499
SupraModem 2400 (Supra Corporation)	\$180
Serial cable (Apple Computer)	\$30
OctoRam, 2Mb (MDIdeas)	\$700
SuperSonic stereo card (MDIdeas)	\$60
Two Bose RoomMate speakers (Bose Corporation)	\$229
Mach II joystick (CH Products)	\$40
Flight Stick (CH Products)	\$75
Keys to Solving Computer Adventure Games (Prentice-Hall)	\$20
Quest for Clues (Origin Systems)	\$25
All-Star software	\$1222

TOTAL: \$5076

sion, every combat encounter tempts impatient players to cast a clenched-fist spell into their keyboard.

At those moments, misery loves company, and your fellow Apple gamers can be a prime source of help. For that reason, install an Apple Super Serial Card, RS-232 modem cable, and a 2400-bps modem.

Among the external modems, the SupraModem 2400 has the multiple benefits of Hayes compatibility, reliability, affordability, and compact physical size. This setup can put you online and in touch with other simi-

larly frustrated players.

Enhanced Sound

No one ever said the Apple IIe was the last word in great audio. In an arcade game, a buzzing internal speaker is a slim substitute for the

otherworldly whir of an alien spacecraft. To remedy the situation, some manufacturers have created add-on sound boards to enhance the IIe's sonics. Although only a few programs can take advantage of these boards, this is a dream system, right? Plug in Applied Engineering's Phasor Board, a multipurpose audio add-on that can provide its own sound environment as well as emulate the Mockingboard.

The complex number-crunching of war games often transforms a crisp simulation of World War II into the Hundred Years War. Applied Engineering's TransWarp card turbocharges your IIe and escalates warmongering to more acceptable speeds.

Apple IIc and IIGS

As with the IIe, a basic IIc system is still the best choice for games. Bring together an Apple IIc with built-in disk drive and 128K of RAM; an external 5¼-inch disk drive; an Apple color monitor with a monitor stand; and, for those on-line hints, a SupraModem 2400 with RS-232 cable.

The IIGS promises to become the ultimate Apple entertainment powerhouse. The vivid graphics and digitized stereo sound lend true arcade potential to the youngest relative of the IIe/c. A dream hardware setup includes a basic 512K Apple IIGS, two 5¼-inch disk drives, one 3.5-inch disk drive, and an AppleColor RGB Monitor. And this system, too, gives access to the world of on-line hints and helps with a SupraModem 2400 and RS-232 cable.

Since several programs take advantage of IIGS expansion RAM, MDIdeas' two-megabyte OctoRam board streamlines the play value of many IIGS games. And to make sure you'll be reveling in IIGS stereo sounds at their loudest, select the MDIdeas SuperSonic Stereo Card and a pair of Bose RoomMate self-powered stereo speakers.

All-Purpose Extras

You can play most Apple games from the keyboard, but punching I-J-K-M over and over lacks the tactile excitement of wielding a joystick. You can never have enough joysticks. A stick that holds you back in one game may be the key to high scores in another. Put together an array of controllers, including

The Dream MACHINE

CH Products' Mach II (in beige or platinum) and Flight Stick.

A fully equipped cheaters' library of hint books comes in handy. Although several companies publish hint volumes for specific games, two general-purpose books cover most of the popular products: M. K. Simon's *Keys to Solving Computer Adventure Games* (Prentice-Hall) and *Quest for Clues*, edited by Shay Addams (Origin Systems).

Oh, yes, and there's the little matter of game software. Well, I want every game ever published. Unfortunately, games go out of print or become difficult to find. To contribute a trace of self-control to this game-playing reverie, I'll opt to own all the games that qualified as A+ All-Stars in the June 1988 issue. The selection ranges from SSI's Rebel Charge at Chickamauga to Brøderbund's Lode Runner.

Wish List

My first wish for the ultimate game system is for Apple to bring back page flipping on the IIGS. My second, bigger, and better wish is for Apple to integrate a graphics "blitter" into the IIGS to accelerate graphics handling. With more hardware support for graphics, Apple programmers could do visually stunning tricks on the IIGS.

Analog joysticks have a long and distinguished past, but I would be pleased if the entire Apple II line got built-in compatibility with the inexpensive digital joysticks that some of those *other* computers use.

And what ever happened to those great early Brøderbund and Sirius arcade games for the Apple II Plus and IIe? An entire generation of Apple II users has never seen Gorgon or Drol or Space Eggs or Autobahn. I'd love to relive these classics of the past; perhaps at a bargain price? **+**

Bob Lindstrom is A+'s entertainment editor and was recently named best software reviewer by the Software Publishers' Association.

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Apple IIe (Apple Computer)	\$829
Two Apple 5.25 Drives (Apple Computer)	\$667
AppleColor Composite Monitor IIe (Apple Computer)	\$379
Apple Super Serial Card (Apple Computer)	\$139
SupraModem 2400 (Supra Corporation)	\$180
Serial cable (Apple Computer)	\$30
Phasor Sound Board (Applied Engineering)	\$179
TransWarp accelerator (Applied Engineering)	\$219
Mach II joystick (CH Products)	\$40
Flight Stick (CH Products)	\$75
Keys to Solving Computer Adventure Games (Prentice-Hall)	\$20
Quest for Clues (Origin Systems)	\$25
All-Star software	\$1192
TOTAL:	\$3974

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AppleColor Composite Monitor with stand (Apple Computer)	\$404
SupraModem 2400 (Supra Corporation)	\$180
Serial cable (Apple Computer)	\$30
Mach II joystick (CH Products)	\$40
Flight Stick (CH Products)	\$75
Keys to Solving Computer Adventure Games (Prentice-Hall)	\$20
Quest for Clues (Origin Systems)	\$25
All-Star software	\$1192
TOTAL:	\$3064



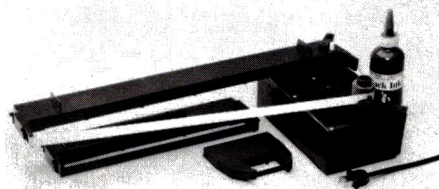
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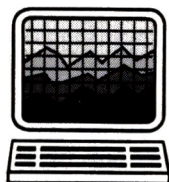
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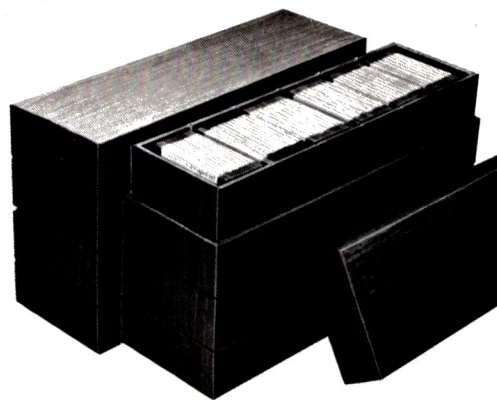
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In addition to being able to commandeer all this information directly from your keyboard, you'll also

*To be very specific, you need an Apple IIc, Apple IIGS or Apple IIe enhanced with 128K of ROM, an 80 column card and a Super Serial card. **General Services is provided to you by Quantum Computer



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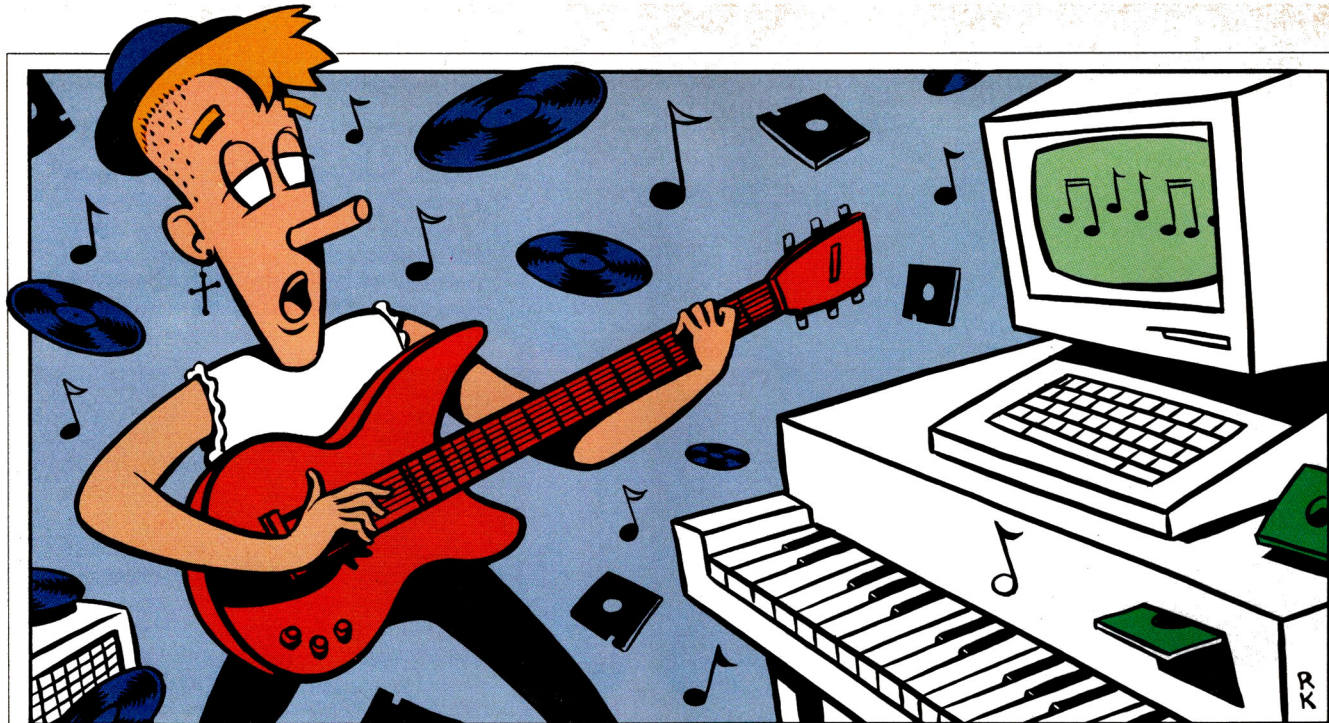
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ROBERT KOPECKY

The Dream MACHINE

COVER STORY BY BOB LINDSTROM

MUSIC

SURRENDER TO THE FANTASY OF AN Apple music dream system—and your wallet may never wake up.

You could nap a little and just buy a simple note editor for the internal voices of your IIe/c, but why not snooze a bit longer and let the dream unfold? Before you slip from the arms of Morpheus, you've got megabucks invested in all kinds of hardware, software, synthesizers, audio equipment, and enough computer-controlled MIDI (Musical Instrument Digital Interface) devices to turn you and your Apple into a one-man band. No problem, it's only dream money.

Still, there's no need to squander your fantasy cash. To ensure that this musical dream wouldn't turn into a pipe dream, I tried to remain circumspect in my choices, selecting a realistic array of hardware

MUSIC TO YOUR EARS FOR \$8756 AND UP

and software that you might afford after receiving only a small wind-fall in the state lottery.

Since many of the outboard musical devices work with all three flavors of Apple II computer, the first order of business is to get your computer prepared to control a dream array of musical add-ons.

Apple IIe

A basic IIe system—an Apple IIe with 128K of RAM, two 5¼-inch drives with controller card, and an AppleColor Composite Monitor—is an excellent foundation for a mu-

sical dream. Since MIDI sequencing can gobble memory quickly, it's also a good idea to add Applied Engineering's RamWorks III RAM-expansion board. Since this is a dream, why not spring for the 3Mb IIe version.

To prepare the IIe to become a master controller for a string of MIDI-compatible synthesizers, add Passport Designs' MIDI interface with the tape-synchronization option. Although the size of the Passport cables conflicts with the size of the IIe slot openings, most MIDI software works with the Passport MIDI interface.

In the software arena, Electronic Arts' Music Construction Set is an introductory note editor that provides access to the limited internal music capabilities of the IIe.

Passport's Master Tracks Pro is a

multitrack MIDI recording and editing software package that includes real-time MIDI recording, step-time and song-mode sequencing, and other high-powered features. With a 2Mb RAM expansion, Master Tracks Pro permits sequences totaling up to 320,000 notes.

Apple IIc

The portability of the Apple IIc gives it a competitive musical edge over the other Apple II computers. If you're a professional moving from club to club or just scheduling an amateur jam session, it's easy to grab the handle on the IIc and head to the next gig. In addition to using a IIc with a built-in 5¼-inch disk drive and 128K of RAM, start with a second 5¼-inch disk drive, an Apple color monitor, and the Apple monitor stand.

Passport's MIDI Pro Interface provides full sync capabilities for the Apple IIc, in addition to Clock In/Out, Tape Sync In/Out, and MIDI In/Out ports.

Electronic Arts' Music Construction Set is just as good an introduction to internal music on the Apple IIc as it is on the IIe. Unfortunately, Passport's Master Tracks for the IIc addresses only the internal memory of the IIc, leaving less room for sequences than you find in a memory-expanded IIe. The program still has 16-channel MIDI recording capability, along with real-time, step-time, and song-mode sequencing.

Apple IIGS

The future of the Apple IIGS looks more promising than its present. Currently available software has yet to fully exploit the 15-channel stereo sound available internally, and most MIDI-controlling programs are adaptations of IIe products.

Apple's IIGS-compatible MIDI interface, introduced last January, does show, however, that Apple has recognized music as an impor-

The Dream MACHINE

tant function of the IIGS. With Apple's encouragement, IIGS music horizons should widen.

In the meantime, outfit yourself with an Apple IIGS with the standard 512K of RAM, one 5¼-inch disk drive, one 3.5-inch disk drive, and an AppleColor RGB Monitor.

Expansion RAM is a must for the IIGS. Try out MDIdeas' OctoRam board with 2Mb of RAM.

Not all IIGS MIDI software recognizes Apple's external MIDI port, nor does all software recognize an internal MIDI interface. For maximum MIDI flexibility, a musical IIGS dream system should have the Passport Designs MIDI interface

The Apple-endorsed Bose RoomMate self-powered speakers offer a great way to get the audio out of the IIGS and into the world at large. Crank up the volume and break a lease or two.

To leap into the wonders of IIGS music, Activision's Music Studio 2.0 matches an introductory-level note editor with real-time MIDI recording (using an Apple-compatible external MIDI interface) and a built-in sound synthesizer. You can also digitize your own instruments and use them in your Music Studio compositions.

Passport Designs' Master Tracks for the IIGS only scratches the surface of IIGS MIDI potential, but it provides a reliable environment for MIDI recording and sequencing. It works only with the Passport Designs MIDI interface and is not compatible with Apple's external interface.

MIDI Add-Ons

A wide, wonderful, and financially threatening world of synthesizers is out there for the serious musical dreamers. I can envision Apple II computers connected to such MIDI marvels as synthesizers/ samplers from Fairlight and Synclavier, which quickly take you into the \$50,000 to \$100,000-and-up price ranges.

Even a dream

needs some contact with reality, though, so I'm fantasizing about MIDI gear that's only slightly out of reach. For the best results, you'll want to acquire all of the following MIDI devices, no matter which II you have.

For years, the Yamaha DX7 keyboard synthesizer has represented an industry standard. The new upgrade version of that keyboard, the Yamaha DX7IIFD, boasts many enhancements, including a built-in disk drive for storing instrument settings (patches) and keyboard environments. It seems destined to become the new standard.

To counteract the slightly thin

APPLE IIGS SYSTEM

Apple IIGS (Apple Computer)	\$999
Apple 5.25 Drive (Apple Computer)	\$299
Apple 3.5 Drive (Apple Computer)	\$399
Apple RGB Monitor (Apple Computer)	\$499
OctoRam, 2Mb (MDIdeas)	\$700
FutureSound Digitizer (Applied Visions)	\$279
Passport MIDI Interface with Tape and Drum Sync (Passport Designs)	\$200
Bose RoomMate speakers (Bose Corporation)	\$229
Opcode Studio Plus Two MIDI Interface (Opcode Systems)	\$275
Music Studio 2.0 (Activision)	\$100
Master Tracks (Passport Designs)	\$250
Yamaha DX7IIFD (Yamaha International Corporation)	\$2495
Roland D-550 Synthesizer (Roland Corp US)	\$1850
Ensoniq Performance Sampler (Ensoniq Corporation)	\$1995
Alesis HR16 drum machine (Alesis Corporation)	\$449

TOTAL: \$11,018

for current software and an Apple-compatible MIDI interface for future software. Since Apple's own MIDI interface includes only one MIDI In and one Out port, I prefer Opcode Systems' Studio Plus Two with two MIDI In and six MIDI Out ports.

The Ensoniq sound chip in the IIGS brings the dimension of sound sampling to this computer. With an audio digitizing card installed in a IIGS, you can digitally record real sounds and turn them into internal instruments. Applied Visions' FutureSound Digitizer combines the functions of an audio digitizer and stereo card.

For APPLE IIGS

SYSTEM SAVER\$79, JUICEBOX \$49, Conserve \$119
MDIdeas Supersonic Stereo Card \$59, Digitizer add on \$ 49
Fingerprint GSi for Screendump....\$89
GRAPPLER GS/c..\$79, PROGRAPPLER ..\$89
ADAPTOR to connect IIGS to two 20 pin DRIVES ...\$39
GSRAM 256K..\$179, RAMKEEPER.....\$149
MAGNAVOX RGB 13" Monitor for IIGS \$329
CABLES: IIGS to Modem, Imagewriter, specify\$20ea

New! Paintworks Gold1.25MB\$69
MECC Calendar Crafter \$45
Typing Tutor IV 512K.....\$45
Paperboy...\$39, Aesop's Fables\$39
Police Quest \$39, Gauntlet \$39
King's Quest \$39, Magical Myth \$39

Deskworks \$49, Multiscribe \$79; Fontpak \$39
DELUXE PAINT IIS69; Art Part V1,V2,Holiday\$25ea
GRAPHIC WRITER V2 (For Desktop Publishing)\$99
FANTAVISION GS..\$45, School Version ..\$59
WORDPERFECT 2.0 w/Spell & Thesaurus ..\$99
Mavis Beacon TEACHES TYPING, IIGS\$39
PRINTSHOP..\$45; Add-on Disk Sampler\$29
LIST PLUS...\$69, SHOW OFF....\$45
WRITER'S Choice Elite \$59 TOP DRAW \$59
GRAPHIC STUDIO...\$49, DRAW PLUS ..\$59
Instant Music \$39, Add-on Hot & Cool Jazz \$29
MUSIC STUDIO(Midi Compatible)...\$59
MARBLE MADNESS..\$29, DREAM ZONE \$39
TOWER of MYRAGLEN, SEASTRIKE \$35ea
Basketball, Hardball, Shanghai, Silent Service\$35ea
Hacker II, Tasstimes, Talking Reader Rabbit\$39ea
Math Rabbit\$35, Writer Rabbit\$35, Thinkquick\$49
ORCA/M \$59, ORCA or TML Pascal ..\$99ea
TML BASIC for Apple IIGS \$99
Math Fractions \$35, First Letters & Words \$35
World Games, Winter Games, Space Quest\$39ea
Destroyer\$29, LeisureSuit \$29, MonteCarlo \$39
ROADWAR 2000....\$39, Cavern Cobra \$35
SpellerBee,Kidtalk,Mathtalk,FirstShapes\$35ea
Visualizer\$79,Softwood File\$79, Madlibs\$19

For APPLE IIGS,e,c

• IMAGEWRITER Compatibles (Single color):
• Wide Carriage 240 cps Friction/Tractor \$499
• 130 cps Letter Width Friction/Tractor \$279

EPIC Classic 2400B Internal Modem\$175
DATALINK Internal Modem IIGS,e\$179
MITSUBA 1200B External Modem\$129
Practical 2400 B External Modem\$199
20 MB SIDER Hard Drive \$695, 40 MB \$895
128 K Internal Buffer for Imagewriter I\$79
64K 80 Col Card for IIGS \$59, 256K Card\$119
RAMWORKS III 256K\$199, 256K Chips \$Call
SYSTEM SAVER for IIGS/II+ Beige/Platinum\$69
KOALAPAD IIGS \$89,Half Height Drive \$139
DRIVE CONTROLLER for 20 pin drives\$59
CH Mach III Joystick\$39, CH Flightstick \$59
4Way Joystick Selector \$39, Thundercans\$199
HEAVY DUTY POWER SUPPLY IIGS,II+ ..\$59
6 SCRIBE Ribbons \$30, 6 Multicolor for Image II \$60
6 Ribbons for Imagewriter \$30, Better Q...\$48

Springboard Publisher\$99, Geo\$99

Works of Art for Springboard Pu\$29ea

TIMEOUT Desktools, Filemaster, Sidespread \$35ea

TIMEOUT Graph\$59, Spell\$49,Font\$59,Macro\$39

Home Accountant Expanded Version for 128K IIGS,e,c...\$49

CHUCK YEAGER's Flight Trainer IIGS,e,c \$35

CROSSWORD Magic \$35, PRINTSHOP \$35

WINGS of FURY \$29, Certificate Maker \$29

Where in world is Carmen SD \$29, Where in USA\$35

DB MASTER Version 5 \$149, Turbo Pascal \$45

Merlin Pro \$99, Assembly Lines (by RW) Disk+Book ...\$39

COPY II PLUS 8.1 \$29, LOCKSMITH6.0 \$45

•PUBLISH IT! Desktop Publishing IIGS,e,c\$79

PRINTRIX \$49, PRINT-QUICK \$39,Fontdisks Call

Universal File Conversion (DOS,ProDOS,Pascal)...\$34

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The Dream MACHINE

APPLE IIc SYSTEM

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AppleColor Composite Monitor IIc (Apple Computer)	\$379
RamWorks III, 3Mb (Applied Engineering)	\$1749
Passport MIDI Interface with Tape and Drum Sync (Passport Designs)	\$200
Music Construction Set (Electronic Arts)	\$15
Master Tracks Pro (Passport Designs)	\$300
Yamaha DX7IIFD (Yamaha International Corporation)	\$2495
Roland D-550 Synthesizer (RolandCorp US)	\$1850
Ensoniq Performance Sampler (Ensoniq Corporation)	\$1995
Alesis HR16 drum machine (Alesis Corporation)	\$449
TOTAL:	\$10,928

APPLE IIc SYSTEM

Apple IIc (Apple Computer)	\$799
Apple 5.25 Drive (Apple Computer)	\$299
AppleColor Composite Monitor with stand (Apple Computer)	\$404
Passport MIDI Pro Interface (Passport Designs)	\$200
Music Construction Set (Electronic Arts)	\$15
Master Tracks (Passport Designs)	\$250
Yamaha DX711FD (Yamaha International Corporation)	\$2495
Roland D-550 Synthesizer (RolandCorp US)	\$1850
Ensoniq Performance Sampler (Ensoniq Corporation)	\$1995
Alesis HR16 drum machine (Alesis Corporation)	\$449
TOTAL:	\$8756

sound of Yamaha's FM sound synthesis, toss in the rich audio glamor of Roland's D-550 synthesizer. This MIDI module (without a keyboard) combines digital sampling with sound synthesis to create some of the most full-bodied sounds to be heard anywhere.

When you need the ultimate in realism, nothing beats a digital-sampling keyboard. The new Ensoniq Performance Sampler (EPS) combines a first-rate MIDI-keyboard, built-in disk drive, 13-bit sampling, and much smoother sound than that of Ensoniq's popular Mirage sampling keyboard.

And, finally, you need a drum machine to ensure that you have a rhythm section pumping away, driving your MIDI music to the top of the charts and turning Apple dreams into Grammy dreams. One of many good choices is the Alesis HR16 with 48 digital drum sounds, 16 voices, and full MIDI abilities.

Of course, you need an array of speakers and amplifiers to repro-

duce the sound of those synthesizers. If space is more important than volume, the Bose RoomMates are a compact choice. Yet, there's nothing stopping you from buying amplifiers and speakers that would make the Beastie Boys sound like quiet time at the public library.

Wish List

I'd like to see Apple give the GS a true 16-bit central processing unit, operating at a faster system speed. It could also eliminate the 64K RAM limit that currently restricts digital sound samples in the IIGS.

I also wish for a multitasking operating system for that faster IIGS comparable to the Mac's MultiFinder. The ability to multitask a sequencer with a patch editor/librarian and change MIDI sounds on the fly is just too potent to do without. +

Bob Lindstrom is A+ 's entertainment editor. He was the classical-music critic of the Portland Oregonian and has composed music for computer games.



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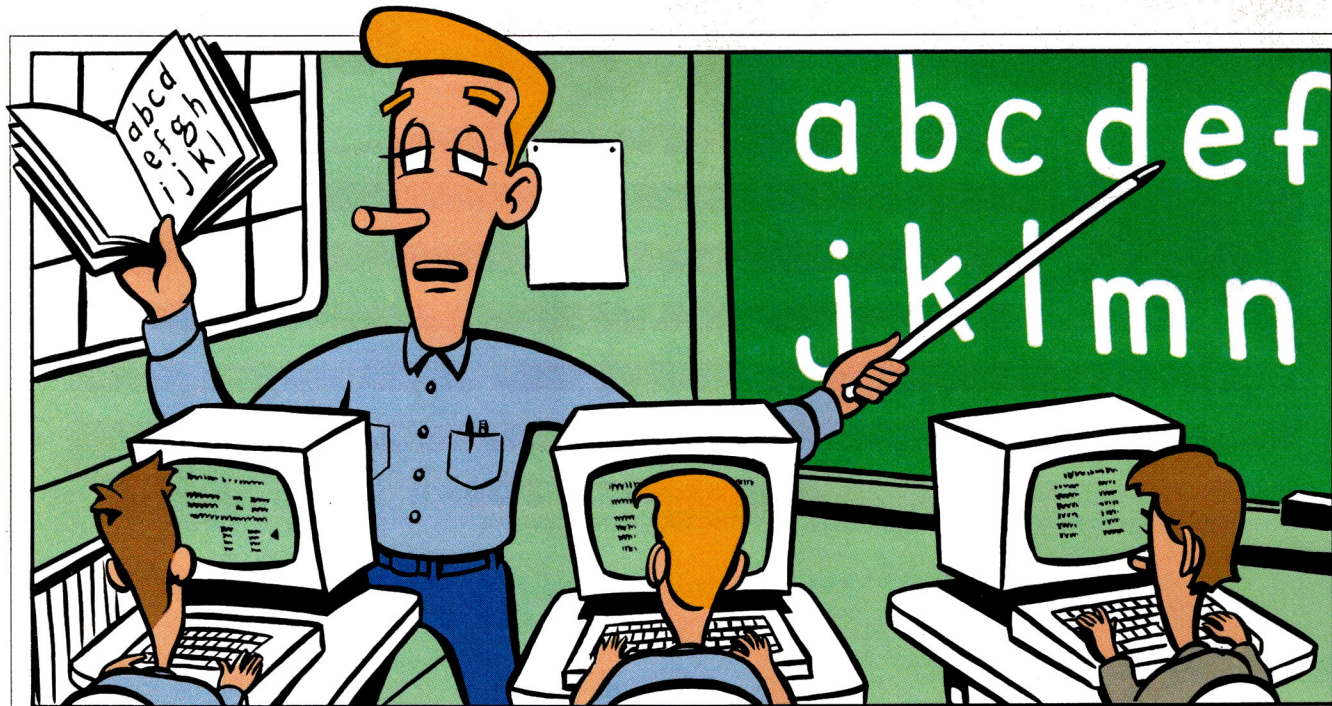
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ROBERT KOPECKY

The Dream MACHINE

COVER STORY BY JENNIFER BRAWER

EDUCATION

THINKING ABOUT THE ULTIMATE dream machine is a luxury for those of us who are interested in educational computing. Usually our thoughts go in the opposite direction—how to maximize the benefits of computerized instruction with the absolute minimum of technology (and money).

As much a luxury as this fantasy may be, it's also complex. Dreaming up an ideal machine for education is complicated by the variety of settings in which education takes place, the variety of people who get educated, and the variety of Apple computers. For the sake of simplicity, I concentrate on systems for a classroom in which teachers use computers for curriculum-based instruction, administrative tasks, and productivity.

I have two dream machines in mind that have their own distinct configurations. These two systems are really multimedia educational workstations, one built around a IIGS and the other built around a IIe. I do not include a description of

HOW TO SPEND \$15,000–\$73,000 WITH CLASS

a dream IIc because this computer does not have the necessary slots to accommodate certain boards vital to my ideal classroom workstation. **Apple IIGS**

The core of my IIGS workstation is the standard CPU with 512K; an AppleColor RGB Monitor; an ImageWriter II color printer, with the 32K memory option that serves as a printer buffer; and three daisy-chained disk drives: two 3.5-inch drives and one 5¼-inch drive. I want two 3.5-inch drives for two reasons. The first is the inevitable demise of the 5¼-inch disk format and drive; the second is that IIGS-specific software needs the added disk space of the 3.5-inch format and just isn't available in the 5¼-

inch size. The single 5¼-inch drive is a must because I undoubtedly will run lots of IIe software in the IIe emulation mode.

The Conserver from MDIdeas keeps my dream system organized, cool, and safe from power surges. It acts as a monitor stand while housing the two 3.5-inch drives, a cooling fan, and a surge protector for the IIGS and connected peripherals.

I need at least 1.25Mb of RAM to meet the newest IIGS-specific software RAM requirements. MDIdeas' OctoRam expandable memory card with 2Mb will take care of these large memory requirements. I can also use it as a RAMdisk to speed up data processing and file access when I'm using AppleWorks.

One more board I'm putting into the dream IIGS is FingerPrint GSi, a screen-dump graphic-utility card with an interrupt button and programmable desktop accessories. This card captures text as well as low-res, hi-res, super-hi-res, and mixed-mode screen images in full

color and black and white. You can create slide shows and import and export captured screens to other graphic publishing programs such as The Print Shop, Newsroom, and Fantavision. The desk accessories include a typewriter, calendar, and calculator.

Apple IIe

My IIe workstation comes with two 5¼-inch disk drives, an Apple-Color Composite monitor, and an ImageWriter II color printer with the 32K memory option. To cool and protect my dream IIe, I'll install a Kensington System Saver. This unit provides a cooling fan, power-surge protection, and noise filtering.

Inside the case I have a standard CPU with 128K of RAM plus Applied Engineering's RamWorks III memory-expansion board. RamWorks III with 1Mb gives you lots of RAMdisk space and elbow room for enhancing the capabilities of AppleWorks. The dream IIe system, like the dream IIGS system, needs a screen-dump graphic-utility card. For the IIe system, I choose FingerPrint+, Thirdware's graphic-utility card for the IIe. This card performs similarly to the GSi card and works with both parallel and serial printers.

The Frills

Beyond the basics, here's what it takes to transform IIGS and IIe's into multimedia educational workstations.

First, I want storage room to park all my dream software, especially AppleWorks and AppleWorks data files and custom templates. An Apple 20Mb hard-disk drive with an Apple II SCSI card and cable (you need a special cable terminator for the IIGS) is just the right size.

Interactive video, whether it involves laserdiscs or videocassettes,

The Dream MACHINE

INTERACTIVE VIDEO IS A POWERFUL TOOL.

is a powerful instructional medium when you team it up with a computer and authoring software.

For my workstations, a Sony video monitor, a Whitney Educational Services CAIV interface, a Pioneer VCR, and a Panasonic videodisc player comprise the video components. The Sony 1271Q is a low-end professional video monitor with two cables that allow simultaneous hookup of a videodisc player

beautifully with Apple II computers. As for the VCR, Panasonic's VHS model 6500 (a high-end industrial machine) allows you to take advantage of state-of-the-art editing capabilities.

Another requisite product for getting the most out of video technology is an authoring language that works with both videodisc and videotape. INSIGHT from Whitney Educational Services is an authoring language specifically for the creation of instructional-video lessons and has features that allow lesson creation, tape logging, text editing, and record management.

Other essentials for my classroom dream machines are speech synthesis, telecommunications capabilities, and an overhead-display projector. The Echo + speech synthesizer adds speech, music, and sound capabilities to the Apple IIe and IIGS, giving a new dimension

to text-based computing for those young and special-needs students who need to hear the written word. The Apple Personal Modem allows me to access my unlimited dream accounts with CompuServe and MIX.

For overhead display of computer screens, I recommend the MagnaByte 5010 projection system, distributed by MECC. This LCD (liquid crystal display) system is compatible with the entire Apple II family of computers and is the ideal choice for one-computer

APPLE IIGS SYSTEM

Apple IIGS (Apple Computer)	\$999
AppleColor RGB Monitor (Apple Computer)	\$499
ImageWriter II (Apple Computer)	\$625
ImageWriter II 32K memory option (Apple Computer)	\$99
Two Apple 3.5 Drives (Apple Computer)	\$798
Apple 5.25 Drive (Apple Computer)	\$299
Conserver (MDIdeas)	\$150
Apple Hard Disk 20SC with SCSI card (Apple Computer)	\$1198
OctoRam, 2Mb (MDIdeas)	\$700
FingerPrint GSi (Thirdware)	\$99
Apple Personal Modem (Apple Computer)	\$429
Echo + speech synthesizer (Street Electronics)	\$180
MagnaByte 5010 (MECC)	\$999
PVM-1271Q monitor (Sony)	\$1065
LDV-4200 videodisc player (Pioneer)	\$1065
LDV-4200 remote control, RS-232 cable, interface kit (Pioneer)	\$105
AG-6500 industrial videocassette player (Panasonic)	\$4395
Supercircuit CAIV (Whitney Educational Services)	\$695
Insight authoring system (Whitney Educational Services)	\$990
AppleWorks 2.0 (Clarisc Corporation)	\$249

WORKSTATION TOTAL: \$15,638
WORKSTATION + NETWORK: \$73,371

and VCR. The best CAIV interface is the Whitney Supercircuit II because it can control a VCR and a videodisc player separately or simultaneously. I recommend the Pioneer LD-V4200 laserdisc player. It isn't the top of the line or the most expensive, but it is easy to use, handles applications of any level of complexity, and works

classrooms.

Dream Network

One last item is the addition of a LocalTalk cable to both the IIe (the IIe also needs an Apple II Workstation Card) and the IIGS dream machines. Attached to this cable are 30 Apple IIGS computers, a Macintosh SE server running AppleShare, a 40-megabyte hard disk filled with

The Dream MACHINE

AN APPLE TALK NETWORK IS THE PIECE DE RESISTANCE FOR THE HIGH-TECH CLASS.

AppleTalk-compatible curriculum-based software, and a LaserWriter IINT. Yes, it's an AppleTalk network and the pièce de résistance for the high-tech classroom.

That's it. With this technology, I have the teacher's dream-machine workstation delivering lessons using the latest instructional technology, my students and I share the benefits of AppleTalk network technology, and we all have a Mac to play with after class. What more could anyone ask for?

APPLE IIc SYSTEM

Apple IIc (Apple Computer)	\$829
AppleColor Composite monitor (Apple Computer)	\$379
ImageWriter II (Apple Computer)	\$625
ImageWriter II 32K memory option (Apple Computer)	\$99
Two Apple 5.25 Drives (Apple Computer)	\$667
System Saver (Kensington Microware)	\$90
Apple Hard Disk 20SC with SCSI card (Apple Computer)	\$1198
RamWorks III, 1Mb (Applied Engineering)	\$579
FingerPrint+ (Thirdware)	\$149
Apple Personal Modem with Super Serial Card (Apple Computer)	\$568
Echo + speech synthesizer (Street Electronics)	\$180
MagnaByte 5010 (MECC)	\$999
PVM-1271Q monitor (Sony)	\$1065
LDV-4200 videodisc player (Pioneer)	\$1065
LDV-4200 remote control, RS-232 cable, interface kit (Pioneer)	\$105
AG-6500 industrial videocassette recorder (Panasonic)	\$4395
Supercircuit CAIV (Whitney Educational Services)	\$695
Insight authoring system (Whitney Educational Services)	\$990
AppleWorks 2.0 (Claris Corporation)	\$249

WORKSTATION TOTAL: \$14,926
WORKSTATION + NETWORK + IIc Workstation Card (\$249): \$72,908

80C/64K CARD \$39.95

Apple Compatible Cards and Products



JE864

16K RAM Card (Language Card) for Apple II and II+ — expand from 48K to 64K.

JE860. \$39.95

Extended 80-Column Card for Apple IIc. Doubles the display and memory capacity of your Apple IIc.

JE864. \$49.95 \$39.95

Disk Drive Controller Card for Apple II, II+ and IIc. Capable of handling 2 drives (including ADD12, right)

JE875. \$49.95

Parallel Centronics Printer Card for Apple II, II+ and IIc. Compatible with most of today's popular dot matrix printers.

JE880. \$49.95

64K Buffer Card for above JE880. Compatible with Apple II, II+ and IIc. Software included.

JE883. \$49.95

Prometheus 1200/300 baud, internal plug-in Modem for the Apple II, II+, IIc and IIGS

PM1200A2. \$199.95 \$179.95

12" Monochrome Green Monitor for Apple II, II+, IIc and IIc, with tilt/swivel base.

AMON. \$99.95

IIc to ImageWriter II or modem cable — 6 feet long.

APC1. \$8.95 \$7.95

IIc to ImageWriter II or serial cable — 6 feet long.

APC2. \$12.95 \$9.95

5 1/4" DISK DRIVE \$99.95

Apple II, II+ and IIc Replacement Keyboards



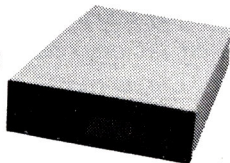
AKB

Keyboard Features: • Apple II/II+ and IIc compatible replacements available • Includes Cursor Control • Keyboards feature all the same keys as the original II/II+ and IIc • Software Compatible

AKB Apple II/II+ Replacement Keyboard . \$39.95

AKB2E Apple IIc Replacement Keyboard . \$44.95

Laser 5 1/4" Half Height Disk Drive



for Apple II, II+ and IIc

• Direct drive • 160K storage • 40 tracks • Super quiet • Works with Apple Controllers or other Apple compatible controllers (JE875, see left) • Complete with connector — just plug into your controller

ADD12 Disk Drive (for II, II+ and IIc) \$99.95

AAM Adapts standard Apple drives for use with IIc . \$4.95

5 1/4" Half Height Disk Drive for Apple IIc

Same specs as ADD12 (above) except no controller needed.

ADD2C Disk Drive (for IIc) \$109.95

300 BAUD MODEM \$29.95

ZOOM 300 Baud Modems



ZM300

for Apple II, II+ and IIc

• 300 Baud • Manual Dial/Manual Answer • Hayes compatible • Incl. ZOOM communications software
NM300. \$29.95

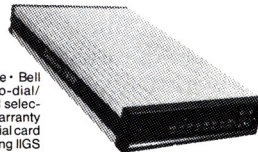
• 300 Baud • Auto Dial/Auto Answer • Hayes compatible • Includes ZOOM communications software
ZM300. \$74.95 \$49.95

• Software enhancement for the NM300 and ZM300 modems • Allows Xmodem file transfer • Allows storage, editing and printing of files

NMS. \$19.95

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for Apple II, II+, IIc, IIGS and IIGS



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1200C 1200/300 Baud Ext. Modem \$119.95

2400E 2400/1200/300 Baud Ext. Modem \$219.95

AP140 Super Serial Card for Apple II, II+ & IIc. . . . \$ 79.95

Additional Apple Compatible Products

KHP4007 Switching Power Supply (for II, II+, IIc) . . . \$34.95

APF Cooling Fan (for II, II+, IIc) \$29.95

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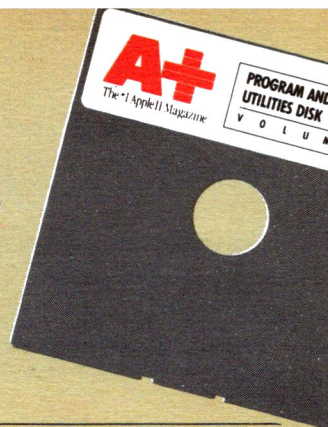
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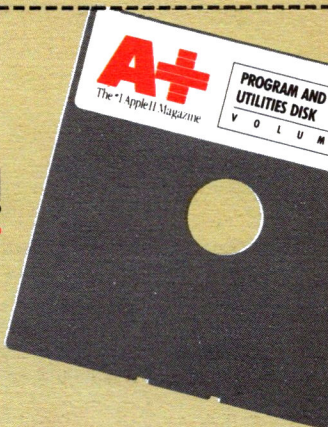
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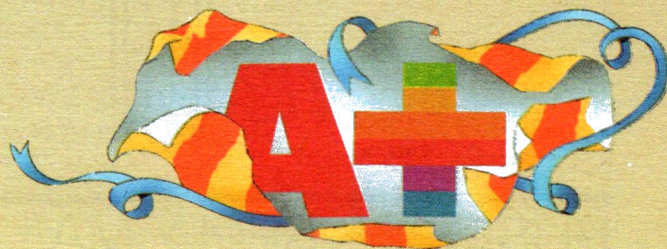
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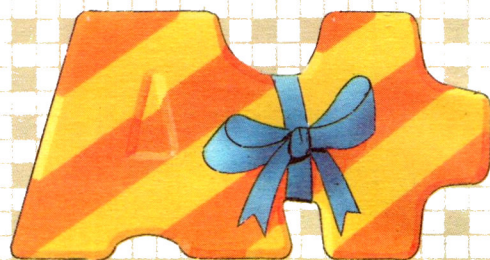
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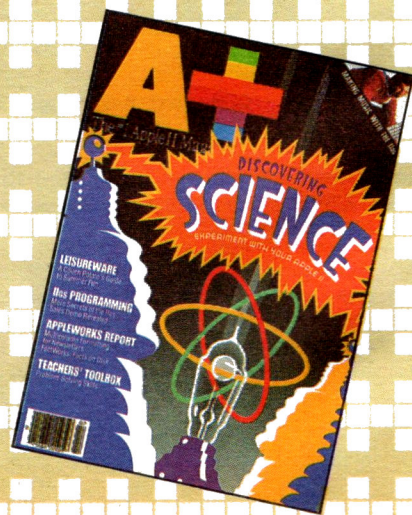
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Wish List

Actually, I can think of some dream-machine items that aren't quite available—yet. I wish there were drivers for the ImageWriter LQ printer. If drivers were here, I would trade in my ImageWriter II printers in a second—I'd even trade in the LaserWriter IINT. The LQ's output is remarkably like Apple's famed LaserWriter output, but it comes in color and at a fraction of the cost. Unfortunately, until the drivers become available (or you write your own!), the ImageWriter LQ's special features are out of reach.

I also want Apple's CD-ROM drive to add to my network, plus a collection of yet-to-be-created CDs that exploit all the presentation possibilities of this medium. Existing CDs such as Microsoft's Bookshelf demonstrate the enormous text-storage possibilities but are a real waste of the technology. CDs can store graphics, text, sound, and video and should distinguish themselves accordingly, not act like a glorified floppy. So I'll get the CD-ROM drive when the applications come of age.

The Dream MACHINE

THANK GOODNESS FOR EDUCATIONAL DISCOUNTS.

The Bottom Line

Thank goodness for educational discounts. The actual retail prices of the items in my workstations are not surprising, but when you add

them all up, the total is astonishing. The grand totals are easier to understand when you consider the number of teacher hours that the introduction of a state-of-the-art instructional delivery system saves, as well as the increase in instruction time. If you know the actual numbers of students who will benefit from exposure to this level of technology over a five-year period, you will probably find the investment to be quite cost-effective. So let's go shopping! **+**

Jennifer Brawer is A+'s education editor.

APPLETALK NETWORK

30 Apple IIGs computers (Apple Computer)	\$29,970
Macintosh SE (Apple Computer)	\$2898
AppleShare File Server Software (Apple Computer)	\$799
AppleShare Print Server Software (Apple Computer)	\$299
32 LocalTalk Connector Kits (Apple Computer)	\$2400
30 AppleColor RGB Monitors (Apple Computer)	\$14,970
Apple Hard Disk 40SC (Apple Computer)	\$1798
Apple LaserWriter IINT (Apple Computer)	\$4599
TOTAL:	\$57,733

PART 2

"Find Red Square" Contest!

Find Red Square in Moscow and enter to win a real trip for two to Europe, courtesy of SubLOGIC and TWA! See the SubLOGIC Product Chart at your dealer or write SubLOGIC for complete details and contest rules.



"WESTERN EUROPEAN TOUR"

Scenery Disk is so beautiful to fly, you'll want to make it the centerpiece of your Scenery Disk collection! This is part two of a five-part guided tour from London to Red Square.

This month we fly to Paris, city of lights. Few sights can compare with the Eiffel Tower at dawn.

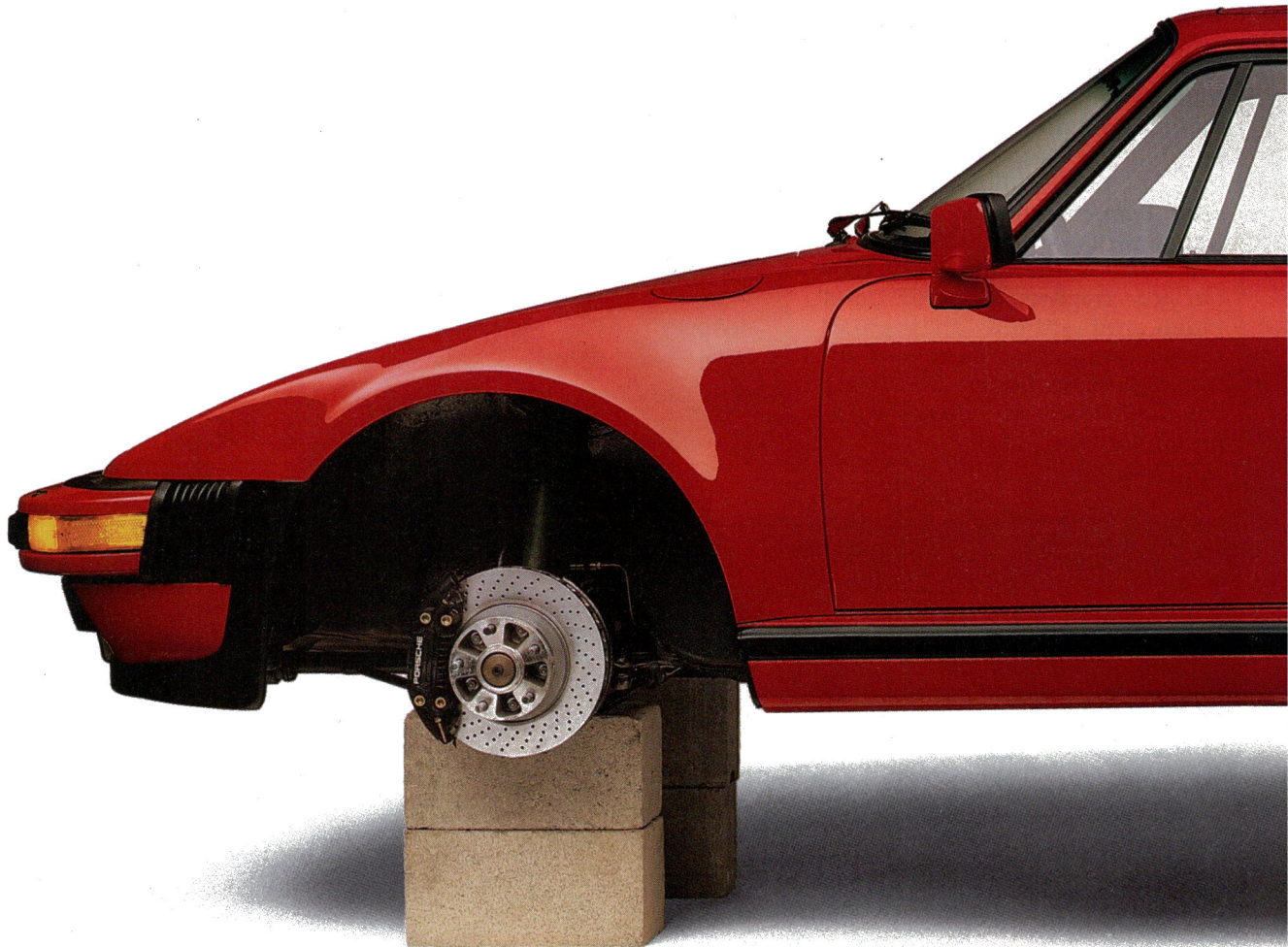
Now off to our left you can see Notre Dame cathedral, situated on an island in the Seine. Other Paris highlights include the Arc de Triomphe, Sacre Coeur, Concorde Obelisk, and the Louvre.

Next month we'll finish our tour of Paris and continue on to Germany.



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Some Apple II owners still



It's like listening to Beethoven's 9th on a transistor radio. Or watching the Super Bowl on a five-inch screen.

Sure, your Apple II probably seems great just the way it is. But until you boot AppleWorks® 2.0, you won't really know what it's capable of doing.

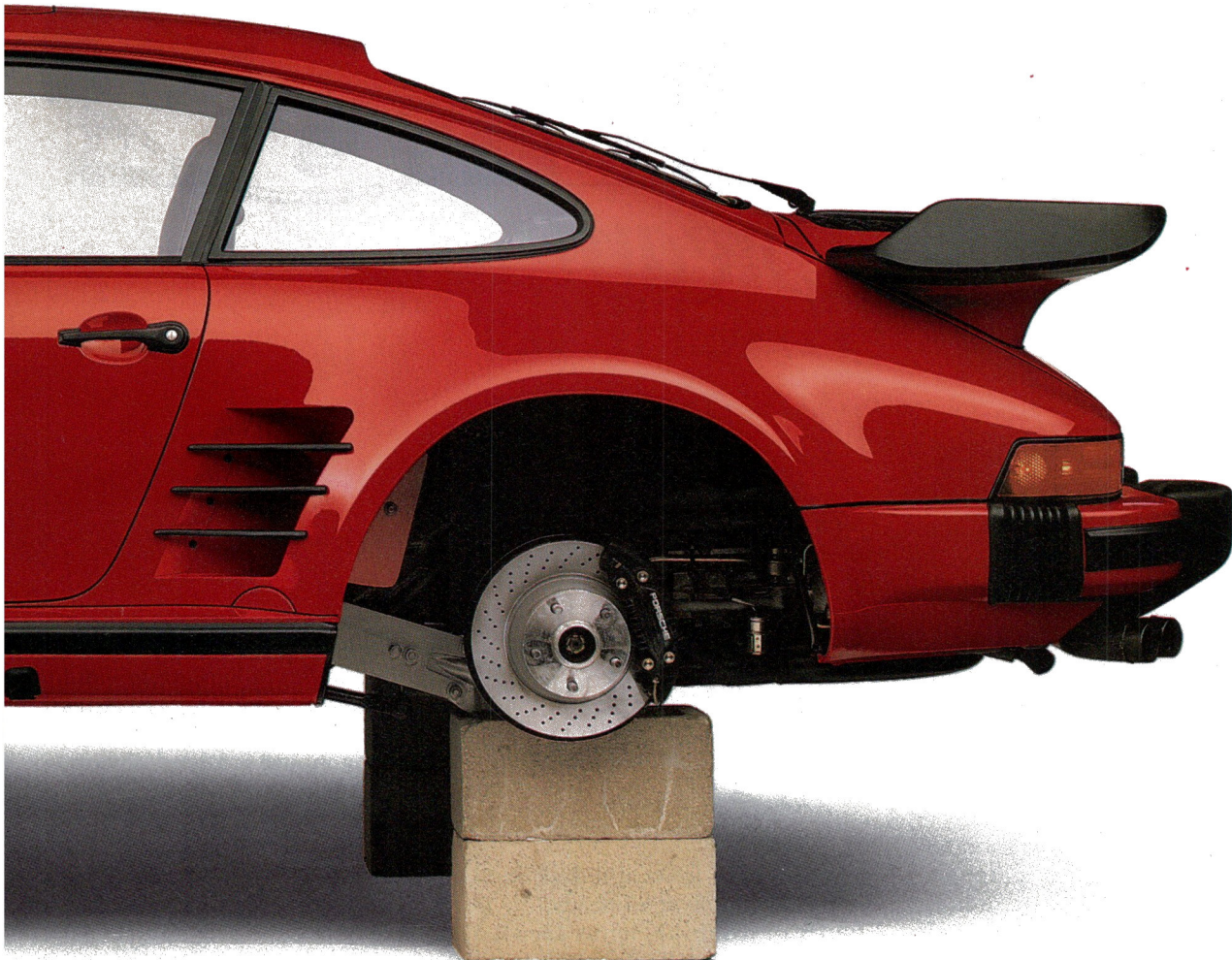
AppleWorks combines three of the most popular applications in one powerful, easy-to-use package: a sophisticated word processor for swiftly creating dynamic marketing plans or compelling letters home to mom. A spreadsheet for compiling

everything from next month's sales forecast to last month's household expenses—then changing the numbers in a flash as you ask questions like “what if I win the lottery tomorrow?” And finally, a database manager to store, sort and organize just about any kind of information you can think of.

Alone, each of these programs is a potent, practical tool.

But put them all together and your Apple II is suddenly traveling in a fast lane you didn't even know existed.

don't have AppleWorks.



You can zip from your stock portfolio to your monthly budget with a few deft keystrokes. Cut sales projections from a spreadsheet and paste them into a business plan in a matter of seconds. Or use the mail merge function to speed addresses from the data base to a form letter. All without swapping disks or rebooting. Even the learning process is accelerated, since you only have to learn one set of commands.

If all this isn't enough, you can choose from dozens of add-on programs to do things like draw

graphs or check your spelling. Or use a RAM disk to take advantage of AppleWorks' extended memory support.

It's no wonder over 750,000 Apple II owners already work with AppleWorks (which is compatible with the entire Apple II family).

For more information and the location of a nearby Claris dealer, call 800-334-3535, ext. 150. If you've got an Apple II parked on your desk, we'll get it on the road to bigger and better things.

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COVER STORY

BY ROBERTA SCHWARTZ
AND MICHAEL CALLERY

The Dream MACHINE

GRAPHICS

WE BEGIN WITH OUR GS DREAM MACHINE, since it gives us the most features—for the most money. Our dream IIGS has 6Mb of RAM, thanks to Applied Engineering's GS-RAM Plus. Actually, 4Mb would be quite satisfactory, but as long as we're dreaming...

The extra memory lets us take advantage of the latest graphics programs—and those to come, which are requiring more and more memory. It also allows us to have a RAMdisk. We can load lots of pictures into a RAMdisk, which lets us display the images very quickly to create some interesting pseudoanimation effects.

Our dream GS has an Apple 20Mb hard-disk drive and four floppy-disk drives. The hard-disk drive gives us immediate access to all our graphics applications and eliminates the bothersome disk swapping floppy disks require. It also lets us maintain a large clipboard and scrapbook across various programs, and it keeps our grow-

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ing collection of fonts and desk accessories available at all times.

Two 5¼-inch drives let us use all our old Apple II software, and two 3.5-inch drives are for the newer programs. Two of each drive allows easy disk backups and copying and transfer of files from one disk to another.

Our system includes an Apple-Color RGB Monitor and an Apple-Color Composite Monitor. The composite monitor displays hi-res and double-hi-res graphics best, whereas the RGB is necessary for crisp super-hi-res graphics.

For input, we've added Apple's extended keyboard, primarily because we don't like the IIGS key-

board. The Apple Extended Keyboard feels a lot better, and it has function keys for cut, copy, and paste—something we graphics people do a lot of.

We use a mouse for everyday operations such as selecting, pointing, and clicking. Drawing with a mouse leaves something to be desired, however, so we've added a graphics tablet. We've chosen the Kurta IS/ADB, the only tablet that works with the latest software.

To keep our system cool, we've added the Kensington System Saver IIGS. We prefer this "power center" to an internal fan because it doesn't take up any space inside the computer. Along with an efficient, quiet fan, we get extra outlets with surge suppression. Best of all, two front-mounted switches let us conveniently power up our GS, monitor, and peripherals.

Because we like to bring printed images and photographs into our graphics, letters, newsletters, and so on, we have an optical scanner.

The Dream MACHINE

The ThunderScan digitizes images in high resolution with 16 shades of gray. We also like to put our smiling faces into documents, along with the images of other three-dimensional objects, so we've added a video digitizer—ComputerEyes fits the bill because it can handle all three graphics modes. We love that GS color, so, of course, we need a color video camera to use with our digitizer. Any high-quality color video camera is fine.

We have two printers. Although we'd prefer a higher-quality color printer, the ImageWriter II works with all Apple II programs. Since most programs don't have enough print options, we have a Serial Grappler+, which gives us more than 30 text and graphics screen-dump commands for our ImageWriter printer.

For obtaining professional-quality black-and-white output, we have added the Apple LaserWriter IINT. The LaserWriter can generate high-quality printouts from programs such as Draw Plus or TopDraw. Eventually, we expect Apple II desktop-publishing programs also to take real advantage of the LaserWriter.

Since the LaserWriter doesn't print in color, we have a KroyKolor Plus, which lets us add color to our LaserWriter printouts.

We want Apple's 1200-bps modem so that we can tap into information services such as CompuServe and GENie, where we can communicate with other GS users and download helpful graphics applications and tips.

As far as software goes, our demands are simple. Our perfect Apple IIGS demands nothing less than every graphics program available. As we've said so many times before, each program has something a little different to offer, and we

want it all! That goes for the IIE and IIC as well—get your hands on every graphics program you can.

For starters, we'll take all the graphics-creativity programs in the "All-Stars" section of the June 1988 issue of *A+*. And, for the IIGS, we'll add Paintworks Gold, which we reviewed in that same issue.

Apple IIE and IIC

Our IIE and IIC dream systems are similar to our IIGS system. Like the IIGS, both machines have added memory so we can use a RAM-disk. The IIE has 1Mb of RAM from Applied Engineering, and the IIC has Apple's memory-expansion kit.

The faster the better, so our IIE

inch drives. The IIE has a Kensington System Saver for the same reasons our IIGS has one. No comparable product is available for the Apple IIC.

Our IIE and IIC computers also have two monitors each. For these machines, however, it's a composite color monitor and a monochrome monitor. We prefer a separate monochrome monitor, even though the composite monitor lets you switch modes to read 80-column text comfortably, because only a monochrome monitor lets you see individual pixels as you work. When we're fine-tuning our graphics, we keep both monitors on; one lets us see the color, while the other lets us see the pixels.

Our IIE and IIC both have mice for everyday pointing and clicking, and our IIE system has an Apple Graphics Tablet, the tablet that's

compatible with most hi-res and double-hi-res graphics programs. Since we are dealing with a dream system, it does not matter that Apple no longer manufactures this tablet. Our dream lets us find a used one. Both systems have a ComputerEyes video digitizer, a black-and-white camera, and a ThunderScan scanner. Both systems also have Apple's Personal Modem.

The ImageWriter II is the perfect printer for both the IIE

and IIC. To the IIE, as with the IIGS, we've added a Serial Grappler+ for printing our graphics in black and white and color on the ImageWriter II. We've included the KroyKolor Plus here too, even though this setup doesn't involve a LaserWriter. Rather than LaserWriter output, you can use photocopies of your work with the Kroy machine to get stunning colors.

Wish List

Are we satisfied yet? Not quite. Looking into the future, we want a

APPLE IIGS SYSTEM

Apple IIGS (Apple Computer)	\$999
GS-RAM Plus, 6Mb (Applied Engineering)	\$3139
Apple Hard Disk 20SC with SCSI card (Apple Computer)	\$1198
Two Apple 3.5 Drives (Apple Computer)	\$798
Two Apple 5.25 Drives (Apple Computer)	\$598
AppleColor RGB Monitor (Apple Computer)	\$499
AppleColor Composite Monitor (Apple Computer)	\$379
Apple Extended Keyboard (Apple Computer)	\$229
IS/ADB graphics tablet (Kurta Corporation)	\$395
System Saver IIGS (Kensington Microware)	\$100
ThunderScan (ThunderWare)	\$219
ComputerEyes GS (Digital Vision)	\$250
Color video camera	\$750
ImageWriter II (Apple Computer)	\$625
Serial Grappler+ (Orange Micro)	\$89
LaserWriter IINT with two LocalTalk kits (Apple Computer)	\$4749
KroyKolor Plus (Kroy)	\$875
Apple Personal Modem (Apple Computer)	\$429
Paintworks Gold (Activision)	\$100
All-Star software	\$785

TOTAL: \$17,205

system has Applied Engineering's TransWarp accelerator card, which makes our programs run three to four times faster than normal speed; this extra speed really makes our animations fly. (To get a speed increase on the IIC, we have to wait for the Zip Chip.)

Our IIE has an Apple hard-disk drive, and both the IIE and IIC have two 5¼-inch drives (that means only one extra 5¼-inch drive for the IIC, since one is already built in). Both machines have two 3.5-

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speedup board or chip for the Apple IIGS. The GS is painfully slow. Also, we'll be happy when the Zip Chip finally arrives and gives the IIe and IIc a speed boost too.

For the IIGS, we want a film recorder. Film recorders provide the simplest and most effective way to get high-quality film or slide output. Polaroid had a product for Apple II standard hi-res, but as far as we know, no IIGS film recorder is available.

Apple's new CD-ROM (Apple-CD SC Drive) promises to give us megabytes of clip art at our beck and call. Imagine the entire Dover Clip Art library available at the click of a mouse. But we won't make the investment until CD-ROM

The Dream MACHINE

software makes it worthwhile.

Rounding off the figures, our dream systems range from just under \$7000 to almost \$17,000, and that's not counting software, supplies, and electric bills! Perhaps we ought to return to traditional media—good pencils are only \$5 a dozen. +

*Roberta Schwartz and Michael Cal-
lery are A+'s graphics editors and
authors of our monthly "Speaking of
Graphics" column.*

APPLE IIc SYSTEM

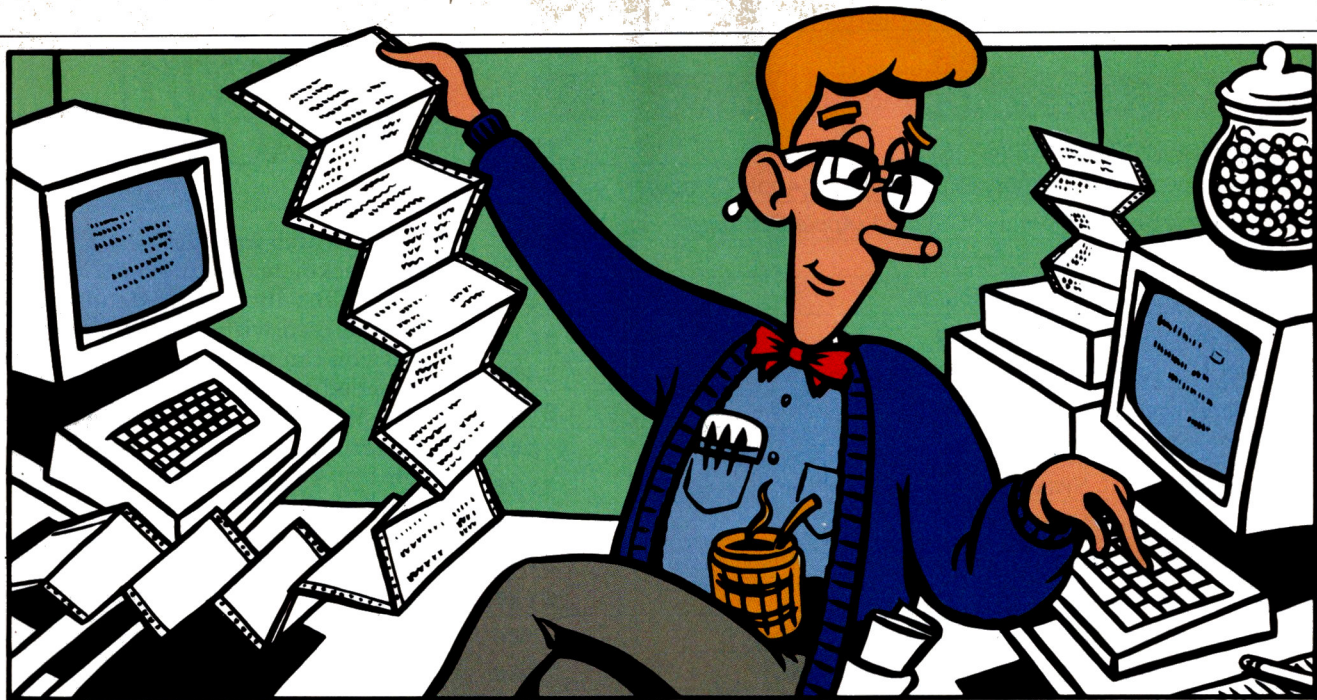
Apple IIe (Apple Computer)	\$829
RamWorks III, 1Mb (Applied Engineering)	\$579
TransWarp accelerator (Applied Engineering)	\$219
Two Apple 5.25 Drives (Apple Computer)	\$667
Two UniDisk 3.5 Drives (Apple Computer)	\$897
System Saver Fan (Kensington Microware)	\$90
Apple Monochrome Monitor (Apple Computer)	\$129
AppleColor Composite Monitor (Apple Computer)	\$379
AppleMouse IIe (Apple Computer)	\$149
Apple Graphics Tablet, used (Apple Computer)	\$400
ComputerEyes/2 (Digital Vision)	\$130
WV-140 black-and-white video camera (Panasonic)	\$270
ThunderScan (ThunderWare)	\$219
Apple Personal Modem; Super Serial Card (Apple Computer)	\$568
ImageWriter II (Apple Computer)	\$625
Serial Grappler+ (Orange Micro)	\$89
KroyKolor Plus (Kroy)	\$875
All-Star software	\$505

TOTAL: \$7619

APPLE IIc SYSTEM

Apple IIc (Apple Computer)	\$799
Apple IIc Memory Expansion Card, 1Mb (Apple Computer)	\$476
Apple 5.25 Drive (Apple Computer)	\$299
Two UniDisk 3.5 Drives with Catalyst 3.0 (Apple Computer)	\$828
Apple Monochrome Monitor (Apple Computer)	\$129
AppleColor Composite Monitor (Apple Computer)	\$379
AppleMouse IIc (Apple Computer)	\$99
ComputerEyes IIc (Digital Vision)	\$130
WV-140 black-and-white video camera (Panasonic)	\$270
KroyKolor Plus (Kroy)	\$875
ThunderScan (ThunderWare)	\$219
Apple Personal Modem (Apple Computer)	\$429
ImageWriter II (Apple Computer)	\$625
All-Star software	\$505

TOTAL: \$6062



The Dream MACHINE

COVER STORY BY MICHAEL FISCHER

PROGRAMMING

THE PROGRAMMING FEATURES OF the Apple II originated from the magnificent dreams of its inventor, Steve Wozniak. In fact, although Woz himself referred to one section of the Apple II monitor as being a "6502 Dream Machine," this term better applies to the entire Apple II family.

Ten years later, the Apple II still fulfills the dreams of programmers. My programming dreams for Apple II systems vary, depending on whether I am dreaming of an 8-bit (Apple IIe and IIC) or 16-bit (Apple IIGS) world. Significant hardware and software differences exist between these two environments.

A Software Dream in 8 Bits

There is no universal dream about software for programming, but several, depending on the dream language. I'm too cautious to identify a single dream programming language—programmers tend to get violent about this subject—but I will name names in the different language categories. I'd want to have all of the software I mention here to create the dream programming environment on the IIe and IIC.

A PROGRAM FOR SPENDING \$2800—\$6000

I have two very different dream BASIC packages. The obvious one is Applesoft BASIC, compiled with the Beagle Compiler. Applesoft is easy and always available, and it runs quite fast when compiled. Using the Program Writer by Alan Bird with it gives me a full-screen editor for programming. An alternative dream—ZBasic—gives me source-code portability; I can take a program written for one brand of computer and, using substantially the same source code, compile it on another brand of computer. This portable dream even includes a computer-independent method of drawing graphics.

Although many assembly-language packages are available for the Apple IIe and IIC, my dream assembler is Merlin 8/16. It is easy to learn and use, yet it includes a

great deal of power. Merlin is also popular, so I can find source-code examples and assistance easily. More-powerful assemblers are available, but the cost in increased complexity is too great.

Finally, we come to Pascal. The default dream Pascal language for the IIe and IIC is Apple II Pascal, Version 1.3, although its mere mention is enough to cause a nightmare for some programmers. Yet, it is the only real Pascal available for programming in the 8-bit Apple world.

Hardware Dreams

In setting up the hardware for a dream machine, I tended, whenever I had a choice, to select Apple's own hardware. Program development on a relatively pure Apple setup is preferable. New users tend to have mainly Apple peripherals, and I want to be sure that my programs will work with their setup.

When I dream of an Apple IIe hardware setup, I think of two factors: power and speed. In fact, a programmer's dream machine can never be too fast or have too much memory or storage. These considerations lead to my dream configu-

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APPLE IIGS SYSTEM

Apple IIGS (Apple Computer)	\$999
Three Apple II 256K Memory Expansion Kits (Apple Computer)	\$207
Apple Hard Disk 20SC with SCSI card (Apple Computer)	\$1198
Apple 3.5 Drive (Apple Computer)	\$399
Apple 5.25 Drive (Apple Computer)	\$299
ImageWriter II (Apple Computer)	\$625
AppleColor RGB Monitor (Apple Computer)	\$499
MemorySaver (Checkmate Technology)	\$150
MultiRam GS, 2Mb (Checkmate Technology)	\$1045
TML Pascal (TML Systems)	\$125
Merlin 8/16 (Roger Wagner)	\$125
APW (Apple Programmer's and Developer's Association)	\$100
AC/BASIC (Absoft)	\$125
Apple IIGS Firmware Reference (Addison-Wesley)	\$24
Apple IIGS ProDOS Reference (Addison-Wesley)	\$30
Apple IIGS Toolbox Reference (Addison-Wesley)	\$48
TOTAL:	\$5998

APPLE IIc SYSTEM

Apple IIc (Apple Computer)	\$829
Apple Hard Disk 20SC with SCSI card (Apple Computer)	\$1198
UniDisk 3.5 Drive (Apple Computer)	\$468
Apple 5.25 Drive (Apple Computer)	\$368
Apple Monochrome Monitor IIc (Apple Computer)	\$129
ImageWriter II with Super Serial Card (Apple Computer)	\$764
Beagle Compiler (Beagle Bros)	\$75
Program Writer (Beagle Bros)	\$50
ZBasic DOS 3.3 (Zedcor)	\$50
Merlin 8/16 (Roger Wagner Publishing)	\$125
Apple II Pascal (Apple Programmer's and Developer's Association)	\$75
MultiRam RGB, 1Mb (Checkmate Technology)	\$555
TransWarp accelerator (Applied Engineering)	\$219
Apple Technical Reference Manual (Addison-Wesley)	\$25
TOTAL:	\$4930

APPLE IIc SYSTEM

Apple IIc (Apple Computer)	\$799
Apple Memory Expansion Card, 1Mb (Apple Computer)	\$476
UniDisk 3.5 (Apple Computer)	\$399
Apple Monochrome Monitor (Apple Computer)	\$129
ImageWriter II (Apple Computer)	\$625
Beagle Compiler (Beagle Bros)	\$75
Program Writer (Beagle Bros)	\$50
ZBasic DOS 3.3 (Zedcor)	\$50
Merlin 8/16 (Roger Wagner)	\$125
Apple II Pascal (Apple Programmer's and Developer's Association)	\$75
Apple Technical Reference Manual (Addison-Wesley)	\$25
TOTAL:	\$2828

ration, which includes

- a Checkmate Technology Multi-Ram RGB, which is an extended 80-column card with 1Mb of memory that you can use as a RAMdisk;
- a speedup device—namely the TransWarp card from Applied Engineering—to streamline the assembly or compilation of the source code;
- a 20Mb Apple Hard Disk 20SC with a SCSI card;
- a UniDisk 3.5 Drive to back up my source-code files;
- an Apple 5.25 Drive, because no Apple IIc is complete without at least one 5¼-inch drive;
- an Apple Monochrome Monitor, because it is easy on the eyes when you're working with source-code text; and

• an ImageWriter II printer with an Apple Super Serial Card interface and cable, for printing out program listings at its fast draft speed.

Apple IIc System

My Apple IIc dream is based on the same considerations—power and speed—as my Apple IIc dream. The configuration includes

- a 1Mb Apple memory-expansion card for use as a RAMdisk;
- a UniDisk 3.5 drive for additional disk space (the IIc has a 5¼-inch drive built in, and it currently has no acceptable hard-disk options);
- an Apple Monochrome Monitor; and
- an ImageWriter II printer.

Apple IIGS: Technicolor Dreams

The dream Apple IIGS hardware setup is an Apple IIGS with 3Mb of memory. I'll configure 2Mb for use as a ROM disk with the Memory-Saver from Checkmate Technology. The memory consists of an Apple IIGS Memory Expansion Card for 1Mb of the RAM (attached to the back of the MemorySaver). The remaining memory is from the Checkmate Technology MultiRam GS with two megabytes.

For disk storage on this dream GS, I use the Apple Hard Disk 20SC 20Mb hard-disk drive and an Apple SCSI card. I also have an Apple 5.25 Drive and an Apple 3.5 Drive to back up the source-code files. My dream Apple IIGS system also

has an AppleColor RGB monitor. The text image on this monitor is easy to read, yet it has clear, sharp IIGS colors. Finally, I have an ImageWriter II printer for source-code listings. Although the hard copy is not as sharp as that from a LaserWriter, the draft mode is faster than using ImageWriter emulation on the LaserWriter.

As is the case with 8-bit Apple programming, my dream programming software differs, depending on the language I am using.

My Pascal is TML Pascal.

For assembly language, I have to choose between two dream-software packages:

If I'm programming entirely in assembler, I use Merlin 8/16 because it is the most intuitive and easy to use of the 16-bit Apple IIGS assemblers. Even though the program is easy to use, it possesses all the power I need to perform most programming tasks. If I'm programming in a mixture of assembly and other languages, I use the Apple Programmer's Workshop (APW) Assembler. It lets me link modules created with APW C, Orca Pascal (either version), and

The Dream MACHINE

TML Pascal (APW version).

My dream BASIC programming software is AC/BASIC, practically by default. Other compiled BASICs I've heard about are currently still in development.

Books

Every programmer should consider buying Apple's official technical-reference manuals, published by Addison-Wesley. Many useful books by independent authors are also available, most of which you can get from the Apple Programmer's and Developer's Association.

The Ultimate Dream

Sometimes, like the Man of La Mancha, we want to dream the impossible dream, putting together a dream system that doesn't exist today. For such a system I would want a programming environment that worked on the IIGS, IIC, and IIC and permitted free intermixing of BASIC, Pascal, C, and assembly language. Simple commands

would switch you from programming for 8-bit and 16-bit Apple IIs.

For the IIC and IIC, I'm awaiting the arrival of the Zip Chip, which will accelerate processing speed without taking up a slot.

I'd also like a hardware debugger that continually displayed memory locations and symbolic-variable values and traced program execution in real time or by stepping through the code. This debugger would display its information on a monitor screen separate from the actual Apple II program screen.

The Apple II programming environment already contains much of the stuff of which dreams are made, and recent developments indicate that we are steadily enlarging the realm of programming possibility. In fact, maybe the only unattainable dream for an Apple II programmer is that mythical instruction every programmer wants: the DWIM (Do What I Mean) command. +

Michael Fischer is A+'s telecommunications editor and author of Apple IIGS Technical Reference (Osborne/McGraw-Hill).

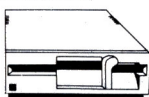
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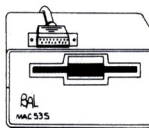
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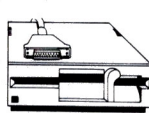
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Broderbund Toy Shop	34.	Certificate Maker	26.
Dazzle Draw	41.	Certificate Maker Library #1	20.
Drawing Table (IIgs)	62.	Fonts For Springboard Publisher	26.
Print Shop Enhanced or Fantavision	34.	Newsroom Clip Art Collection Vol. 1 or 3	20.
Print Shop (IIgs) or Fantavision (IIgs)	41.	Newsroom Clip Art Collection Vol. 2	26.
Print Shop School Edition	41.	Laser Drivers	26.
Dazzle Draw School Edition	48.	Style Sheets/Newsletters	20.
Print Shop Companion	27.	Works of Art Education, Holidays	26.
Print Shop Graphics Library I, II, III	17.	or Assortment (IIe or IIgs)	58.
or Holiday Ed.	24.	StyleWare, Inc. TopDraw (IIgs)	26.
Print Shop Graphics Library Sampler Edition	24.	Union World Printmaster Plus	31.
Print Shop Graphics Library Party Edition	24.	Art Gallery I or Art Gallery II	19.
Show Off (IIgs)	41.	Art Gallery Fantasy	19.

Communication Software

Activision Teleworks Plus (IIgs)	68.	Pinpoint Point-To-Point	74.
Checkpoint Technology		United Software Industries	
ProTERM (IIgs, IIe, IIc)	80.	ASCII: Express Pro: Prodos or Dos 3.3	74.
CompuServe CompuServe Starter Kit	24.	ASCII: Express Mousetalk	61.

Accelerators/Ramcards/Z-80/80 Column Cards

Apple Computer		Z-RAM Ultra 1 (256K or 512K)	Call
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RamWorks Basic (256K or 512K)	Call	TransWarp Accelerator (II+ and IIe)	179.
RamWorks III (64K to 3 MB)	Call	ViewMaster 80 (II+)	135.
2 Meg Plus RamWorks Expander (1 or 2MB)	Call	Z-80 Plus (II+, IIe, IIgs)	125.
PC Transporter (384K to 768K)	Call	Checkpoint Technology MemorySaver (IIgs)	129.
PC Transporter Installation Kit (IIe or IIgs)	Call	Orange Micro RamPak 4GS	
RamFactor (256K to 1MB)	Call	(512k Exp. to 4MB w/Utilities)	229.

Printer Interface Cards

Apple Apple Super Serial Card	119.	SMT Envoy (Super Serial type Interface)	67.
Applied Engineering BufferPro 32K	94.	Printech II (Parallel Interface)	37.
BufferPro 128K or 256K	Call	Thirdware Finger Print GSi	69.
Serial Pro (II+, IIe, IIgs)	119.	Finger Print Plus	
Parallel Pro (II+, IIe, IIgs)	85.	(Specify Cables: Parallel, Serial or	
Orange Micro ProGrappler (Apple IIe or IIgs)	84.	ImageWriter II-III & IIe)	89.
Serial Grappler Plus	64.	FingerPrint IIc (Internal or External Ver.)	74.
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Hot Link	54.	Cable II+, IIe, IIgs)	55.

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Cupertino, CA 95014
(408) 996-1010

Applied Engineering, Inc.
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Carrollton, TX 75006
(214) 241-6060

Applied Visions
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Cambridge, MA 02139
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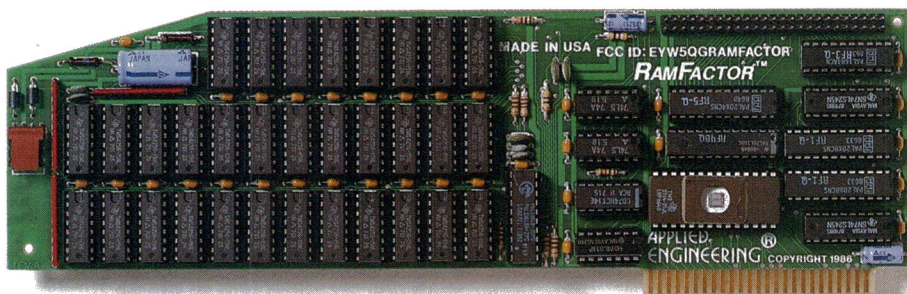
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RamFactor™

The Ultimate Slot 1-7 Memory Card



RamFactor is automatically recognized as additional workspace memory by AppleWorks 1.3 and 2.0. In addition, RamFactor's memory can be used for creating the ultimate in program speed—a lightning-fast RAMdisk for the Apple IIGs, IIE, II+, Franklin and Laser 128. A RAMdisk does not depend on the slow moving parts of a conventional floppy drive. RAMdisks eliminate wear and tear on your disk drive plus your programs run up to 20 times faster! When a program is in RAM, your computer won't have to search for it in the mechanical disk drive during program operation. With RamFactor, you can have up to 9 separate simultaneous RAMdisks—even in different operating systems! Now you can instantly switch from one program to another or even switch from AppleWorks to DOS 3.3 to CP/AM to Apple Pascal 1.3 to ProDOS.

Apple Memory Expansion Card Compatible

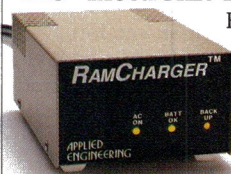
RamFactor is 100% Apple Memory Expansion Card compatible. This means that software designed for Apple's card is automatically compatible with RamFactor. Thousands of software programs—including AppleWorks, Pinpoint, MacroWorks, MultiScribe, and Managing Your Money—can take advantage of the speed and performance RamFactor provides. But with Apple's card, you can have only one RAMdrive partition instead of the 9 simultaneous RAMdrives that RamFactor offers. And that's only part of the story...

2.0 AppleWorks Power

Other slot 1-7 cards can give AppleWorks a larger desktop, but that's the end of their story. RamFactor provides many more powerful functions. It's the only slot 1-7 card that increases AppleWorks 2.0 internal limits by increasing the maximum number of records in the database to 22,600, increasing the maximum number of lines permitted in the word processor to 22,600, and expanding the clipboard size to 2,250 lines maximum. RamFactor is the only standard slot card that will automatically load all of AppleWorks into RAM, dramatically increasing speed and

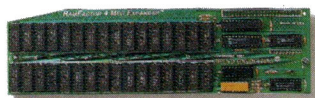
eliminating the time required to access the program disk. It will even display the time and date on the AppleWorks screen with a ProDOS clock. RamFactor will automatically segment large files so they can be saved on multiple 5¼" and 3½" floppies or a hard disk. All this performance is available for the Apple IIE, Laser 128, Franklin or 64K Apple II Plus when used with an 80 column card. No other standard slot card comes close to enhancing AppleWorks so much.

The "Electronic Hard Disk"



RamCharger is an optional battery back-up device, (about the size of a disk drive), that can plug into a connector on RamFactor. With RamCharger added to RamFactor, your program will appear almost instantaneously when you turn on your computer. RamCharger contains LED's that let you know RamFactor's reserve power status. Since RamCharger has its own built-in power supply, it can retain RamFactor's memory indefinitely. Plus, RamCharger's battery will continue backing up RamFactor's memory for up to 10 hours during power failures. An optional "Y" cable is also available that allows one RamCharger to power two fully expanded RamFactors.

If 1 MEG Isn't Enough



A 4 MEG RamFactor Expander can be plugged into the expansion port on RamFactor for up to 5 MEG's total. RamFactor Expander uses standard 1 MEG chips and can be expanded in 1 MEG increments. With the addition of RamCharger, both RamFactor and the expander will provide up to 5 MEG's of lightning-fast battery backed storage.

Features

- Compatible with Apple IIGs, IIE, II+, Franklin and Laser 128
- 256K to 1 MEG on main board with 256K

memory chips; expansion port supports up to 5 MEG with Expander option

- 100% Apple Memory Expansion Card compatible
- RamCharger battery back-up option available for permanent storage
- Reduces power strain to internal power supply with RamCharger option
- Fully socketed and user upgradeable
- Expands internal limits of AppleWorks 2.0
- Automatically recognized by ProDOS, DOS 3.3, Apple Pascal 1.3 and CP/AM
- Built-in RAMDrive software (true RAMdisk not disk caching)
- Graphic memory test included
- Allows Apple II+ to run AppleWorks 2.0 without buying additional software
- Automatically recognized by AppleWorks 1.3 and 2.0
- Fits in any I/O slot except slot 3
- 5 year warranty — parts and labor
- Proudly made in the U.S.A.

RamFactor with 256K	\$269
RamFactor with 512K	\$389
RamFactor with 1 MEG	\$629
RamFactor Expander with 1-4 MEG	CALL
RamCharger backup option	\$179
"Y" cable	\$24

(Allows one RamCharger to power two RamFactors.)

Order RamFactor today... with 15 day money back guarantee and our five year warranty. See your dealer or call (214) 241-6060, 9 a.m. to 11 p.m., 7 days, or send check or money order to Applied Engineering MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10.00 if outside U.S.A.

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PICK OF THE CROP

BY BOB LINDSTROM

Data protection, tangle-free telecommunication, BASIC for the IIGs, algebra in a mall, and printing made easier

PRODUCT SPOTLIGHT

EQUATION EDUCATION

Working in a shopping mall and learning algebra would seem to represent the worst of two possible worlds, but programmer/designer Cary Hammer makes the combination enjoyable and educational in Algebra Shop, another excellent instructional product from Scholastic.

You appear on the screen as a "little guy" roaming a

shopping mall in search of employment. You use the cursor keys to move your character and select one of ten shops in which to assume duties as a clerk.

Stores range from Soda Store to Cheese Shop to Equation Shop. Each employment opportunity carries its own algebraic challenge. In the Candy Shop, you have to use equal-size bags to package five kinds

of candy in different amounts. While you're on the job, you learn the concepts of identifying common factors and dividing whole numbers.

In the Equation Shop, customers enter with a variable x to solve, and you have to acquire the skills of solving for a single variable and reducing equations.

Each store screen is formatted in a way that encourages you to experiment with several possible solutions before making a final choice. This "what if" environment provides a low-pressure, guilt-free way in which to work with algebraic concepts.

The Teacher Edition of the program includes a program disk and backup disk, a full instructional guide, and several worksheets that may be duplicated for classroom use.

Algebra Shop

List Price: \$39.95; school version, \$87.45

Requires: Apple II Plus, IIe, or IIGs; 64K RAM; one 5¼-inch disk drive (3.5-inch disk version available for \$10 additional charge and 5¼-inch disk trade-in). ProDOS; copy-protected.

Scholastic, Inc.

P.O. Box 7502

2931 East McCarty Street
Jefferson City, MO 65102
(800) 325-6149

In MO (800) 329-2179

CIRCLE READER SERVICE NO. 401

INSIDE JOB

Oh, what a tangled web we weave when first we telecommunicate.

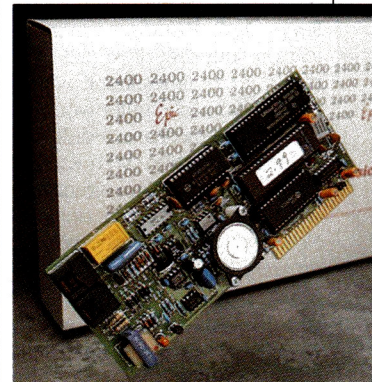
It isn't just the mind-numbing web of stop bits, parity, and protocols but the physical tangle as well. You get power cables and modem cables and phone cables. I suspect that several modem-installation strangulations go unrecognized every year: "It's so sad, officer. His last wish was just to get on-line."

The Epic2400Classic (that's the way *they* spell it) modem from Epic Technology, Inc., is an affordable internal modem for the Apple II Plus, IIe, and IIGs. Not only does the Epic2400Clas-

sic provide rapid 2400-bps performance at low cost, but its internal mounting also helps reduce the squalor of telecom cables. One phone line into your Apple (and an optional phone line out) is the total wire count.

The Epic2400Classic communicates at 300, 1200, and 2400 bps. It features full Hayes "AT" command-set compatibility, auto-answer, auto-redial, an audio-monitor speaker, and self-test modes. The product comes with a demonstration version of Talk Back software and an offer for free on-line time on The Source.

You should be sure your terminal software is compatible with the Epic-2400Classic hardware. In particular, the unit's internal installation is not compatible with some telecommunications software for the Apple IIGs.



EPIC2400Classic modem

List Price: \$175

Requires: Apple II Plus, IIe, or IIGs; telecommunications software

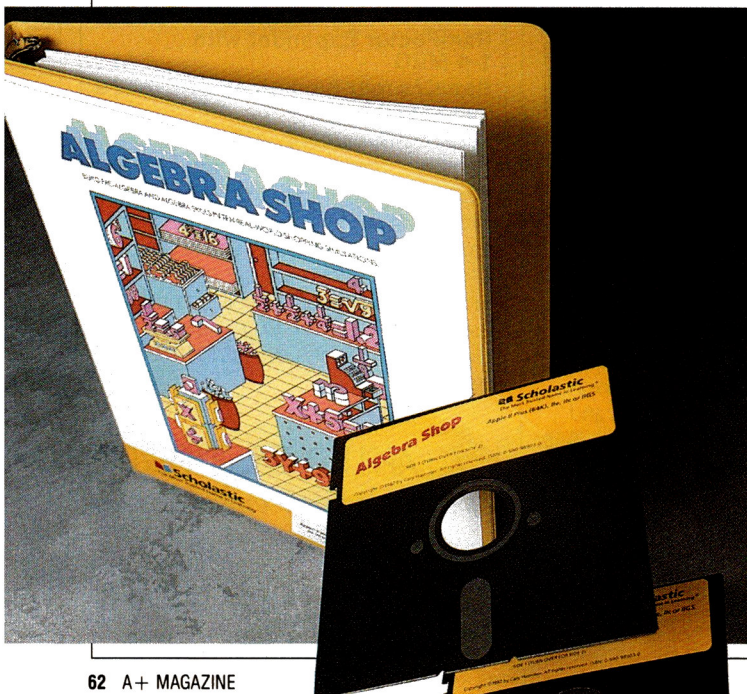
Epic Technology, Inc.
5680 Stewart Avenue
Fremont, CA 94538
(800) 634-9992
(415) 683-0932

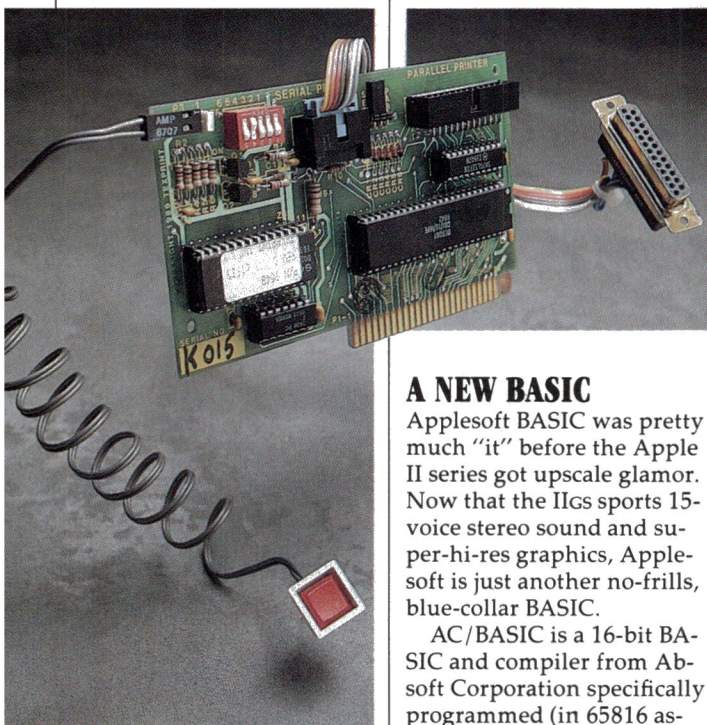
CIRCLE READER SERVICE NO. 402

TAME THAT PRINTER

Anyone who has ever wrestled with a pin-feed or jiggled a DIP switch into the wee hours knows that computers and printers were not made to work with each other. At least that's one man's opinion.

Print It is a universal serial or parallel printer-interface card for the II Plus and IIe that not only helps move

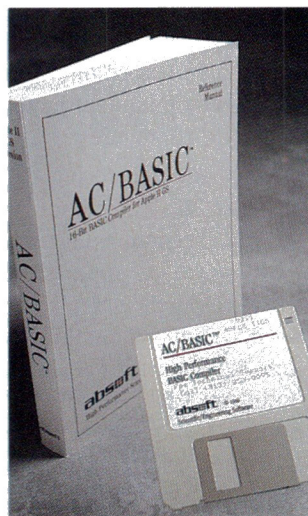




A NEW BASIC

Applesoft BASIC was pretty much "it" before the Apple II series got upscale glamor. Now that the IIgs sports 15-voice stereo sound and super-hi-res graphics, Applesoft is just another no-frills, blue-collar BASIC.

AC/BASIC is a 16-bit BASIC and compiler from Absoft Corporation specifically programmed (in 65816 assembly language) for the Apple IIgs. It is based on Absoft's 32-bit MS BASIC for the Macintosh and claims compatibility with MS BASIC on the Mac and AC/BASIC on the Commodore Amiga.



In addition to the garden-variety collection of BASIC commands, AC/BASIC includes several commands such as SCREEN, WAVE, WINDOW, and BUTTON to allow you to access the unique graphics, sound, and Finder interface of the IIgs. A MACHINE command permits access to machine-language subroutines.

Since AC/BASIC boasts compatibility with BASICs on the Macintosh and Amiga, you can often port

programs between the machines with minimal alteration. The sizable users' manual specifies the BASIC idiosyncrasies of each system and lists the common conversion problems.

The AC/BASIC compiler creates stand-alone versions of BASIC programs that do not require AC/BASIC. Absoft does not charge a licensing fee from developers who use the AC/BASIC run-time package in commercial programs. The company does require filing a software-redistribution license, however.

AC/BASIC

List Price: \$125

Requires: Apple IIgs, 512K RAM, one 3.5-inch disk drive. Not copy-protected.

Absoft Corporation
2781 Bond Street
Auburn Hills, MI 48050
(313) 853-0050

CIRCLE READER SERVICE NO. 404

A REAL PLUS

Real computer users never turn off their Apples.

Right. That approach may be fine for trusting souls living in the heart of utility-topia, but those of us on the ragged edge of the power grid know better. We get served a brownout every morning with our coffee and cornflakes.

But when you want to eliminate that ProDOS or AppleWorks start-up delay, what's the alternative to putting foolish faith in the power company? The alternative is Cirtech's plusDisk.

plusDisk is a battery-backed-up RAMcard that resides in any slot of an Apple

II Plus, IIe, or IIgs. You can configure it as a RAMdisk. The breakthrough here is that the backup battery is rechargeable and renews itself every time you turn on the computer.

After that, the choices are up to you. Install AppleWorks and boot up from the plusDisk. Install the IIgs Finder in the plusDisk and eliminate that tedious disk-drive wait. And because the plusDisk has a rechargeable battery, you won't lose your plusDisk data when you turn off the computer.

Cirtech also provides a utility disk that partitions plusDisk to simultaneously store ProDOS, DOS 3.3, Pascal, and CP/M applications.

You can purchase the product with 128K RAM or 512K RAM, and an adapter board expands the plusDisk to one megabyte of RAM, a recommended option if you're going to make extensive use of plusDisk.

plusDisk

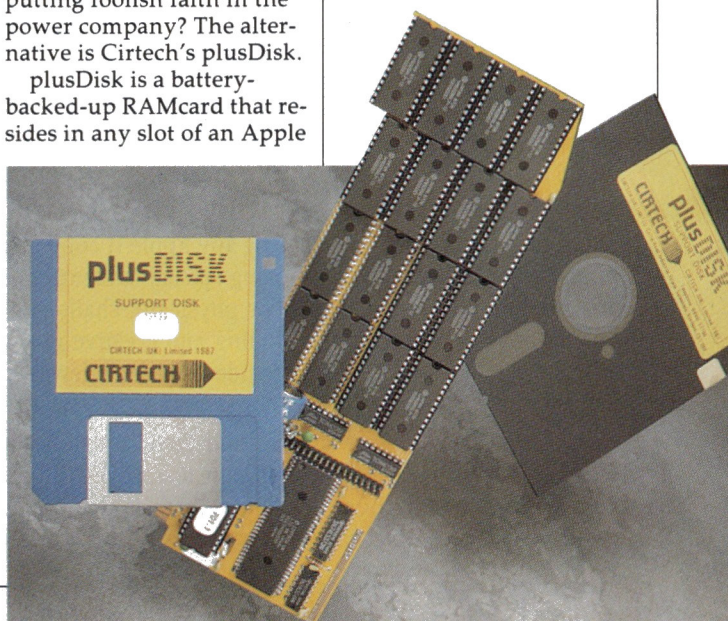
List Price: £99 (128K)

Requires: Apple II Plus, IIe, or IIgs; one 5¼- or 3.5-inch disk drive

Cirtech (UK) Limited
Currie Road Industrial Estate
Galashiels
Selkirkshire TD1 2BP
Scotland
(0896) 57790

CIRCLE READER SERVICE NO. 405

FOR MORE PRODUCT INFORMATION, SEE "ROUNDUP," PAGE 102.



your data to the printed page but also acts as intermediary in the ongoing computer/printer compatibility wars.

An on-board DIP switch configures Print It to work with a wide variety of printers, from the C. Itoh Pro-writer and Epson LQ1500 to the Okimate-20 color printer and the Star Gemini 10x.

You get a parallel- or serial-printer cable as well as a screen-dump button. Pushing the button at any time suspends program operation and dumps the current screen image to the printer, hi-res and double-hi-res images included. Before printing, you can select from several options such as black/white image, color, double-size image, and invert black/white.

Print It is not compatible with the IIgs, and Apple Language cards require a minor modification when used with Print It.

Print It

List Price: serial or parallel version, \$199

Requires: Apple II Plus or IIe

Computer Products
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200 Reservoir Street
Needham Heights, MA
02194
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(617) 449-5808

CIRCLE READER SERVICE NO. 403

A N N O U N C I N G

The **A+** SECOND ANNUAL

'HOW I USE THE

Share your Apple II teaching success stories with *A +* magazine, and you may win a complete Apple IIgs®* computer system contributed by Apple Computer or hundreds of dollars' worth of Apple II software from leading software companies!

October is Computer Learning Month, and *A +* magazine is celebrating by again sponsoring the popular "How I Use the II to Teach" contest. If you've discovered innovative ways to teach with Apple II computers, *A +* wants to hear from you! Send your Apple II teaching success stories by July 15, 1988 to: II to Teach, *A +* magazine,
950 Tower Lane, 18th Floor
Foster City, CA 94404.

All entries must be 500 words or less in length, type-written, and double-spaced. And make sure your entry includes your name, address, telephone number, and the name of the category you are entering.

Two Winning Categories: Regular Classroom and Special Education

REGULAR CLASSROOM TEACHERS:

Share with us your successes, using any Apple II computer, in teaching a group of students (two or more) in public or private primary or secondary schools and colleges/universities. Entries can also be in adult continuing education or even in corporate training.

Tell us about the creative ideas and effective methods you've used with the help of your Apple II that have produced noticeable results from your students.

SPECIAL EDUCATION TEACHERS:

Share with us *your* successes, using any Apple II computer in any educational setting, teaching special students who are emotionally, intellectually, or physically challenged. Tell us how your innovative thinking and creative use of an Apple II have inspired your students to new levels of learning and achievement.

A + will award a Grand Prize and First, Second, and Third Prizes in each of two separate categories of entries—Regular Classroom and Special Education—for a total of eight exciting, high-value prizes! The Grand Prize

is an Apple IIgs computer contributed by Apple Computer with GS-compatible peripherals from the following leading hardware companies:

■ Applied Engineering ■ Bose ■ Electronic Learning Systems ■ Kensington Microware.

First, Second, and Third Prizes are \$400, \$300, and \$200 worth of Apple II software from these prominent software publishers:

■ Accolade ■ Activision ■ Addison-Wesley Publishing ■ Baudville ■ Blue Lion Software ■ Britannica Software ■ Brøderbund Software ■ Claris ■ Compu-Teach ■ DataSoft ■ Davidson & Associates ■ Educational Resources ■ Electronic Arts ■ First Byte ■ Great Wave Software ■ HBJ Publishing ■ Heartsoft ■ Jada Graphics ■ Mastery Developments ■ Milliken Publishing ■ Mindscape ■ Penguin/Polarware ■ Random House Media ■ Scholastic Software ■ Sensible Software ■ Sequential Systems ■ Springboard Software ■ Stone & Associates ■ StyleWare ■ Sunburst Communications ■ Teachers Support Software ■ The Learning Company ■ The Software ToolWorks ■ Thunderware ■ Timeworks ■ Unison World ■ Weekly Reader Software/Optimum Resource.

Start writing your Apple II success stories today, and you could win hundreds of dollars' worth of software or the Apple IIgs system of your dreams!

* Apple IIgs is a registered trademark of Apple Computer, Inc.

*Hurry! Entries must be postmarked by
July 15, 1988, and received by A+
no later than July 21, 1988.*

II TO TEACH™ CONTEST

Official Contest Rules

NO PURCHASE NECESSARY

1. All entries must be 500 words or less, typed and double-spaced. Multiple entries, mailed in separate envelopes, will be accepted. On each entry include your name, address, daytime telephone number, and the name of the category you are entering (Regular Classroom or Special Education). The publisher of *A+* magazine will have the right to publish any entry in *A+* magazine and in any collection of entries. Mail completed entries to: "II to Teach" Contest

A+ magazine
950 Tower Lane, 18th Floor
Foster City, CA 94404

Entries not fulfilling the above requirements will be disqualified.

2. Contest begins April 15, 1988, and is promoted and advertised in *A+* magazine and related publications. All entries must be postmarked by July 15, 1988, and received no later than July 21, 1988. All decisions will be made by September, 1988, and winners will be announced in the November issue of *A+*.

3. For each category there will be a total of four prizes awarded as follows:

Grand Prize: Complete Apple IIs computer system

1st Prize: \$400 worth of Apple II-compatible software

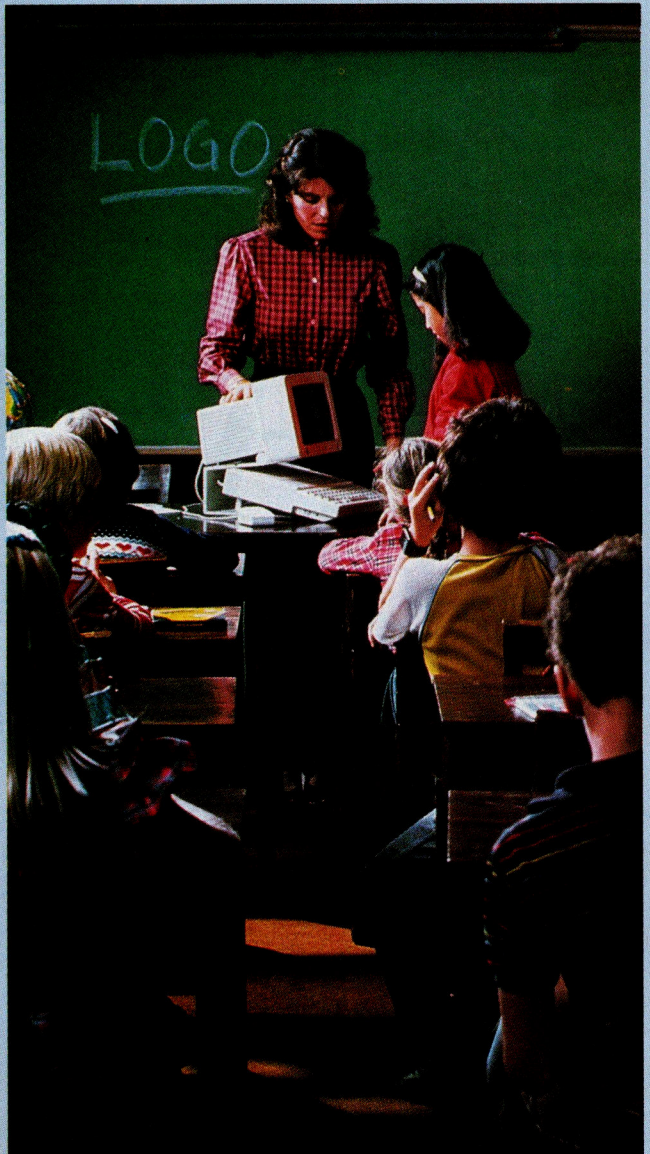
2nd Prize: \$300 worth of Apple II-compatible software

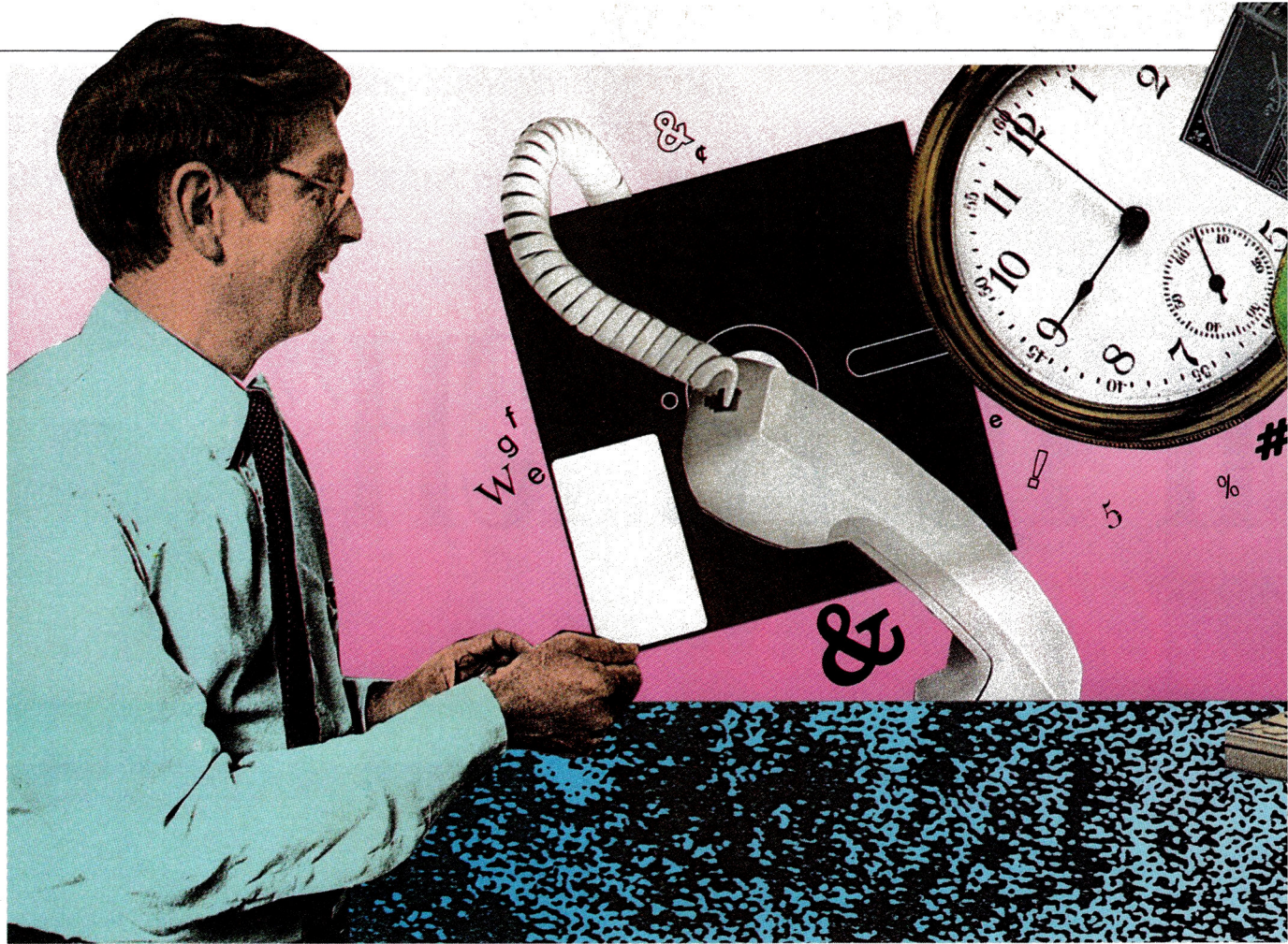
3rd Prize: \$200 worth of Apple II-compatible software

4. Winners will be selected by a panel of industry experts and *A+* magazine editors from all submissions that meet entry requirements. Decisions will be based equally upon content, originality, practicality, and results of educational applications described. The judges' decisions are final.

5. The *A+* "How I Use the II to Teach" contest is open to all individuals of at least 18 years of age who are residents of the U.S., its territories and possessions, with the exception of employees (and their families) of Ziff-Davis Publishing Company and its properties, and their advertising and promotion agencies. Void where prohibited or restricted by law.

6. For a complete winners' list, send a stamped, self-addressed envelope to: *A+* magazine, "II to Teach" Contest, 950 Tower Lane, 18th Floor, Foster City, CA 94404. Refer to the November, 1988 issue of *A+* magazine for winners' names.





TELECOMMUNICATIONS

BY MICHAEL FISCHER

APPLE

THE PERSONAL EDITION: THE OFFICIAL

In my telecommunications column last October, I noted that Apple was considering opening its dealer-oriented AppleLink service to consumers. Well, I was wrong. Rather, Apple has introduced an entirely redesigned and greatly expanded AppleLink "for the rest of us." It is called AppleLink—The Personal Edition, an official Apple on-line national information service. This service offers most of the

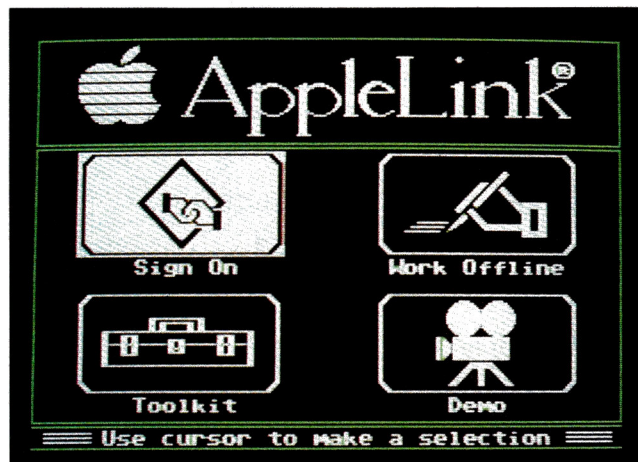


Figure 1: AppleLink software main menu

general and Apple-specific material that you can find on other services, but it has the added bonus of an official Apple presence.

The service uses special software that takes care of modem-configuration details, leaving you free to concentrate on communication. And the software does not merely display the boring "dumb terminal" form of scrolling text that is common to many services. Instead, all text



ELINK

APPLE ON-LINE INFORMATION SERVICE

appears in scrollable windows, and the commands appear in pull-down menus. Graphic icons further help guide you around the system.

Getting Started

To connect to Apple-Link, you simply buy its special software package; enter your identification number, password, modem speed, and local-access telephone number (which you select from a book of Telenet, Tymnet, and Datapac numbers);

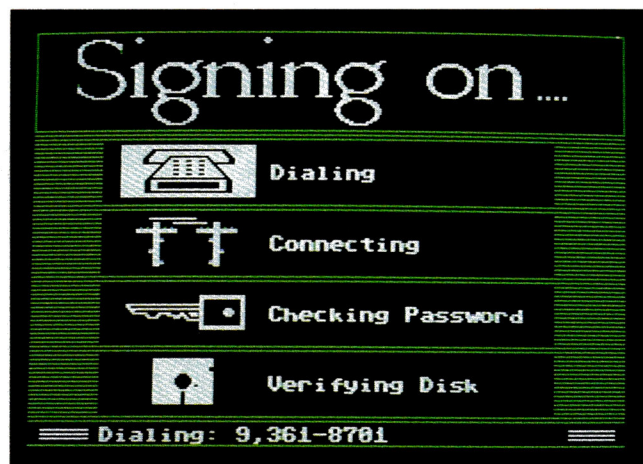


Figure 2: Sign-on sequence initiated through main-menu choice

and tell the software to "sign on." You don't need to know any modem commands or any special sign-on procedures.

When you have entered your personal information into the software once, all you have to do the next time is boot the disk and select the Sign On icon (see figures 1 and 2). The pricing for Apple-Link-The Personal Edition is reasonable. The software will sell for \$35 and will include two

hours of free connect time and a subscription to an AppleLink magazine. Access charges will be \$6 per hour non prime-time (weekends and 6 P.M.-7 A.M. weekdays), and \$15 per hour prime-time. Unlike most services, the prices will be the same even if you're communicating at 1200 or 2400 baud, and there will not be a surcharge for using special services such as the stock-quotation reporter.

If you are familiar with the dealer/developer version of AppleLink (see *A+*, October 1987), you will be familiar with the basic look and feel of the Personal Edition software, although the contents of the service are greatly expanded. At present only the Apple II version of the software is

sonal Edition is a joint project of Apple Computer, Inc., and Quantum Computer Services. Quantum also runs a Commodore-only service known as QuantumLink, so it has ample experience in providing on-line information.

After you have logged onto AppleLink, you see two icons representing the two general areas of AppleLink: Apple Community and General Services (see figure 3). The Apple Community section is the official Apple area of the service as well as the location of Apple-specific information.

Apple Community

The Apple Community (see figure 4) contains seven areas:

- The University offers Apple-sponsored on-line classes on subjects de-



Figure 3: AppleLink is divided into Apple-specific and general-interest areas.

available—the Macintosh version is being tested and will be available later this year, and a IIGS-only version of the software is under development.

The software uses MouseText icons to form windows for its display. It is icon- and menu-driven, and an "expert mode" lets you use keywords to move around within the system. You make selections with the mouse or the keyboard.

AppleLink—The Per-

signed to increase your enjoyment of your computer. Two classes that were offered during the service's prerelease testing period were BASIC Fun (creating animated games using Applesoft BASIC) and AppleWorks: Making Your Home Budget. The courses are programmed and interactive.

- In Headquarters, you can ask questions of Apple, get product and promotional information, read special "hot tips" for

APPLELINK FORUM LEADERS

AppleLink—The Personal Edition is unique among the national information services in that it has 12 different Apple II interest areas, known as forums. Each forum has a different leader:

Apple II Hardware Forum—Tracy Poe. Poe is also the sysop of the Apple Corps of Dallas BBS. His "day job" is as an air-traffic controller at the Fort Worth Air Traffic Control Center.

Apple II Development Forum—James M. Luther. Luther lives in Kansas City and spends much of his spare time programming the Apple IIGS in Pascal, assembly language, BASIC, and C.

AppleWorks Forum—Oliver W. Roosevelt. Roosevelt previously held a similar position on GENie. He is a music teacher in South Carolina by day, but Roosevelt also finds time to teach classes and write articles for the National AppleWorks Users Group.

Music and Sound Forum—Tim Knight. Knight was the marketing manager for the Apple MIDI Interface and trade-show manager for Apple at the recent National Association of Music Merchants show.

Art & Graphics Forum—Marian Petrides. Petrides, a physician, used to be the Apple II sysop on GENie.

Apple II Games Forum—Bob Lindstrom. Lindstrom needs no introduction to *A+* readers, since he is the award-winning entertainment editor of *A+*.

Telecommunications Forum—Vince Cooper.

Cooper publishes the Prime bulletin-board program for the Apple II and works as a computer salesman and consultant in Denver, Colorado.

Utilities Forum—Floyd Zink. Zink has written several public-domain programs, including his biggest claim to fame, BLU (Binary II Library Utility). He is a real-estate developer in Florida.

Education Forum—Cathy Christensen. Christensen was sysop of the Apple II area on GENie for a year. She is currently pursuing a degree in computer science and mathematics in Brockport, New York.

CP/M Forum—Jack Brown. Brown has been a CP/M guru for more than six years. He is also the technical support manager for FOG, an international nonprofit computer users' group with more than 17,000 members worldwide.

The Productivity Forum—Marty Knight. Knight has conducted several successful teacher workshops on AppleWorks for his school system in Middeltown, Connecticut. He is a member of the National AppleWorks Users Group and a volunteer in its "Members Helping Members" program.

Word Processing Forum—Frank Dooling. Dooling is a lieutenant commander in the Navy. He brings to AppleLink years of experience in word processing, a comprehensive technical background in Apple II hardware, and a quick wit during on-line chat sessions.

CIRCLE 231 ON READER SERVICE CARD



Figure 4: The Apple Community has seven areas to explore.

using Apple hardware and software products, as well as order Apple products and chat with Apple personnel on-line.

- The Reference Library allows you to search various official Apple reference materials including product specifications, product-manual tables of contents, and a special-education database that lists hardware and software products for disabled users. This area also includes software reviews and information from APDA (Apple Programmer's and Developer's Association).

- The Software Center contains the public-domain, shareware, and demonstration software available on AppleLink. This area is actually a compilation of the files available from each of the forums (see sidebar, page 68). You can access the files from either location. Included in this area are all the "Apple II Technical Notes."

- Calendar & Events shows you a summary of what's happening on the AppleLink forums.

- Forums is an area that contains four subgroups: Apple II, Macintosh, Industry Connection, and User Groups.

Within the Apple II area, you find the following forums: Apple II De-

velopment (programming), Apple II Hardware, AppleWorks, Art and Graphics, CP/M and MS/DOS, Education, Games, Music and Sound, Productivity, Telecommunications, Utilities, and Word Processing. The leaders of the Apple II forums are Willie Collier (of Apple Computer) and Kent Fillmore (of Quantum Computer Services). Fillmore formerly ran the Apple II services on GENIE (General Electric Network for Information Exchange).

The Macintosh area will contain similar forums for Macintosh users, as well as forums on HyperCard and desktop publishing.

Each of the forums is run by a forum leader and one or more assistants. In addition, VIPs connected with every forum can provide technical assistance. The forums feature a message board (called Let's Discuss) divided into categories and topics, a software library, weekly conferences on forum-related subjects (including guest participants), software and text libraries (linked to the Software Center), and contests. Several forum conferences take place every night, normally from 9 to 11 P.M. Eastern time.

The Industry Connection forums are run by third-party Apple software and hardware companies and include various levels of product support. Some companies have actual product-support forums that include an on-line catalog, message boards, software demos, and weekly chats. Other companies have product-support message boards. Still others merely have a person available on AppleLink, possibly as a Special Interest Forum VIP.

The Apple II third-party companies on AppleLink include Activision, Applied Engineering, Beagle Bros, Brøderbund, ByteWorks, Davidson and Associates, Electronic Arts, Epyx, Orange Micro, PBI, Roger Wagner Publishing, Sierra On-Line, TML Systems, and WordPerfect. (Many additional companies are considering joining Industry Connection.) Macintosh software and hardware producers will also be present.

The User Group Forum is run by Apple's User Group Support Group and provides help for Apple users' groups and individuals seeking information about groups.

Interactive System

AppleLink is highly interactive. Each forum

has a "chat room" in which up to 23 people can "converse" at a time. The main entrance "lobby," where you go initially after signing onto the system, is also a chat room. You can create public or private chat rooms at any time. Several "auditoriums" sprinkled throughout the system are for more structured discussions. The discussion leader controls the auditorium and invites people "up on stage" to "speak" or collects questions and comments from the audience and forwards them to the speaker or speakers.

The software allows you to save a log of auditorium discussions and chat sessions. A member can instantly send a message to any other other member on the system—you can do a search to determine if a certain member is on-line. You can use electronic mail to send text letters and program files. The entrance lobby also serves as one of several places where a member can get help. Rather than using the Customer Service area, you can find AppleLink guides—actual people who can answer most of your questions about AppleLink—in the lobby.

General Services

The entrance lobby is



Figure 5: General Services provides typical information service features.

one part of People Connection, which is itself a part of the General Services side of AppleLink—The Personal Edition (see figure 5). General Services includes several other areas:

- Financial District provides investment information and business news.

- Recreation Center has entertainment, news, and sports information. It even enables you to play on-line chess matches with other members.

- Club House contains various special-interest clubs such as debate, fantasy, and genealogy groups. If you can convince the powers-that-be at AppleLink that it will be worthwhile, you can even form your own club.

- The News Room provides wire-service news stories and an area where you can post your own reactions to the news.

- You can obtain merchandise or get information from merchants in The Mall. Merchants include Comp-u-store Online, Apple Collection, EAasy Sabre (airline reservations), a flower shop, and classified ads.

- Learning Center contains research material, an on-line community college, and a forum for business managers.

There has been some speculation about the effect of AppleLink—The Personal Edition on the Apple areas of the other national information services such as BIX, CompuServe, Delphi, GENie, and The Source. I believe that AppleLink, with its personalized software, will introduce thousands of Apple users to the world of telecommunications. And, as these people reach out into other areas, every service with something to offer will find its user base expanding. +

Michael Fischer is A+ 's telecommunications editor.

VITAL STATISTICS

APPLELINK—THE PERSONAL EDITION

Apple's new official on-line information service has something for everyone.

CPU: Apple IIe (enhanced), IIc, or IIGS

RAM: 128K

LIST PRICE: \$35

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Expanded RAM cards supported	Y	N	N
Capture buffer	2.5 Mb	N	4 pages
Copy buffer	45K	17K	36K
Dial lists	unlimited	16	—
File transfer protocols	7	4	3
Copy files, Format disk	Y	N	N
Load/Save AppleWorks™ files	Y	N	N
Editor commands	42	12	14
Set page margins	Y	N	N
Print formatting commands	Y	N	N
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Procedure macros	unlimited	N	N
Commands available	20	N	N
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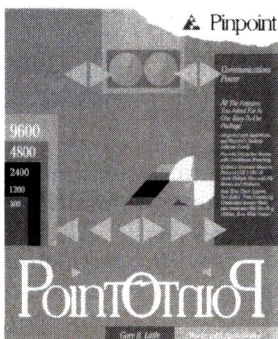


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The IIe/IIc WORD PROCESSING

Whenever a new computer comes out, software makers almost always get into a dogfight to establish their product as the definitive one of its kind. Remember PC-DOS vs. CPM-86 on the original IBM PC? Excel vs. Jazz on the Macintosh?

What you don't expect to find is that kind of a fight involving a machine that's been around as long as the Apple II. Yet that's just what's going on now, as two programs square off in the battle to become the definitive mouse-driven Mac-like word-processing program for the IIe and IIc—and in the process provide further proof (as if further proof were necessary) that the eight-bit Apple II is the computer that refuses to die.

In this corner is the defending champion, MultiScribe 3.0 from StyleWare. Boasting a clean, graphic interface and an armload of add-on and customizing programs, MultiScribe has set the standard for its type of Apple II word-processing program.

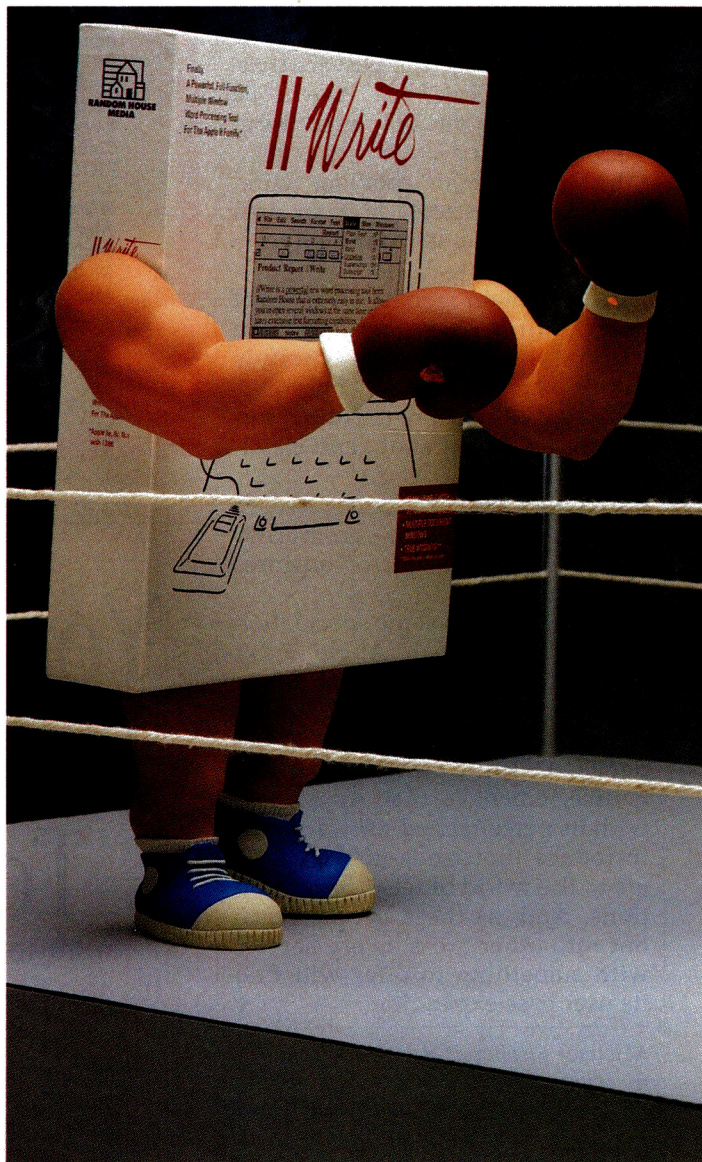
In the other corner is IIWrite, the challenger from Random House Media. Although it so far lacks the enhancements that MultiScribe boasts, IIWrite can claim to be even closer than its competitor to the MacWrite model. And unlike MultiScribe, IIWrite lets you have multiple documents open at the same time.

Although the programs are both extraordinarily easy to learn and use, their differences are significant enough to warrant a close look before you decide which one may be for you. Even before looking at them individually, you'll have to ask yourself a couple of basic questions to determine whether either one is what you need.

First and foremost, ask yourself why you need a word-processing program. Are you planning to tackle the Great American Novel? If so, neither of these programs may be for you. Both sacrifice some speed and text-handling power in order to bring you such features as the ability to print many different fonts on an ImageWriter II.

If it's only the mouse interface that you're after, Roger Wagner's MouseWrite program offers it, along with the speed that comes with using the Apple's text, rather than graphics, screen. MouseWrite comes with several fonts that you can download to the printer but that don't appear on the screen.

But if you're looking for a program that offers a variety of on-screen fonts and the ability to customize printouts or is suitable for producing a newsletter or



short school newspaper, either MultiScribe or IIWrite will do quite nicely.

MultiScribe 3.0

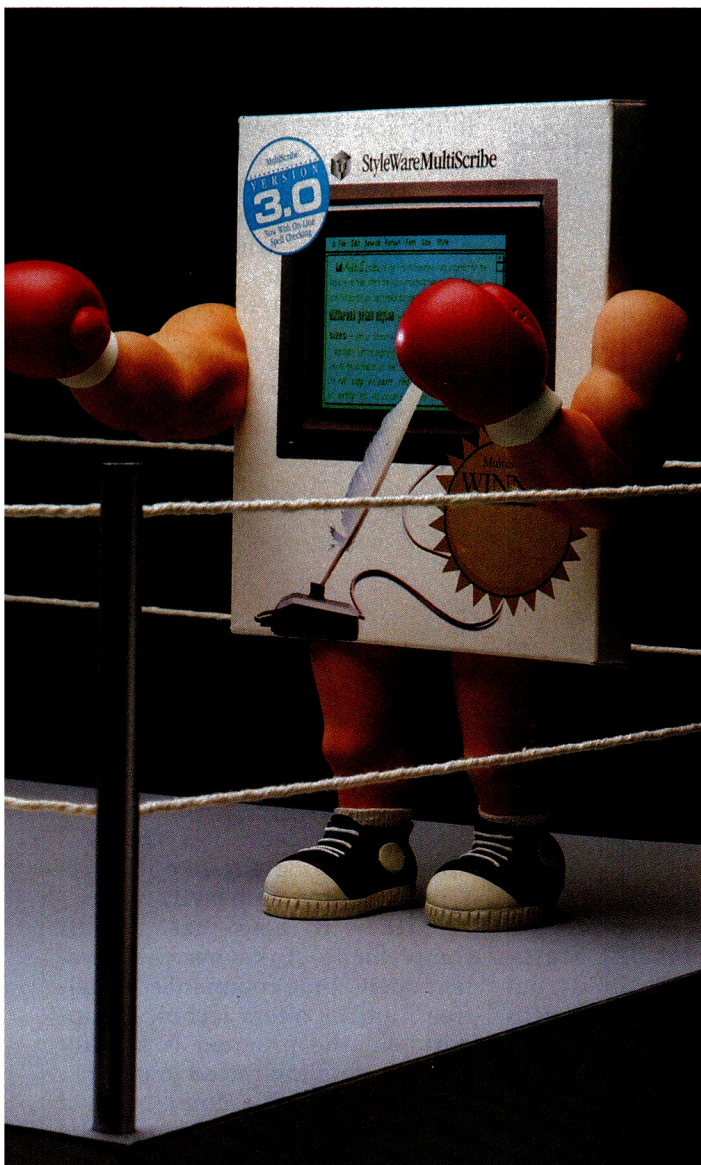
Think of MultiScribe as a fancy car, all decked out with chrome trim, plush interior, power steering, and a dozen other optional features. At its heart is a basic four-cylinder engine. You don't buy this car for its engine, though; you buy it for the style and comfort.

MultiScribe now comes with a 50,000-word spelling checker, always a welcome addition (see figure 1). You

SOFTWARE BY RICH JAROSLOVSKY

*IIWrite and MultiScribe square off
in the word-processing arena.*

CHALLENGE



matically recognize AppleWorks files, but it does allow both the reading and saving of ASCII text files. You can create or edit a file in AppleWorks, save it in the ASCII format, and then bring it into MultiScribe to customize it. Saving documents is similarly a snap; you have a choice of three formats: MultiScribe, ASCII, or "Old MultiScribe."

Far and away the main reason to use a graphics-

MultiScribe 3.0 and IIWrite Feature Comparison

	MultiScribe	IIWrite
Number of standard fonts	10	5
Number of styles	11	6
Number of type sizes	5	5
Number of print modes	6	3
Has windows	No	4 max.
Has spelling checker	Yes	No
Reads AppleWorks files	No	Yes
Previews printed text	Yes	No
Is copy-protected	Yes	Yes
Has 5¼-inch backup disk	Yes	Free
copy-protected	\$10	
unprotected	\$20	
Is copyable to hard disk	Yes	No
Is copyable to 3.5-in. disk	Yes	No
Works with RAMdisk	Yes	No
Imports graphics	\$39.95 (opt.)	No
Top-bottom scroll of 10K document	7 sec.	3 sec.
Printing at highest-quality mode of 10K document	21 min.	14 min.

based word-processing program is the flexibility it allows in document printing. Here MultiScribe truly shines. It comes with 10 built-in typefaces, or fonts; 11 styles, such as shadowed, underlined, and italics; 5 different sizes; and 6 print modes, ranging from a fast, text-only option to two "near-letter-quality" choices that print fonts with painstaking care. Moreover, you can buy 8 different "fontpaks"—for \$19.95 apiece—that each offer 10 or 11 additional typefaces, including foreign and scientific character sets.

The program's flexibility doesn't stop there. StyleWare also sells a \$39.95 MultiScribe Picture Manager, an on-line accessory that allows you to merge single- or double-high-resolution pictures, such as Dazzle Draw or MousePaint creations, into your documents (see figure 2). With a little extra work, you can

can load MultiScribe onto a RAMdisk to speed it up substantially. It automatically recognizes Apple's Memory Expansion Card, and you can configure it to take advantage of Applied Engineering's RamWorks card and Checkmate Technology's MultiRam. (Technical support is available, for the price of a phone call to Houston.)

Document-handling in MultiScribe is easy; pop-up windows step you through the process with a minimum of fuss and bother. MultiScribe does not auto-

use Print Shop or Newsroom graphics as well. Thus, MultiScribe is especially useful for producing small newsletters and the like. (Schools may be interested in a special MultiScribe school package that's available from Scholastic for \$124.95. It includes the Picture Manager as well as a teachers' guide, an activities book, and an activities disk.)

Finally, MultiScribe Desk Accessories, also \$39.95, includes a pop-up calculator; clock; calendar; and macro capability, which lets you automate frequently used key-stroke sequences by storing and calling them up with a single key-stroke.

You have to pay a price for all this flexibility, however. As with most graphics-based word-processing programs, the problems are with capacity and speed. The more fonts you use in a document, the less memory remains for the docu-

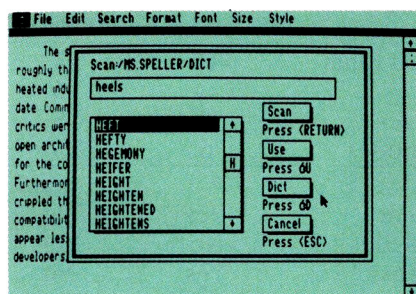


Figure 1: MultiScribe's built-in spell checker

ment itself; even with the default setup, MultiScribe's work space amounts to a paltry 30K or so in a 128K IIe or IIc. All those accessories can mean a lot of disk swapping and waiting while the computer reads the disks. The time it takes to scroll through a document, while probably within acceptable bounds for most users, will seem poky to those used to AppleWorks' near-instantaneous cursor leaps. And plan to do something else while your MultiScribe creation is printing out on your ImageWriter II. A 10K text document, utilizing four fonts and no pictures, takes 21 minutes to print in the highest-quality mode.

MultiScribe 3.0 is copy-protected; you have to buy backup copies from StyleWare (\$20 for an unprotected backup and \$10 for protected). Although the program is simple to start and run, copy protection seems fairly unnecessary, since you can't begin to learn

all it can do without referring to the detailed (and well-produced) 346-page manual. So, to get the most out of the \$79.95 program, anyone using a bootleg copy would likely have to spend a great deal of time at a photocopy machine. MultiScribe is one of those cases where the quality of the package is probably a better deterrent to illegal copying than is any protection scheme.

On the plus side, MultiScribe comes with instructions for loading to a hard-disk or 3.5-inch drive, which takes a bit of the sting out of the copy protection. Once it's on a hard disk, it doesn't require a key disk to boot.

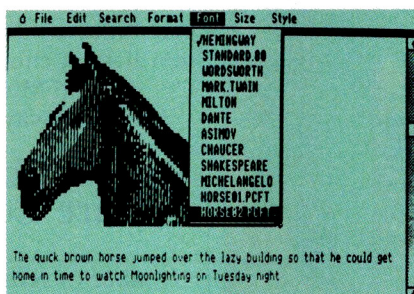


Figure 2: Picture Manager accessory can import graphics.

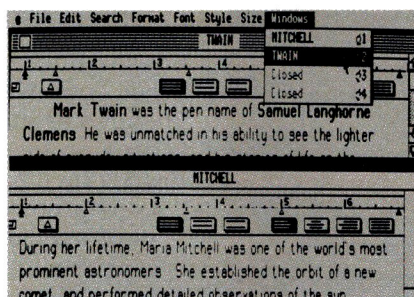


Figure 3: IIWrite accommodates multiple windows.

IIWrite

Random House Media's entry in the graphics-based word-processing arena lacks some of MultiScribe's features and flexibility, but it has a few tricks that its competitor lacks.

First, it accommodates multiple windows. Unlike MultiScribe, which allows only one document to be in memory at once, IIWrite lets you have up to four documents open (see figure 3). The documents can't be long, however; the total work space is quite limited and shrinks if you are using more than one font. But within that limitation, IIWrite functions remarkably like a true MacWrite for the Apple II. You can stack windows on top of one another, so that only the top-

most is visible. Or you can shrink windows and move them around on the desktop—allowing, for instance, children to view an essay question in one window while composing the answer in another.

Educational use, in fact, is more or less what Random House has in mind for IIWrite. The program comes in three versions: a \$79.95 home package that includes one copy-protected 5¼-inch disk (the copy protection does not allow hard-disk installation) and a coupon for a free 5¼- or 3.5-inch backup; an \$89.95 school edition that includes the 5¼-inch backup, a separate "student activities disk," and special teachers' guide in addition to the standard manual; and a new \$269.95 AppleShare network version aimed at classroom use.

Like MultiScribe, IIWrite is a what-you-see-is-what-you-get program; that is, fonts, margins, and the like appear on the screen just as

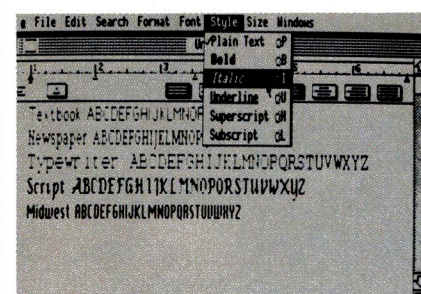


Figure 4: IIWrite has limited fonts and styles.

they will appear when you print them. You can set margins, tabs, and spacing on a ruler that runs across the top of the document; you can hide it or leave it visible. Although the program, like its MacWrite ancestor, is heavily mouse-oriented, it also has a full complement of keyboard-equivalent open-apple commands. A toll-free number offers technical support, but the program is so easy that you shouldn't need to use it.

IIWrite doesn't come with a spelling checker, but one is in the works for this fall. Meanwhile, you can check IIWrite documents saved as ASCII text files with other programs, such as Pinpoint Document Checker or Sensible Speller Pro-Dos. (In addition to the spelling add-on, a filing program may also be in the offing.)

In terms of file handling, IIWrite has an edge over MultiScribe. Although the 78-page manual fails to

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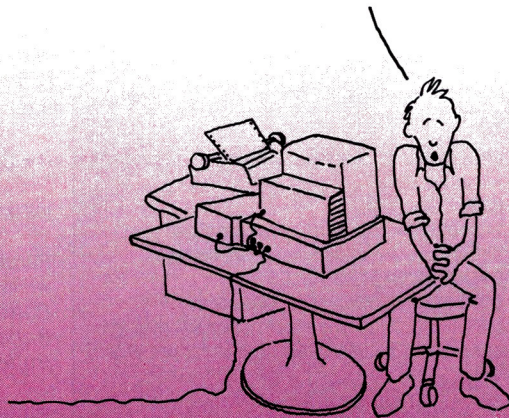
. . . it could run programs, remove programs, back up, restore, index, copy, and other stuff, too, automatically. And it could be incredibly fast and easy to use.

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mention this feature, the program can handle a variety of different types of word-processing files, including AppleWorks files. Whenever IIWrite encounters a type of file with which it is unfamiliar, it sends you a little message telling you so and offers to load the file anyway. My AppleWorks files loaded flawlessly, with carriage returns and other formatting commands seemingly intact. And although IIWrite is no speed demon, it took less than half the time MultiScribe did to scroll from the top to the bottom of a 10K file.

What IIWrite lacks is the flexibility that distinguishes MultiScribe. The program comes with only five fonts, each available in six styles and five sizes, giving it substantially fewer options than its competitor (see figure 4). It makes no allowance for RAMdisks or memory-expansion cards, probably on the assumption that such accessories aren't common in classrooms.

IIWrite allows three printing modes: high-quality, standard, and draft (which uses the printer's built-in character set and doesn't reproduce fonts or other enhancements). Its high-quality mode compares favorably with the "NLQ1" setting in MultiScribe. And the same document that took me 21 minutes to print in MultiScribe's best-quality mode took only 14 minutes in IIWrite, with little, if any, loss of clarity. The program lacks the capacity to import graphics, however.

Early copies of IIWrite couldn't handle headers and footers properly; contact Random House if you encounter such problems. Otherwise, IIWrite seems refreshingly free of bugs for a new piece of software.

Coming Out on Top

So, which program wins the competition? Both are inordinately easy to use and are good values for the money. IIWrite has one big advantage, the ability to handle up to four documents at the same time. It is also better at dealing with documents created by other word-processing programs and operates somewhat faster than its rival.

But MultiScribe 3.0 offers more built-in fonts, an already available, no-extra-cost spelling checker, and unparalleled versatility. With its additional print modes and its

wide array of add-ons, it gives you substantially more options and a better chance to have your finished product come out looking precisely the way you want it to.

You can cut and paste between documents with a clipboard, but it's not as easy to accomplish as in IIWrite. Still, unless windowing is critical to you, give the edge to MultiScribe 3.0. Whichever program you choose, be prepared to do things with your Apple II that you never thought you could. **+**

Rich Jaroslovsky is a political editor and columnist in The Wall Street Journal's Washington bureau.

VITAL STATISTICS

MULTISCRIBE 3.0

A versatile, graphics-based word-processing program with many fonts and typesets, as well as the ability to import graphics

CPU: Apple IIe, IIc, or IIgs (in emulation mode—separate IIgs version available)

RAM: 128K

DISK DRIVES: one 5¼-inch (two recommended)

OTHER: mouse and dot-matrix printer recommended

OPERATING SYSTEM: ProDOS

COPY PROTECTION: yes (backups available)

LIST PRICE: \$79.95; unprotected backup, \$20; protected backup, \$10; Scholastic MultiScribe School Package, \$124.95

StyleWare, Inc.
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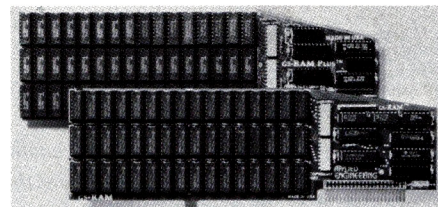
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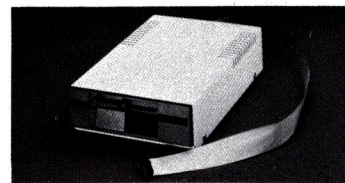
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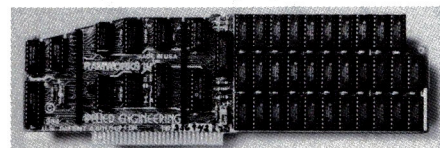
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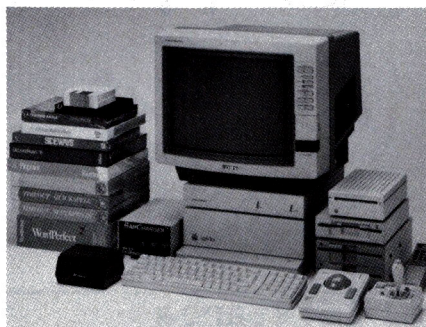
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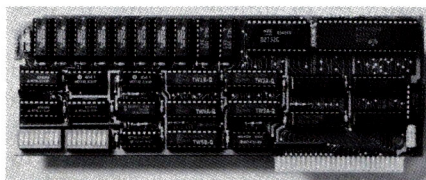
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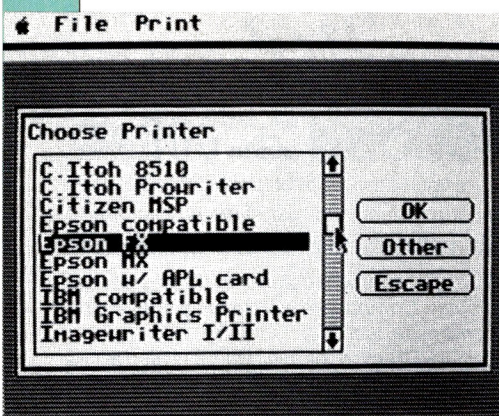
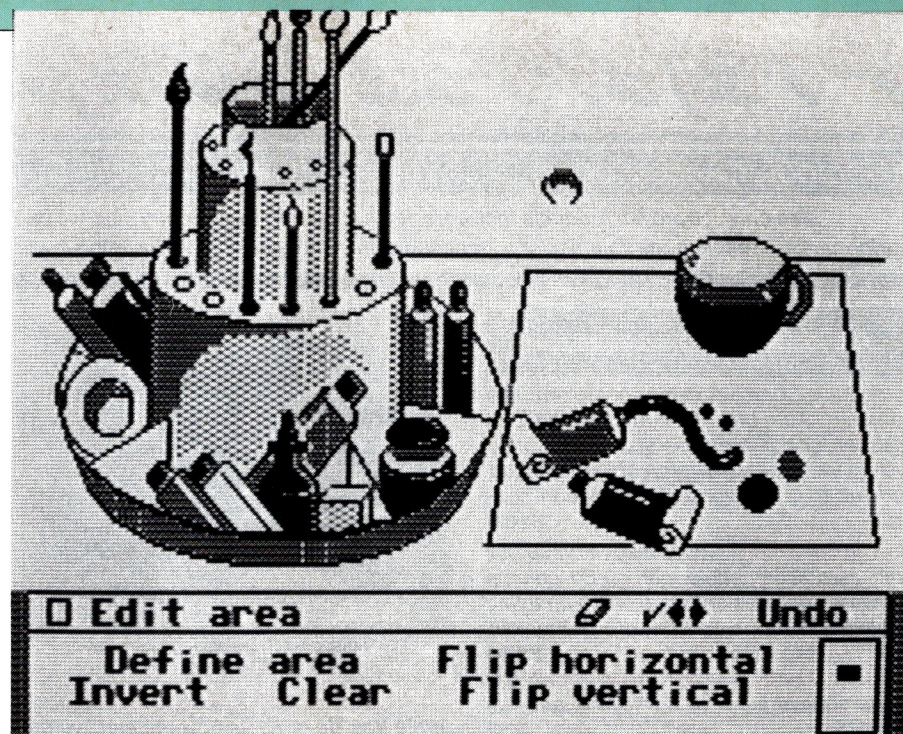


Figure 1 (above): It's easy to configure Print Magic from its list of 20 printers and 16 interfaces.

Figure 2 (right): Its graphics editor lets you modify any portion of a page.



SOFTWARE BY KEN LUCKE

A graphics/printing program that outdistances the competition

PRINT

Print Magic is a formidable, affordable extension of the ideas behind The Print Shop and Print Master, which, until this release by Epyx, were the state-of-the-art in poor man's poster and card creation. Although expensive programs let you do more, cost has always been a major consideration for many personal-computer owners. Low priced and flexible, Print Magic brings the average user many capabilities that simply were not available before.

This program gives you broad leeway in designing and printing posters, cards, and banners. Configuring the program from a list of 20 printers and 16 interfaces is easy (see figure 1), and you can use printer- and interface-driver files from other disks (unfortunately, the file structure is not documented). The ability to manipulate the creations with a MousePaint/Dazzle Draw-type graphics editor (which includes Zoom, Fill, Cut & Paste, Edit, Shapes, Text, and some other versatile features) allows de-

tailed modification of any portion of a page (see figure 2). The Paint section of the program alone boasts an impressive 24 brushes, 6 shapes, 6 line widths, and 5 pens and can paint in 24 different patterns (see figure 3). The Print Shop and Print Master permit the editing of graphics only (a single-pixel brush at a time).

The program is mouse-driven, with pull-down menus and a Macintosh look and feel. If you do not have a mouse, you may elect to use the keyboard instead. Dialog boxes appear throughout the program asking you to confirm critical operations. The program is of the "what you see is what you get" variety, allowing you to view closely any portion of your creation before printing. Although one of Print Magic's competitors, Print Master, lets you view your page before printing, it does so at a reduced size, making details obscure. The Print Shop has no such function.

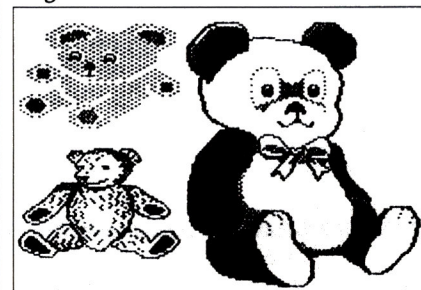
A File Utilities accessory lets you use the mouse to issue DOS com-

mands such as Rename, Delete, Lock/Unlock, and Catalog. This method is an improvement over that of Print Master or The Print Shop, which both require you to exit from the program to manipulate files. The Install Accessories selection in Print Magic allows future expansion of the program. The Typeface Editor, Newsroom Utilities, Screen Utilities, and File Utilities are set up as accessories.

Versatile Text

Print Magic includes several at-

Figures 5 and 6: These bears and roses are from The Print Shop (upper left in each case), Print Master (lower left), and Print Magic



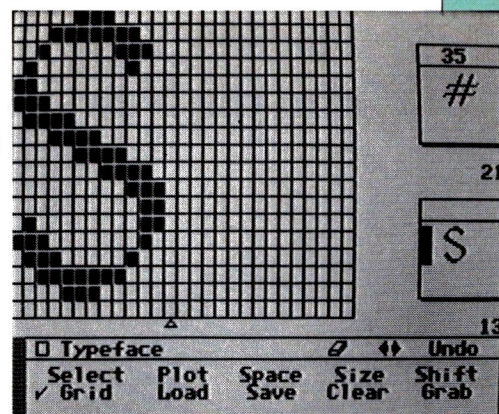
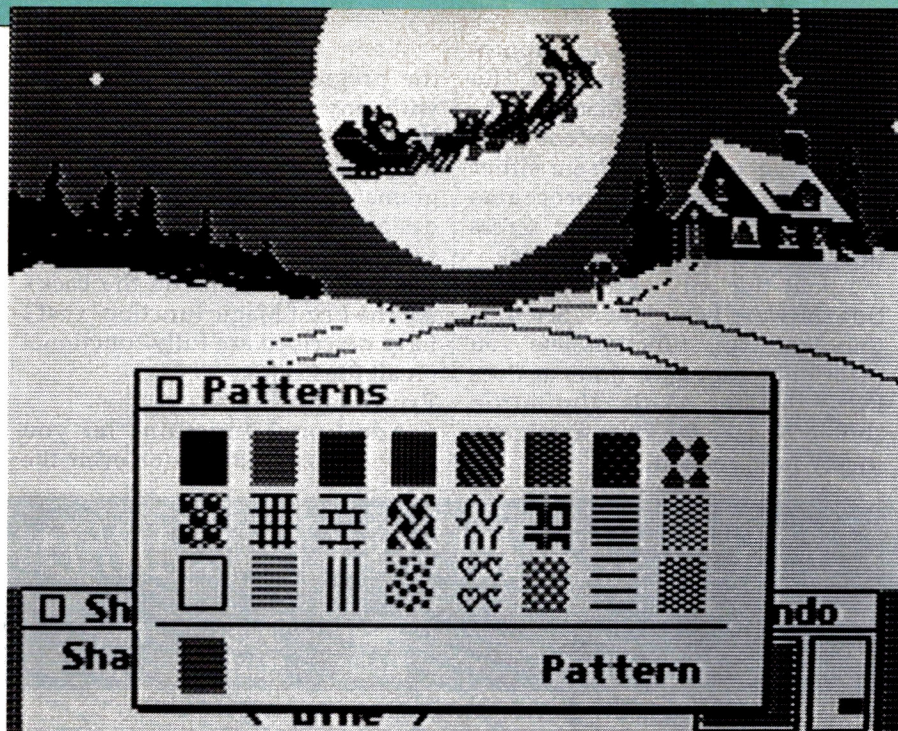
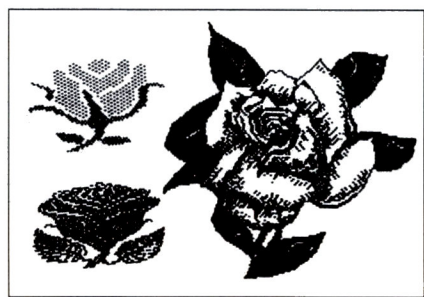


Figure 3 (left): With Print Magic you can paint in 24 different patterns.

Figure 4 (above): You can add to Print Magic's collection of fonts by designing your own.

MAGIC

tractive fonts, but if you want more, you can take advantage of the program's typeface editor, which lets you design your own fonts (see figure 4) or grab sections of the hi-res screen as characters. To generate new fonts for The Print Shop, on the other hand, you have to purchase an accessory program (Print Shop Companion), and I know of no way to add fonts to Print Master. Print Magic is also compatible with Fontrix fonts. Fifteen Fontrix FontPaks are currently available from Data Transforms, Inc., 616 Washington Street, Denver, CO 80203; (303) 832-1501—each with at least ten fonts.



A text-entry line lets you move the cursor and insert or delete before setting the line. A unique View Line option allows you to see the line in your chosen font and format before you place it, and you can change the font and formatting without retyping the line. The line can be centered or left- or right-justified, and you can specify the space between consecutive lines. Text can be plain or have any combination of boldface, italic, underlined, or enlarged typestyles. After the text looks the way you want it, you can place it anywhere on the page.

Worth a Thousand Words

The program comes with one or two disks (depending on whether the Holiday Graphics assortment comes with your purchase version) of pre-made, finely detailed graphics (see figures 5 and 6 for a comparison of graphics from The Print Shop, Print Master, and Print Magic). The program disk also includes several pre-made greeting cards and posters, ready to print out or modi-

fy. You can use any Print Shop graphics and Newsroom clip art as well. Print Magic can even capture any portion of a standard hi-res screen (you have to convert ProDOS files to the DOS 3.3 format first), so graphics and digitizing enthusiasts can make posters and cards that display the best pictures they've made with other products.

The Print Shop and Print Master restrict you to one picture size, limit you to one graphic, let you put graphics only in certain locations, and force you to follow specific steps, but Print Magic has no such limitations. You can use any number of different-size graphics, borders, and text—anywhere on the page. These benefits alone are worth the program's price. You can also switch among any of the functions at any time without destroying your work.

Bordering on Genius

You can select borders in any of 24 styles and 9 thicknesses. The border width appears on the page, and you can change the pattern or thickness easily before finally setting it. Again, there is no limit on the number of borders on the page or their locations. Unfortunately, though, Print Magic has no option for creating your own custom borders or patterns—one of the few features this software lacks.

Another minor disappointment

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is that you cannot include graphics in banners, as you can with The Print Shop and Print Master. Otherwise, the banners come out looking similar to banners from either of those competing programs (small black blocks spaced across the page to form each character).

About the only other aspect of this software I can find deficient is that the Print function lets you print only copy at a time, as does Print Master. This limitation should be easy for Epyx to remedy in any new version.

When you're designing cards, the program allows you to work with any of the four card sides (front, back, inside right, inside left). The two comparison programs, on the other hand, permit designs only on the front and inside right (The Print Shop also lets you put a credit line on the back). All the Print Magic functions that I have described are fully functional on all four sides.

Print Magic Extras

Additional functions let you move whole sections (or even the

PRINT PROGRAMS COMPARED

	PRINT MAGIC	PRINT MASTER	PRINT SHOP
F O R M A T S			
Creates posters (page)	YES	YES	YES
Creates greeting cards	YES	YES	YES
Creates banners	YES ¹	YES	YES
Creates calendars		YES	
Creates letterheads		YES	YES
G R A P H I C S			
Comes with graphics	YES	YES	YES
Uses Print Shop graphics	YES	YES	YES
Uses Newsroom clip art	YES		
Uses high-resolution screens	YES		
No predefined graphic sizes	YES		
Number of graphic resizes	6 ²	3	3
Allows items anywhere on page/card	YES		
Multiple borders allowed	YES		
Borders from disk			YES
F O N T S			
Multiple fonts allowed	YES	YES ³	
Fonts from disk	YES		YES
Built-in font editing	YES		
E D I T I N G			
Lets you edit on page/card	YES		
Number of editing tools	36	1	1
Horizontal/vertical flip	YES	YES ⁴	
Lets you invert area	YES	YES ⁴	
Lets you move area	YES		
Lets you save finished design ⁵	YES	YES	
O T H E R			
Built-in DOS access	YES		
Automatic multiple-copy printing			YES
User-controlled completion order	YES		
Mouse, joystick, or keyboard control	M / K	J / K	J / K

1. No graphics in banners
2. Depends on original art size
3. Limited to number of text lines

4. Whole page/card only
5. Excludes banners

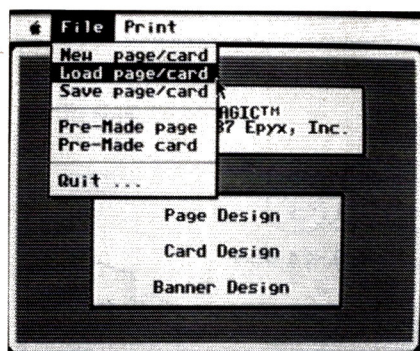


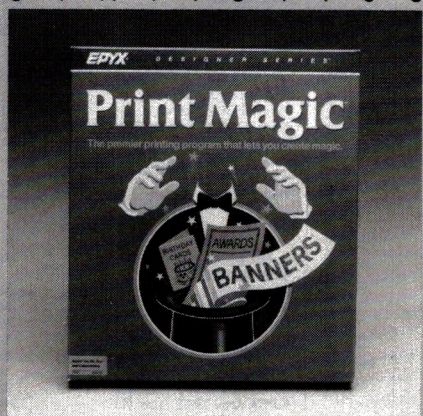
Figure 7: Print Magic lets you print a page as a card, or vice versa.

entire page) around, overlay items without erasing, and edit any area of the page (inverting it, flipping it vertically or horizontally, or simply clearing it). These functions are also possible on a smaller scale when you're using the Paint option. You can also print a page as a card, or vice versa (see figure 7). Print Master also has some of these options, but The Print Shop has none.

Once you've laid out your page, you can print it, save it whole, or save portions of it back to disk as hi-res pictures or user graphics files for use with Print Magic.

The program is well documented

VITAL STATISTICS



PRINT MAGIC

An extremely powerful personal graphics-design program at a bargain price

CPU: Apple IIe, IIc, or IIgs

RAM: 128K

DISK DRIVES: one 5¼-inch

OPERATING SYSTEM: DOS 3.3

COPY PROTECTION: no (but you cannot copy the program to a hard disk)

MOUSE: optional (recommended)

LIST PRICE: \$59.95

Epyx

600 Galveston Drive
Redwood City, CA 94063
(415) 366-0606

in a 48-page manual, which includes a "Quick Tour" section as well as a more detailed portion that covers less frequently used features. The manual also includes an order form for an additional disk of 80+ graphics and fonts (\$19.95 plus shipping).

All in all, Print Magic is an extremely powerful personal graphics-design program. It is well thought out and pleasing to operate, and it provides hours of fun as well as viable and professional-

looking output. In my opinion, Print Magic is far easier to use and more flexible than either Print Master or The Print Shop. With a purchase price of \$59.95 retail, Print Magic is a real bargain, and the quality of the program makes it nearly a must buy. **+**

Ken Lucke has been involved with personal computers since 1978 and has been an Apple-computer fan since 1981. He is a computer consultant and custom programmer.



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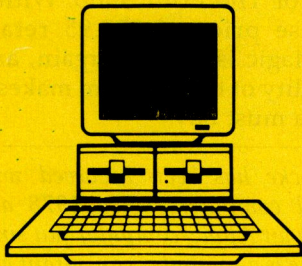
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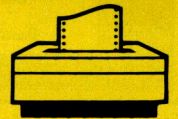
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A+ APPLEWORKS REPORT

*Using the database
module to do a
budget, and
questions from our
readers*

FEATURE REPORT

BY STEVE MILLER

DATABASE BUDGETING

All of us use budgets, whether we realize it or not. Need to find out how much a big party is going to cost? Wondering how much you'll need to spend to remodel your living room? What about the cost of sending your kids to college, including tuition, housing, transportation, clothing, food, and all those incidentals?

AppleWorks can easily figure these budgets for you. You can work them out with the spreadsheet module, of course, but for many basic budgeting applications, using the database module is much easier. You set up a budget database from the basic information that's available to you and use AppleWorks' calculated-categories and totaling features to do all the math. The resulting document is easy to read, and—if you're using it in business—its neat, professional appearance makes you look good too.

The Basics

Here's how you can set up a basic budget:

In this example, you want to find out how much it will cost to give a catered dinner for 80 guests. Among the expenses you'll have are invitations; rental of tables,

chairs, and place settings; the meal itself; and a band.

From the AppleWorks main menu, select Add files to the Desktop and then Make a new file for the: Database. Choose From scratch, and press Return. Enter a meaningful filename—PartyBudget, for example.

Next, create category names (see figure 1). You can use the same basic names—item, number, unit, and \$/unit—for almost any budget because they define the total cost of any set of items.

To enter category names, first delete the sample name Category 1, which appears at the top of the screen. (To delete it, put the cursor on the first letter and press open-apple/Y). After entering the four category names you see in figure 1 (with a Return after each), press Escape and then the space bar, and you're ready to enter your various expenses.

Entering Your Costs

For each item in your budget, enter its name, the quantity, what the individual unit is called, and the cost per unit (see figure 2). Press Return after each entry. Unless you need an exact cost down to the penny, round your figures to the nearest dollar—your final report will be

cleaner and easier to read. If you need exact figures, however, go ahead and enter those dollars and cents. If you make a mistake, use the arrow keys to move the cursor back to the error, correct it, and press Return to change the entry.

After entering all your budget items, press Escape. AppleWorks now shows you a summary of all your items, or records (see figure 3). You'll notice that the categories on this screen are all the same width, and some long entries may appear incomplete. Don't worry—what you see at this point is not necessarily how your final printed report will look, so this screen doesn't have to be laid out perfectly. If a layout with incomplete entries bothers you, however, you can adjust it by pressing open-apple/L. (Apple IIGS users, note: Your keyboard does not have an "open-apple" key. Use the Option key instead, whenever instructions call for open-apple.)

You can also make corrections without leaving this screen—just be sure to press Return after making an entry. (If you make a mistake while correcting an entry, or just change your mind, press Escape instead of Return, and the

original entry will reappear.)

Once you've entered all your data and checked it for accuracy, save it to a data disk. Just press open-apple/S.

Creating a Report

Now that you're ready to create a report, press open-apple/P (for Print) and select 2. Create a new "tables" format. Name the report Estimate, or anything else that serves your purpose, and press Return. As you'll see later, you can attach many report formats to a database—each one designed to present your data in a different way.

Next, lay out the categories as you want them to appear in your printed report. You can make each category wider or narrower by moving the cursor to it and then holding down open-apple together with the left- or right-arrow key.

AppleWorks assumes that you want a left margin of 0, but a margin of at least 1/2 inch is much nicer. To get it, press open-apple/O for printer options. Enter LM, press return, enter .5, and press Return again. To double-space the report, enter DS and Return. A list of other options is displayed, in case you need them. Press Escape to return to your format.

So far, you have a list of item quantities and individual costs but no totals, so you need to create a calculated column of total costs. Use the right-arrow key to move the cursor past the last column; then press open-apple/K. Enter a name, Totals, for the new category and press Return.

Now the program asks you to define a formula for how the items in this column are to be mathematically calculated. The arithmetic functions that are available in database calculated categories are addition (+), subtraction (-), multiplication (*), and division (/).

Looking at your data, you can easily see that the total cost for each type of expense equals the number of items times the cost per item. The categories on the screen are each labeled with a letter (A-B-C-D). What you need is the result of the figures in column B multiplied by those in column D. Enter this formula as B*D and press Return (see figure 4).

File: PartyBudget CHANGE NAME/CATEGORY Escape: Review/Add/Cha

Category names

=====

item

number

unit

\$/unit

File: PartyBudget REVIEW/ADD/CHANGE

Selection: All records

Record 1 of 1

=====

item: invitations

number: 5

unit: packages

\$/unit: 4

Figure 1: The first step in setting up a budget is to create category names.

Figure 2: For each item in the budget (invitations, flowers, catering, and so on), enter its name, quantity, what the individual unit is called, and the cost per unit.

File: PartyBudget REVIEW/ADD/CHANGE Escape: Main Menu

Selection: All records

item	number	unit	\$/unit
invitations	5	packages	4
table rentals	10	tables of 8	16
chair rentals	80	chairs	5
china/silver re	80	place settings	5
flowers	10	centerpieces	20
catering	80	meals	20
hors d'oeuvres	8	platters	16
band	4	hours	80

Type entry or use @ commands @-? for Help

Figure 3: After you've entered information for each budget item, pressing Escape creates a summary.

File: PartyBudget DEFINE CALCULATED Escape: Report Format

Report: estimate

Selection: All records

--> or <-- Move cursor @-J Right justify this category

> @ < Switch category positions @-K Define a calculated category

--> @ <-- Change column width @-N Change report name and/or title

@-A Arrange (sort) on this category @-O Printer options

@-D Delete this category @-P Print the report

@-G Add/remove group totals @-R Change record selection rules

@-I Insert a prev. deleted category @-T Add/remove category totals

item	number	unit	\$/unit	totals	L
-A-	-B-	-C-	-D-	-E-	
invitations	5	packages	4	9999999	n
table rentals	10	tables of 8	16	9999999	6
chair rentals	80	chairs	5	9999999	8

Type calculation rules (Example: A+B*C/5.75): B*D

Figure 4: To obtain the total cost for each item, you must multiply the number of units by the cost per unit. The totals show a 9999999 until you print your report.

FEATURE REPORT

A note regarding calculated columns in the database module: The mathematical functions the module offers are relatively inflexible. AppleWorks reads the formulas you give it literally, from left to right. Unfortunately, it cannot handle parentheses. If AppleWorks can't figure out how to do the calculations, it will print a row of number signs (#####) in the calculated column in your printed report. In such a case, try to devise another, more straightforward formula that will give you the desired result.

After you've entered your formula, the program asks you for the number of decimal places you would like to appear in your report (if you aren't using cents, enter 0 and press Return; if you're using exact costs, enter 2 and press Return). The number of blank spaces that will follow this column is not important, unless you plan to add another column after it—accept the 3 the program offers as the default.

Taking a Look

At this point, you might want to try printing your report to the screen to see what you've accomplished. (To print to the screen, press open-apple/P; then choose the Screen option and press Return twice). You should have a subtotal amount, in the Totals column, for each item in your budget. Check some of the totals to be certain that the program is calculating them correctly. After examining the report, press the space bar to return to the format you've been working on. (If you need to amend the formula for the calculated column, put the cursor on that column and press open-apple/K; then choose the Edit option.)

You now have a subtotal for each item, but you still need a grand total for the entire project. To obtain it, place the cursor on the Totals column, if it's not already there, and press open-apple/T. The program again asks you for the number of decimal places and the number of blank spaces to follow the column. Just press Return after each to accept the defaults.

At this point, your format should be complete. Print to the screen once again, and check for er-

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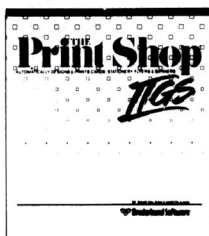
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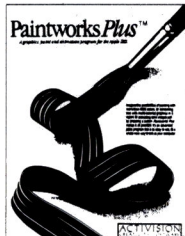
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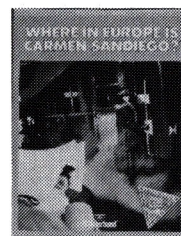
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CIRCLE 183 ON READER SERVICE CARD

FEATURE REPORT

rors. If everything looks OK, save your file to disk again and then send it to your printer. It should look like figure 5. The grand-total cost for your project appears at the bottom of the calculated column, followed by an asterisk.

After you see what the report looks like, you might want to further adjust margins and spacing, which you can do with the Printer Options menu (open-apple/O) while your format is displayed on the screen. Remember to save your file again if you make any changes.

You can adapt this basic budget format for almost any cost-estimating purpose. Also, you can add new items to your budget database at any time. To do so, return to the Review/Add/Change screen (press Escape if you're in the Print format). Then press open-apple/I (for Insert) and insert as many new items as you want. Press Escape when you're through inserting.

Handling Complexity

What if your situation is more complex, though, and involves additional calculated costs such as taxes or commissions? No problem! Just add another calculated category and include the appropriate multiplier in the equation.

For example, suppose you're thinking of hiring a party coordinator for your little company event and that this coordinator adds 10%

to the cost of each item as a fee.

You can return to your report format (Estimate), put the cursor on the Totals column, and press open-apple/K to add another calculated column. Call this category 10% Fee and define it as $.1*B*0$ (which is 10% of the total for each item). To find out what the party coordinator's fee will be, use open-apple/T to get the total.

You need to define a new formula to figure your total costs, because you now have to add in the coordinator's fee. To change the formula for the Totals column, put the cursor on it, press open-apple/K, and choose Edit. Press Return to accept the existing category name but enter a new formula: $1.1*B*0$. It gives

you 10% more than you had before the party coordinator came into the picture. (1.1 is the same as 110%).

One final enhancement: You can print a heading at the top of your report. To do so, press open-apple/N while looking at the report format. Don't change the report name but press Return. The cursor will jump to the line just above the format, and you can enter any one-line heading you want.

Save your file to disk; print it; and, if the price is right, enjoy your dinner party! **+**

Steve Miller is a television producer/director. He uses AppleWorks to write scripts and to prepare production budgets.

File: PartyBudget Report: estimate					Page 1 date
item	number	unit	\$/unit	totals	
invitations	5	packages	4	20	
table rentals	10	tables of 8	16	160	
chair rentals	80	chairs	5	400	
china/silver rental	80	place settings	5	400	
flowers	10	centerpieces	20	200	
catering	80	meals	20	1600	
hors d'oeuvres	8	platters	16	128	
band	4	hours	80	320	
				3228*	

Figure 5: The printed report shows the totals for each item and the total cost for all items together.

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QUESTIONS FROM OUR READERS

Claris, the publisher of AppleWorks, answers your AppleWorks questions.

PHANTOM PRINTOUTS

Q. *I just purchased a Dynax DX-15 printer to use with AppleWorks. Whenever I use the Print command to print, I get no readable printout. I used to print with my ImageWriter printer, with no problem. What do I need to do to get my letter-quality printer to print properly?*

A. AppleWorks Version 2.0 contains drivers for 11 common printers. If your printer is not one of these 11, you can follow the instructions below, after which AppleWorks will know the correct codes to send your printer. You may also have purchased a unique printer-interface card for your printer. Depending on this card, you might need to enter a different Interface Card code in the Printer Specifications, since the Printer Interface Card code default in AppleWorks 2.0 is Control-180N.

To set up your printer, you must tell AppleWorks the exact codes that your printer understands for the different print formats (e.g., bold, underline, and so on).

First, go to the main menu in AppleWorks 2.0 and select 5. Other Activities, 7. Specify information about your printer(s), 2. Add a printer, and 12. Custom printer. After you enter the printer name and the number of the slot in which the printer-interface card is located, you also need to enter the printer codes for lines per inch, character per inch, boldface, underline, and the like. You should find the printer codes you need in your printer's manual. Check its index for printer codes or Escape sequences. Most printer manuals have an ASCII table that indicates the equivalent keystrokes for hexadecimal, decimal, and ASCII codes. When entering these codes, make sure that whenever the manual indicates an Escape command, you press the Escape key and for a Control command you enter the Control key while you enter the command's letter.

For example, to enter the Control-I command, hold down the Control key and the letter i. To exit from each printer-code screen, hold down the Shift key and the number 6. Check your AppleWorks 2.0 manual Chapter 6, "Printers," for more information on adding custom printers.

The National AppleWorks User Group sells a wall chart of more than 100 different printer codes. For more information, write The AppleWorks National User Group, P.O. Box 8745, Canton, MI 48187

INTERMINABLE PRINTING

Q. *How can I make my printer stop printing when I'm working in AppleWorks? The space bar doesn't make it pause, nor does the Escape key make it stop.*

A. When you press the space bar within AppleWorks to make the printing pause or press the Escape key to stop it, AppleWorks does stop sending data to the printer until you tell it to continue. Some printers hold information in a temporary storage area called a printer buffer before it prints, however. After AppleWorks stops sending information, the printer continues to print the information that remains in this print buffer. The only way to abort the printing operation in such a situation is to shut the printer off.

CELL TRANSFER

Q. *How can I transfer certain cells from one spreadsheet in AppleWorks to another? The Copy command lets me copy only entire rows.*

A. Yes, Copy (open-apple/C) lets you select only entire rows, but you can achieve what you want by using a two-step Copy command. First you need to copy the rows of the cells you want to transfer from the first spreadsheet to the Clipboard, using open-apple/C. Next, go to the end of your second spreadsheet, using

open-apple/9, and copy from the Clipboard onto a blank area of this spreadsheet. With open-apple/B, blank the unwanted cells (selecting Block or Entry), and use open-apple/C to copy the cells (selecting Within worksheet) that you wanted to transfer originally.

ENCROACHING LABELS

Q. *My labels are not printing correctly. The beginning of my second record prints on the first label. I entered the correct page (label) length within the printer options in my database report format, and it still prints the beginning of my second record on the first label. How can I get only one record per label?*

A. Many AppleWorks database users ask this question. The main thing to check is that the number of lines you've defined within your Report Format screen is the same as the number of lines the program calculated when you entered the page length and lines per inch within the Printer Options screen. When you enter the page length and lines per inch in the Printer Options screen, the program calculates the number of lines to print per page (label). Check the number of lines per page designated on this screen. Add or delete blank lines within your report format to show at the bottom that it will print the same number of lines. As long as you have the same number of lines defined in both screens, your labels will print properly. The following message should appear at the end of your Report Format screen:
-Each record will print XX lines-
(where xx is the number of lines per label).

The technical staff at Claris Corporation answers your AppleWorks questions. Write to Help File, A+, 950 Tower Lane, 18th Floor, Foster City, CA 94404. Because of limited space, we aren't able to publish responses to all inquiries we receive.

SPEAKING OF GRAPHICS GALLERY

*A collection of goofy
graphics from our
Apple II artists*

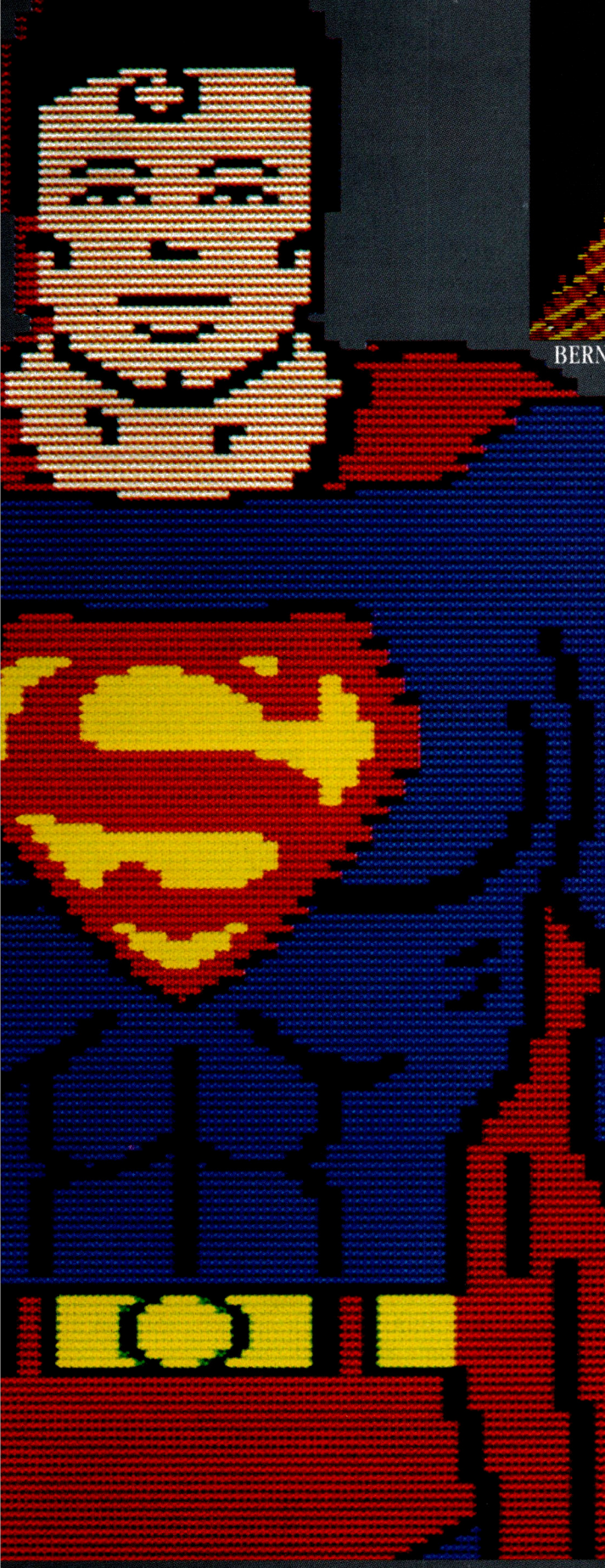
COMIC CREATIONS

This month's galley contributors go loony-tunes with cartoon characters of their own creation (except for one, which is an interpretation of a famous comic-strip hero). "Party Animal" was created with the Gibson Light Pen, while the rest were made with Dazzle Draw.



CIAO (above), BEAUTY (below), JOSEPH CHARLES, Honeoye Falls, NY

SUPERMAN, DAVID WANG,
Pacifica, CA



BERNIE & CLYDE BY MAD, MERCH DeGRASSE, Seattle, WA



MOUSE, RHINO, TONY BALICH,
Downers Grove, IL



PARTY ANIMAL, DICK DAVIES,
Mountain View, CA

ENTERTAIN

*Encounters in a
singles bar,
on Civil War
battlefields, and in
indoor athletic
settings*

LOVELORN LOSER ON THE MAKE

Flying faster than a punctured party doll. More powerful than the smell of a bus-station restroom. Able to leap beyond the limits of decency in a single bound.

Down in the alley! It's a nerd! It's a shame! It's . . . Leisure Suit Larry in The Land of the Lounge Lizards, a new animated graphic adventure available from Sierra On-Line.

Before we continue, would all the mature adults please identify themselves? Good. All mature adults, stop reading and turn the page

NOW. I only want to talk to the immature adults. I want to talk to anyone who's ever snickered on the playground; smirked under the drier at the beauty parlor; or yelled, "Wait'll ya hear this one!" in the country-club locker room. In short: Vulgarians wanted, all others need not apply. Let the aggressively tasteful folks ponder the political subtleties of Balance of Power. Leisure Suit Larry is a computer game for the rest of us, a game with the warmth, wit, and wisdom of all three Porky's movies rolled into one. Now, *that's* entertainment!

Get a load of this scenario, fellow cheeseballs. Larry Laffer is a sincere, sensitive, shy nerd on the make. He's set to prowling the soft underbelly of

Hush Puppies take the suave edge off the outfit, but you've got to give the guy points for trying. Larry has a tough job ahead of him. Before the evening is over, he has to talk three eligible young

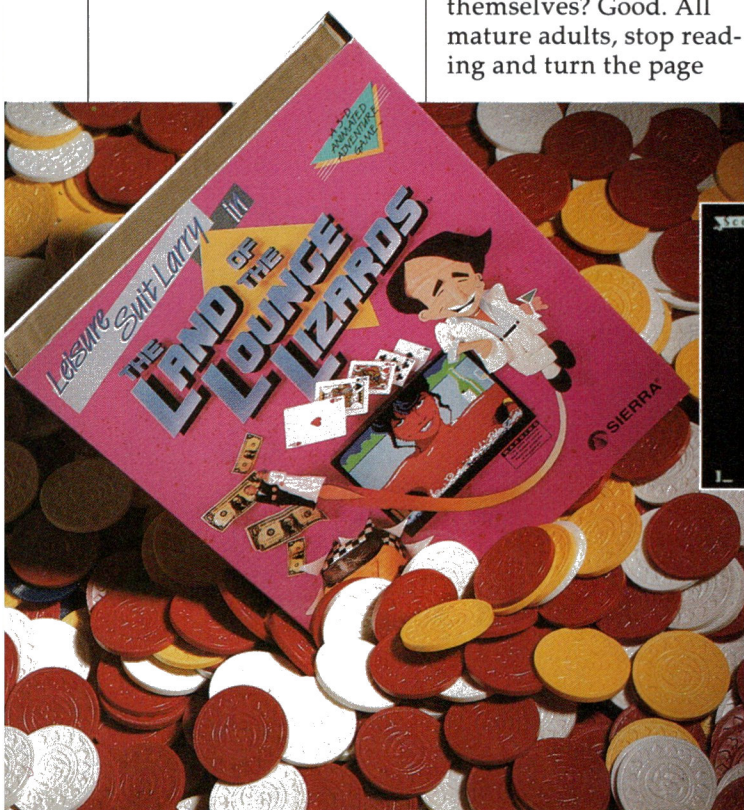


Singles Scene, USA. This is one ready dude, all decked out in his finest double-knit "cool" suit, with his shirt provocatively unbuttoned to the navel. All the better to see those gold neck chains, sweetheart.

OK, so I admit the

women into a little mutually beneficial data transfer (hint, hint, nudge, nudge, say no more). And, face it, he has a few things working against him: his looks, his personality, and his lack of savoir faire, not to mention his bad breath. If you overlook those failings, he still makes Don Knotts look like Tom Cruise.

As the omniscient human behind Larry's pixels, you have to make sure that this lovelorn loser is in the right place at the right time with the right stuff. You are a raider of the lost virtue,



MENT REVIEWS



guiding Larry through bars and bedrooms, into yuppy-infested discos and While-U-Wait wedding chapels.

Since no night out on the town happens without a hefty bank roll, you'll also need to drop into the local casino for a few hands of blackjack or to pull the handle on the slot machine, a nice arcade-like interlude in the adventure-game framework.

Just in case you hadn't noticed, this game isn't the stuff of Saturday kiddie matinees. In fact, some will find it a little rough around the edges. But what lifts Leisure Suit Larry out of the gutter is the game's sly sense of humor.

When you start the game, a series of questions verifies that you are old enough to play. When you are asked if

Spiro Agnew is a rare social disease, it doesn't take long to determine that this game has its tongue in its cheek and its taste in its mouth.

Subsequent encounters with flashers, drunks, incontinent canines, and Catskill comedians pack Larry full of juvenile yet genuine belly laughs.

Adventurers old enough to remember and sleazy enough to admit it will recognize Leisure Suit Larry as a rewrite of Chuck Benton's SoftPorn Adventure, a Sierra On-Line text adventure from the early days of Apple computing. (Yes, that *was* designer Roberta "King's Quest" Williams in the hot tub on the package.) In most cases, the puzzles are identical. Like Larry, SoftPorn was often hilarious. Unlike Larry, it was also occasionally smutty.

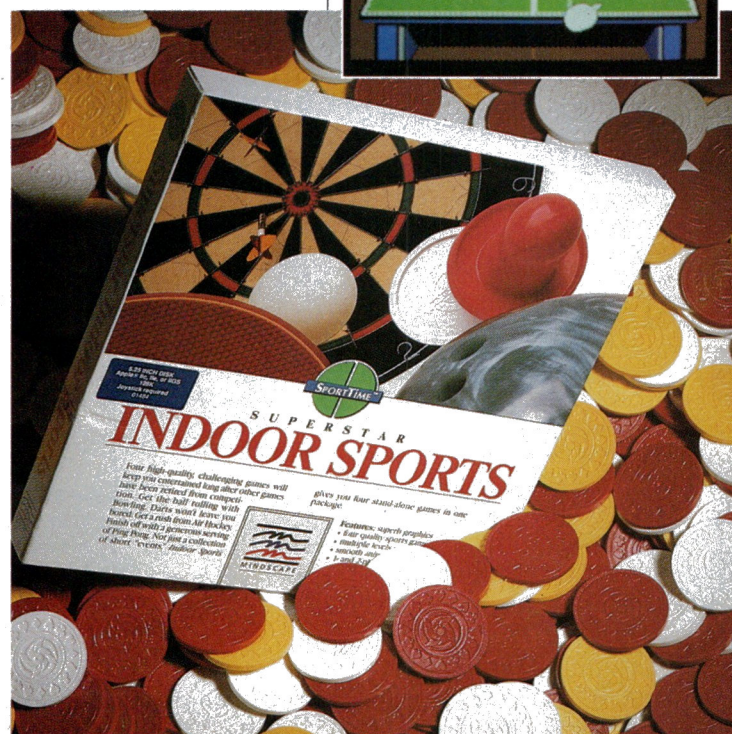
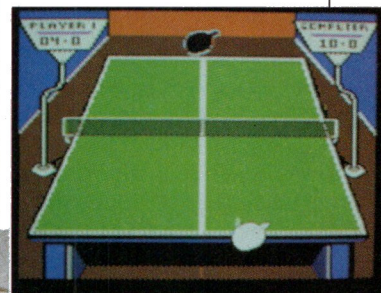
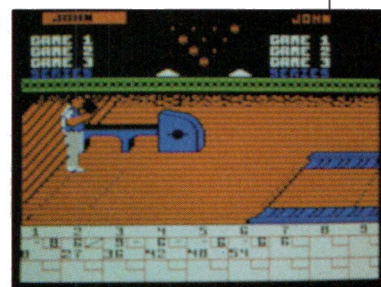
Programmer Al Lowe

and graphics designer Mark Crowe shoveled a heap of humor into Benton's randy original and came up with a game full of unashamed but relatively innocent locker-room yucks. The game is raunchy but funny; explicit but under control. Even so, at times you'll find yourself asking, "How low can Lowe and Crowe go?" (Those aren't balloons in Larry's pocket, gang. This game advocates Safe Adventuring.)

If you require the ultimate in adventure challenges, you'd better hit the singles bars on your own this Friday night. That's a truly punishing game of oneupmanship.

If you completed Soft-

Porn Adventure, lo those many years ago, you'll recall virtually all the solutions from the original. Better wait for the promised sequel to Land of the Lounge Lizards. It presumably will have all



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REVIEWS

new puzzles.

Larry contributes a fair share of trashy hilarity to computer games and invents a new shade of "Big Blue." If you can enjoy a good, clean, dirty joke combined with a smarmy bit of adventure puzzlement, you're going to laugh again and again at the high-spirited low humor of Leisure Suit Larry.

Bob Lindstrom

LEISURE SUIT LARRY IN THE LAND OF THE LOUNGE LIZARDS

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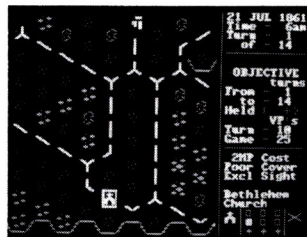
REQUIRES: Apple IIe or IIc; 128K RAM; one 5¼-inch disk drive. Or Apple IIgs; 512K RAM; one 3.5-inch disk drive. Copy-protected.

CIRCLE READER SERVICE NO. 410

GRAPPLING WITH COMMAND

A few years ago, I visited the battlefields of Shiloh, Tennessee, and Chickamauga, Georgia. Our National Park Service does a magnificent job of keeping the landscape just as it was more than six score and five years ago. Having read many books about the battles, I thought I knew the terrain like my own neighborhood, but I was surprised to discover the limited visibility in this wooded country. Except for a few farm clearings, you often cannot see more than 50 feet ahead of you through the trees and underbrush.

Imagine trying to con-

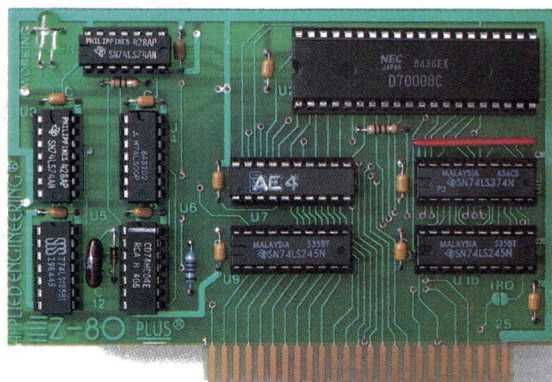


trol a mob of 50,000 armed teenagers scattered through the forest. Now try it without radios, when a similar mob on the other side is trying to kill you. It's not one bit like moving chessmen across a board, and any game that tries to simulate the Civil War had better grapple with the problem of command and control.

Civil War generals were trained in Napoleonic tactics of column and line, which made sense in the open, rolling farmlands of Europe, where commanders could usually find a convenient hilltop for scanning the battlefield, with its dense, easily controlled formations. By 1860, the accuracy of the rifled musket had made dense formations suicidal. Armies had to spread out to survive even a few hours of combat.

Roger Keating and Ian Trout have designed a computer-game system that simulates, with startling accuracy, the confusion of the 19th-century battlefield. The basic unit is the brigade (1000 to 3000 men, depending on the condition of its regiments). Brigades marched in column formation and fought in line formation. The game

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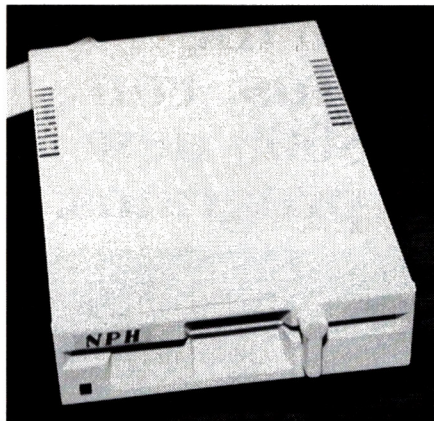
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REVIEWS

models the differing capabilities of infantry, cavalry, and artillery brigades.

Two to six brigades form a division, and several divisions make up a corps. Each level of command can receive and execute or ignore your orders, depending on the distance, the quality of the officers, and the course of the battle. Each map cell covers 300-500 yards, and each turn represents an hour. The game handles the effects of terrain on movement and combat realistically. Units always move in reference to "objectives," key points on the map. The intricate system of nested menus will be familiar to players of other SSG games. Once you get used to it, it flows pretty smoothly.

The game covers six battles from the first half of the war. A second "volume" to be published later in 1988 will include battles from Gettysburg to the war's end, and detailed design specifications for additional battles appear in *Run 5*, SSG's quarterly journal. The battles in this first volume include •First Bull Run (July 21, 1861). In the first major clash of the war, a disorganized Union army marching on Richmond is turned back. Thomas Jackson earns the nickname Stonewall for his brigade's steadiness under fire. •Shiloh (April 6-7, 1862). Encamped beside the Tennessee, Grant's army

is surprised and nearly driven into the river by a Rebel charge.

•Second Bull Run (August 29-30, 1862). Lee once again outmaneuvers an advancing Federal army, hammers it, and forces it to retreat.

•Antietam (September 17, 1862). The bloodiest single day of the war.

Trapped on the wrong side of the swollen Potomac, Lee holds off repeated uncoordinated Union attacks.

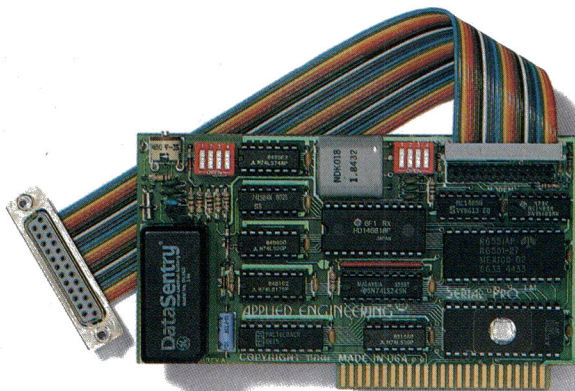
•Fredericksburg (December 13, 1862). In a bold feat of engineering, the Union army crosses the Rappahannock River on pontoon bridges, only to smash itself against entrenched Rebels on the heights behind the town.

•Chancellorsville (May 1-3, 1863). In a daring maneuver, Stonewall Jackson marches 26,000 men around the right flank of the Union army and crushes a force three times that size. At the moment of victory, one of his own men accidentally shoots him.

The Civil War was the last conflict in which top commanders stood a good chance of getting killed alongside their subordinates. Personal leadership was often the only way to push an attack or rally a defense. The game system lets each commander adopt a "personal profile": heroic, bold, sensible, or cautious. The greater the risk, the greater the combat bonus.

Decisive Battles of the American Civil War, Vol-

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

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Serial Pro is perfect for Apple IIe, II+, IIGs or compatible owners in need of a serial port or clock/calendar or both. But unlike other multifunction cards on the market, Serial Pro does not use phantom slots, so all the slots in your computer are useable.

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Serial Pro \$139

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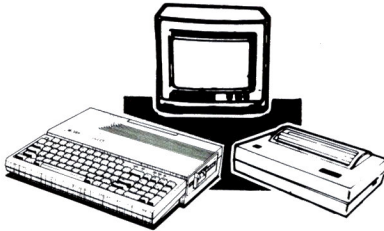
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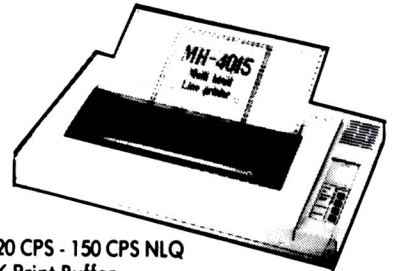
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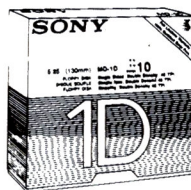
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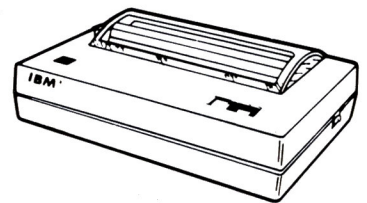
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REVIEWS

ume One, although limited by the four colors and blocky graphics of the Apple hi-res screen, plays better than it looks. Players will appreciate the colorful fold-out map, which details the five battlefields. The 72-page manual needs improvement. The list of Confederate forces at Chancellorsville is garbled. It lacks a quick reference for the various screen "icons" that indicate unit status, and it has no bibliography or index. Nevertheless, with this title, SSG has advanced the state of the art for 64K Apple II war games, just when we thought there was no more room to grow.

Mike Markowitz

DECISIVE BATTLES OF THE AMERICAN CIVIL WAR, VOLUME ONE

Strategic Studies Group, Inc.
1747 Orleans Court
Walnut Creek, CA 94598
(415) 932-3019

LIST PRICE: \$40

REQUIRES: Apple II Plus, IIe, IIc, or IIgs;
64K RAM; one 5¼-inch disk drive; color
monitor recommended. Master disk is copy-
protected; scenario disk is not.

CIRCLE READER SERVICE NO. 411

FOUR GAMES IN ONE

I've played football, baseball, basketball, and ice hockey. I've killed a hundred zillion demons in endless dungeons, protected my planet from invading aliens, and flown cross-country in a Lear Jet. Why, I'm a regular Bo Jackson, Indiana Jones, and Luke Skywalker rolled (or should I say

rolled?) into one. Even though I've performed my heroics only with a joystick and an Apple, I'm ready for something just a tiny bit closer to home. How about some good old-fashioned indoor sports?

And what do you know? As if answering my request, Mindscape has come out with a dandy collection of bowling, darts, air hockey, and Ping-Pong. Sound exciting? Well, if you're the kind of gamer who can get thrills only at the controls of a rocket ship or behind a high-powered laser gun, you don't know what you're missing.

Each of the four fine simulations in Mindscape's Superstar Indoor Sports is a game in itself, complete with several skill levels, one- or two-player options, and a series of choices to make the game personal and varied.

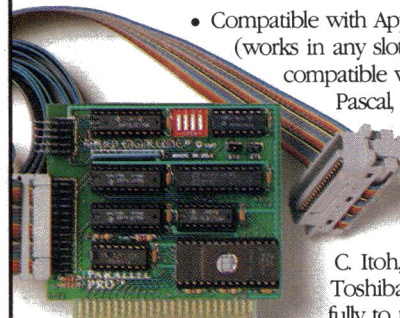
Look at Bowling. You can play alone for practice, against a computer opponent, or against another human player. You can also select the weight of your ball, your skill level, and the number of games in a complete series. Alley slickness changes at random from one session to the next. The combination of ball weight and alley slickness has a significant effect on your bowling style.

When you play the game, you watch your bowler from the side. You must first choose the

Parallel Pro™

The Most Powerful Apple Printer Interface You Can Buy

When you're trying to find the right parallel interface for your printer, look to Applied Engineering to bring you the best in quality and features.



- Compatible with Apple IIe, IIgs, and II+ (works in any slot except 3).
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- Works automatically with all software.
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- Automatic formatting of basic listings
- Built-in self test and Buffer Pro™ support
- Extensive graphics print capability for the hi-res, double hi-res, and the IIgs super hi-res screens
- Buffer option available (see below).
- Includes 6-ft. cable for connecting to your printer.

Buffer Pro™

Buffer Pro adds memory to Parallel Pro, freeing your Apple from running the printer. With Buffer Pro, you can continue to use your Apple while the printer is printing. To add Buffer Pro to Parallel Pro, simply unplug the cable on Parallel Pro and plug Buffer Pro where the cable was, then plug the cable onto Buffer Pro. That's it!



- Compatible with IIe, IIgs, and II+.
- Fits in a IIgs with or without fan.
- Adds 32 to 256 pages of printer buffering.
- User expandable using 64K or 256K RAM chips one chip at a time and in any combination. Each 256K chip adds 32 pages (maximum of 8 chips).
- Connects directly to Parallel Pro.
- Works automatically with all software
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Both Parallel Pro and Buffer Pro come with a comprehensive manual, a 5-year warranty — parts & labor, and outstanding technical support if needed.

Parallel Pro	\$99.00
Buffer Pro Option: with 32-page buffer	\$109.00
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with 256-page buffer	\$219.00

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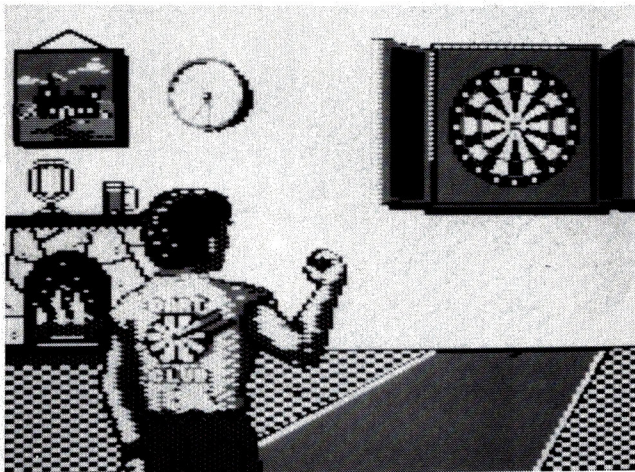
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MEDIA
INTELLIGENCE



REVIEWS



starting position and then the "aiming spot" on the alley. Finally, you must press the fire button at the right moment for a good throw; otherwise you'll hit yourself on the leg or, worse yet, take a header down the alley and throw a gutter ball. Also, as you let the ball go, you choose the amount of curve on it by positioning the joystick. After you let go of the ball, the scene shifts to the end of the alley, where you see the results of your throw. A pin boy watches from above the alley and smiles or grimaces to reflect the quality of your shot. Scoring is automatic.

It would be nice if the game gave you a few practice throws to get a feel for the alley. Also, you can't see the pins when you throw the ball. On the first shot, throwing blind isn't so bad, but it would help to see the pins on spares.

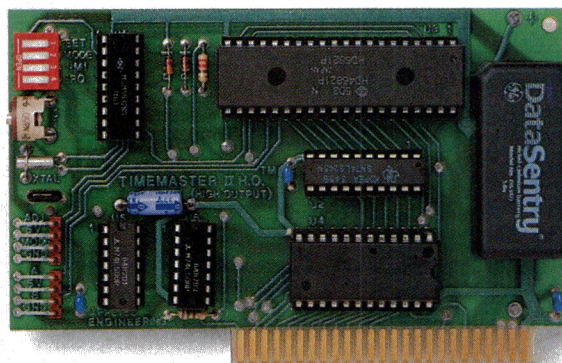
When you're ready for a game of darts, you can select double on and double off (meaning that you

must begin with a double and/or end with one). You can also select skill level and overall game speed and play alone, against the computer, or against another human player.

Throwing a dart requires a combination of aiming, angle, and power. The idea is to reduce your starting score to zero (you must go out on an exact throw). The first screen shows a close-up of the dart board. Using the joystick, you aim the dart and then set the angle and power of the throw, using meters on the screen. When everything is set, you press the fire button, and the scene shifts to a long-range view. You see the dart arc through the air and stick to the target (usually—sometimes you get one that falls out). The scene then changes back to the dart-board close-up, where you get to see the results. The program automatically tallies your score.

Although playing darts is fun and requires

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It's the smart way to put the time and date on your Apple IIe or II+. Because only the Timemaster H.O. packs *ALL* the important features of all the competition *combined*, including leap year, year (not just in ProDOS), month, date, day of week, hours, minutes, seconds and milliseconds. It's totally ProDOS, DOS 3.3, PASCAL and CP/M compatible. And, of course, it works better than any other clock with AppleWorks.

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If you're using or writing software for other clock cards, you're still covered. Because the H.O. will *automatically* emulate them. And only the Timemaster H.O. adds 15 new commands to BASIC. The H.O. even comes complete with two disks full of sample programs, including a computerized appointment book, a DOS dating program, interrupt programs, and over 30 programs that others charge you extra for — or don't even offer. As a low-cost option, you can add true BSR remote control to the H.O., giving you remote control of up to 16 lights and appliances in your home or office.

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Timemaster H.O.	\$99.00
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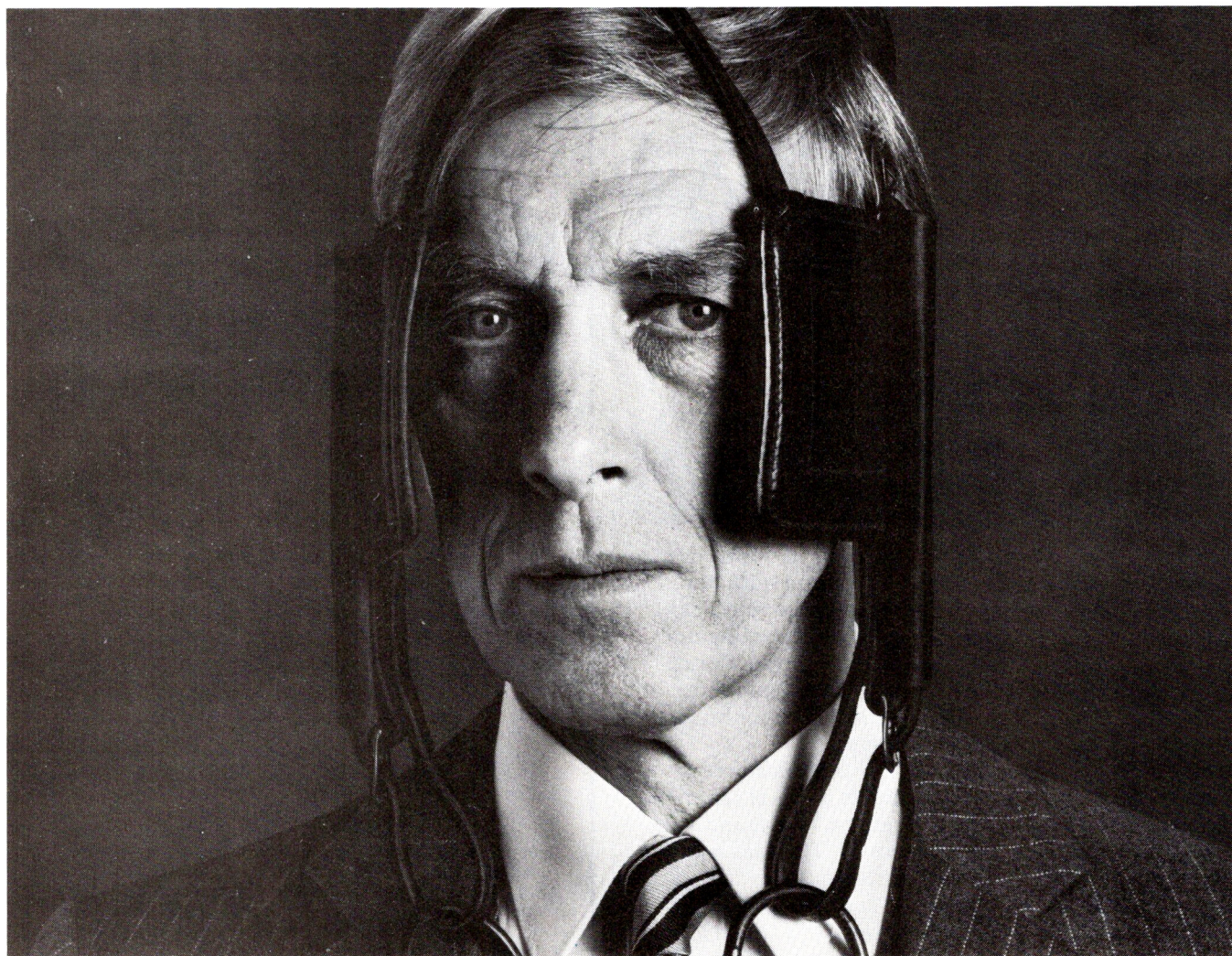
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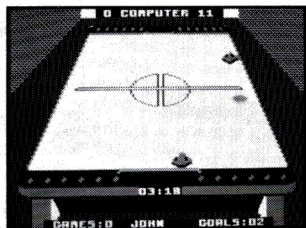
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REVIEWS



a steady aim, air hockey is the best of all. This game is so much like the real one that I hardly need to explain anything. If you've ever played air hockey, you already know what this game is like. You use the joystick to control the hitter. Pressing the fire button makes your hitter move faster. You can smash the puck at all angles and, as in the real game, cause your opponent fits. One careless move, though, and your goal's the one that gets penetrated. Not only is this one of the best simulations of an actual game I've seen, but it is also the best game in this collection.

Superstar Ping-Pong is also well simulated. You can choose to have the computer position the paddle for you, or you can control it yourself; you can play against the computer at different skill levels or against another human player. You must control your forehand and backhand shots, angle the ball by timing your hits, and optionally put backspin on the ball or smash it. Each player has up to 12 points to allocate to different skills, including smashing, forehand, backhand, reaction time, endurance, and the like.

Too much smashing can wear you out, so it's important to control the ball and keep your opponent off balance. Too much reliance on sheer power eventually backfires.

Ping-Pong is pretty challenging. Even at moderate skill levels, the computer will beat you every time, until you master your timing and shot selection. At higher skill levels—what can I say? You'll need to practice, practice, practice.

Although the joystick works well in all the games, it is sometimes sluggish and uncooperative when you're selecting from menus. Also, to change from one game to another, you must press the number 1 key, which reboots the computer. I found this reboot annoying, but it's really the only major fly in this product's ointment. Indoor Sports provides challenge and diversion, from the precise control demanded in bowling and darts to the fierce activity of Ping Pong and air hockey. The graphics and animation are consistently excellent, and the games—especially air hockey—keep me coming back. Who says you have to save the Earth to have a good time?

Rusel DeMaria

SUPERSTAR INDOOR SPORTS

Mindscape, Inc.

3444 Dundee Road

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(312) 480-8715

LIST PRICE: \$29.95

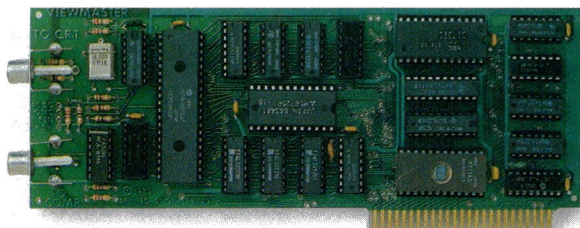
REQUIRES: Apple IIe, IIc, or IIgs; 128K

RAM; 5¼-inch drive; joystick.

CIRCLE READER SERVICE NO. 412

Viewmaster 80

Now run AppleWorks™ on your II+ and keep full 80 column compatibility!



	BUILT-IN SOFTWARE	SHIFT KEY SUPPORT	LOW POWER DESIGN	80 COLUMN HOME	7-9 DOT MATRIX	LIGHT PEN INPUTS	80 COLUMN OVERVIEW	INVERSE CHARACTERS
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One look at the chart will give you some of the reasons there's only one smart choice in 80 column cards for your Apple. But the real secret to Viewmaster 80's success is something even better: Total compatibility.

Each Viewmaster 80 includes our powerful AppleWorks expand software, allowing AppleWorks to run on the II+ with only 64K (or more) memory. (We recommend the RamFactor memory card, but any compatible Apple memory card will work.) The software provides our full range of AppleWorks enhancements, including expanded records, word processor, multi-disk saving, time and date display on screen with any ProDOS clock, and more!

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Viewmaster 80 \$159.00 16K RAM Card \$89.00

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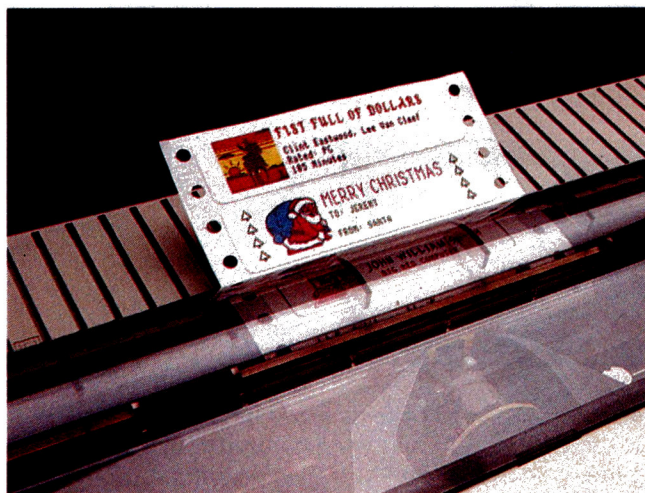
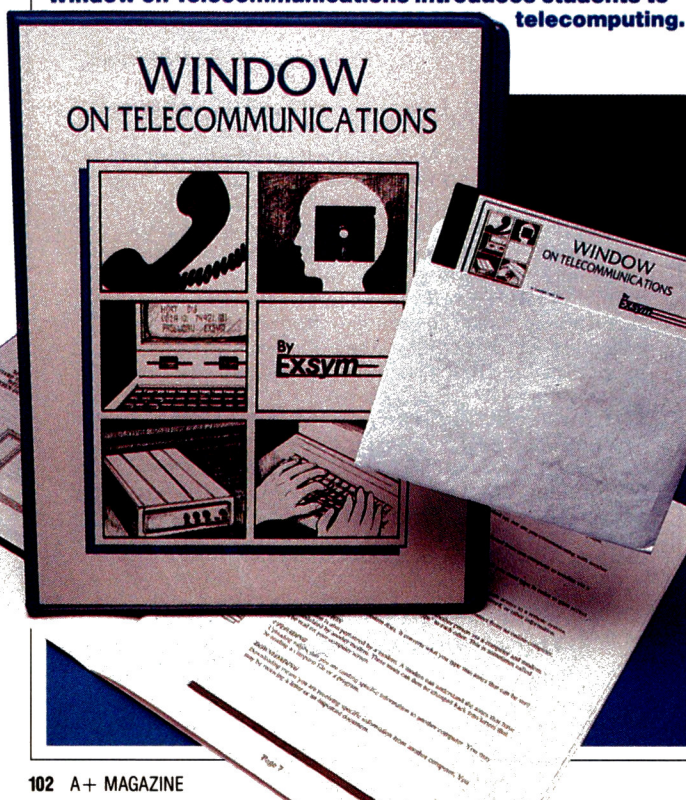
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Window on Telecommunications introduces students to telecomputing.



Labels, Labels, Labels lets you create labels with Print Shop graphics and merge them with AppleWorks database files.

Logo procedures.

List Price: \$79.95

Requires: Apple II Plus, IIe, IIc, or IIGs; 64K RAM; one 5¼-inch disk drive. DOS 3.3, not copy-protected.

Exsym

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(505) 881-3670

CIRCLE READER SERVICE NO. 501

LABELS, LABELS, LABELS

Labels, Labels, Labels lets you create fancy labels with Print Shop Graphics, borders, and fonts and to merge labels with AppleWorks database files. The program has features for printing mailing labels, disk labels, videotape labels, badges, postcards, and price tags. It also has a custom option for printing odd-size labels. Each element on the label can be printed in one of seven colors on certain color printers. The program lets you print up to 99 copies of each label.

List Price: \$39.95

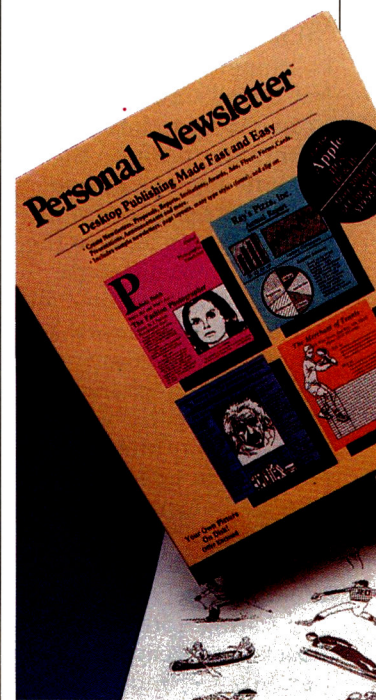
Requires: Apple II Plus, IIe, IIc, or IIGs; 64K RAM (128K for color printing); one 5¼-inch disk drive (two recommended); printer; AppleWorks and/or Print Shop recommended. Program loads from both DOS 3.3 and ProDOS; not copy-protected.

Big Red Computer Club
423 Norfolk Avenue
Norfolk, NE 68701
(402) 379-4680

CIRCLE READER SERVICE NO. 502

PERSONAL NEWSLETTER

Personal Newsletter is a desktop-publishing program that allows you to combine text, graphics, and page composition. In designing the page layout, you can set up as many as nine columns, create boxes for



pictures, and select border designs. The word-processing component lets you edit, move, copy, and paste text—and you can choose from a variety of typestyles, fonts, and sizes. You can merge in pictures from the program's clip-art disk or create your own pictures. Personal Newsletter also lets you use clip art from most other popular painting and graphics programs.

List Price: \$59.95

Requires: Apple IIe (enhanced, with 80-column card), IIc, or IIGs; 128K RAM; one 5¼- or 3.5-inch disk drive; dot-matrix printer; mouse optional. ProDOS; not copy-protected.

Softsync

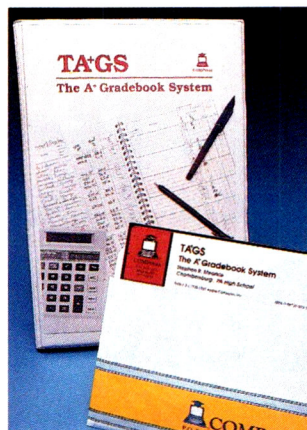
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New York, NY 10016
(212) 685-2080

CIRCLE READER SERVICE NO. 503

TA + GS

TA + GS is a gradebook program that lets you generate any number of data disks with up to 288 students per class, for up to 5 classes. You can make as many as 45 grade entries per student in each report period, for 1 to 6 periods. The program accommodates any numerical or letter-grade system, and it can calculate report-period averages, yearly averages, or standard deviation. Printing options include individual or class summary of grades, individual defi-

ciency reports, bar graphs, normal distribution curve, class lists, and attendance charts.



The TA + GS gradebook program lets you generate any number of data disks.

List Price: \$39.95

Requires: Apple IIe (with 80-column card), IIc, or IIGs; 48K RAM; one 5¼-inch disk drive. DOS 3.3; copy-protected. COMPRESS
P.O. Box 102
Wentworth, NH 03282
(603) 764-5225

CIRCLE READER SERVICE NO. 504

APPLE 2GS ARMOR

Apple 2GS Armor is a security cabinet that allows you to lock up your IIGs, monitor, keyboard, mouse, and two 5¼- or 3.5-inch disk drives. The solid steel case secures to any work surface with bolts or adhesive. It is well ventilated, so components will not overheat.

List Price: \$213.50 (quantity discounts available)
Omni Tech Corporation



Learning Basic Computer Programming, for grades 4-12.

21850 West Watertown
Road
Waukesha, WI 53186
(414) 784-4112

CIRCLE READER SERVICE NO. 505

LEARNING BASIC COMPUTER PROGRAMMING

Learning BASIC Computer Programming is a three-workbook series that teaches the BASIC computer language to students in grades 4-12.

Book 1 introduces programs, input, output, editing, debugging, and flow-charting through the PRINT

and GO commands. Book 2 presents variables and logical expressions, using the INPUT and IF... THEN commands. Book 3 teaches about counters, accumulators, and controlled looping, using the LET and FOR... NEXT commands. The set of three student workbooks totals 136 pages.

List Price: three-workbook set, \$5.95; *Answers and Notes*, \$1.95

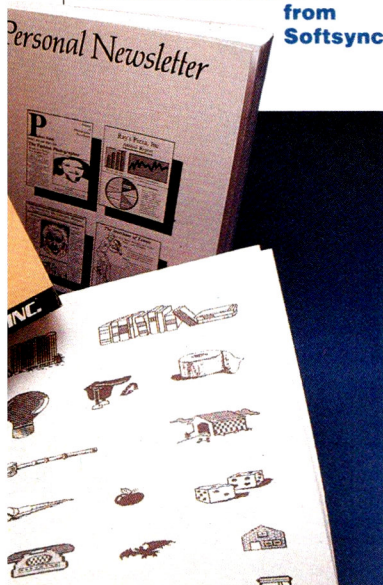
EduSoft
P.O. Box 2560
Berkeley, CA 94702
(800) EduSoft
(415) 548-2304

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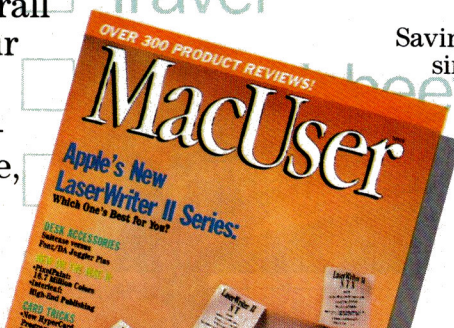
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PRODUCT ROUNDUP

HARDWARE

ALTERNATIVE KEYBOARD

Martek Electronics' alternative keyboard for the Apple II Plus and IIe is a discontinued Adam keyboard with an interface card, converter, and connector that plugs directly into the keyboard connector.

The keyboard features a low height, a detached case with 4-foot cord, 12 user-programmable keys, and a logical cursor-pad layout. It provides II Plus users with full ASCII, auto-repeat, apple keys, and Caps Lock. The II Plus version is upgradable for use with a IIe. The unit comes in kit or assembled form.

List Price: II Plus kit, \$50; II Plus version assembled, \$70; IIe kit, \$60; IIe version assembled, \$80; Plus-e kit, \$20
Requires: Apple II Plus or IIe

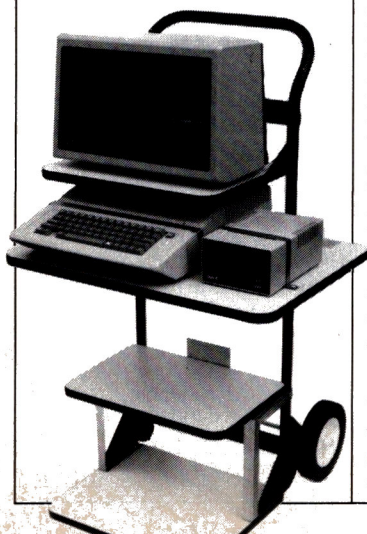
Martek Electronics
P.O. Box 24
Novi, MI 48050

Written inquiries only

CIRCLE READER SERVICE NO. 507

dILLY dOLLY

The dILLY dOLLY portable workstation for Apple computers consists of a welded



tubular frame that supports a base on wheels, and shelves for a computer, disk drive, and monitor, which are secured with stainless-steel and nylon straps. Especially suited for school use, each dILLY dOLLY comes with a six-outlet electric-supply suppressor. An optional printer shelf is also available.

List Price: \$175; optional printer shelf, \$60; special bracket for second disk drive, \$6

Requires: Apple IIe, IIc, or IIgs

The dILLY dOLLY Company
2957 Mariposa Drive
Burlingame, CA 94010
(415) 697-9272
(415) 573-9237

CIRCLE READER SERVICE NO. 508

SOFTWARE

THE L.I.F.E. DIARY

The L.I.F.E. (Learn/Improve from Experience) Diary is a set of programs for use as an ordinary diary or as a problem solver for dealing with stress, exercise, work, weight control, or other daily problem areas. You can access the diary by date or various other criteria and can edit and print it out. The program also allows you to analyze your diary records to determine which are the most promising steps for dealing with a particular problem, and you can check on your progress in areas you have been keeping track of. You can display and print out graphs of emotional factors in your life.

List Price: \$24.95

Requires: Apple II Plus, IIe, IIc, or IIgs; 64K RAM (128K version available); one 3.5- or 5¼-inch disk drive. ProDOS 8; not copy-protected. Maretech

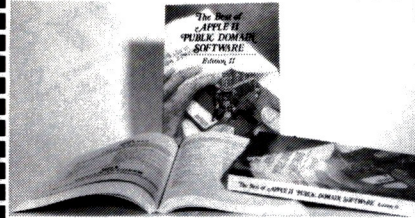
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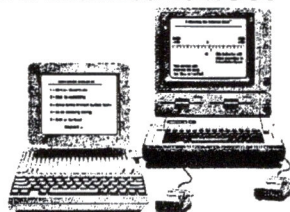


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CIRCLE 329 ON READER SERVICE CARD

PRODUCT ROUNDUP

ACE EXPLORER READING/Writing PROGRAM

Ace Explorer is a reading/writing program for grades 2-8. Each of the 60 story missions requires players to visit alien planets, conduct interviews by video-phone, and search computer banks for information. Ace explorers must then sequence the vital information before the final report—and alien graphic—can be submitted to Mission Control and printed.

Challenge Upgrade options include sound, time, level, text speed, story selection, story creation, and performance summaries.

List Price: \$49.99

Requires: Apple II Plus, IIe, IIC, or IIGs; 48K RAM; one 5¼-inch disk drive. DOS 3.3; copy-protected.

Methods and Solutions, Inc.
100 Conifer Hill Drive
Suite 301
Danvers, MA 01923

(800) 221-7911

(617) 774-1760

CIRCLE READER SERVICE NO. 517

MATH MIND PUZZLERS

Math Mind Puzzlers is the fourth in a series of math-worksheet generator programs that allows you to print an unlimited number of activity sheets for student use. The program contains two sets of puzzles: Triangle Puzzlers and Sequence Puzzlers.

Triangle Puzzlers challenges students to place given amounts, in the proper order, on each side of a triangle so that the sums of each side are equal. It has 22 levels of difficulty involving whole numbers, decimals, fractions, standard measurement, and metrics.

In Sequence Puzzlers, students fill in missing num-

bers in the sequence of numbers on the activity sheet. Ten levels include addition, subtraction, multiplication, division, and mixed operations.

Worksheets and answer keys print in large, double-width print.

List Price: \$49.95 (backup, \$10)

Requires: Apple II Plus, IIe, IIC, or IIGs; 48K RAM; one 5¼-inch disk drive; dot-matrix printer. DOS 3.3; copy-protected.

Friend-Lee Software
6041 West View Drive
Orange, CA 92669
(714) 771-1678

CIRCLE READER SERVICE NO. 518

THE THINKING MACHINE AND THE GREAT POSTER DISK

The Thinking Machine is a program for grades 8 through high school that teaches students how to learn. Numerous exercises throughout the program increase students' learning skills. The program covers how to think, how to study, how to learn, how to memorize, how to take notes, and how to be creative. It also contains practice sessions that promote mental growth and creative thinking.

Another newly released program by Psychological Psoftware is the Great Poster Disk. The program lets you print out up to 25 different mini posters. The subject matter ranges from humorous to serious. It does not allow you to change the posters or print out posters of your own.

List Price: The Thinking Machine, \$89.50; The Great Poster Disk, \$25

Requires: The Thinking Machine—Apple IIe, IIC, or IIGs; 64K RAM; two 5¼-inch disk drives; printer. DOS 3.3; copy-protected. The Great Poster Disk—Apple II Plus, IIe, IIC, or IIGs; 64K RAM; one 5¼-inch disk drive; dot-matrix printer. DOS 3.3; copy-protected. Psychological Psoftware Company

312 Los Altos Drive
Aptos, CA 95003
(408) 688-6808

CIRCLE READER SERVICE NO. 519

PRODUCT ROUNDUP

NUMERIC CONCEPTS/MEMORY SKILLS PACKAGE

Numeric Concepts/Memory Skills is the latest addition to the Captains Log: Cognitive Training System. The program is for individuals age 6 to adult who are learning-disabled or mentally retarded or who have had head injuries or strokes. The seven programs in the package cover the following: numeric comparisons, numeric combinations, numeric sequences, number-line logic, numeric classification, numeric distinctions, and ordinal numbers.

List Price: \$395

Requires: Apple II Plus, IIe, IIc or IIGs; 64K RAM; one 5¼- or 3.5-inch disk drive (two recommended—specify size when ordering); mouse; color monitor; clock card. System Master copy-protected, other disks not copy-protected.

Network Services
1915 Huguenot Road
Richmond, VA 23235
(804) 379-2253

CIRCLE READER SERVICE NO. 510

CNC LATHE SIMULATION

This program teaches the basic operation of a CNC metal lathe.

The software allows you to enter, edit, and save your own CNC programs, using a set of six standard International G-Codes to provide for basic machine operations such as rapid traverse, longitudinal turning, facing taper cutting, and radius generation. You can also see a work piece machined on a metal lathe through on-screen animation.

List Price: \$89.95

Requires: Apple IIe, IIc, or IIGs; 64K RAM; one 5¼-inch disk drive. DOS 3.3; not copy-protected.

Hearlihy & Company
P.O. Box 869
Springfield, OH 45501
(800) 622-1000
In OH (513) 324-5721

CIRCLE READER SERVICE NO. 511

AGENT ORGANIZER PROGRAM

The Agent Organizer Program is a series of insurance templates for use with AppleWorks.

Program functions include 19 detailed reference checklists on various lines of insurance, 18 proposal forms, and 25 different types of utility worksheets. Utilities include rating worksheets and tutorials, workman's-compensation calculations, and a submission cover-letter outline to the underwriters. The package emphasizes the 1986 insurance formats.

List Price: \$69.95

Requires: Apple IIe, IIc, or IIGs; 128K RAM; two 5¼- or 3.5-inch disk drives recommended (specify size when ordering); AppleWorks 2.0. Not copy-protected.

Info-Med
P.O. Box 24412
Jacksonville, FL 32241-4412
(904) 723-2771

CIRCLE READER SERVICE NO. 512

REBUS WRITER

Designed for students in grades 3-12, Rebus Writer uses rebus phrases (sentences comprising pictures, symbols, letters, and/or numbers that suggest sounds or syllables) to develop language skills. The rebus puzzles vary in difficulty and sophistication. Students can also create their own rebus puzzles using the program's "pictionary" of 250 illustrations, or they can draw their own rebus images.

List Price: \$49.95

Requires: Apple II Plus, IIe, IIc, or IIGs; 64K RAM; one 5¼-inch disk drive; mouse or joystick. DOS 3.3; copy-protected.

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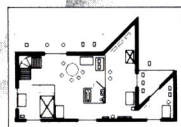
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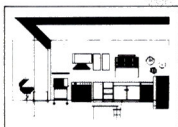
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CIRCLE 227 ON READER SERVICE CARD

PRODUCT ROUNDUP

DISCOVERCAD COURSEWARE

This CAD instructional system contains software that features plotter and printer-dump capabilities and pull-down menus. The program is useful for mechanical, architectural, or electronic drawing. It includes the following features: zoom, pan, auto-dimensioning, draw text, move copy, mirror copy, rotate copy, and 128 layers for different line weights and multicolor plots. The program comes with a 180-page workbook with step-by-step basics, practice drills, and drawing exercises.

List Price: \$220

Requires: Apple IIe, IIc, or IIGs; 128K RAM; two 5¼-inch disk drives for the IIe or IIc; one 3.5-inch or two 5¼-inch disk drives for the IIGs (specify size when ordering); mouse; Triple Dump for IIe and IIc; Fingerprint GSI for IIGs. Pascal 1.3; copy-protected. Hearlily & Company P.O. Box 869 Springfield, OH 45501 (800) 622-1000

In OH (513) 324-5721

CIRCLE READER SERVICE NO. 514

MASTERY ARITHMETIC PROGRAM

The Mastery Arithmetic Program, designed to work with the Mastery Development network system, provides practice on ten levels of arithmetic skills, including numeration, number relations, addition, subtraction, multiplication, division, estimation, story problems, number theory, and fractions. Each level culminates in a corresponding skill game. The program also provides for individual data files on each student's progress and allows report printouts.

List Price: Game Series 1-5, \$39.95; Game Series 6-10, \$69.95

Requires: Apple II Plus, IIe, or IIGs; 48K RAM; one 5¼-inch disk drive; Mastery Development Network. DOS 3.3; copy-protected.

Mastery Development P.O. Box 2563

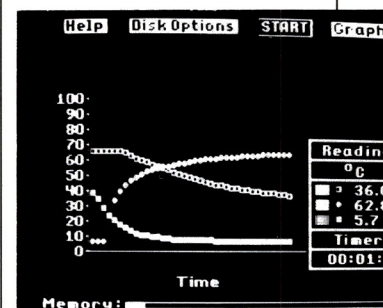
Mesa, AZ 85214

(602) 962-0207

CIRCLE READER SERVICE NO. 515

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Playing with Science: Temperature

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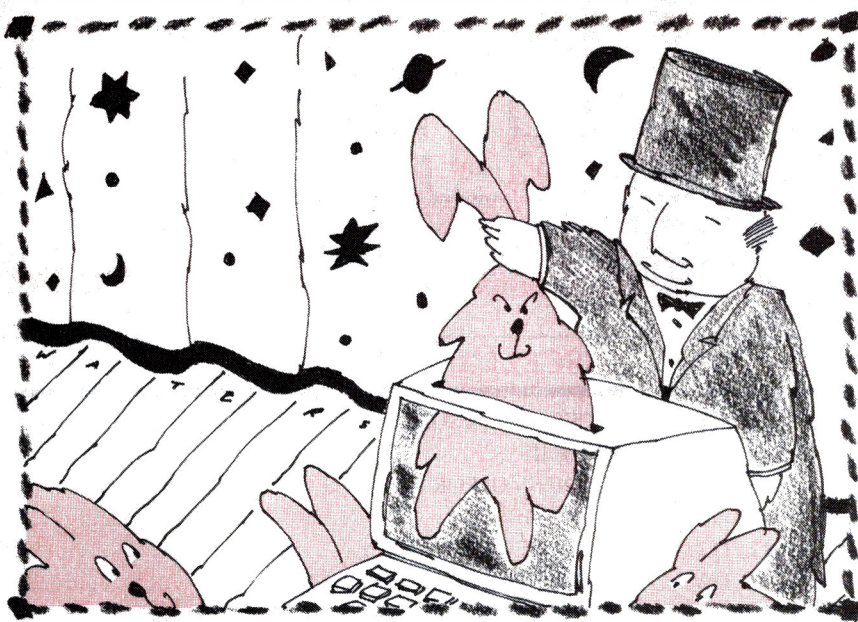
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TIPS AND TECHNIQUES

WHAT DAY IS IT?

A while ago, I did a school mathematics project on the calendar system. I wrote a program to find the day of any date in any century (see figure 1). This program works as long as the present-day calendar system remains in use.

Lines 25 to 45 are the gist of the program. The value of F in line 45 indicates the day. Days are numbered from 0 (Sunday) through 6 (Saturday).

BRIAN C.L. SIM
REPUBLIC OF SINGAPORE

PRINT SHOP TO HI-RES

Many utilities are available for creating Print Shop graphics from standard hi-res pictures, but the reverse conversion can sometimes be useful as well—e.g., if you want to use MultiScribe's Picture Manager, which works with standard hi-res pictures, not Print Shop graphics.

The first step is to get a Print Shop graphic on the screen. I like to use the editor of the Print Shop Companion because it makes a large graphic. Next, insert a DOS 3.3 disk with a short HELLO pro-

gram and reboot the system with open-apple/Control/Reset. At this stage, your picture will still be sitting in memory. (Don't boot ProDOS, because it overwrites the picture's memory area.)

Now save the picture to disk with the following command: BSAVE picturename,A\$2000,1\$2000, where *picturename* is whatever you want to call the file. You now have a disk file of the entire Apple screen containing the Print Shop graphic as well as whatever was around it, such as the Print Shop editor command menus. You can crop extraneous images with any picture-editing application.

The next step, if you need a ProDOS picture, is to transfer the file to a ProDOS disk. My favorite method is simply to use the Copy II Plus copy command.

BARRY AUSTERN
CINCINNATI, OH

MONITORING YOUR COLOR

If you do not have a color monitor for your computer but want to view the color screen, you can do so without an RF generator. If either your VCR or TV has a VIDEO IN jack, simply run a cable from the computer's COMPOSITE OUT jack to the device's VIDEO IN jack. Set the device to accept line input and turn it on, and you have a full-size color monitor. With a IIC or IIGS, you can also port the sound over to the AUDIO IN jack. With a VCR, you can then record your entire computing session.

CARY DAVIS
MAIDSTONE, SASKATCHEWAN
CANADA

WARPED VIEWPOINT

If you have an Apple IIGS and high-powered speakers to go with it, placing the speakers too close to the monitor can cause the screen to distort. If you have this problem, turn the monitor off and move the speakers further away. After a few minutes, turn the monitor back on. The problem should have been corrected. You must turn the monitor off; simply moving the speakers won't do it.

VINCENT D. O'CONNOR
BABBITT, MN

```

10 HOME
15 PRINT "INPUT MM,DD,YYYY":INPUT " ";M,D,Y
20 A = Y - (INT (Y / 28) * 28):B = A / 4:E = A - INT(B) * 4
25 C$ = "511462403513": IF E = 0 THEN IF M < 3 THEN C$ = "40"
35 E = VAL ( MID$ (C$,M,1)): IF Y < 1900 THEN A = A + 12
45 G = A + INT (B) + D + E:F = G - (INT (G / 7) * 7)
50 DATA SUN,MON,TUES,WEDNES,THURS,FRI,SATUR
60 RESTORE : FOR B = 0 TO F: READ C$: NEXT B
70 PRINT " " = ":",C$,"DAY":HTAB 25: PRINT "ANOTHER? Y/N"
80 PRINT " ": GET C$ IF C$ = "Y" THEN 15

```

Figure 1: This program gives you the day of any date in any century.

"Tips and Techniques" is compiled by Ken Lucke. Please send your tips to him care of A+.

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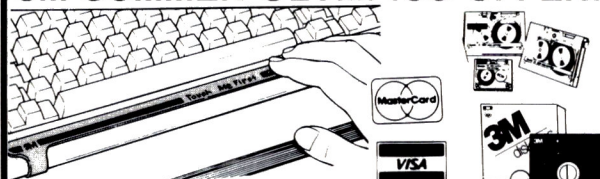
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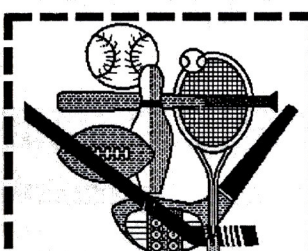
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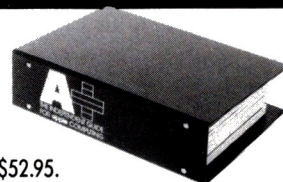
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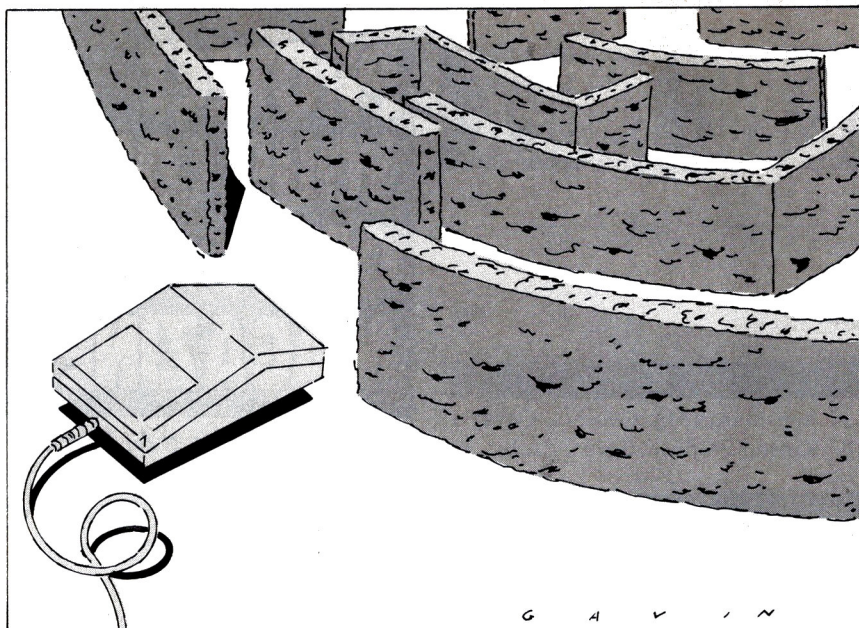
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ProDOS DISK FORMATTING

Q. As a longtime user of DOS 3.3, moving "up" to ProDOS has been frustrating. I appreciate the need for the new disk-operating system, but why didn't Apple retain the best feature of DOS 3.3—the ability to format a disk and designate which program is to run when the disk is booted? How can I do this with ProDOS?

BRIAN GREENWAY
BOWMANVILLE, ONTARIO
CANADA

A. You're actually a bit better off with ProDOS; you just don't realize it. When you use DOS 3.3's INIT command, you can designate only an Applesoft program as the boot program. ProDOS doesn't have an INIT command (you must use the System Utilities program to format a disk), but it runs the first system program it finds in the root directory that has a name ending in .SYSTEM. This program can be the BASIC interpreter or most any of the professional ProDOS applications you'll come across.

If you make BASIC.SYSTEM the first system program, you can also specify the Applesoft program that runs when you boot up. All you have to do is name it STARTUP. Then BASIC.SYSTEM loads and runs it when it gets control.

STRAY NUMBERS

Q. I've been trying unsuccessfully to write ProDOS-based Applesoft programs that use the PR#3 command to switch to an 80-column display screen. What I see is a series of numbers on the screen (such as #103, #90, #12). What am I doing wrong?

DAVID WHITE
ORLANDO, FL

A. When ProDOS is active, you must use the ProDOS version of the PR#3 command to switch to the 80-column mode. The program statement for sending this command is PRINT CHR\$(4); 'PR#3'. If you use PR#3 by itself, the Applesoft trace mode is accidentally enabled, so you see the numbers of the program lines being executed.

Gary Little is A+'s editor and author of several books about Apple computers. Please send your questions and problems to "Rescue Squad," A+, 950 Tower Lane, 18th Floor, Foster City, CA 94404. Because of limited space, we aren't able to publish responses to all inquiries we receive.

RESCUE SQUAD

BY GARY B. LITTLE

AVOIDING OVERWRITES

Q. When I list an Applesoft program on my printer, I've found that the tail end of a line longer than 80 characters overwrites the beginning of the line. How can I avoid this problem? I am using an Apple IIGS.

BRIAN FRANKLIN
PELHAM, NC

A. Most printers have switches you can set, or commands you can send, to tell them how to handle situations in which they receive more than one full line of characters without an intervening carriage return/line feed. On the ImageWriter II, for example, send an Esc D Space Ctrl-@ sequence to force the printer to advance to the next line when the current line is full. On the GS, you can achieve the same result by using the Printer Port command in the Control Panel. Just set the Line Length option to the desired width (40, 72, 80, or 132 characters)—much easier than sending an escape sequence to the printer.

One caveat: either of the above techniques may interfere with word-processing programs that do their own line formatting. So try to use these methods only when you're listing Applesoft programs.

SKIPPING THE IIGS FINDER OR LAUNCHER

Q. I have an Apple IIGS and want to be able to boot a system disk and run an application program without going through the Finder or Launcher first. How can I do this?

TSGT. C. R. SHEPPARD (USAF)
DEL RIO, TX

A. When you boot a ProDOS 16 system disk, the first program that runs is the one called START in the SYSTEM/ subdirectory. On the current version of the GS system disk, this program simply runs the Finder or Launcher, depending on the amount of memory you have. If the START program isn't there, ProDOS 16 scans the root directory, looks for the first system program with a name that ends in .SYSTEM (ProDOS 8) or .SYS16 (ProDOS 16), and runs it.

So, to boot directly into a specific ProDOS 16 application, delete the START program, transfer your ProDOS 16 application to the root directory, and give the application's start-up file a new name that ends in .SYS16. You might also want to delete the LAUNCHER and FINDER files in the SYSTEM/ subdirectory to free up more disk space.

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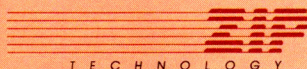
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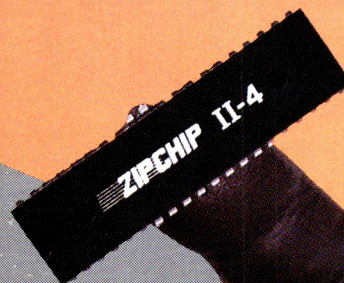


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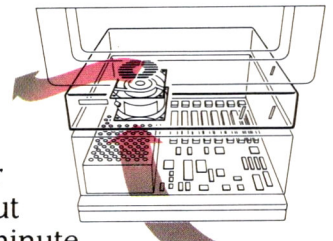
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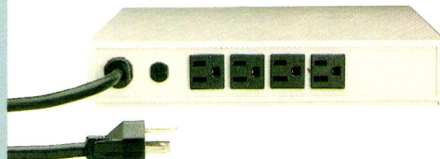
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