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The Apple IIGS Buyer's Guide

A Redgate Publication
Fall 1989 Vol. 3, No. 1
U.S. $4.00, Canada $5.00



IIGS Technology Breakthrough

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- Inside Apple's Video Card
- AppleTalk In The Classroom

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- Arcade Games
- Desktop Publishing With AppleWorks GS
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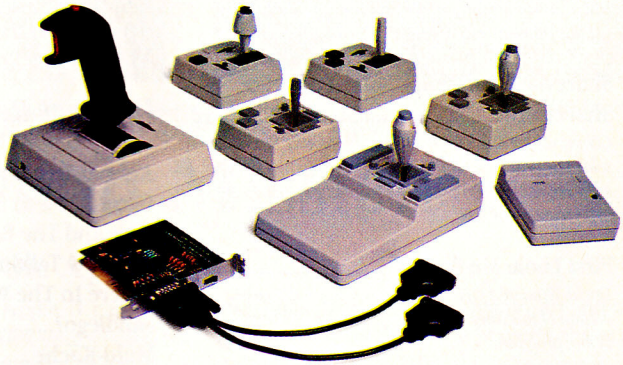
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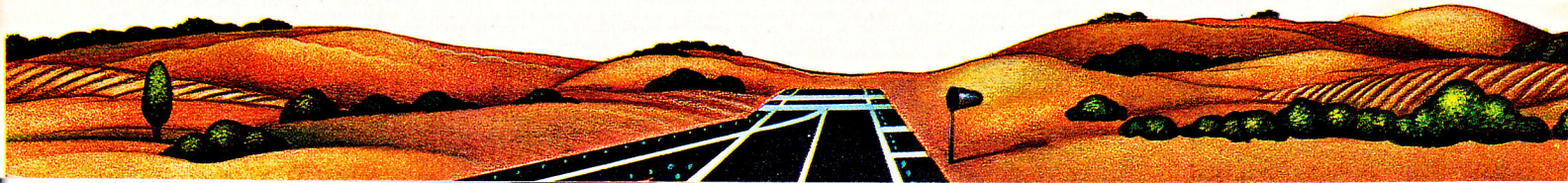
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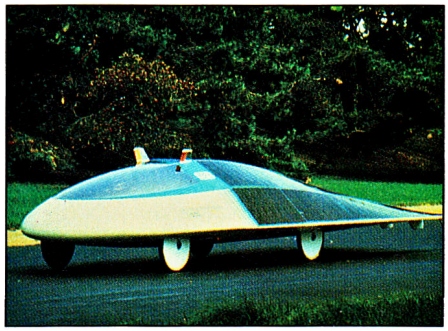
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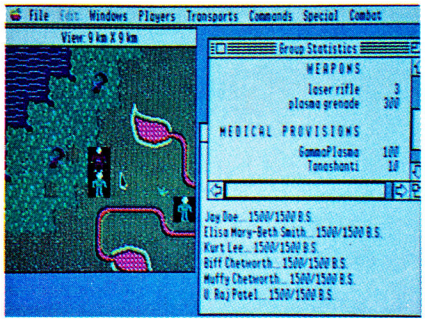
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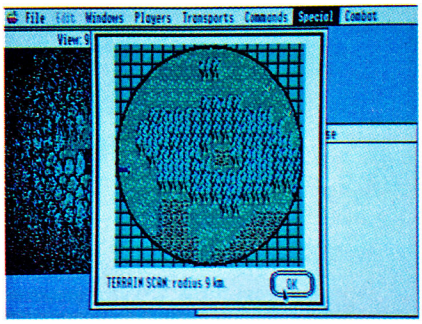
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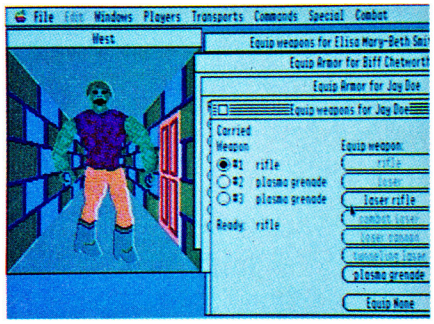
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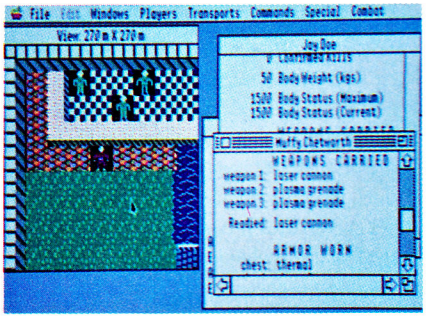
Be alert while exploring the Cryllan surface, for strange creatures abound.



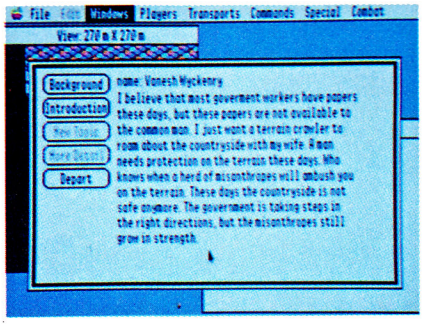
Operating various scanners, your science officer can offer invaluable guidance at night.



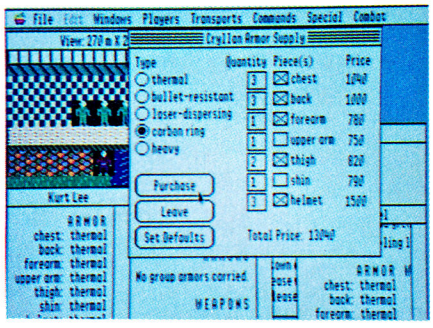
Explore buildings and caverns, but be prepared for hostile encounters in dark corridors!



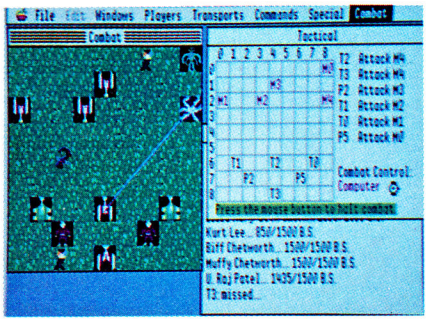
Towns offer armor, weapons, food, medical provisions, transports, repairs, and healing.



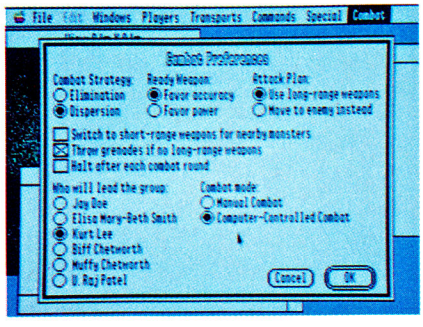
Chat with the local townspeople, but always remember the nature of your mission.



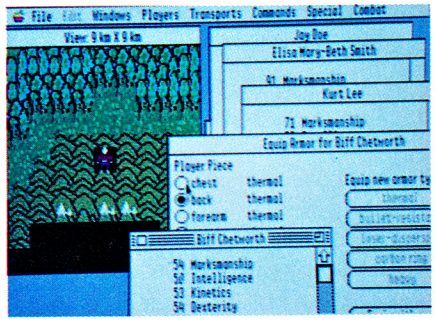
Modeless dialogs allow you to browse your supplies while shopping for new items.



Both player and monster groups can bring transports into combat.



Control combat manually, or allow the computer to follow your selected strategy.



Windows and dialogs are now 300-800% faster with System 5.0! Wow!

2088: The Cryllan Mission

Written Only for the Apple IIgs

November 20, 2088: Captain, you have been summoned here regarding the loss of contact with the U.S.S. Houston. The Houston had discovered a small planet, Crylla, in the Gamma-Chi sector. Transmission is several months overdue, and now we are concerned. Assemble your team of six within 72 hours for immediate dispatch to Crylla. Determine the crew's whereabouts, but do not disclose your mission to any natives. Good luck.

Victory Software proudly introduces **2088: The Cryllan Mission**, a role-playing game which incorporates fast 640x200 graphics and the complete desktop interface. Now with System 5.0 the desktop is up to 800% faster, providing a convenient, familiar, and quick interface.

Crylla's Colorful Landscape

2088: The Cryllan Mission displays the most realistic graphics of any Apple II game. For example, dense forests block your vision, but climbing hills allows you to peer over the tops of these same forests. Also, movement speed varies according to transport types and terrain.

A Six-Person Team of Specialists

Team members specialize in medicine, science, or combat. All members can fight, but their specialties can be quite handy on Crylla.

Combat

2088: The Cryllan Mission introduces several new dimensions to combat. First of all, both sides can bring several armored transports into battle. Players can enter and exit these transports freely during battle and repel approaching foes with the transports' lasers. Secondly, the command interface is simple, intuitive, and quick. Each round of combat is first planned and then executed. Move, attack, and enter-transport commands are quickly entered by clicking on the player's shape and dragging to a target. Finally, a computer-controlled mode can follow a variety of attack strategies. This automated mode can be entered and exited at will during a battle.

How to Order Your Copy

2088: The Cryllan Mission is available from Victory Software for only $69.95. Please include an additional $4.00 for shipping and handling. Please note that Texas residents must add 7% for state sales tax.

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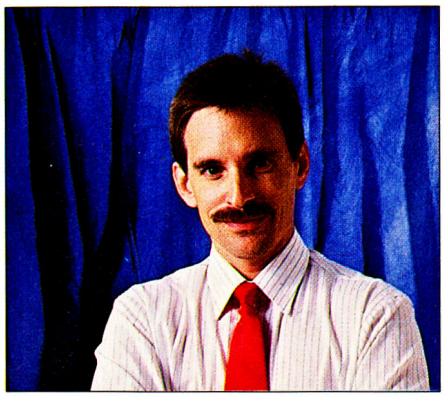
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Future Forecast



Hardly a day goes by where our readers don't phone or write to ask about the future of the Apple II line. In many cases, they want to buy a IIGS, but hesitate because of the uncertainty surrounding its future. The buying public is obviously concerned by whispers that the IIGS will disappear and be reincarnated as a low-end color Mac. The question I hear most often is, "Will the IIGS be around two years from now?"

Apple does not share its business plan with me, however, so coming up with a definitive answer for these would-be purchasers is impossible. Apple itself remains elusive about the subject. "We will continue to sell the Apple II as long as there are customers who want to buy it" is a paraphrase of the corporate response to the Apple II question.

Of course, how Apple defines suitable customer sales is anyone's guess. Will Apple be happy with a million IIGS sales per year? How about 300,000?

Rather than trying to second-guess Apple's intentions through rumor, I recently formed a new forecast based on market fact. My forecast weighs in as cautiously optimistic, not because this magazine has a vested interest in a healthy IIGS market (we do), but because of a few welcome developments first previewed at Boston's AppleFest. Each development bodes well for the IIGS market, so here they are, in some order of importance.

GS/OS Version 5. Unlike earlier versions of GS/OS or ProDOS 16, GS/OS Version 5 is a grown-up operating system that begins to tap the 16-bit capabilities of the IIGS. Sure, it's got a few bugs and is missing some ingredients we'd like to see. Yet overall, GS/OS Version 5 is light-years ahead of earlier versions of ProDOS and (at least in the user interface department) much more advanced than operating systems running on competitive machines from Commodore and Atari. Watch for our review in the next issue.

I've heard that Apple has committed at least 40 technical people to GS/OS development. Does that sound like a company that wants to close the IIGS door anytime soon?

HyperStudio. AppleFest also showcased Roger Wagner's HyperStudio, the first hypermedia system specifically designed for the IIGS. Once again, a few missing ingredients should not detract from the significance of this product. Here, for the first time, is a tool that allows everyone to program the Apple IIGS using all of its capabilities. Teachers, students, oldsters, youngsters and even legitimate software hackers will appreciate the way in which HyperStudio lifts the veil of IIGS secrets in the world of graphics and sound.

HyperStudio was not the first hypermedia product for a personal computer. Nor was it even the first for the Apple II line — Techware Corp.'s ever-evolving Tutor-Tech gets to wear that crown. Nevertheless, HyperStudio introduces a powerful new class of software to a computer that really needs a software hit for the masses. Read our story in this issue to learn more.

Video Overlay Card. Unlike GS/OS and maybe even HyperStudio, the vast majority of IIGS owners will never purchase Apple's amazing new Video Overlay Card. The steep price and current lack of software simply forbid it. Apple knows that. But it also knows that a single Video Overlay Card installed in the real target market — the schools — has the potential to significantly broaden the computing horizons of dozens of young users.

We pay our homage to the technical genius behind this card in this issue. Even if you cannot afford it, read our inside look at the Video Overlay Card for a fascinating glimpse at what's in store for tomorrow's classrooms.

There are many other positive IIGS developments leading up to my favorable forecast, including Applied Engineering's Vulcan hard drive, a growing selection of quality courseware and announced but still-to-ship products, such as Zip Technology's ZIP-GS and the Genesys applications generator from Simple Software Systems International.

It seems to me that the clouds have parted over the IIGS market. Stay tuned for tomorrow's long-range forecast, but do enjoy today's sunny weather. ■

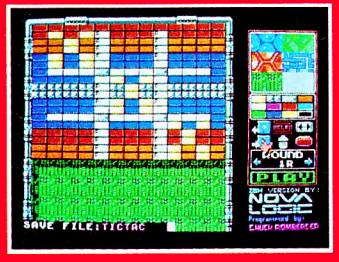
— Paul Pinella, Editor-In-Chief

RAGE!

DOH RAGES ON IN ARKANOID® II!



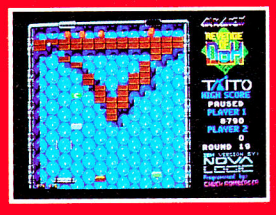
Arkanoid was never like this! Arkanoid II is here with more menace and explosive action than ever. Loaded with powerful weapons, 67 outrageous force barriers, and intense graphics and animation, it takes lightning-fast reflexes and superior strategy to survive! But survival is just the beginning.



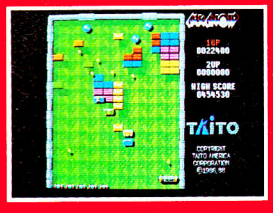
With the Arkanoid Construction Set, you create the game! IBM EGA/VGA screen.

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The new Arkanoid Construction Set™ gives you the tools to master the game. Build complex force barriers. Create exciting and original levels of play. Challenge the force of DOH! Arkanoid Construction Set available for Apple IIGS, IBM, and IBM compatible personal computers.



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IIGS Address

The editors of *The Apple IIGS Buyer's Guide* and Contributing Editor Larry Miller answer letters and questions from readers.

Address all inquiries to IIGS Address, c/o *The Apple IIGS Buyer's Guide*, Redgate Communications Corp., 24 New England Executive Park, Burlington, MA 01803. Questions may also be sent via electronic mail on AppleLink (Pinella), CompuServe (71625,567) or MCI Mail (352-9601). Individual responses cannot be guaranteed.

Looking For A Print Buffer

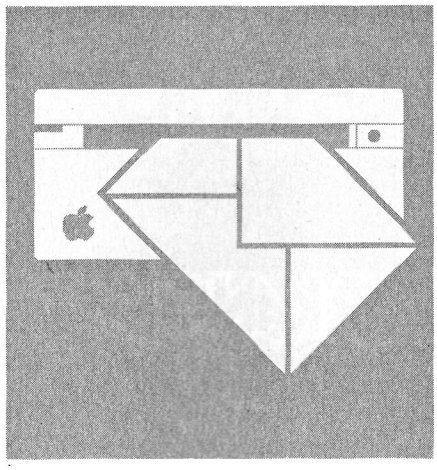
I purchased an Orange Micro Image Buffer to reduce the print time of my ImageWriter II, but found that it is not compatible with IIGS graphics-based software. They don't tell you that it will only speed up printing of the IIe and earlier types of programs. Is there a good printer buffer that will work with all IIGS software?

Victor Vance
(via AppleLink Personal Edition)

We join you in wishing that makers of Apple accessories would be more up-front about significant limitations in their products. But in this case, it wouldn't make much difference. The Image Buffer doesn't function with IIGS desktop programs because it works just like Apple's own accessory buffer. The ImageWriter owner's manual points out that the Apple buffer doesn't work with graphics printing.

Actually, our year-old manual only mentions that the buffer doesn't work with Macintosh programs. It's up to the reader to figure out that it won't work with IIGS desktop programs, which are just like Macintosh programs — both print by putting the printer into a graphics mode.

Even if the buffer did work with these programs, it would provide minimal help. When you print from a desktop program, notice that the printer pauses briefly after printing each line. That means it's waiting for data from the computer. A buffer is only useful if the computer sends data faster than the printer can print it.



If advances in system software and speedups, such as the TransWarp GS, make the computer significantly faster than the printer, a stand-alone buffer will partially work with IIGS desktop programs.

There are two limitations on the help that even a buffer like this can provide, however. A printer equipped with a stand-alone buffer won't be able to print in color. Before the IIGS printer driver prints in color, it sends a message to the printer asking if there's a color ribbon installed. The buffer either prevents the message from getting to the printer or the answer from getting back to the computer (or the information from getting back fast enough for the driver to realize that the question has been answered). As a result, the driver prints only in black.

Another limitation is that it takes a lot of data to describe how to print a character in graphics mode, especially when compared to text mode where the data only has to specify which character to print. Thus, a buffer will hold far fewer pages of a document when it's printed in graphics mode.

This is such a limitation in the Macintosh world that spooler programs that print in the background while the computer does other tasks are common, but buffers are virtually non-existent.

More Memory

My Apple IIGS has an Apple RAM card with 1 MB installed on it. I bought AppleWorks GS thinking I had enough memory, but my system constantly runs out of memory. I would like to upgrade to an Applied Engineering card, but I don't want to scrap my Apple card.

I've heard that you can have an AE RamWorks card in Slot 7 and have an Apple RAM card in the expansion slot. Is this true?

Mark McDevitt
Arlington, VA

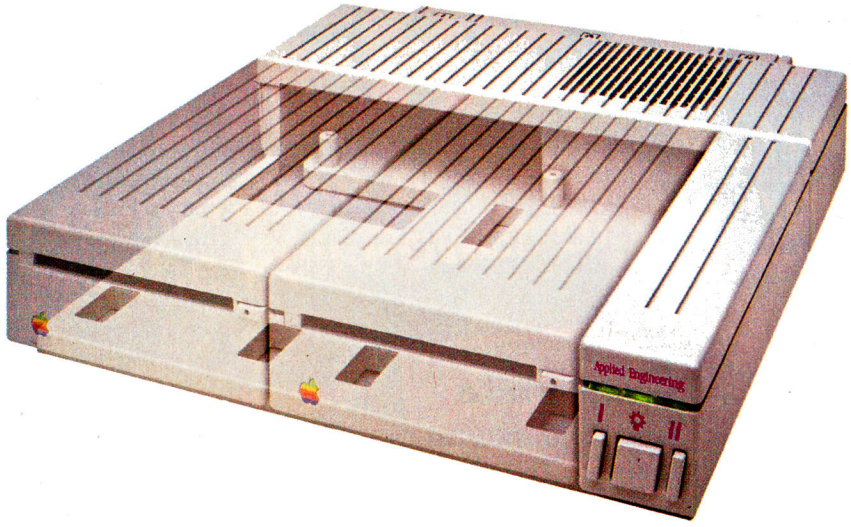
There are RAM cards that you can put in a numbered slot, but they won't help you run AppleWorks GS without running out of memory. The RamWorks card you mentioned fits in the auxiliary slot of a IIe and can't be used in a IIGS at all. The Applied Engineering card that will fit in a numbered slot is the RamFactor, but its primary use is as a RAM disk.

When a RamFactor or similar card is used in a IIe, along with Version 1.3 or later of the original AppleWorks, it will automatically use the memory on the card to expand the AppleWorks desktop. When the original AppleWorks is used on a IIGS, it won't even know the card is there unless the program has been modified to prevent it from checking to see if it is running on a IIGS. We know of no IIGS program that will use the RAM on a RamFactor card for program memory.

However, there is a way you can add an Applied Engineering memory card to your IIGS and not scrap the Apple memory card. Both Applied Engineering (RAMKeeper) and Checkmate Technology (Memory Saver) make cards that you can put in the IIGS memory slot. The cards essentially let you plug two memory cards into them, effectively allowing you to use two memory cards in one slot.

Therefore, you can solve your problem by connecting the Apple memory card and an additional memory card to either RAMKeeper or Memory Saver.

The memory cards also allow a block of memory to be used as a ROM disk (as seen by the IIGS, even though it is RAM, not ROM). Both cards use a separate power supply for the memory and provide battery backup of the memory in the ROM disk, so its contents will be retained when the computer is turned off or in the event of a power failure.



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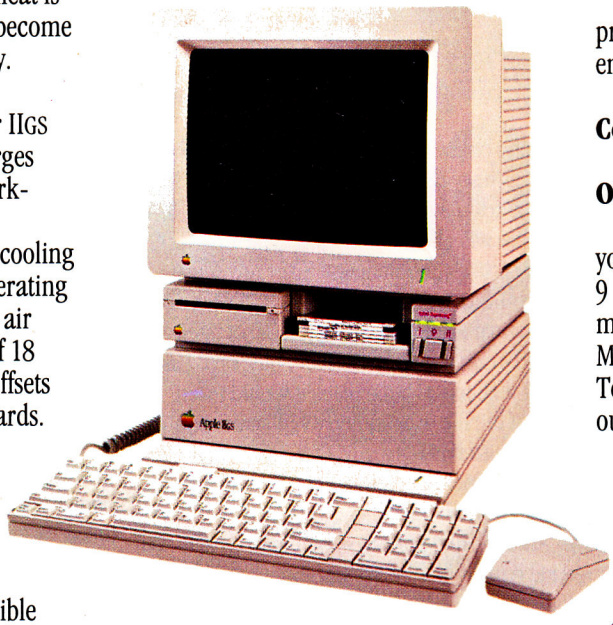
Heat is your computer's most insidious enemy. Peripheral cards allow you to do wonderful things with your computer, but they unavoidably produce heat inside your cpu. Load a IIGS with several peripheral cards and that heat is multiplied. Heat-related failures become a real (and devastating) possibility.

Conserver™, from Applied Engineering, effectively cools your IIGS while it protects against power surges and helps organize a cluttered work-space.

Conserver's quiet but powerful cooling fan efficiently maintains a safe operating temperature at all times. Drawing air from the top of the IIGS at a rate of 18 cubic feet per minute, Conserver offsets the heat produced by expansion cards. In fact, tests show a IIGS operates more than 20 degrees cooler with a Conserver than without. The difference can be critical to the life of your computer.

Power surges are another invisible risk to your computer's well-being. Power surges occur when voltage spikes surge through your wiring looking for a place to dissipate. If that place is inside your computer, you'll very quickly gain a greater understanding of the laws of electricity. It's not a pretty sight.

Conserver incorporates special line conditioning filters and dual surge suppression circuitry to protect against surges, reduce noise and provide "clean " power. Six switched AC power outlets line the rear of Conserver to accommodate your computer, monitor and four other peripherals. Thus protecting your computer and your peripherals from surges. The outlets are conveniently controlled by three front-mounted switches with LED indicators.



For beauty, we gave Conserver the same sleek lines of the IIGS and a perfectly matched platinum color. To reduce desktop clutter, the unit was cleverly designed to house two 3.5"disk drives, or one drive and the special diskette holder we include.

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Circle Reader Service Number 5

Upgrading Memory

I have an Apple IIGS with standard 256K of RAM. I am interested in expanding the memory size to 1 MB. I am new to the computer world and not sure what RAM is or how to use it. How can I upgrade my computer memory?

Michael J. Muolo
Colorado Springs, CO

Think of the RAM in your computer as a piece of scratch paper the computer can use. If you had to look up and dial several telephone numbers, you would probably find it easier and faster to write the numbers on scratch paper as you looked them up, rather than having to go back to the phone book each time you were ready to dial a new number (or redial one you had already looked up). Adding RAM to your computer is just like giving it a larger pad of scratch paper to work with.

For the most part, you don't have to know anything about how to use the RAM yourself. As your IIGS needs RAM during operations, it automatically uses it without you having to do anything (as long as you have enough RAM).

When you upgrade, you don't need to know how to install RAM unless you buy it from a mail-order company. If RAM is purchased from a local dealer, that dealer will install it for you.

Discussions of the memory in a IIGS sometimes get confusing. The IIGS comes with 256K of memory on the main circuit board. All but the earliest IIGS computers came with an additional 256K on a memory expansion board. When people talk about the memory in a IIGS, they sometimes forget to include the memory on the motherboard and mention only that on the expansion board. Whether it is what you meant or not, we suggest you add 1 MB of memory to the 256K on the motherboard for 1.25 MB of total memory.

If your IIGS is one of those that came with an expansion memory board, the easiest way to expand the memory is to add memory chips to the expansion board. Adding enough chips to fill the board will give you 1.25 MB of memory, enough for all IIGS programs that we know about.

You might also consider another approach. We suggest you consider purchasing a memory card that uses 1 MB chips instead of the 256K chips the Apple card uses. These chips cannot work with the Apple memory board. They only work with boards from Checkmate or Applied Engineering.

The cards that use 1 MB chips represent a slightly more expensive way to add more memory at the start, but are cheaper in the long run if you find 1.25 MB of memory restrictive.

AppleWorks GS And Communications

Recently, I bought a copy of AppleWorks GS, intending to use the integrated word processing and communications modules. Unfortunately, I have not been able to transmit a word-wrapped letter via CompuServe when using AppleWorks GS. Apparently, a hard carriage return is expected at the end of each line or some buffer gets jammed up.

Because I don't have this problem with original AppleWorks and the communications program Point-To-Point, I assume the problem is not with CompuServe. Is there something I can do within AppleWorks GS to overcome the limitation?

Jim Sanford
(via CompuServe)

Many online services and bulletin board systems have difficulty processing more than 80 characters without a carriage return. CompuServe will allow about 130 characters before it has a problem, but 80 or fewer usually works better.

Original AppleWorks Version 2.0 or later would insert carriage returns in files saved as ASCII text, in the same place it would insert them if the file was printed to an actual printer. Because this is usually after fewer than 80 characters per line, these files seldom cause a problem when transmitted via modem.

Additionally, Point-To-Point inserts carriage returns in a similar fashion when it transmits AppleWorks files directly.

The bad news is, we aren't aware of any way to make AppleWorks GS insert the carriage returns for you. There are separate utility programs that can do the job, but that defeats the purpose of an integrated program like AppleWorks GS. The best hope for a solution in the near future is for a desk accessory that can add carriage returns to a text file and also solve the accompanying problem of removing unwanted characters, such as carriage returns and line feeds, from files received with the communications module.

Unfortunately, we don't know of any such desk accessory. So, until such a desk accessory exists, you're probably stuck with inserting carriage returns by hand.

ImageWriter LQ And The IIGS

I have an Apple IIGS and an ImageWriter LQ printer. I have been using AppleWorks, AppleWorks GS and WordPerfect for the IIGS. These programs do not use the 27-pin capability of the ImageWriter LQ, in spite of the fact that the LQ is a selectable printer. Are there any programs for the Apple IIGS that do?

Charles Boutin
Englewood, CO

WordPerfect Corp. is well known for supporting a wide variety of printers. The company tries to support these printers as completely as possible. WordPerfect should be able to use the letter-quality printing capability of the ImageWriter LQ printer. We don't have an ImageWriter LQ to test with WordPerfect here, but one of its fonts from 3 to 8 should provide the ImageWriter LQ's highest-quality print mode.

Original AppleWorks has never supported the ImageWriter LQ as a selectable printer, but that's about to change. Version 3.0 of AppleWorks will directly support the ImageWriter LQ. We're not sure what features of this printer will be supported, though. AppleWorks is not known for making use of a wide range of printer features.

Vendors of AppleWorks GS and other desktop programs are at the mercy of the printer drivers supplied by Apple. The ImageWriter LQ printer driver supports the printer in little more than ImageWriter II emulation mode and can make no use of the LQ's higher-resolution printing capability.

Apple has been in no hurry to develop a printer driver that will take full advantage of the LQ printer on the IIGS. We suspect part of the reason is because the company doesn't feel it's worthwhile to develop a new driver, because there aren't enough IIGS owners with ImageWriter LQ printers. The LQ printer

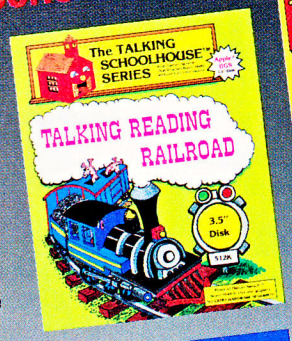
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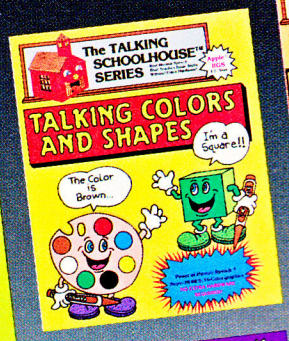
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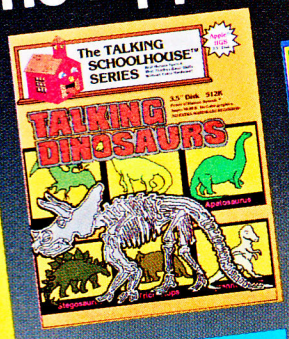
Imagine a "Talking Schoolhouse"

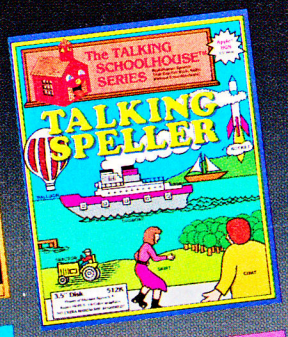
inside your GS computer — software that uses perfect human voice and the most stunning graphics imaginable to teach basic skills to youngsters. Why fantasize? . . It's here now and it's known as the TALKING SCHOOLHOUSE ™ SERIES from Orange Cherry Software. 14 software programs captivate children ages 3-9 as they explore basic concepts on their own:

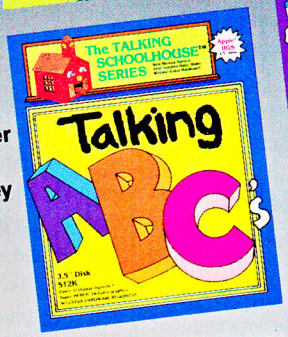
- Talking Animals
- Talking Dinosaurs
- Talking Numbers
- Talking First Writer
- Talking First Reader
- Talking School Bus
- Talking Alpha Chimp
- Talking Colors and Shapes
- Talking Reading Railroad
- Talking Addition and Subtraction
- Talking ABC's
- Talking Speller
- Talking Clock
- Talking Money

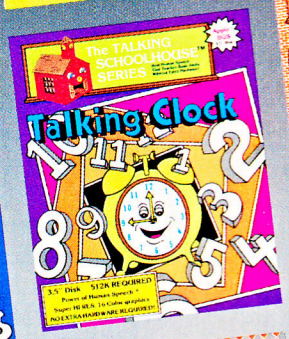


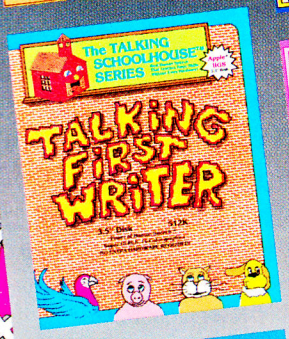


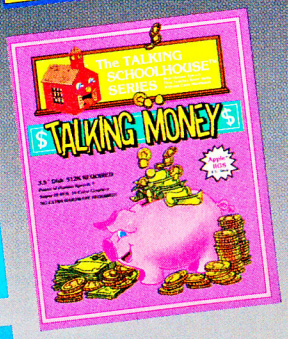


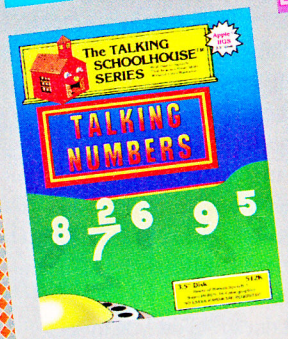








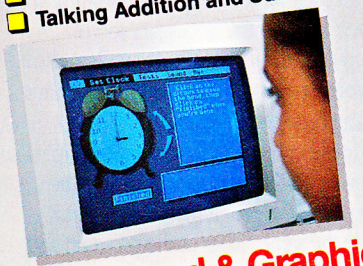






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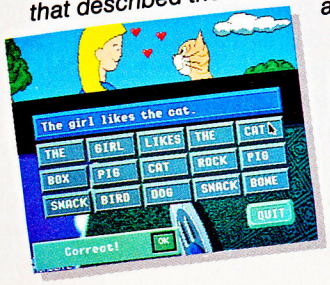
Perfect Human Voice

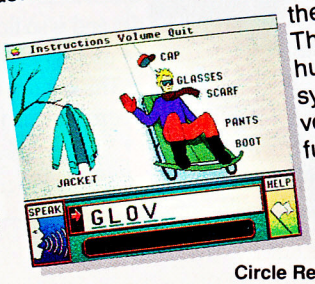
This software brings the friendly and reassuring voice of a real person into the computer learning environment. No speech board is required because we utilize the GS's built-in Ensoniq™ sound chip. Developers working with proven educational concepts have recorded actual human voice & electronically digitized the sound into the computer program. The result is perfect human speech - not a synthesized computer voice that only confuses youngsters.

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Letters, numbers, words, concepts, and even dinosaurs come alive in thousands of colors with our super high resolution graphics. These programs let the GS computer perform at its maximum level.







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from Orange Cherry Software. All programs are currently available on 3.5" disks for the Apple IIGS. The suggested retail price is $49, $59 for the School Edition. To order, or for more information contact your dealer or call toll-free (800) 672-6002.



owner's only recourse seems to be to petition Apple for a better printer driver.

Diacritical Accents

I teach French and computer science in a bilingual school in New York. From 1984 to 1986, my job was to study the possibility of using computers for teaching French as a second language. One of our biggest problems has been in getting diacritical accents over letters.

A year ago we purchased two Apple IIGS computers. We are pleased to have access to alternate keyboards via the Control Panel, but we are still unable to get many of the characters we need. We are very disappointed not to be able to get the characters we need by using the Option key, like on the Macintosh.

Gerard Chamorin
New York, NY

We know of several items that will help you now. We have hopes for more when Apple releases the new system software for the IIGS. Most of the fonts available for IIGS desktop programs are converted Macintosh fonts. Many of these fonts have the special characters you need. The problem is that most IIGS software only allows you access to half the characters available in a font.

There are several ways to get to the extra characters in a font. The Beagle Bros. Time-Out series program SuperFonts is one solution. Although it doesn't allow you to see those characters on screen, SuperFonts does allow original AppleWorks to print using IIGS fonts and to access all of the 256 possible characters. SuperFonts works with many printers, as well as the IIe or IIc.

If there's no substitute for seeing what you're going to print on screen before it's printed, check out Paintworks Gold, Writer's Plus Elite and Draw Plus. These packages were developed in part by Version Soft, a France-based company. They will access the extra characters in a font when the Option key is pressed, just like Macintosh software.

Another possibility is the Keycaps desk accessory from MECC. Like the Macintosh desk accessory of the same name, Keycaps will show you all of the characters available in a character set and allow you to copy characters that you can then paste into your applications.

Finally, there are several font editors available for IIGS fonts. See the article on fonts and font editors elsewhere in this issue for more information on the products available. If none of the other solutions seem to help, a font editor can always be used to create the characters you need.

There is some hope for more help in this area when Apple releases System 5.0. It has been reported that there will be a feature in System 5.0 that will make it easier to use characters with diacritical accents. See the article in this issue for more details about System 5.0.

Error Message Mystery

Every now an then, I get a $0681 error on my IIGS. What does it mean?

Michael Bonifacio
Sydney, Australia

There's a method behind the funny numbers that a IIGS uses to report errors. The dollar sign means the numbers are hexadecimal, or base 16. The first two digits of the error number generally tell where the error came from.

Errors that start with an 06 come from a IIGS tool called the Event Manager. Errors starting with 00 and 09 are also common. The 00 errors generally come from GS/OS. Errors in the 09 series (notably the 0911 error explained in the last issue) are generated by the tool set that works with the Apple Desktop Bus, the method Apple uses for keyboard and mouse input.

IIGS desktop applications are typically event-driven programs. That means the program decides what action to take next by responding to events. Events include user actions such as clicking the mouse and typing on the keyboard. Events that happen before the program is ready to respond to them are stored in a queue by the Event Manager and reported to the program, based on their priority and when they happened.

Error 0681 is generated if the Event Manager determines that the information in the queue has been damaged, perhaps by a rogue program writing into memory it shouldn't.

Program Selector

I recently ordered an Inner Drive from Applied Ingenuity. My understanding was that the drive is formatted with GS/OS, which means the Finder appears when the system is booted. When I installed my programs, I believed they went in folders.

Obviously, a program selector is a must. I've heard a lot about ProSel and I currently use JumpStart, by Dave Hill, on my System Disk. I'm very pleased with JumpStart, except that it will lock up occasionally when loading a program.

Which program selector should I use and how can I set up the Inner Drive for greatest efficiency? Should I reserve some memory on the RamKeeper for storage, or has the hard drive rendered it obsolete?

Paul Klenk, Esq.
(Via AppleLink Personal Edition)

Yes, it's best to keep applications in folders. A ProDOS device can have only 51 files in its main directory. If you tried to put all your programs in the main directory, it would be full long before the space on the hard drive is used up. The main directory is best reserved for folders that contain programs or data and the few files that must be in a main directory.

There are two theories on general organization of hard drives. Because programs don't change very often and data does, many people like to divide their hard drives this way. They put all their programs on one volume and all their data on the other volume. Then, when they do the necessary job of backing up the hard drive, they usually only have to worry about the data volume, making the backup chore easier.

Others feel that because most programs, particularly under GS/OS, start out expecting the data to be where the program is, they'll keep their data in the same folder as the program and do not waste time telling the program where to get the data every time they run it.

There are so many program launchers available for the IIGS, we don't want to try to list them all for fear of leaving several out. They range from the Finder that comes on the System Disk to simple, bare-bones launchers to the extremely powerful ProSel, which includes a comprehensive set of utilities and is so flexible its launch screens can be used as a Hypertext display medium.

The fact that some applications sometimes freeze up when launched isn't necessarily

connected to JumpStart. That happens occasionally when programs are launched from almost any program launcher.

We find that it happens less often when we start a program from a launcher like ProSel-16, which can purge memory as it launches a program, or JumpStart, with its problem-file launch procedure.

But you have to tell the launcher to purge memory, and even programs started up like this aren't immune from crashing. Often the program being run has bugs in it. If the problems only happen after starting such a program up with a particular program launcher, it may only mean that the launcher provides an environment that enables the bugs to make themselves known. And sometimes desk accessories can interfere with some programs, but not others.

The decision on whether your RamKeeper is obsolete or not is one you'll have to make. When you have a fast hard drive — and an Inner Drive definitely qualifies — the speed of a RAM or ROM disk is less impressive when compared to that of the hard drive.

We found that we quit using our RAMKeeper and eventually removed it from our computer when we got a hard drive that was nearly as fast. We know of others who get as much use out of their RamKeeper now as they did before they got their hard drive. We would suggest that if you are thinking of getting both, get the hard drive first and then see if you still need the RamKeeper. ■

— *Larry Miller*

Larry Miller, a programmer and consultant based in Indiana, is a SYSOP on CompuServe. His CompuServe I.D. is 76703,1031.

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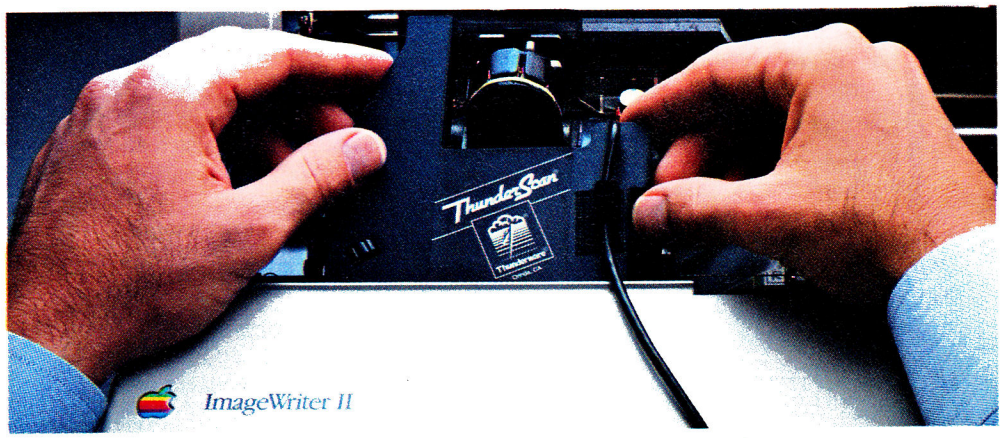
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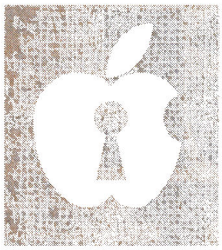
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Circle Reader Service Number 7

Desktop Publishing With AppleWorks GS



Desktop publishing provides students and educators with a fun, easy and effective way to express their ideas on paper. Because AppleWorks GS is nothing if not a desktop publishing program, let's use it to build a simple one-page, two-column newsletter of the type a school might use. As a model, we'll use the newsletter in the photo on this page.

You may find it useful to have the back page of your AppleWorks GS Quick Reference Guide handy.

The first step in any such project is planning. Visualize what your final product will look like. Draw a simple diagram if it will help. As a rule of thumb, assume a typical page can hold about 400 words of 12-point text, including a few special effects.

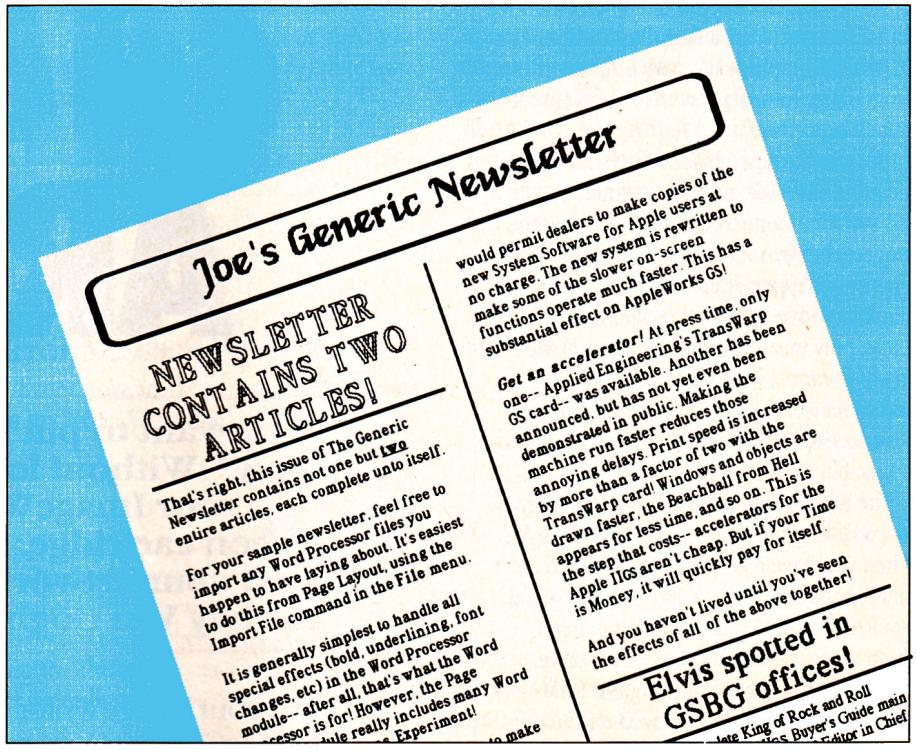
To use the highest quality printing for your final output, make sure that, wherever possible, you use fonts that are available in twice the desired sizes. When Better Text is selected for printing, a double-size font, if available, will be squeezed down to half size for the best possible resolution. For this example, we used only fonts that are included with AppleWorks GS.

Usually, the first creative step in the process is writing the articles that will be included. Use the Word Processor for this task. You'll need two articles, one about 350 words long and the other about 100. You can either create two articles from scratch or modify any Word Processor documents you have handy. For this exercise, create the long article in the 10-point New York font and the short one in 12-point Times.

Open a new Page Layout document. This is done most easily from the first display AppleWorks GS gives you; just double-click on the Page Layout icon.

As in our Tip of the Month (see page 14), immediately select Page Setup and choose Condensed print and a vertical layout. Notice the rulers in the document reset themselves to larger vertical size. This is an effect of condensed printing.

Now select the Master Page by clicking on the "M" page icon at the lower left of the



The format for our sample one-page, two-column newsletter was flexible enough to even include late-breaking news!

screen. From there, select Set Guides from the Options menu. Set the Top/Bottom and Left/Right margins to 1 inch each. Select two columns and set the column spacing to .5 of an inch. Click OK when done, then select Lock Guides from the same Options menu. Now click on the Page 1 icon next to the Master Page icon and you're ready to begin.

For the banner, we used the largest font included in AppleWorks GS, 28-point Venice.

Creating the banner is a two-step process. First, create a Text Object by using the "A" text tool to create a rectangle an inch tall by about 5 inches wide. Note that these measurements are based on the displayed ruler. Select the desired font from the Font menu and type your banner. When you're done, you can use the arrow tool to select the text object and move it so it's centered and aligned just below the top margin.

To outline the border, select the rounded rectangle tool. Pick a line size (we used the middle one) and make sure that the unfilled shape is selected. This is done by clicking the leftmost of the two little squares just above the line selections.

Now drag a rectangle around the banner. Remember that after you're done, you can again use the arrow tool to select, move and even resize the rectangle until it is aligned and sized the way you want it.

Next, enter the headline for the first article. Using the "A" tool, drag a text object that starts just under the banner and extends down about an inch and a half. Its width should fill the left column. If you selected Magnetic Guides, this will be easier.

For the font, select New York 24, Bold and Outlined. Type the desired headline and adjust and align it as desired.

To put the first article on the page, start by selecting Fit in Window from the Options menu. This will give you a somewhat distorted display of the entire page. Under the File menu, select Import File and the larger of the two Word Processor files you chose for this newsletter.

You will now have a new pointer that looks like the upper left corner of a page of text. This pointer is used to place the text you are importing. Realizing that the "corner" of the pointer is the drawing point, drag a

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rectangle starting just below the headline and reaching to the bottom of the page, filling the left column edge to edge. Notice that text fills in this rectangle. Notice also that it doesn't all fit into the rectangle you drew.

Using the arrow tool, click on the rectangle containing the text. You will see that handles — the little black squares on the corners of the rectangle — appear, along with the top and bottom link tags. To make the text continue to the next column, click once on the link tag at the bottom of the column of text.

You will again see the text pointer. Drag another rectangle, this time in the right column beginning just under the banner and ranging about halfway down the page. You'll see the remaining text automatically fill the object.

Select Actual Size from the Options menu to see your page in a readable size. You can fine-tune the placement and alignment of the text objects at this stage. As you adjust the objects containing the article, the text automatically readjusts itself between the two columns.

When you're done, create a text object for the second article's headline in the right column directly below the end of the first column. For this headline, use 24-point Times Bold.

Import the second article the same way you did the first; use the Fit in Window function again, if you wish. Place the article in a text object that fills the remainder of the right column.

Return to Actual Size and fine-tune the placement of the various objects on the page. When you have finalized the layout, add some separating lines. The plus-shaped tool (+) will force lines to be drawn exactly vertical or horizontal. Pick a pleasing line thickness and place lines below the first headline and above and below the second. Also draw a long vertical line that separates the left and right columns.

You're done! Print out the page and see how it looks. Compare the differences in quality and speed when you select Better Text or Better Color.

If you have an ImageWriter II and a color ribbon, feel free to embellish your newsletter with color where you deem appropriate. Keep in mind that if you intend to reproduce your newsletter for distribution, an all-black master is much easier and less expensive to duplicate than a multicolored one.

Tip Of The Month

Taking the following steps in the following order can make your life much easier when starting a new Page Layout document:

Immediately after opening the new PL document, Select Page Setup from the File menu.

Select the desired paper size, then the vertical or horizontal layout icon — as appropriate for your project.

Also select Condensed Print. Always do this. Otherwise, all your text will print out at the size you see on screen, which, because of the tall-rectangle aspect of the screen pixels, will print out at twice the height of the point size you selected. Sounds complex, but it's very important.

The Page Layout module rearranges the layout of your document to fit the above parameters.

After defining the Page Setup, click on the Master Page icon. (If you want different layouts between left and right pages, select Left and Right Master Pages under the Options menu and define each Master Page in turn.)

Now set up your page constants, the things that appear the same on all pages. This includes items such as page numbers, the date and, most importantly, margins.

Select Define Guides under the Options menu. Then set your margins, number of columns and column separation. This creates dotted guide lines that show up in the same place on each page, assuring consistency.

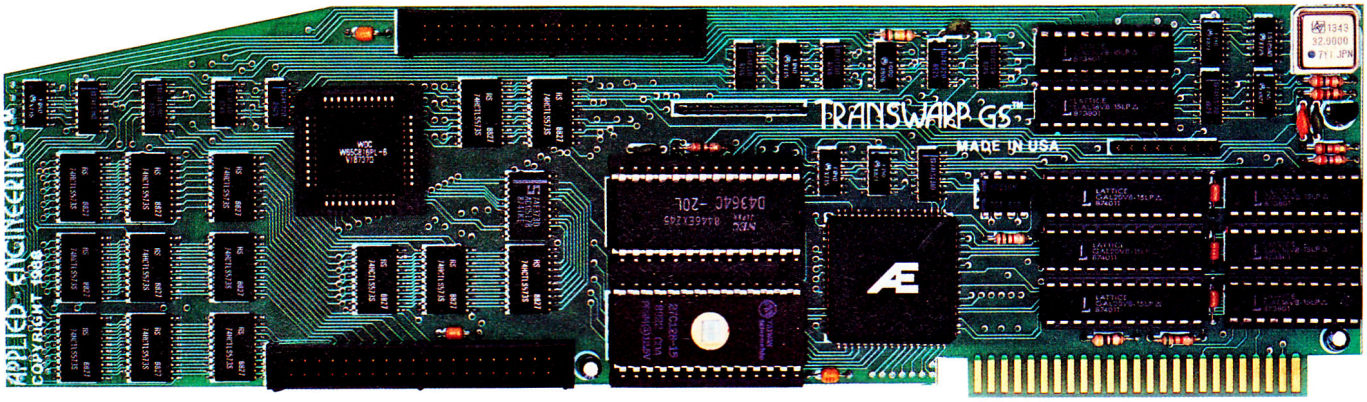
When you finish setting the margins, select Lock Guides from the Options menu so you won't accidentally move the guides later.

You can also select Magnetic Guides, which will automatically cause any objects placed near a guide line to be pulled onto the guide.

As soon as you are finished defining your Master Page, immediately select the Page One icon or you'll find yourself building your first page on the Master. Once you've done this, you're ready to continue creating your laid-out page. ■

— Joe Walters

Joe Walters has been using, programming and writing about the Apple II since 1982. He lives in New Mexico and can be reached via electronic mail on CompuServe (72406,742).



Fan mail GS

"TransWarp GS has performed flawlessly ... I've become addicted to computing at warp speed ... once you get a taste, you'll wonder how you ever got anything accomplished with your IIGS lumbering along at an unaccelerated pace ... it's an improvement you're going to appreciate every time you place your fingers on the keyboard."

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— George Dombrowski, Jr., Chicago, IL

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— Dan Muse, Editor in Chief, Incider

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— Dean Esmay, A2-Central

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In Search Of Great Output

One of the most important considerations for those of us that use desktop publishing software is the quality of the output. The shape, contour and spacing of each individual letter is critical to a readable, attractive document. Blocky, jagged or improperly spaced letters make text difficult to read. And readability leads to understanding.

Some fonts are more legible than others. Fonts with serifs make reading easier than sans serif fonts. The serifs help to make each individual letter unique. Sans serif letters can look alike and, therefore, slow the reader down.

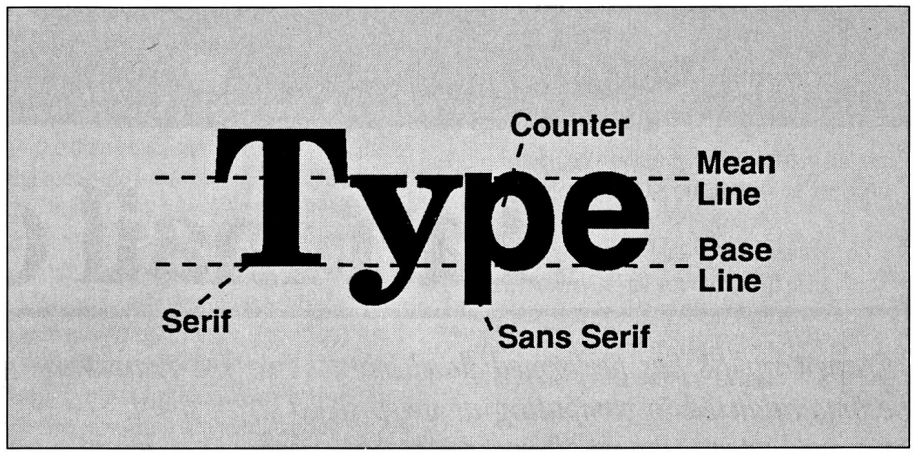
The more distinct the contour of a letter, the easier it is to identify. If the edges of a letter are too jagged, recognition can be difficult. The individual parts of a letter must also be easy to recognize.

Letters should be set far enough apart so that each individual letter is easily identified, but not so far apart that it looks as if the letters are separate from one another. Word spacing, too, must be appropriate to prevent words from running together into a jumbled mess. Correct word spacing is determined by the proportion of the space used between letters. The greater the space between letters, the greater the space required between words.

It is especially difficult for a dot matrix printer, such as the ImageWriter, to create subtle serifs and smooth contours. The results will be rather blocky when compared with a laser printer or typeset-quality output.

When using IIGS-specific programs, the best quality from an ImageWriter can be had by selecting the Better Text option under Printer Options. To have the text actually improve by selecting this option, the font being used must be available on disk in a size that is twice that of the text in the document. If no such font exists, the quality of the type will not be improved significantly. Unfortunately, we must usually trade off time for better results. Each page of text output with Better Text selected may take up to four minutes to print, depending on the program and print driver being used.

Users have an advantage when using the LaserWriter, because each IIGS desktop publishing program uses the LaserWriter's built-in fonts. This makes the shape of each letter consistent from program to program. The main differences are in letter and word spacing. There are also slight variations in the weight and point size of letters created by the different programs.



This "type" diagram shows the difference between serif and sans serif letters. Serifs are any of the short lines that emerge from — and at an angle to — the upper and lower ends of a letter. Fonts with serifs are easier to read.

Available fonts on a LaserWriter are Courier, Helvetica, Times and Symbol. In addition to these fonts, the LaserWriter Plus includes Avant Garde, Bookman, Helvetica Narrow, New Century Schoolbook, Palatino, Zapf Chancery and Zapf Dingbats. Not all IIGS desktop publishing programs support the full range of fonts built into a LaserWriter Plus.

How Each Program Stacks Up

Good but inconsistent quality can be had with AppleWorks GS 1.0v2 on an ImageWriter. The tops of letters can be distorted or sheared off. This problem sometimes affects the first line in a paragraph. When the printout is correct, the parts of each letter are clear and smooth. The letter spacing is a little too tight because some letter combinations touch. Word spacing, on the other hand, is well proportioned.

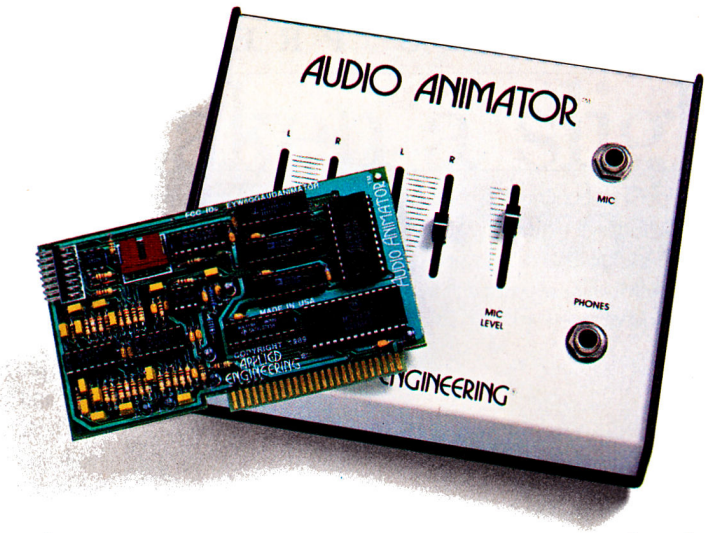
The new print driver that comes with AppleWorks GS 1.0v2 decreases the time it takes to print a document on an ImageWriter. Using the new ImageWriter.CL driver, a page of text clocked in at three minutes. The older driver took just over four minutes to print the same document. Eleven fonts are provided with the program. AppleWorks GS supports the ImageWriter, ImageWriter LQ, LaserWriter and Epson. Printers can be interfaced through AppleTalk, the IIGS modem or printer port, GraphiCard or a parallel card.

AppleWorks GS 1.0v2 produced excellent results with tight letter and word spacing when text was output to a LaserWriter. Unfortunately, only the standard LaserWriter fonts are supported. Bit-mapped fonts print properly.

The legibility of text output by GraphicWriter 2.0 to an ImageWriter is excellent. The individual parts of each letter are clear, relatively smooth and distinct. Counters are open and properly defined. Even though the contours of the letters are slightly jagged, the overall effect is clear and well shaped. Serifs are of good quality. Letter and word spacing is loose. The 13 fonts provided with the program come in a variety of useful sizes.

It took about 2 .5 minutes to print a full page of high-quality text. Only the ImageWriter and LaserWriter are supported through AppleTalk or the IIGS modem or printer ports.

GraphicWriter 2.0 comes up short when used with a LaserWriter. The letter spacing is fine, but the word spacing is extremely loose. For some fonts, the word spacing is unacceptable. Also, not all the LaserWriter Plus fonts are supported. They are available on the GraphicWriter 2.0 disk, but other fonts substitute for them when printed. Only the standard LaserWriter fonts print properly. The LaserWriter will also substitute built-in fonts for bit-mapped fonts that are output by GraphicWriter 2.0.



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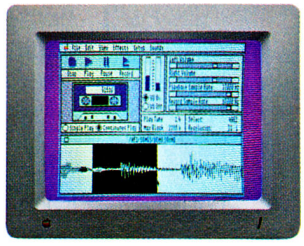
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These sample printouts were produced by booting the original disks provided by each vendor. The same fonts were not available for each of the programs we tested. Therefore, we determined that it would be best to select one each of a serif and sans serif font, trying to make sure that the fonts selected looked as much alike as possible. The size of the text is 12 point on a line length of 2 1/8 inches. The lines of type were set flush left so that extra spaces would not be inserted between words.

Operating under GS/OS with a two drive system, Springboard Publisher was used to output this sentence to a LaserWriter Plus.

Springboard Publisher was used to output this serif type to an ImageWriter II printer.

AppleWorks GS 1.0v2 was used to output this Helvetica type to a LaserWriter Plus.

Medley 1.0's output to an ImageWriter is very good. The letter spacing is a bit too tight, because some letter combinations touch. Word spacing is also tight, but proper proportions are maintained. The 21 fonts provided come in many useful sizes.

It took Medley 1.0 four minutes to print a page of text, using the Better Text option. The ImageWriter and LaserWriter are supported through AppleTalk or the IIGS printer or modem ports.

Medley 1.0 boasts tight letter and word spacing on a LaserWriter. All LaserWriter Plus fonts are supported, except for Helvetica Narrow. The program also includes an extensive selection of bit-mapped fonts that output properly to the LaserWriter.

Publish It! 2 produces very good output on an ImageWriter. The letters are squared off in a pleasing way that does not emphasize the inadequacies of the ImageWriter. The contours of the letters do suffer somewhat from the jaggies, but letter and word spacing is appropriate.

Only Publish It! 2 offers extensive menu commands, which enable you to customize letter and word spacing. Kerning is also available for pairs of letters.

Publish It! 2 was able to print out a full page of text, with Double Strike selected, in a blistering 50 seconds! There are six fonts that come with the program. The printers supported include the ImageWriter and LaserWriter and a variety of printers by Epson, Gemini and Okidata. Interfaces supported by Publish It! 2 are the IIGS ports, IIc ports, Super Serial Card, parallel card, Grappler, Laser 128, PKASO, Textprint Print it!, Videx Uniprint and AppleTalk.

Excellent results with a LaserWriter can be had with Publish It! 2. The program substitutes LaserWriter fonts for its own fonts, without producing any spacing problems between letters or words. Desplaines becomes Helvetica, and Deerfield becomes Times on a LaserWriter. When Publish It! 2 is used with a LaserWriter Plus, Wilmette prints out as New Century Schoolbook, Westwood as Bookman and Ravinia as Zapf Chancery.

Springboard Publisher 2.0 produces only fair output on an ImageWriter. The letters are very blocky and have a lot of jagged edges. The serifs are also squared off and blocky. Letter and word spacing is tight, although letter spacing is customizable. Springboard Publisher 2.0 offers only three fonts with the main program disk, Gothic (Old English), serif and sans serif.

The time that it takes to print a page of text with Springboard Publisher 2.0 varies dramatically, depending on the type of disk drives that are being used and whether a RAM disk is in use. It took four minutes to print a page using 5.25-inch disk drives, but only two minutes, 45 seconds to print the same document from a RAM disk.

In addition to an ImageWriter and LaserWriter, Springboard Publisher also supports printers from C. Itoh, Citizen, Epson, Fujitsu, IDS, NEC, Okidata, Panasonic, Printek, Prowriter, Seikosha, Star and Toshiba. In addition, Springboard Publisher supports a wide number of interfaces, including Alphabits, IIc port, parallel card, Super Serial Card, Apricorn, AST, CCS, Dispatcher, Dual-Comm Plus, Dumpling-64, Epson, Finger-Print, Firmware, GraphiCard, Grappler, HappiCard, K-T Parallel, Microbuffer, Microtek, Mountain, MPI Auto-Plot, Omni-Graph, PKASO, Print-it!, Printermate, Printmax, Seiko, SSM, Tymac, Versacad, Videx Uniprint and Wizard.

Springboard Publisher 2.0 produced excellent results with a LaserWriter. The sans serif font becomes Helvetica, and the serif font becomes Times when printed. The letter and word spacing for both is appropriate.

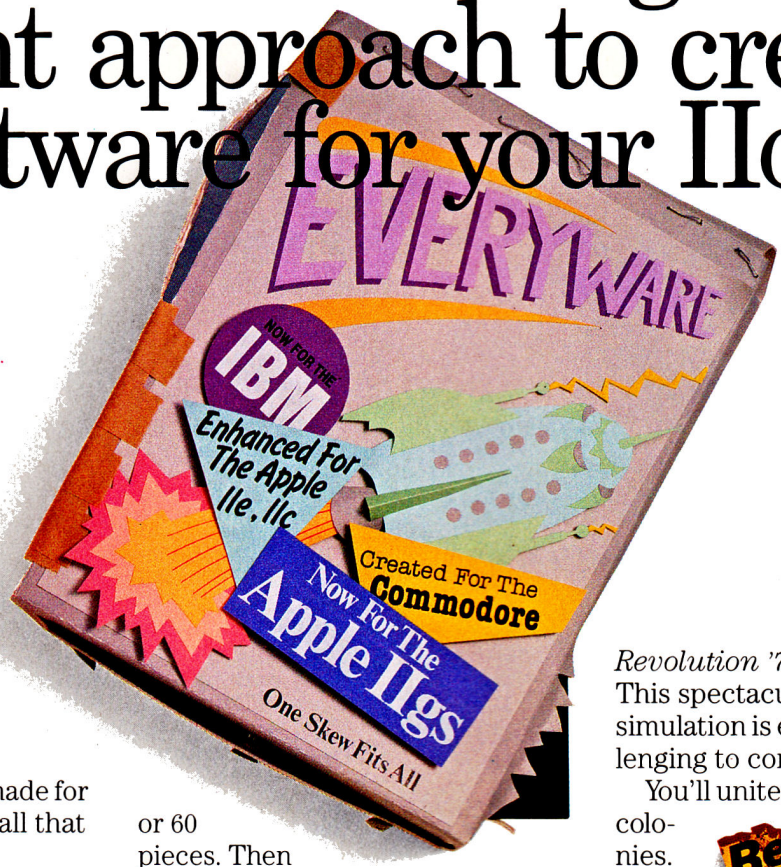
Conclusions

If you want a speed demon that can produce quality output on an ImageWriter, in about the same time that it would take using the internal fonts of the ImageWriter, then Publish It! 2 is for you. No other program that we tested came close to its speed. Publish It! 2 also offers the most commands for altering letter and word spacing.

Our vote for best IIGS-specific output to an ImageWriter is split between GraphicWriter 2.0 and Medley 1.0. While GraphicWriter 2.0 has excellent letter and word spacing, Medley 1.0 has a more extensive selection of fonts.

AppleWorks GS 1.0v2 needs to have the bug worked out that causes the first line of a paragraph to sometimes misprint. The program could also do with a better font selection.

We've taken a slightly different approach to creating software for your IIGS.



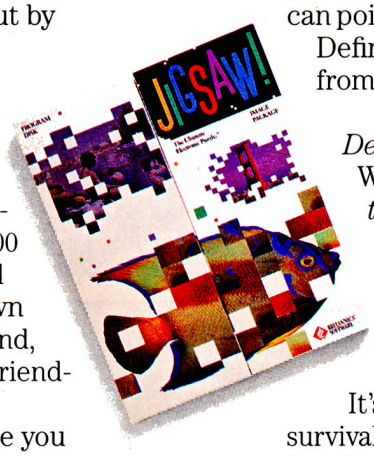
Most IIGS software is created for everyone else first–for IBM, Commodore, Apple IIe.

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JIGSAW!
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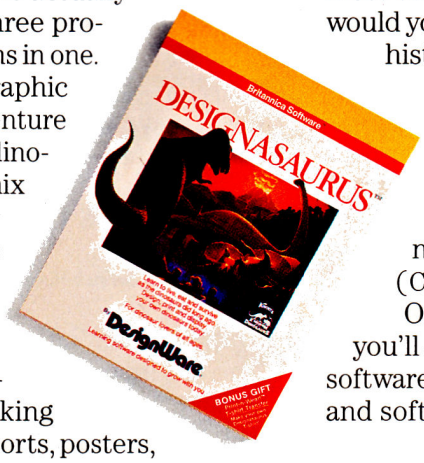
This wonderfully addicting electronic puzzle uses all 4,000 of your IIGS colors in its 24 images. Each image can be scrambled into 8, 15, 40 or 60 pieces. Then you see how fast you can point and click it back together.

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Typefaces	AppleWorks GS 1.0v2	GraphicWriter 2.0	Medley 1.0	Publish It! 2	Springboard Publisher 2.0
Athens			18		
Avant Garde**		12, 24	10, 12, 14, 18, 24		
Bookman**		12, 24	10, 12, 14, 18, 24		
Cairo	18	18			
Calligraphy			24, 36		
Camelot			12, 24		
Circus			36		
Courier*	9, 10, 12, 18, 24	12	10, 12		
Deerfield				12, 24	
Des Plaines				9, 10, 12, 18, 36	
Geneva	9, 10, 12, 18, 24	9, 12, 18, 24	10, 12		
Helvetica*	10, 12, 24	9, 12, 18, 24	10, 12		
Hollywood			12, 18, 24		
London					
(Old English) (Gothic)	18				72
Long Island			12, 18		
Madison				24, 48	
Monaco	9, 12	9	9, 12		
New Century Schoolbook**			10, 12, 14, 24		
New York	9, 10, 12, 18, 24		18		
Palatino**		12, 24	10, 12, 14, 18, 24		
Ravinia				18, 36	
San Francisco		18			
San Serif					9, 10, 12, 14, 18, 24, 36, 48, 72
Serif					9, 10, 12, 14, 18, 24, 36, 48, 72
Shaston	16	16	16		
Symbol*	12, 24	12	9, 18, 24		
Times*	10, 12, 24	9, 12, 18, 24	10, 12		
Venice	14, 28	14	12, 14, 24		
Westwood				18, 36	
Wilmette				9, 10, 12, 18, 36, 72	
Zaph Chancery**			12, 14, 18, 24		
Zaph Dingbats**			12, 24		

*Available on a LaserWriter or LaserWriter Plus
**Available on a LaserWriter Plus

If you have a non-Apple printer or interface, Springboard Publisher 2.0 offers the support needed to make the right connection.

The best programs for LaserWriter output are AppleWorks GS 1.0v2, Medley 1.0 and Publish It! 2. Each of these programs provides excellent word and letter spacing. Medley comes out on top because it supports all but one of the LaserWriter Plus fonts. ■

— Gary Ramey

Columnist Gary Ramey is director of advertising design at the National Education Center in Arizona. He has 17 years of experience in commercial art.

Products Mentioned

Additional company and product information is listed in the "Apple IIGS Hardware And Software Directory."

AppleWorks GS 1.0v2
Claris Corp.
Circle Reader Service Number 36

GraphicWriter 2.0
Seven Hills Software Corp.
Circle Reader Service Number 37

Medley 1.0
Milliken Publishing Co.
Circle Reader Service Number 38

Publish It! 2
Timeworks, Inc.
Circle Reader Service Number 39

Springboard Publisher 2.0
Springboard Software, Inc.
Circle Reader Service Number 40

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Apple Color Composite IIc	$ 312
Apple Monochrome	$ 135
Magnavox RGB/Comp.	$ 299

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Apple 3.5 UniDisk IIe/IIc	$ 319
UniDisk 3.5 Controller	$ 59
Apple 5.25 Disk Drive	$ 259
Apple 5.25 Controller	$ 59
System Gate 3.5 Daisy Chainable Disk Drive	$ 189
Applied 5.25 Disk Drive	$ 118
Applied Vulcan HD/20	$ 499
Applied Vulcan HD/40	$ 649
Applied Vulcan HD/100	$1375
CMS 20 Meg w/SCSI	$ 579
CMS 30 Meg w/SCSI	$ 659
CMS 43 Meg w/SCSI	$ 786
CMS 60 Meg w/SCSI	$ 839

Printers

ImageWriter II w/Cable	$ 459
Epson LX-810	$ 209
Panasonic KX-P1180	$ 219
Panasonic KX-P1190	$ 279
Olympia NP-30 w/Cable	$ 289

Printer Interface Cards

Apple Super Serial	$ 109
Orange Grappler C/M/GS	$ 79
Orange ProGrappler	$ 82
Thirdware Fingerprint GSI Plus	$ 85

Modems

Applied DataLink 1200	$ 135
Applied DataLink 2400	$ 175
Practical 1200 SA Mini	$ 85
Practical 2400 SA	$ 185
IIGS/IIc Modem Cable	$ 19

PC Transporter

PC Transporter 768K	$ 389
IIGS Installation Kit	$ 45
IIe Installation Kit	$ 39
Single 360K Drive	$ 219
Dual 360K Drive	$ 329

Sound & Music

Apple MIDI Interface	$ 79
Applied Sonic Blaster	$ 99
Applied Audio Animator	$179
Applied Phasor	$ 132
Opcode MIDI Pro Plus	$ 99
Bose Roommate Speaker System	$ 199
Passport MIDI Interface with Drum Sync	$ 99
Passport MIDI Interface w/Tape & Drum Sync	$ 139

Power/Surge Protection

Applied Heavy Duty Power Supply for IIe/II+	$ 59
EPD EC-I 6 Outlet Surge Protector	$ 29
Kensington Sys. Saver IIe	$ 68
Kensington Sys. Saver GS	$ 77
Tripplite 350 Watt UPS Battery Backup	$ 399

Input Devices and Joysticks

Apple IIc Mouse	$ 79
Apple IIe Mouse w/Card	$ 119
CH Mach II Joystick	$ 29
CH Mach III Joystick	$ 36
CH Flight Stick	$ 48

Digitizers & Scanners

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ComputerEyes IIe	$ 109
ThunderScan	$ 179

Time & Accelerators

TransWarp GS	$ 299
TransWarp Accelerator	$ 175
SMT No Slot Clock	$ 39

Memory Upgrades

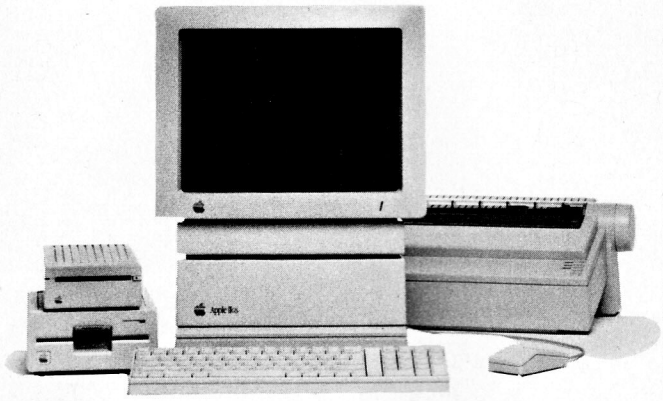
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GS-RAM Ultra 512K	$ 229
GS-RAM Ultra 1 Meg	$ 319
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GS-RAM Plus 1 Meg	$ 329
GS-RAM Plus 2 Meg	$ 529
RamKeeper	$ 142
RamKeeper Slot Mover	$ 32
RamWorks III 256K	$ 159
RamWorks III 512K	$ 219
RamWorks III 1 Meg	$ 329
RamFactor 256K	$ 199
RamFactor 512K	$ 259
RamFactor 1 Meg	$ 359
RamCharger Backup	$ 145
Ram Express 256K	$ 219
Ram Express 512K	$ 259
Ram Express 1 Meg	$ 369
Ram Exp. Clock Option	$ 49
Checkmate Mem Saver	$ 119
Apple Memory Card 256K for IIGS	$ 129
Applied Ingenuity Extd. 80 Column 64K IIe	$ 49

Chip Sets

Upgrade your IIGS, IIe, or IIc Memory card. Most memory cards take the 150ns chips. Recent revisions of the Applied GS-RAM use 120ns chips.

256K Chip Set 150ns	$ 59
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256K Chip Set for RamPak & GS-Ram Ultra	$ 59
1Mb Chip Set GS-Ram+	$ 129



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The Well-Connected IIGS

Local area networks (LANs) are becoming quite popular among educators. The connectivity capabilities of the Apple IIGS are a major reason why.

Since it was introduced in 1986, the Apple IIGS has been popular among educators. Local area networks have not. Lately, however, educators are becoming aware of the benefits — in cost and efficiency — that networks offer to both students and faculty. As a result, local area networks are becoming more noticeable in computer labs, classrooms and administrative offices.

There are several reasons for a school to install a local area network. These include reduced costs for peripherals, software and storage media; greatly improved disk management; and more efficient information sharing.

A Question Of Economics

When it comes to saving money, local area networks can't be beat. School administrators around the country are saving money on software, hardware and diskettes by using local area networks.

Mac McCassey, administrator of data processing for the Medford Public Schools, Medford, Massachusetts, says there are five AppleTalk networks installed at Medford High School. The networks allow teachers, students and administrators to share expensive software and costly peripherals, such as LaserWriter and ImageWriter printers.

AppleTalk lowers McCassey's software costs because he no longer has to buy applications in multiple 10-packs. A single network-aware version of a program saves money for the high school.

Networks are so efficient in allowing users to share printers and other devices that Mary Lou Holding, a computer science teacher at Kennedy Middle School in Redwood City, California, claims one ImageWriter printer is "more than adequate" for the 18 Apple II computers in her lab. Because students usually work on different tasks and finish at different times, having only one printer in the classroom has not been a problem.

Jay Spillum, computer coordinator and network administrator of the Little Falls school district, Little Falls, Minnesota, has installed five AppleTalk networks within the district. Two of the networks are located in the Community High School; one each in the district's three elementary schools.

Four of the labs have 20 to 24 IIGS computers each. The computers share two or three ImageWriter printers. The Industrial Lab at the high school links several Macintoshes to a LaserWriter printer.

Disks Are More Manageable

Spillum considers disk management another benefit gained from employing local area networks. "We wanted to get away from using so many disks," he says. The networks make it possible for Spillum to put programs

and student files onto a single hard drive, saving the cost and handling hassles of using thousands of diskettes.

Without the networks, each lab would need one copy of every program for each of its 20 to 25 IIGS computers. Because some programs come on double-sided 5.25-inch floppies, students would have to swap disks during operation. The students would then have to use additional disks to save their data. "With a network, the students do not handle disks," Spillum says.

This results in diskette and hardware savings. Peter Lavelle, computer coordinator for the Brookline public schools, Brookline, Massachusetts, believes that networks result in more reliable disk drives. "Fewer things can go wrong in the classrooms," he says. "You don't have problems with misaligned disk drives. We've cut down on our disk replacement costs."

Bruce Powers, district technology specialist for the schools in Elk River, Minnesota, credits disk management for improving the technical quality of students' writing. "We have AppleWorks installed on a hard disk, plus all the TimeOut programs — Quickspell, Thesaurus and Superfonts," he says. "If we had been working with stand-alone Apple IIe computers, we would not have bothered with TimeOut, because students would have to deal with five or six diskettes. But with only a hard disk on the file server, there's no need for all those diskettes."

Before the TimeOut series was installed on the network in Elk River, teachers spent most of their time correcting spelling errors. Now a spelling checker handles that task.

The network also makes it easier for students to work in groups. Frequently, kids will do joint projects. They create a single data file on the server, which they each access at different times. It's quite common for students to leave messages and work directives for one another on the file server.

Saving work files on the file server eliminates some of the age-old excuses — the dog can no longer eat a student's homework, for example. Additionally, security features can deny students access to certain network files and applications. Students can't accidentally lose anyone else's files.

The AppleTalk Connection

Most networking solutions offer improved disk management, peripheral sharing and reduced software costs. When Apple IIs and Macs are involved, the network of choice is AppleTalk. One of the biggest reasons for this is that AppleTalk connectivity is built into the physical makeup of every Apple IIGS.

The simplest configuration consists of LocalTalk twisted-pair cabling and connectors. Users merely attach a system connector to the IIGS printer port, plug a cable into one of the cable sockets on the connector, daisy-chain a second IIGS to the first machine — via the second socket on the connector (and so on down the line) — and attach the chain to a dedicated Macintosh file server.

Users who intend to hook up an ImageWriter to AppleTalk will need to equip their printer with an option card and cable it to the system. (Most LaserWriter models are AppleTalk compatible, although the LaserWriter IISC requires an option card.)

Users who want to attach an Apple IIe will have to install an Apple IIe Workstation Card. Most people insert the Workstation Card in Slot 7 on a IIe so the machine boots directly from the file server at start-up. When the workstations, file server and peripherals are connected, the users are ready to configure the AppleShare file and print-server software and prep the workstations for the appropriate software menu displays.

The AppleShare file server software turns a Macintosh computer with one or more hard disks into a multiuser storage device. It lets users launch the same program simultaneously. Individuals on an AppleTalk network can share software files, folders and applications.

A network administrator can determine which users have access to which applications and documents. Because users can launch applications directly from the server, there is often little need for diskette drives at the individual workstations.

An AppleShare printer server makes it more convenient for computers on an AppleTalk network to share printers. AppleShare print servers function as print spoolers or buffers. When users are ready to print, the print server accepts the print request and lets users continue working at their computers, instead of making them wait for the printing job to finish.

The print server lines up print requests in the order they are received. The network administrator can rearrange this order, placing higher priority print jobs further up the list. Administrators can also remove documents from the queue or cancel the printing process entirely.

AppleShare print servers can manage as many as five printers at once.

Installation Is Not For Babies

Although installing a network might seem like a simple task, users are not encouraged to undertake the procedure on their own.

First, network administrators should decide what they want a network to do. After laying out a basic design on paper, they should consult with a local vendor.

Jay Spillum, computer coordinator and network administrator in Little Falls, Minnesota, consulted with Computers of St. Cloud (a local Apple vendor) when he decided to use AppleTalk. "We got together one Saturday to install the system," he says.

Some educators seek technical advice directly from Apple prior to installation. They confer with Apple system engineers and attend AppleTalk summer workshops. Elk River, Minnesota's Bruce Powers and his support staff belong to a local AppleShare users group sponsored by Computers of St. Cloud. He finds the meetings invaluable for acquiring information about new AppleTalk products.

Summary

All networks make it possible for users to share costly peripherals and software applications. And every network system has both good points and bad.

Users complain about the high cost of AppleTalk, but are quick to point out that AppleTalk works well. They explain that its transparency to users makes it a viable solution for the classroom.

Bruce Powers also has a network of IBM PS/2 Model 30s for the administrators in the Elk River, Minnesota school district, but he can't get the printers to work properly on the network. He has to use individual printers hooked up to individual workstations to enable printing. This type of difficulty is unheard of with AppleTalk.

"AppleTalk is a network solution with a future," claims Peter Lavelle of Brookline, Massachusetts, "and it's the future that is really exciting." Lavelle refers to the fact that AppleTalk is easily expandable to meet growth needs. Once connected, students have immediate access to what's stored on the file server, without having to leave the classroom setting.

(Continued on page 28)

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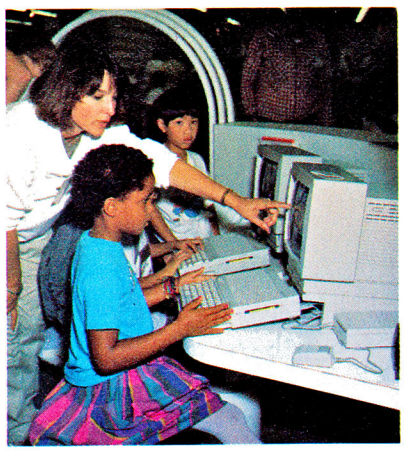
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The Grass Is Not All Green

The overwhelming majority of educators interviewed for this article are happy with AppleTalk. There are several things to keep in mind when deciding to install an AppleTalk network, however. Cost is one consideration, for example, because a Macintosh must be used as a file server. A typical educational-setting configuration consisting of a Macintosh SE/30 file server with a 40 MB hard disk drive and 2 MB of RAM costs about $5,000. There are other limitations to Apple II-based AppleTalk networks, such as:

- An Apple IIe can be used on the system, but not a II+, IIc or IIc+. The Apple IIe must be "enhanced" with the addition of an Apple II Workstation Card ($175 to educators).

- The standard IIGS configuration consists of an Apple IIGS, 512K RAM, one 3.5-inch disk drive and one 5.25-inch disk drive. Networked Apple IIGS machines require at least 768K RAM. Therefore, users must purchase additional RAM to be network compatible. This increases the cost of the initial IIGS configuration.

- Because Apple IIGS workstations can launch applications from the AppleShare file server without using a local disk, some educators believe that the initial system cost (which includes both 3.5-inch and 5.25-inch disk drives) is more expensive than necessary. Yet Apple offers no price reduction for users who would like to purchase a IIGS without diskette drives.

- You cannot hook up an inexpensive non-Apple printer to the network. Although GS/OS (System v5.0) includes an Epson printer driver, Epson does not equip its printers with a LocalTalk option. Neither Epson, Apple nor Orange Micro have found a way to get around this hardware limitation.

- As mentioned above, AppleTalk requires a dedicated Macintosh file server. While it's possible to use a less expensive Macintosh Plus as the server, Apple recommends installing the more expensive SE/30, II, IIcx or IIx. Dave Rothschild, in K-12 Channel Marketing at Apple, explains that when a Macintosh file server is equipped with 2 MB of RAM and a 68020 microprocessor (Macintosh II) or 68030 microprocessor (SE/30, IIcx and IIx), it will support 50 concurrent users in a single network zone, as long as a "repeater" — to amplify the signal on the cable — is installed. Machines with a 68000 microprocessor (the Macintosh SE and Macintosh Plus) and 2 MB of RAM can support only 25 concurrent users.

- Apple recommends purchasing the largest hard disk a computer budget will bear. This enables network administrators to store many applications and files on the server. Hard drives with 40 or 80 MB of storage have become standard. Of course, the more applications and files stored on a hard disk, the greater the potential for disaster if the hard disk ever malfunctions. In addition to purchasing a hard disk, consider adding a tape backup system. Backup systems increase overall system costs, but users only have to be burned once to realize their tremendous value. Bruce Powers, district technology specialist in Elk River, had a file server's hard disk go bad. "I was relieved to have a tape backup to restore the files when a new disk drive arrived," he says. Powers backs up his networks on a biweekly basis.

- DOS 3.3 software cannot be stored on an AppleShare file server. AppleShare can handle only ProDOS, MS-DOS and Macintosh operating systems. To get around this limitation, MECC, St. Paul, Minnesota, has designed the MECC Universal Cross Loader (member price is $250) for several of its DOS 3.3 products. The Cross Loader intercepts input/output requests from a DOS 3.3 application at the workstation and converts these requests to the ProDOS file operations that AppleShare understands. Unfortunately, the product is designed to work only on MECC software. It won't copy DOS 3.3 software from other publishers to the network.

- The number of AppleTalk-compatible software selections is still rather small. While this number increases almost daily, keep in mind that other network solutions have been available for almost a decade. Users may not be able to use the older programs on their AppleTalk networks.

- Aristotle, Apple's own menu management software, is viewed as AppleTalk's Achilles' heel. Network-aware educators invariably perceive it as a clumsy product. To set it up, users need to use one of the Apple II workstations on a network. The workstation requires a RAM disk with 256K and a mouse. While these system requirements might not be a problem for a IIGS (it already has a mouse and memory card), users will need to purchase additional hardware to configure Aristotle from an Apple IIe. In addition, teachers find that configuring Aristotle is rather awkward, because it only accepts input from a mouse. Users can't use the keyboard arrow keys to move the cursor through the menu options.

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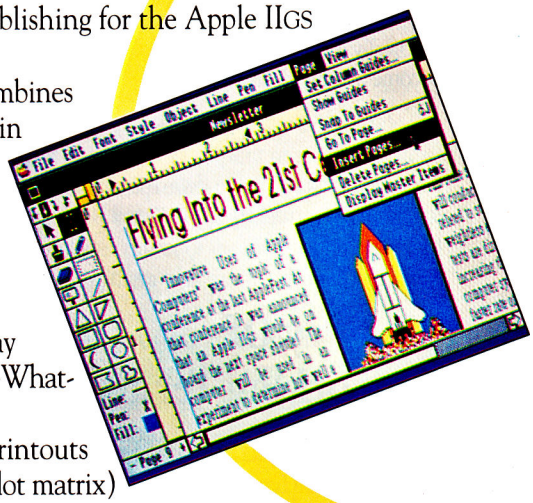
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(Continued from page 24)

While AppleTalk may not be the system with the largest pool of network-aware software, there are many products currently available to meet a variety of curricular needs. The fact that AppleTalk is Apple's own product practically guarantees that it is destined to become a network standard. ■

— *Carol S. Holzberg, Ph.D.*

The author has had more than 100 articles published in a variety of Apple II and Macintosh publications.

Glossary Of Networking Terms

Access privileges — Identifies the kind of access users will have to the applications, folders and files stored on an AppleShare file server. Users who are denied access privileges cannot launch applications or modify documents on the file server.

AppleShare — Apple's own network software, consisting of file server and print server applications. AppleShare turns a Macintosh into a dedicated server resource for sharing programs, files and peripherals over an AppleTalk network.

AppleTalk — Apple's network architecture. It includes computers, printers, cables and several other hardware components, plus communications protocols that specify the kinds of information that can be sent and received, how devices are addressed, and what to do when data arrives at a workstation. AppleTalk links computers so users can share applications, files and hardware peripherals.

Aristotle — Apple's menuing software for Apple II workstations. Aristotle offers menu management so teachers can create "classes" on a server and assign particular students to each class. Aristotle also lets a network administrator configure the "menu display" that appears on individual workstation screens. The program provides access to the applications stored on the file server.

Bridge — Because AppleTalk is theoretically limited to 32 devices on a particular LocalTalk segment, users can link segments to connect more than 32 devices by using a resource known as a bridge. The bridge typically makes an electrical connection between two or more similar networks and synchronizes data transmission from one network segment to the other.

Connectivity — The concept of physically linking computers and peripherals to share data, applications, equipment and services.

Electronic mail — A popular communications service that allows individuals connected to a network (via a computer) to send and receive electronic data messages.

File server — The file server on an AppleTalk network usually consists of a

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dedicated Macintosh computer with one or more hard disks. AppleShare turns the file server into a storage device so users on the network can store files, folders and applications; some or all of which may be shared with other users.

Gateway — A device that physically connects two or more dissimilar networks (which use different protocols) so that other devices can share data.

Local area network (LAN) — Allows multiple users to interconnect (via computers and cabling) to share devices such as printers or modems over short distances (typically a single building or less than a mile).

LocalTalk — A physical cabling method that connects computers and peripherals on a network. Other cabling connection options include Ethernet and Token Ring. All cabling methods are transparent to the user.

Log on — Signing onto a network. This usually involves typing in a user name and password.

Network administrator — The person in charge of supervising the AppleShare file and print servers, backing up data stored on the file server, performing menu management tasks and troubleshooting the system when any part of the network malfunctions.

Network-aware — Software that run on a network. "Single-launch" network-aware software runs on a network, but does not permit several users to use the software simultaneously. "Multi-launch" network-aware software enables several users to run the application concurrently.

Node — Each device or connecting point on a network. A node may be an individual workstation, printer or dedicated server. Theoretically, an AppleTalk LAN is limited to a maximum of 32 nodes. Several third-party products make it possible to go beyond the 32-node limit.

Password — When users sign onto the network, they must enter a password. Without the correct password, they will be denied entry to the system.

Print server — A print server acts as a document buffer, taking all print requests and storing them in a queue until the printer is ready to process them. This enables users to regain immediate control of their computers instead of making them wait for the printer to finish.

Protocol — A set of rules governing the exchange of information over a network (e.g., data formatting, error detection and error correction).

Repeater — A device that amplifies the electrical signals sent over the wires. Repeaters typically extend the length of an AppleTalk



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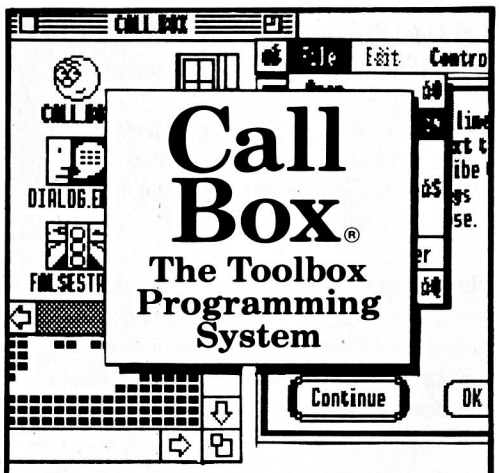
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network, making it possible to locate devices farther apart than possible without a repeater.

Software router — A software solution that links multiple zones on a network. A network administrator can use a router to determine user access privileges (i.e., which users have access to which zones on the network).

Workstation — An individual computer on a network.

Zone — An AppleTalk-defined piece of a network. Each zone is technically limited to 32 nodes, but zones may be linked by a bridge. Users can access information and data from one zone to the next, but they cannot boot an Apple IIe or IIGS across a bridge. For a workstation to boot, the zone must contain a file server.

Editor's Note: For more information, refer to: Understanding Computer Networks *(1989), by Apple Computer, Inc., published by Addison-Wesley Publishing Co., Inc. ($9.95).*

System Software v5.0 - Connections With GS/OS

Apple's latest System Software v5.0 offers lots of spiffy features, such as a faster start-up time and a speedier program launcher. The product, which is slated for release by the time this article appears in print, also includes an updated GS/OS operating system.

The new GS/OS can access files and applications stored on an AppleShare file server. Users won't have to reboot a local workstation when they want to switch between local and file server-based applications. This was not the case with Apple's previous network-aware System Software, ProDOS 16.

Most people log on to a network to share applications, but the new AppleShare-aware GS/OS offers additional file sharing capabilities. Anne Bachtold, Apple's product manager for the new System Software v5.0, claims that students using an AppleShare-aware word processing application on a IIGS can access a data file on a server and have it automatically port into the open GS document. The file (perhaps a finished homework assignment) won't have to be one created by the same application.

Even more impressive, IIGS users will be able to import data from a Macintosh application directly to a IIGS. Formatting will have to be adjusted and superfluous control characters deleted, Bachtold says. Nevertheless, all text from the original document will be there, ready to be modified in the GS/OS environment. Students working with a network-aware version of AppleWorks (ProDOS 8) will be able to import ASCII text files.

GS/OS can access files stored on an AppleShare file server and port documents into open workstation files across applications. It can do so because it is equipped with an AppleShare File System Translator (FST). The translator operates in the background and is transparent to users.

System Software v5.0 also gives users access to shared printing devices on a network. Individuals need only enter the IIGS Control Panel and select the printer of choice. They will be able to output directly to the printer, as long as it's properly installed for use on the network.

Bachtold points out that with the new GS/OS, users no longer have to purchase special workstation software. Nor do they have to run under the old and "imperfect" ProDOS 16 operating system when they wish to access files on a network. Moreover, in keeping with the Apple tradition of downward compatibility, all network-aware ProDOS 16 and ProDOS 8 applications may be launched from the AppleShare file server by using the System v5.0.

Apple's new System v5.0 has one additional AppleTalk network compatibility benefit that may be of interest to educators. It offers an "Aristotle Quick Log-Off" feature that allows students to quit a network much more quickly. Previously, whenever students logged off the system, new users following them on the workstation had to reboot to log on. Rebooting took precious minutes away from the time the students could spend at their workstations.

With Aristotle Quick Log-Off, students on their way out of a classroom merely have to press the Escape key to sign off. The workstation then automatically proceeds into the log-on mode. There is no longer any need to reboot the local workstation.

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Circle Reader Service Number 20

What's In A FONT?

Font Editors Can Help You Design Your Own Fonts

If you've used any IIGS software at all, you've come into contact with fonts. All desktop programs use them to display characters. But you don't really appreciate fonts until you get serious with word processing or desktop publishing applications. You'll find that a calligraphic font looks great on invitations; your newsletter looks best printed with the New York font; and that a big, bold font, such as Plymouth or Basel, looks good for headlines.

There are many ways your words can look better in print or on screen with the right font. Unfortunately, Apple provides only enough fonts on the System Disk to tantalize us.

There are many megabytes of public domain, commercial and shareware fonts available for the IIGS, most converted from the Macintosh. As with many arsenals, however, even the most well-stocked font library can sometimes be found lacking when just "the right" font is needed.

Until recently, the only thing a font-hungry desktop publisher could do was hunt for more fonts, hoping to get enough styles to cover every situation. Within the last few months, several font editors have been introduced for the IIGS. So, we can now design our own fonts.

All font editors let you use the mouse to edit a font character by character on screen, which is rather like the fat bits tool in a paint program. It's easy to edit characters this way, but it can get tedious, especially if you're editing a large number of the 255 possible characters in a font. Luckily, most font editors have additional tools to relieve some of the drudgery.

Let's take a look at three editors and see what tools are available:

Font Doctor



Performance: 7.0
Innovation: 6.5
Ease Of Use: 8.0
Documentation/Support: 5.0
Value: 7.5
Overall: 6.8

Font Doctor, a shareware product, was one of the first font editors available for the IIGS. Like many actively developed shareware products, Font Doctor has been revised often. In a few months, it's grown from a basic tool that could barely do the job to a program that can hold its own with commercial products.

Font Doctor edits fonts in a unique way. Because characters being edited are displayed pixel by pixel, an entire character is typically larger than the IIGS screen.

Other editors keep the pixels the same size and let you move the character being edited around. Font Doctor uses smaller pixels for large characters. This way is nice, because it lets you see the whole character being edited.

The downside, however, is that smaller pixels are more difficult to edit. As proof, we often found ourselves clicking on the wrong pixel.

To edit a character with Font Doctor, type the character or enter its ASCII number code. The code method works fine for most characters. Most of us have not memorized the ASCII codes for all 255 characters, so this process can be cumbersome, especially with the high-ASCII characters that can't be typed in directly.

One useful feature of Font Doctor is its capability to print a sample of a font in any style. A font doesn't have to be installed in the System Folder for Font Doctor to be able to print it.

Author Mark Collins has a long list of planned improvements for his program, including better selection of the character to be edited, cut/paste/copy between characters, importing and exporting fonts to several formats used by other Apple II programs and more.

You should be able to find a copy of Font Doctor in your user group library or in an online service's library. Remember to pay the shareware fee if you like and use the program. If you don't have access to it through these means, you can also purchase it directly from the author at the address listed later in this article.

GS Font Editor



Performance: 7.0
Innovation: 7.0
Ease Of Use: 8.0
Documentation/Support: 7.0
Value: 7.0
Overall: 7.2

Of the editors reviewed here, GS Font Editor provides the widest variety of font editing tools. Besides the ubiquitous pencil tool, most of the tools found in a paint program are present. There's an eraser for wiping clean large swaths of pixels in a character, a straight edge for drawing lines, plus rectangle and circle drawing tools.

One of the more interesting tools is marquee, which helps you cut and paste parts of letters. If you've worked hard getting the top half of the letter "B" just right, you can transfer it to the "R" and "P" characters effortlessly. GS Font Editor also keeps a separate clipboard for cutting and pasting whole characters.

Another unique feature of GS Font Editor is its capability to scale a font horizontally, vertically or both in a wide variety of ratios. If you'd like a font that's like an existing font, only a little shorter and a little wider, GS Font Editor can give you what you want in seconds.

GS Font Editor is the only font editor that allows you to type in your own sample text with the font you are editing. It's a nice touch that allows you to see how characters look together. It would be nice if there were some easy way to get the standard sample display back after looking at some custom typing, however. This feature would also be much nicer if you could print a sample of the font.

Font Factory GS



Performance: 8.0
Innovation: 7.5
Ease Of Use: 8.0
Documentation/Support: 6.0
Value: 7.5
Overall: 7.4

This editor from Seven Hills appeared on the market as Version 1.2. That's because it's an existing editor developed in Europe and translated into English.

Font Factory GS provides the widest varieties of selecting a character to edit. You actually have a choice of displaying a font as the font itself; as the System Font, an equivalent of the Beagle Bros.' GS Font Editor screen; or as the ASCII code. The display can be switched quickly among the three with mouse or keyboard commands.

Like Font Doctor, Font Factory prints samples on paper. We like the latter's printing a little better. Font Factory uses the System Font to print the name, size and number of the font, ensuring that this data is always legible. Font Doctor prints name, size and style, but prints out in the font being sampled. As a result, your words may not be legible if a pictorial font is printed.

Font Factory is the only font editor that can currently convert fonts from one format to another. Right now it can only convert Publish It! fonts. Seven Hills plans to add other conversion types, including Macintosh font conversion, in a future version of the software.

We also thought Font Factory had the best character editing screen. We liked the optional grid lines and found the numerical display of the character's height and width useful. We thought the fact that the editor kept track of — and automatically adjusted — some font attributes as they were edited was an outstanding feature.

Another feature in Font Factory not found in the other font editors is character smoothing. Smoothing can relieve a lot of the tedium involved in making a font that has been rescaled useable, but it should be used with caution. It can scramble some characters or fill holes you didn't want filled.

Font Factory uses standard IIGS windows to display the current font and to edit individual characters. It was the only editor that allowed us to look at the fat bits image of more than one character at a time. This made it easy to compare character details as we edited. The capability to have several fonts open at one time made copying characters between fonts not only possible, but a snap.

Which To Use

Font Factory GS is our favorite font editor. It's the one we'd choose first for most jobs. It's also the only editor that can create prestyled fonts. But the other two editors are also good choices. Both of them have unique features that make them more suitable for some tasks.

After you design a new font, consider this: Font Doctor author Mark Collins has done a lot of work trying to keep the Apple II world from having trouble with font ID conflicts.

This is as a result of the problems that have arisen in the Macintosh world.

When two fonts have the same ID, the font manager can get confused and display the wrong font. If you create a font that will be distributed beyond your own system, you'll want to register it with Collins and get a unique font ID to help prevent conflicts. Font registration is free, and you'll be helping keep the Apple II world organized. ■

— Larry Miller

Products Mentioned:

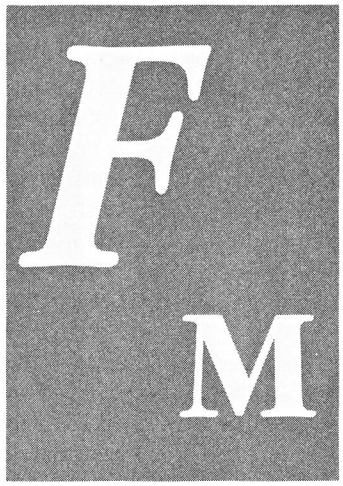
GS Font Editor; $49.95; Beagle Bros., Inc.; 6215 Ferris Sq., Ste. 100; San Diego, CA 92121
Circle Reader Service Number 41

Font Doctor; $15; Pebble Valley Software; 2511 Pebble Valley Rd.; Waukesha, WI 53188
Circle Reader Service Number 42

Font Factory GS; $39.95; Seven Hills Software; 2310 Oxford Rd.; Tallahassee, FL 32304
Circle Reader Service Number 43

Font Editors Make Your Words Look Good In Print

Making a distinctive typeface that will make a printing job look good is the obvious use for a font editor. That might include a font designed to look good in normal rather than condensed mode.



Most existing IIGS fonts are converted Macintosh fonts. They look rather long and lean on the IIGS screen, because the IIGS has rectangular pixels rather than the square pixels of the Mac.

When you print a document in Better Text mode, the IIGS print manager tries to use a font twice as large as the one being printed and scale it down, effectively doubling the resolution. If there isn't a font twice as large as the one being printed, it just uses the font being printed.

Use a font editor to make double-size versions of all the fonts you print. This will reduce the blockiness of your print.

When you use a font in any style but plain, the algorithms in the Apple Quick Draw tool produce the character images to make italics, boldface and so forth. The results of applying these algorithms to some fonts can look pretty ghastly.

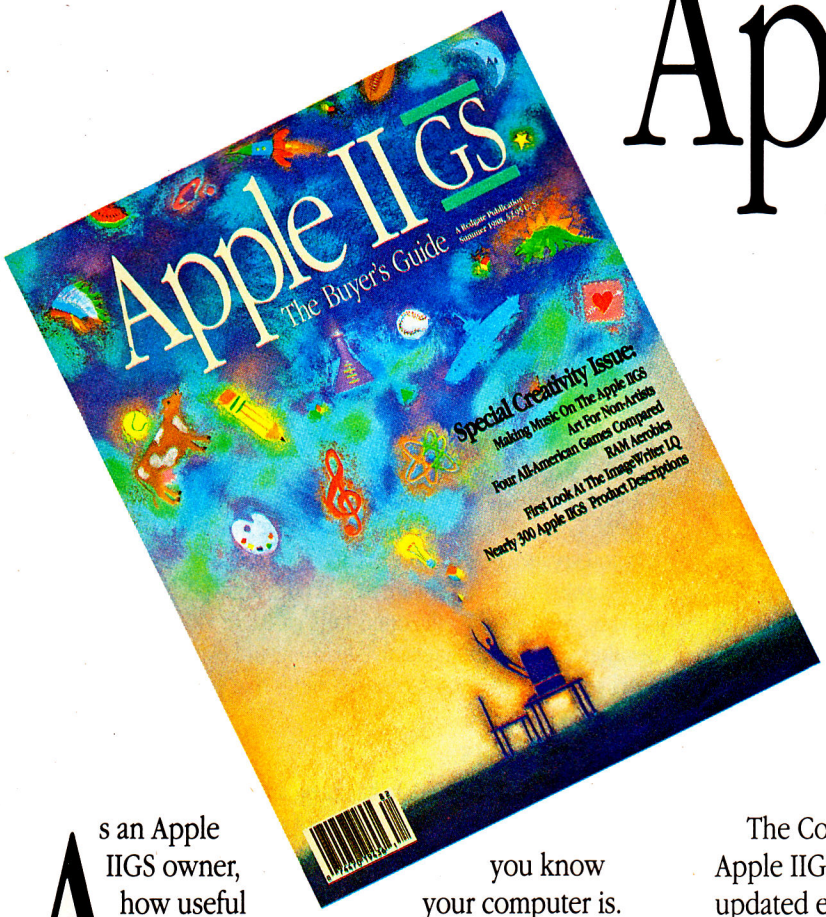
It's possible to make a font that already has a style, such as italics. When you use this font and italic type is called for, the algorithms in Quick Draw won't be applied to the prestyled font. Prestyled fonts are used heavily on the Macintosh for better looking print, but are seldom mentioned for the IIGS. Only Font Factory GS supports making prestyled fonts.

Comparison Table

	Font Editor GS	Font Doctor	Font Factory GS
Creates fonts	Y	P	Y
Adjust ascent line	Y	Y	Y
Adjust descent line	Y	N	A
Adjust character width	Y	Y	Y
Adjust leading	Y	N	Y
Prints samples	N	Y	Y
Variety of drawing tools	Y	N	N
Create prestyled fonts	N	N	Y
Scale fonts	H&V	P	Y
Memory needed to run	128K	768K	768K
Number of fonts open	1	1	M
Cut and paste	Y	P	Y

P=Planned for future version. A=Automatic. M=Limited by memory only. H&V=Horizontal and vertical independent. Font Factory GS also allows you to change a font's style.

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Apple II GS
The Buyer's Guide

Circle Reader Service Number 22

IIGS Video Gets Serious

The Apple II Video Overlay Card

You can make a good case for the argument that television is the most destructive technology in American history. In less than 50 years, it has reduced two generations to a state of mindless, passive consumerism. It has distorted our politics, brutalized our values and eroded our literacy.

Much of what passes for "educational" video is little more than electronic baby-sitting, and even the most non-commercial kinds of TV are deeply influenced by the prevailing video aesthetics of short attention spans and simplified emotions, instead of facts and ideas.

If you don't like what's on TV, then make your own show.

Until recently, this sort of advice was a bad joke, because the entry-level cost for even the simplest kind of video production was so prohibitively high. Anyone with access to a photocopy machine and the ability to write can create print media, however crudely. But to create any kind of video you need a camera, video recorders, fancy editing equipment and special skills. Don't you?

On April 3, 1989, the Apple II Video Overlay Card (VOC) was announced, and the entry-level cost of video technology dropped by an order of magnitude.

The card, one of the most complex products Apple engineers have ever designed, opens up possibilities that will challenge programmers and hardware engineers for years, but it is amazingly simple to use. Put the card in a slot in your computer, connect it to almost any video source, load the appropriate software and watch the magic. Connect a videocassette recorder to the output of the card and you're a producer.

During development, the card was known by several code names, including "Roger Rabbit." If you saw the movie "Who Framed Roger Rabbit?" you will remember the clever synchronization of animated actors overlaid onto live-action film.

With good software and lots of patience, the Video Overlay Card lets you create similar effects. Many users will use the card with VCRs and simple graphics software to add titles and special effects to "home movies." Some users will connect the card to a videodisc player and develop software for interactive learning and exploration. And some users will do unexpected, creative things that we can barely imagine.



Performance: 8.5
Innovation: 9.5
Ease Of Use: 9.0
Documentation/Support: 8.0
Value: 8.5
Overall: 8.7

How It Works

Video overlay, or genlock, has been around for years on MS-DOS, Amiga and other systems. It consists of circuitry that takes the incoming signal from a source (videotape, videodisc or camera) and mixes it with the computer's own native video graphics output, on the same monitor. The resulting image can be recorded onto a VCR or even broadcast as a standard NTSC RS-170A video signal. (NTSC stands for National Television Standards Committee, which many years ago determined the technical requirements for TV signals.)

The composite video output of an Apple II is not NTSC compatible, which used to be a major headache for video people trying to work with Apple hardware — the screen image wiggles and creeps, the colors bleed and the picture is generally a mess.

The video overlay card, on the other hand, produces stable roll-free genlock — the computer graphics do not roll whenever the video image changes (this is a problem with some genlock cards on other systems). When there is no external video source, the VOC simply passes the Apple's normal screen image along to the monitor.



The Apple II Video Overlay Card mixes an external video signal with the IIGS' video graphics output. The resulting image can be recorded on a VCR or broadcast as a standard video signal.

Physical Description

Like most Apple cards, the VOC is beautifully designed, with a dense array of surface-mount VLSI (very-large-scale integration) chips. The entire back side of the board is studded with tiny surface-mount resistors. One small 8-pin chip is socketed. Two of the big VLSI chips have Apple 86 copyright labels, which initially led us to think that this design had been languishing in the R&D labs for three years.

Then we discovered that the chips are actually old "friends" from the Apple IIGS motherboard: the Mega II and the VGC (Video Graphics Controller). In effect, the card duplicates the video circuitry of the IIGS. It would, theoretically, be possible to write software for the IIe that directly accessed this circuitry to produce IIGS-style super-high-resolution (super-hi-res) graphics, but Apple apparently has no plans to support this idea.

The card has a three-pin Molex connector for composite video input/output and a 16-pin connector for the analog RGB signal. There is also an undocumented 14-pin connector (J3) that provides a video expansion bus for future third-party enhancements, such as video digitizers. There are 10 small trim pots, sealed with dabs of paint, and three test points, suggesting that the card requires precise, individual factory calibration and adjustment of critical variables.

The package includes the card, four mounting screws (which are too long and require excessive force to install), a video In/Out cable, an RGB cable, a 3.5-inch diskette (VideoMix for the IIGS), a 5.25-inch diskette (VideoMix for the IIe), the manual and a registration card. The VOC carries Apple's standard 90-day warranty.

Unfortunately, the odds are that your local Authorized Apple Dealer will have little understanding of what the card does or how to help you if you run into problems.

What Do You Do With An Overlay Card?

The VOC works either in Slot #3 of a IIGS (512K) or in any slot of an enhanced IIe (128K), using either the AppleColor RGB monitor (which works only on the IIGS) or a composite color monitor (on either computer). The Slot #3 requirement creates a small problem for users of the AE TransWarp GS accelerator card, which also is normally required to occupy that slot.

TransWarp GS will work in Slot 2 or 4 as well, you just have to be creative with the cable that goes to the CPU socket. The cable has to be carefully routed under other cards.

Installation is fairly simple. You attach two ribbon cables that lead from connectors on the card to connector blocks that screw onto the back panel of your computer. One block has a DB-15 connector that replaces the regular RGB output of the IIGS. The other block has two RCA-type sockets labeled Video In and Video Out.

In a typical application, you would also need two VCRs — one to provide input and one to record your output. The input source could be an inexpensive playback-only unit, but if you want to freeze single video frames, a high-quality four-head VCR is recommended. A video camera or videodisc player can also serve as a video source. The VOC is not compatible with the special connector or the video signal of Super-VHS, but most S-VHS equipment also has a composite output that is compatible.

VideoMix

The VideoMix software works on the IIGS as a New Desk Accessory under GS/OS and on the IIe as a separate, stand-alone application. The 3.5-inch diskette includes an Installer that automatically copies VideoMix to your start-up disk. The program provides simple controls for mixing video and computer graphics and enables the user to adjust the tint and color of the video image on an RGB monitor.

Apple took a deliberately minimalist approach to software for the VOC, in order to leave the widest possible scope for third-party developers to provide programs for editing, animation and special effects.

When you select the VideoMix new desk accessory (NDA), a small window displays the current palette of 16 super-high-resolution (SHR) colors. One of these colors (the key color) is highlighted. All the other colors are called non-key colors. The default key color is black, but you can select another color by clicking on it.

There is a small check box in the VideoMix window that's labeled "Pick from Screen." If you click in this box, the cursor turns into a hand with a pointing finger. You can select your key color by pointing and clicking anywhere on the screen.

When you run your video source, the key color will be transparent to video, and the non-key colors will be opaque. That means that anything black on your computer screen will be replaced by the video, and all the non-key colors on your graphics screen will be overlaid on top of the video.

VideoMix does not limit you to simple all-or-nothing colors, however. You can mix up different degrees of translucency by clicking

The VOC And IVD

The Apple Video Overlay Card is a strategic linchpin in Apple's efforts to provide a low-cost system solution for the interactive videodisc (IVD) market. IVD is a fast-growing instructional technology, particularly in military and industrial technical training.

Under computer control, a videodisc shows short segments of motion and sound that illustrate a procedure or present a problem. At key points, the learner has to respond to, question or choose a path. The computer program then accesses the appropriate portion of the videodisc to provide feedback.

Early interactive videodisc systems required two monitors, one for the video and one for the computer. This was expensive and often made the learner feel like a midcourt spectator at a tennis match, constantly shifting attention from one side to the other.

The lack of a standardized, low-cost, interactive video solution has weakened Apple's position at the leading edge of computer-aided instruction. Release of the Apple Video Overlay Card is a significant defensive move against the low-end PS/2 systems (where IBM has been aggressively promoting interactive video for education and training).

Along with a compact disc player (which can store and access 640 MB of data or up to 72 minutes of high-fidelity sound on a single disc), videodisc is a major technology for the emerging field of Hypermedia. The definition of Hypermedia is still controversial, but it describes a new generation of software that makes it possible to mix text, graphics, animation and sound in ways that users can easily control an freely explore. HyperCard on the Macintosh and HyperStudio for the IIGS are early examples.

Because of the high cost of videodisc hardware, it is unlikely that schools will be able to put interactive video on every desk or in every classroom. About 9 percent of U.S. public schools owned videodisc players in 1988, but about 90 percent owned at least one VCR.

the button labeled "Video/Graphics Mix." This brings up a pair of seven-position sliders, one for the key color and one for the non-key colors. As a default, the key color slider is located at the bottom, which means the key color is completely transparent to video. The slider for the non-key color is at the top, which means that the non-key colors are completely opaque.

If you move both sliders to the middle position, every pixel on the screen will be an equal mix of video and graphics, which lets you create an effect of two superimposed "ghost" images.

By carefully selecting the key color and the transparency levels, you could open up a video "window" in the middle of a computer graphics animation and gradually make your animated characters fade in or out. Such dynamic effects are quite time consuming to create — you would have to start your animation, record a few seconds, stop the tape, change the VideoMix settings, start the tape, and run the animation a few more frames.

Because the VOC can accept commands from a running program or an external device, we expect that some industrious developer will eventually create editing software (and perhaps hardware) that will make this process easier.

In the 640 SHR graphics mode, the IIGS can display only two pure colors, black and white. All the other colors are dithered (alternate pixels of different pure colors that fool the eye into seeing uniform hues). As a result, using anything but black or white as the key color with VideoMix in 640 SHR mode may cause interesting or unexpected translucency effects.

Some IIGS users might prefer to use the IIe version of VideoMix for compatibility with 8-bit graphics software or to avoid the processing overhead of GS/OS. Run the 8-bit version of VideoMix first. The settings you determine remain in force when you run your graphics program or until the computer is turned off or reset.

What It Costs

The Apple II Video Overlay Card dramatically lowers the entry-level cost of desktop video production. A few specialized companies make hardware that does similar things at roughly four to 10 times the price. With a suggested retail price of $549, the card will still not attract many home video hobbyists. Educational institutions, which enjoy a hefty discount from Apple, will be the major buyers.

A complete school video lab might require a IIGS with the VOC and AppleColor RGB monitor, at least two VHS videocassette recorders, a rugged camcorder, a videodisc player (see sidebar) and assorted cables and connectors, plus a good supply of blank videotapes for student use. Thus, a few thousand dollars would provide capabilities that previously required a massive investment in studio equipment.

More than 20 third-party hardware and software products supporting the VOC have been announced. One notable item is a $289 video overlay synchronizer to record audio cues onto video or audiotape (Whitney Educational Services, PO Box 2X371, San Mateo, California 94402, 415-341-5818).

An ideal suite of supporting software might include HyperStudio, Tutor Tech VCR Companion, Slide Shop, and 8/16 Paint or Paintworks Gold. Many schools already own much of the necessary equipment, and the main difficulties are finding the space, the students and the free time for overworked, underpaid creative teachers.

How It Performs

Apple claims the card improves the display on both the Apple IIe and the IIGS. On the IIGS, the biggest surprise was that the video input fills the entire screen of the AppleColor RGB monitor, including the half-inch of dead space all around the borders. This excellent Sony Trinitron monitor is factory adjusted (some users might say "crippled") to limit the active video area to 200mm horizontal by 150mm vertical.

You could use the IIGS Control Panel to make the border of the display any color you want, but you couldn't use it for anything, until now. The VOC creates the impression that you have a bigger monitor, even though your overlay graphics are still confined to the "active" central area of the IIGS display.

One problem with the card is a slight but persistent jitter or up-and-down vibration of the computer graphics you overlay onto a video image. According to the user manual, this is normal and does not indicate a problem with the card or your video equipment. The manual recommends a way to minimize this effect by avoiding thin horizontal lines and sharply contrasting adjacent colors.

When we had the card installed in our IIGS, we noticed a peculiar effect on the game Arkanoid. Parts of the moving spacecraft used in the game seem to fade out or disappear at times (this doesn't happen when the VOC is removed).

Our greatest disappointment with the VOC is that it cannot capture, or screen dump, your video image. Apple has left this capability for third-party developers to provide, at additional cost. Early freeze-frame video digitizers, such as the discontinued AST VisionPlus card, produced relatively fuzzy images with muddy colors.

Digital Vision, maker of the ComputerEyes video digitizer for the IIGS, has announced a version that will interface directly with the VOC. This device, slated for release this fall, will support both the 320 and 640 super-hi-res modes in all standard IIGS graphics file formats.

Although the IIGS can produce 4,096 brilliant colors, the present lack of any drivers for high-quality color hard-copy devices (such as the Hewlett-Packard PaintJet) continues to limit the usefulness of color video screen capture.

Another disappointment is that there is no support for high-quality sound in the design. Any sound track on your video source is simply passed through unchanged, from Video In to Video Out. This follows up on Apple's mistake of not incorporating stereo sound into the original IIGS hardware (leaving third-party vendors to provide this capability, at additional cost).

Video is, after all, an audiovisual medium, and the capability to capture spoken words, sound effects and music is as important as the capability to record and manipulate images. Fortunately, products like HyperStudio can work together with the VOC to provide truly creative audiovisual output.

The 84-page *Owner's Guide* is a beautifully illustrated, four-color compendium that provides an introduction to the concept of video overlay, offers clear and detailed setup instructions, explains the use of the software and includes helpful advice for beginners.

Technical documentation for programmers who want to develop software that uses the capabilities of the VOC should be available by the time you read this.

The VOC is an excellent product that gives the IIGS credibility in the interactive videodisc and training world. We think it will help us start to use television as a learning medium, and not solely as a vast wasteland. ■

— Mike Markowitz, contributing editor

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The Complete Guide To Public Domain Software And Shareware For the Apple IIGS



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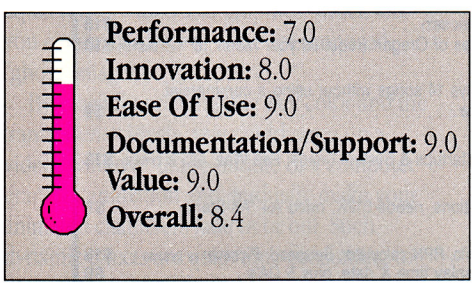
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HyperStudio Arrives In Style



With its release of HyperStudio, Roger Wagner Publishing has brought Apple II users the capabilities that heretofore have been the sole province of those using Apple's HyperCard software on a Macintosh.

Apple IIGS users can now get the pleasure of using Hypertext technology with databases organized in stacks. Like HyperCard, HyperStudio brings personal computing to a new level.

HyperStudio stacks start with what is called a Home Card. Most other cards within a stack have a little house icon that leads right back to the Home Card.

HyperStudio starts up by displaying its own Home Card, which leads to several demo stacks that you can use and modify as you learn the program. You may continue to use the included Home Card for start-up purposes or build your own.

Movement through any stack is accomplished by using the mouse and the on-screen pointer to click on buttons or other objects. Buttons are used throughout HyperStudio to execute all functions, including playing sounds, accessing text, flipping to another card, or exiting the program.

Installation

HyperStudio is not copy protected and can be easily installed on a hard disk. If you do not have a hard disk, you are advised to make backup copies of the disks and only use the backups — good advice for all software programs.

The package comes with four 3.5-inch diskettes and a manual. In addition, because sound input and output are cornerstones of the Hypermedia concept, the package includes an amplified speaker (which requires four AA batteries), a microphone and a small sound digitizer board.

HyperStudio is both a hardware and software product, so installation is not instantaneous. You'll need to actually open the IIGS and use a screwdriver.

The hardware portion of the package is the sound digitizer. This is a small circuit board that does not plug into a slot. Installing the board does not rob you of the use of any of your slots; it also greatly reduces the effect of "noise" from the circuit board that plagues some slot-based digitizers.

Installing the board requires removing one of the little plugs in the back of the computer and attaching the board to the resulting hole, with two included screws. The hole nearest the power supply is recommended, but any of the other three similarly sized holes will do.

We found it easiest to install the sound board by first removing the power supply and setting it aside. The wires connecting the power supply to the motherboard get in the

way of installation, and moving the power supply gets them out of the way until the sound board is in place. When replacing the power supply, we pressed the wires below the card.

Installing the card is a little tricky, but if you can arrange your IIGS so that you can easily access the back of the machine during installation the task becomes much easier.

A lengthy ribbon cable attaches the board to the sound input socket on the IIGS motherboard near the Ensoniq sound chip. If you already have a sound digitizing board using that socket, you need not be concerned. Simply unplug your board from the socket, plug in the HyperStudio board and plug the old board's cable into the chain socket conveniently provided on the HyperStudio board. The HyperStudio digitizer is only active when the provided microphone is plugged in. Remove the microphone and your original board is back in control.

The digitizer board gets its electrical power from the little two-prong socket the IIGS reserves for the Apple fan. If you already have a fan using that socket, the digitizer provides another chain port. Plug the digitizer board into the socket and plug the fan into the chain port on the digitizer.

The microphone plugs directly into the digitizer board. The cord on the mike terminates in the same kind of phone plug used to connect to and from a Walkman-type device. As a result, a phone plug can be used to allow you to record and digitize sounds from portable stereos, compact disc players and other sound sources. The manual explains how to do this.

The speaker plugs into the audio port on the back of the IIGS and provides greatly improved sound. However, if you already have external speakers attached, you won't need this speaker.

Once the hardware is attached and the software is installed, HyperStudio is ready to roll.

Demos

HyperStudio includes several demonstration stacks, which aid in both learning the program and in learning Hypermedia technology in general.

One demo shows the different ways a screen can be "wiped" during transfer from one card to another. Several screen wipes are



HyperStudio gives Apple IIGS users capabilities that used to be available only to users of HyperCard software on a Macintosh.

available, including top to bottom, left to right and fade to black or white.

Another demo displays several buttons; each plays a different sound file from the disk. Another flips through several stack and card ideas, displaying useful background pictures of notebook pages, address books, Rolodex-type cards and more.

Yet another is a demonstration of how Hypermedia can be used to teach languages, such as Spanish. A scene depicting life in a Spanish-speaking country is shown. Clicking on objects results in a voice speaking the Spanish words for those objects.

One of our favorite demos is called Intro. It is a minitutorial that describes most of HyperStudio's features. This helped us come up with many ideas for our own stacks, while we learned the basics of HyperStudio.

Stacking Your Own

Creating your own stack is a surprisingly simple process. The manual includes an excellent tutorial on the basics of building a stack. We recommend that you run through this tutorial once to get the feel of it. The tutorial leads you through the steps necessary to build the Spanish Language stack. Most of the fundamentals — building visible and invisible buttons, moving from card to card, attaching sound files — are covered here. You'll be surprised at how much you can learn from building such a simple stack.

Once you've run the tutorial, you'll be ready to make your own stack from scratch. We learned quickly that if a stack is to contain more than three or four cards, it's a good idea to first sketch out a little "tree" diagram to plan how the cards will be organized. This also facilitates planning which cards can "share" backgrounds.

Each card can have a background graphic defined. Only one copy of the background is stored in the stack file, no matter how many cards share the same background. All cards that use that background simply reference the same data. This saves considerable disk and memory space.

Graphics, sound and text files used by a stack can be left on disk and only loaded into memory when accessed directly. Such files are called "extended data." Using them cuts down a stack's load time and size at the cost of adding a little time to perform some functions. This feature is best used for items that are not frequently accessed. It is also useful

for creating extremely large stacks that will not fit completely into the computer's memory.

The alternative is to have all data load into memory at once, which is called "embedded data." This increases load time, but makes for quick and smooth flow from card to card. This method is best for smaller stacks and frequently accessed smaller objects within a larger stack.

Buttons control all the dynamic elements of HyperStudio. All buttons are rectangular and come in several styles, including basic, rounded, shadowed and invisible rectangles.

Visible buttons contain identifying text that you type in. Invisible buttons, which are much more versatile, simply "exist" over an area on the screen. Clicking within that area activates that button and its function.

For example, to build a button that leads to the Home Card, you might start by adding clip art, in this case the house icon from the Icon clip art file. Place the house where you want it to appear on the card, then select Add a Button from the menu. Select the invisible button from the resulting dialog box and you'll see a flickering rectangle in the middle of the screen. Drag and resize the rectangle so that it exactly surrounds the house. When you finish placing the house, you get a large dialog box that asks you what you want this button to do. Click the button that connects to another card and select the Home Card. You can add other functions here, such as playing a sound during the card transition.

You can also have a button add values to a test score, thus managing a multiple-choice-type test.

HyperStudio uses only 640-mode super-high-resolution graphics throughout, so the more colorful 320-mode pictures that are so common on the IIGS are not useful here. Although we realize this is complicated, we'd like to see HyperStudio add the capability to build 320-mode cards in the future.

Graphics, whether to be used for clip art, icons, buttons, shapes or entire cards, can come from any source that can create 640-mode graphics files. Such sources include HyperStudio's own fine built-in paint tools, Paintworks Gold, Deluxe Paint II, Computer-Eyes and the graphics module in AppleWorks GS, among others.

What Is Hypermedia?

Consider the usual forms of that we call media.

You generally watch a movie or television show from beginning to end. Modern-day devices, such as VCRs, allow you to alter that sequence somewhat, but the presentation itself remains a linear one, with a beginning and an end.

Likewise, a book is usually read from beginning to end, although a reference book can be read in segments appropriate to a task at hand.

An audiotape plays from beginning to end. Rewind and fast forward are available to alter the sequence of events, but there is much searching and backtracking involved in locating a particular segment on the tape.

In the world of what is referred to as Hypermedia, you as the user have complete control over what is presented and in what order. This of course requires a computer.

For example, assume that a student wishes to do research for a geography paper. Using his computer and his favorite Hypermedia program, he selects a geography icon and is greeted with an on-screen graphics map of the world. With the mouse, he selects North America. A new screen (or card) appears, representing that continent with the states and provinces outlined. The user points at Texas and clicks. A map of that state appears, broken down by regions. He selects the Central section, and a blowup of the map delineating counties appears. Just North of the capital, Austin, the student selects Williamson County. A detailed map of the county appears, showing highways and several small towns. He selects the town of Bartlett. From on-screen.buttons, the student can now access information on Bartlett's history, government, population, geographical significance, geology and so on. The lesson proceeds directly in accordance with the student's interest and focus.

As another example, assume that a pianist is rehearsing "Rhapsody In Blue" for an upcoming performance. He wants to compare various ways a particular strain in the piece has been played in the past. Stepping over to his computer, he accesses his Hypermedia music database and sees a screen (a card) listing various music styles. Using the mouse to press a button marked Classical, he sees a new card listing various eras. Selecting Contemporary, he sees buttons with the names of various composers. George Gershwin is selected, and a new card appears listing Gershwin's works. The Rhapsody is selected, and the pianist now sees four buttons, one for each of the performances Gershwin himself recorded on a piano roll in 1929, the same performance re-recorded with an orchestral accompaniment by Michael Tilson-Thomas, a recording by Paul Whiteman (who originally commissioned the piece) with Pennario on the piano and, finally, the distinctive recording made by the Warner Brothers orchestra.

Ready to begin his comparison, he selects the first button and sits back to listen as the strains of the "Rhapsody In Blue" pour forth from his computer.

Finally, your three-year-old asks a question about Grandpa. You fire up the ol' Hypermachine, select the Family Tree icon and click on the grandparents' entry. A photo of the two of them appears, along with buttons and text items describing various facts and figures about them. Perhaps a digitized sound file speaks in their voices or a video of their last Christmas visit plays on the screen. The child learns about his ancestors by moving intuitively up and down the tree and seeing and hearing from the various family members.

This is what Hypermedia is all about. The user tailors the information flow to suit his or her own needs.

Hypermedia has been implemented on the Macintosh for some time now, in the form of a program called HyperCard. Under HyperCard, Hypermedia takes the form of a stack of cards, with each card being represented by one graphic screen. By selecting buttons or other on-screen objects, the user navigates through the stack, card by card. HyperCard also allows further control via the use of a programming language.

HyperStudio implements Hypermedia in a similar fashion, using basically the same stack-of-cards concept, but without HyperCard's programming language.

Clip Art

One entire disk is devoted to clip art and associated graphics files. From these, you can build backgrounds or snatch icons or other graphics images for use in your own stacks. All of the most often used icons are furnished, more than enough to get you going.

Another entire disk is filled with digitized sound files, ranging from animal noises to bells and chimes to voices.

Something's Missing

We received an early, incomplete version of HyperStudio. Several features were not yet implemented or enabled. The package included a letter explaining this and offered a free update to the final version, as well as the next follow-on update at no charge. The first of these updates should be out by the time you read this.

There is a minor compatibility problem with Applied Engineering's TransWarp GS accelerator card. When recording sounds, the TransWarp must be temporarily slowed to normal IIGS speed or recorded sounds will play back at half speed. The effect also shows up in the Sound Shop accessory, but the rest of HyperStudio works just fine with the TransWarp card. This minor inconvenience is expected to be corrected in the next program revision.

Goodies

HyperStudio includes a variety of supplementary utilities that make using the program more enjoyable and useful.

First is Sight 'n Sound, a utility that installs any desired combination of a start-up picture, start-up sound and system beep on your boot disk.

A start-up picture is a super-high-resolution graphics image that displays during the boot process, instead of the GS/OS thermometer. Any graphic file can be displayed.

A start-up sound is a standard digitized sound file (which can even be created by HyperStudio) that is also played during the initial boot process.

These goodies can work together. A popular combination is a picture of the HAL computer console from the film "2001" with HAL's voice speaking and assuring the user of its complete functionality.

A system beep is similar in that it is a digitized sound file, which replaces the beep

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sound the computer makes during a reset, program crash or other computer interruption. The computer's normal beep can be replaced by things like glass breaking, an explosion, a gunshot, a soft pleasant chime, a voice saying "Oops!" or whatever you prefer. Dozens of digitized sound files for this purpose exist in the public domain, and HyperStudio makes it easy to add your own sounds.

The utility program can install and later deinstall, or replace, any combination of these effects.

Another extra is called the Sound Browser, a slide show for sounds. With it, you can quickly and easily compare sound files.

The other utility is Sound Shop, a mini recording studio in itself. Designed to work with HyperStudio's sound digitizer board, it gives you much more flexibility than the simple record function that resides within HyperStudio. The only real disadvantage to Sound Shop is that you have to leave HyperStudio to use it.

Sound Shop lets you control the record and playback rates. A higher rate results in a larger file, but one with greater fidelity. You can vary this value to achieve desired results. You can also edit a digitized sound. Imagine excising the word "not" from Richard Nixon's declaration that "I am not a crook," and then playing it back.

Unlike HyperStudio's built-in digitizer, Sound Shop also will read in sound files recorded in slightly non-standard formats (like most of the sound files floating around the public domain) and convert them, transparently, into HyperStudio-compatible files. This involves simply loading and resaving the files.

Sound Shop also gives you the use of special effects, such as fades (in and out), echos, repeat count (looping), layering, filtering, reverse and stutter. All in all, Sound Shop is a very powerful sound editing tool.

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Hyperventilation

HyperStudio is an exciting package with nearly unlimited potential. Check out HyperStudio for yourself; you have to see it in action to fully understand it.

Even in its unfinished state, it offered amazing performance. Time alone will tell how far it will go, but as A2-Central's Tom Weishaar and others have pointed out, this may well be the package that starts to sell the IIGS to people who just want to run HyperStudio. Remember what AppleWorks did for the IIe.

Congratulations to Roger Wagner Publishing for pushing our performance envelope that much farther out. ■

— Joseph T. Walters, contributing editor

Product: HyperStudio
Price: $129.95 retail
Company: Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522
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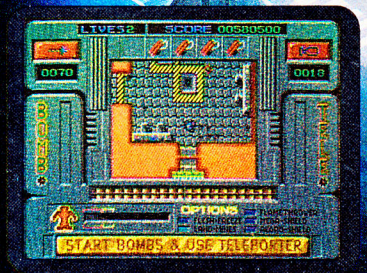
Apple IIgs

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You are given the task of destroying the three moons orbiting the planet Talos IV, in hopes of annihilating a vicious alien race that has been spreading like a virus throughout the galaxy. With agility, strength, endurance and a little luck you will be able to destroy the moons and halt the spread of this alien race.

Only one as brave as yourself could possibly carry out the mission of Xenocide.







*Actual Apple IIgs screens shown.

Xenocide features:

- Uses the full graphics potential of the Apple IIgs (this is not simply a port over!).
- Takes advantage of optional stereo cards.
- Written in 100% assembly language for speed and efficiency.
- You will be required to travel across three moon surfaces, through 6 caverns and three underground Biolabs; each with its own unique features!

Xenocide requires:

- Apple IIgs computer w/ 512 k RAM.
- 3.5 inch disk drive.
- Joystick recommended.

To receive your copy of **Xenocide**™, call

1-800-442-6002

with your Visa or Mastercard ready.
For check or money orders,
send **$49.95**
to Micro Revelations, Inc.,
P.O. Box 70430 Reno, Nevada 89570.
Nevada residents please add 6% sales tax.
Apple IIgs is a trademark of Apple Computer, Inc.
Circle Reader Service Number 14

PARKINSON

MICRO REVELATIONS, INC.
Post Office Box 70430, Reno, Nevada 89570

An Apple A Day



The IIGS boasts a bumper crop of fall software. Several exciting new products will be making their way into the classrooms as interactive electronic supplements to traditional textbook curricula. Some programs work under the IIGS operating system, incorporating spiffy sounds and graphics that use the power of the IIGS microprocessor. Others rely upon ProDOS 8 and show clever ingenuity as they maximize the computing potential of the 8-bit Apple IIs. Many ProDOS 8 offerings demonstrate newfound sophistication, deftly competing for a share of the Apple II software dollar.

Computer-assisted instruction is getting better all the time. In this issue, we examine software tools designed to complement science, math, language arts and social studies curricula. Many of these programs enhance the presentation of classroom materials. They also develop problem-solving and logical thinking skills.

Audubon Wildlife Adventures: Grizzly Bears



Performance: 8.5
Innovation: 8.0
Ease Of Use: 8.5
Documentation/Support: 8.5
Value: 8.5
Overall: 8.4

Explore the vanishing world of the formidable grizzly bear with four action-packed interactive adventures, brought to you by Advanced Ideas and the National Audubon Society. In the process, you'll gain a healthy respect for the wilderness and learn about environmental conservation.

In On the Spot with Dr. Potts, kids assist the knowledgeable doctor as she tracks and studies the venerable grizzly. The kids learn to identify grizzlies, study their diet and examine their habits, so they can be prepared to act appropriately when hiking in bear country.

In Bear Encounters, players assume the role of a field investigator for a wildlife investigations office at a large national park. Their task is to investigate reported contacts between grizzlies and people. Players must determine the severity of the encounters, take corrective action and make recommendations to avoid future confrontations.

Grizzly Bear Mystery requires students to track down clues and interview suspects to determine the cause of a grizzly bear's death. In Oil Explorer, the final interactive adventure, a player becomes the project manager for Petroleoco Oil company, which is responsible for setting up a new oil-drilling site in the heart of a grizzly habitat. The goal is to establish the drill site while minimizing destruction to the bear's ecosystem.

Youngsters complete electronic activities with help from on-disk reference materials. A computerized database, called Bear Country Handbook, provides up-to-date scientific bear facts and information. Grizzly Food Data Cards offer 31 on-screen index cards, detailing the plants and animals that wild bears eat. The Grizzly Habitat Model simulates the effects of environmental destruction on the bear's chances for survival.

Advanced Ideas and the National Audubon Society have put together a vital teaching resource that underscores the importance of the computer in classroom instruction. Grizzly Bears teaches students in grades 4 through 12 about the much maligned and misunderstood Ursus Horribilis, in ways not possible from the pages of an ordinary textbook. The simulations allow students to become armchair wildlife naturalists, investigating the habitat of the dangerous grizzly from the safe distance of the computer. Colorful super-high-resolution graphics, maps, simple animation, sound effects and music assist in the presentation.

The IIGS home edition comes with a 55-page *Grizzly Guidebook* containing color photographs, 18 offline supplemental learning activities and suggestions for further reading. The school edition includes backup disks (although the program is not copy protected), plus a Teacher's Guide that has additional reference materials, lesson plans, offline activities and student worksheets. Wildlife simulations on whales, sharks and poachers are in the works.

Easy Street IIGS



Performance: 7.5
Innovation: 8.0
Ease Of Use: 7.5
Documentation/Support: 7.5
Value: 6.5
Overall: 7.4

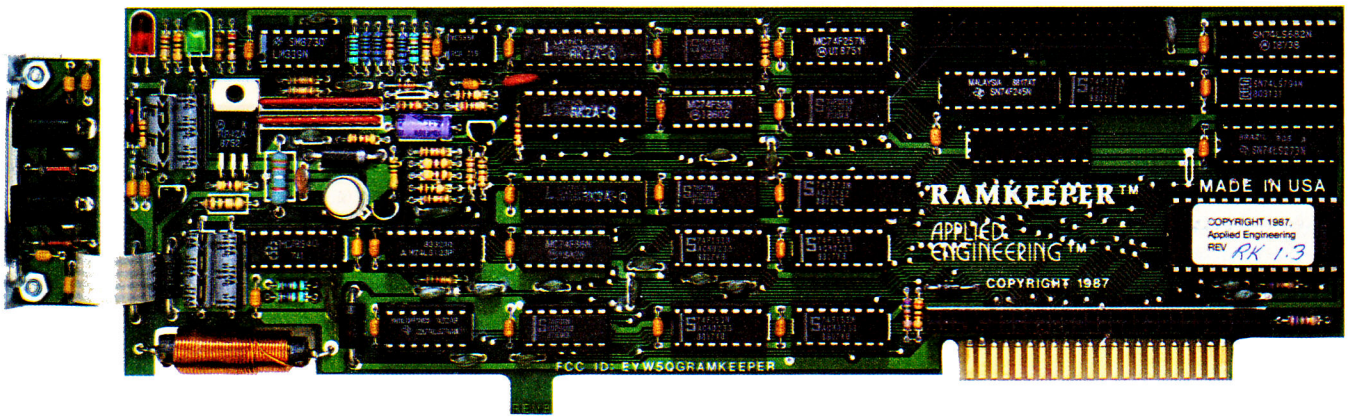
It's difficult to classify Mindplay's Easy Street as a math skills builder. Young children learn numbers, letters, shapes and patterns, as well as simple counting, when they visit shops on Easy Street to fill their shopping lists. The program strengthens reading readiness skills, builds math aptitude and boosts problem-solving capabilities with the help of Knuckles, a pesky but harmless gorilla.

Mindplay's Challenge Upgrade feature lets grown-ups customize program options to tailor the application to the needs of individual children. Instructors can alter the difficulty level, toggle the sound on or off and create a custom town, selecting specific stores and sale items for use during play. A Performance option enables teachers to keep records for up to 25 players.

Easy Street (ProDOS 8) offers optional speech (only in the Game mode) if the computer is equipped with an Echo Board or Cricket speech synthesizer. The optional speech peripheral makes it possible for youngsters to listen to the computer deliver playing instructions, store object descriptions and hear verbal reinforcements. Easy Street IIGS also talks (only in the Game mode), but you won't have to purchase additional hardware to access the program's speech capabilities. Moreover, users can alter the volume level from within the IIGS application without having to go through the computer's Control Panel.

The IIGS version shows its origin as an Apple II program. It does not follow the standard IIGS graphics interface and it offers only partial mouse control. The fact that the mouse is not always active may frustrate the youngest players at times. Nevertheless, there are definite advantages to purchasing the IIGS over the ProDOS 8 version.

RamKeeper.™ If not the first board you add to your IIGS



Certainly the second.

Chances are the first board you add to your computer will be for memory expansion. RamKeeper™ makes a smart second addition by performing *two important tasks:*

First, it gives you a sensible way to grow beyond the Apple memory expansion board that probably came with your IIGS. Apple's board has room for only 1 MEG of memory, and the new, integrated programs need a MEG just to boot.

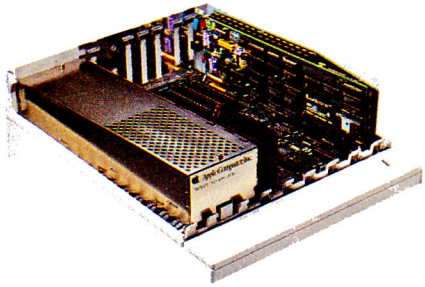
RamKeeper lets you add a second memory board to your memory expansion slot with a special "back pocket" connector. That way, you can use your 1 MEG Apple board and still expand beyond its 1 MEG limit. And RamKeeper "sees" the two boards as one, so all you'll notice is the increased memory.

Second, RamKeeper creates battery-backed Ram and ROM. Safely store your system software, often-used application programs and most-needed files on RamKeeper-enabled ROM. It's like an internal, electronic hard disk (up to 16 MEG!), but five times faster than an ordinary hard disk.

Turn your computer on and see the finder in 13 seconds, instead of several minutes.

Safe storage

RamKeeper powers up to two memory boards simultaneously, even when your computer is turned off. What's more, the stored programs are protected against power outages by the reliable Gel/Cell battery we include. Startup checksums are employed to verify that no data was lost



RamKeeper is easy to install and stores programs in an "instant on" electronic hard disk.

while the power was off. To protect the operating software against program crashes, we installed RamKeeper's controlling firmware in an EPROM.

You can even mix different brands of boards. For example, an Apple board with at least 512K of memory (based on 256K x 1 chips), and AE's (MEG-chip based) GS-RAM Plus™ or GS-RAM Ultra™ boards. And most all other brand and size combinations are also possible.

Advanced enough to be easy

We designed RamKeeper to be easy to use. Instructions are clear and most functions are automatic. For example, there's no need to manually configure if you add a second board, it's done automatically. The configuring is linear, so there's less chance of a program crash. And *you* decide how much memory to devote to ROM and to RAM—all without affecting your stored files.

Compare features:

RamKeeper includes a collection of important features like *disk caching* that tremendously accelerates access time to the 3.5 drive, running most applications up to *seven times faster.*

Our *diagnostic utlilty* feature graphically detects the presence of bad or improperly-installed chips and tests for CAS before RAS chips.

And RamKeeper features Applied Engineering's meticulous craftsmanship, 5-year warranty, 15-day money-back guarantee* and our American-made pride.

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AppleWorks users will find another bonus. Our AppleWorks enhancement package dramatically increases AppleWorks word processor lines from 7,250 to 22,500. Database records are increased from 6,350 to 22,500 and clipboard capacity climbs from 255 lines to 2,042.

RamKeeper $189

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The IIGS features improved speech quality and super-high-resolution graphics. The human-like voice is crisper and more intelligible. Graphic colors are brighter. Pictures receive more detailed artistic attention. Players can pay for their shopping items with "real" money and learn to make change in the process. Finally, the IIGS Version is not copy protected.

Explore-A-Classic



Performance: 8.5
Innovation: 9.0
Ease Of Use: 8.0
Documentation/Support: 8.5
Value: 7.0
Overall: 8.2

If you're familiar with the ProDOS 8 Explore-A-Story and Explore-A-Science applications from William K. Bradford and Learningways, Explore-A-Classic will seem like an old friend. All three series employ virtually identical icon-based graphics interfaces. Currently, Explore-A-Classic offers three soon-to-be-released children's tales: Stone Soup, The Three Little Pigs and The Princess and The Pea. We examined a prerelease version of each product.

All Explore-A-Classic tales consist of three program modules: Story Teller, Story Maker and Activities. Story Teller brings the children's tale to life with brightly colored graphics and animation. For example, in the Story Teller segment of Stone Soup, youngsters delight in helping a wise but hungry beggar trick greedy townsfolk into parting with food for a delicious pot of stone soup. The soup ingredients actually disappear when they are added to the big, black pot.

Each electronic story page introduces new characters and props. While adults read the stories aloud, children interact with the program by moving objects around the scenes and peeking behind props. They can access a menu of additional animated characters, inanimate objects and text labels to personalize the contents of any screen. Electronic pages may be saved to disk and printed.

The Story Maker module consists of several animated screens that use the same story characters and props, but without text. Kids can modify the pictures with additional objects or word labels, then use the scenes as story starters. Text may be typed anywhere on the screen, directly from the keyboard. Files may be saved to disk and printed. Activities contains several theme-related projects, including additional story-starter screens to stimulate creative writing. Kids can print out pictures of story characters and color them for use as finger puppets. In The Princess and The Pea, for example, they can decorate a crown with jewels, rearrange castle parts to build a new home for the prince and princess and use multicolored peas to make words or a picture. In Three Little Pigs, they must find hidden tools, build several different houses and practice simple counting.

Each classic tale is available in 5.25-inch (two double-sided diskettes) or a 3.5-inch (one 800K diskette) disk format. The single 800K disk option is a real advantage with young children in a classroom setting. Keeping all program files together simplifies program operation and minimizes adult intervention.

The Explore-A-Classic series builds language arts skills. The applications are very open ended, providing ample opportunity for kids to practice reading and writing without getting bored. Youngsters delight in interacting with the programs, writing their own stories, completing the story-related activities and sharing their publications with other members of the class.

Math Blaster Mystery



Performance: 8.5
Innovation: 8.5
Ease Of Use: 8.5
Documentation/Support: 8.5
Value: 9.0
Overall: 8.6

ProDOS 8 on an Apple IIGS reaches new heights with Davidson's latest software release. Math Blaster Mystery offers four math mystery activities to build problem-solving skills in youngsters ages 10 and up. Students not only have to solve math problems, they must develop strategies to come up with the right answers.

Each activity has four levels of difficulty. The highest level presents problems sufficiently difficult to challenge even the most enterprising mathematical sleuth. Youngsters may obtain on-screen assistance for any activity by selecting Instructions from the Help menu. A pop-up electronic calculator is available to facilitate computation.

Davidson's Student Desktop Interface simplifies program operation and offers ample use of pull-down menus, dialog boxes and icons. While the application works well with input from the keyboard, IIGS users will appreciate being able to point and click with the mouse. Several keyboard equivalent commands speed up cursor movement.

Players begin as Computation Cadets. For every 1,000 points earned, they move up in detective status. Ranks include: Arithmetic Agent, Digit Detective, Solution Sergeant, Calculation Captain and Chief Problem Solver.

The first activity is Follow the Steps, which focuses on word problems. It incorporates a variety of mathematical operations, beginning with simple problems that involve whole numbers and working up to fractions, decimals, percentages, ratios, proportions, interest, probability and equations. Instructors can use the program editor to prepare custom problems for practice or test situations.

Weigh the Evidence requires youngsters to solve math problems by moving a set of weights from one scale to another. Students must use three of the weights to come up with the correct solution. Strategy is very important, because players cannot stack a larger number on top of a smaller one. Higher levels make use of positive and negative integers, fractions, decimals and percentages.

In Decipher the Code, players determine the mystery equation by testing hypotheses and making inferences about equation variables. They get only 15 chances to solve the problem. The first two levels provide some initial clues. At levels 3 and 4, the work screen is blank.

For the final activity — Search for Clues — youngsters select graphics images, which in turn provide hints to the solution of a mystery number. When the guess is logical but not correct, players may proceed to the next clue. When the guess is illogical, they must try again before receiving another clue. Hints, definitions, a list of incorrect guesses and the on-screen calculator all furnish assistance.

Teachers may keep records on student performance. There are options to toggle sound and graphics reinforcements on or off. At the end of each activity, the program lets

players print a graphic certificate with student name, activity completed and current detective status. All things considered, Davidson scores high points for this innovative and entertaining skills builder.

World Geograph 1.1



Performance: 9.0
Innovation: 9.0
Ease Of Use: 9.0
Documentation/Support: 9.0
Value: 7.0
Overall: 8.6

World Geograph is computer-assisted instruction at its best. This powerful graphics-based IIGS-specific program teaches human geography and database management skills to children in grades 6 to 12. The application provides a level of interactive study not possible from the pages of a textbook. Kids have access to colorful maps, graphs and 55 fields of information on 177 nations.

The program follows the standard IIGS interface, with pull-down menus, scroll bars, icons, dialog boxes and mouse control. The interface minimizes the learning time required to feel comfortable with simple File and Edit tasks. Pushing the application to its fullest capabilities, however, will take time.

There are so many teaching possibilities that the program's vendor (MECC) also sells an optional companion Classroom Guide with more than 50 lesson plans, student handouts and training materials.

Flexibility makes World Geograph the next best thing to being there. Students can examine a world map in English or metric units, with or without national boundaries. They can explore the world by special themes, such as climate zones, elevation, energy consumption or population density. Pop-up Key windows are available to explain the theme map colors.

When more detail is required, youngsters may zoom in on the continents (six maps) or take a regional approach (21 maps) for a closer look. Regional maps display country names. Selecting a particular country lets you invoke its data cards, with 55 information categories, including birth rate, borders, area, cities, climate zones, population statistics, minerals and per capita income.

You can compare a nation by particular categories (e.g., military expense as a percent of the GNP), in terms of a greater-than or less-than approach to other nations in the world, continent or region. Or you could display this data by world quartiles, ranking selected nations, regions or continents according to whether they fall into the top 25 percent, second highest 25 percent, third highest 25 percent or lowest 25 percent of nations for that category.

Students can print out maps (with map keys), charts and database reports on an ImageWriter, LaserWriter or Epson printer. Color printing is possible. Data may be exported as a DIF file (Data Interchange Format), for use with another database or spreadsheet application, or as a text file for modification in a word processor.

World Geograph combines sophisticated graphics and database functions in a single educational package. While the current version won't let you pinpoint capital city locations on a map, or zoom in on particular countries to show urban centers and national divisions, the program creates a dynamic interactive environment for teaching geography skills.

The IIGS Is Great For Instruction

Computer-assisted instruction motivates children to learn. Color, sound and animation provide audiovisual reinforcements that entertain and teach important basic skills. So take advantage of what the IIGS can offer and test drive the programs described here. You'll be amazed to see how much children can master while having fun. ■

— Carol S. Holzberg, Ph.D.

The author is a contributing editor of The Apple IIGS Buyer's Guide.

Product Information:

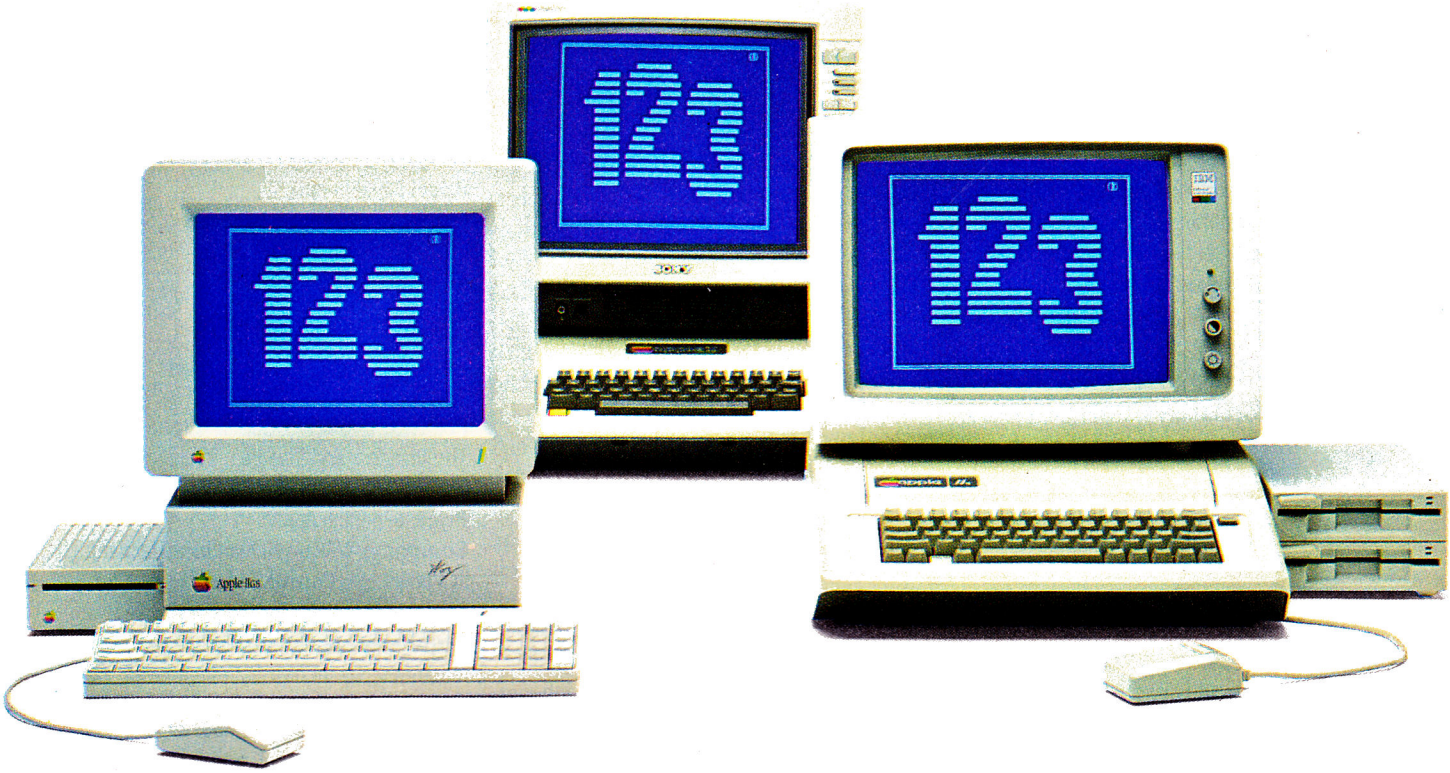
Product: Audubon Wildlife Adventures: Grizzly Bears
Price: $59.95 retail; $89.95 school edition
Company: Advanced Ideas, Inc.; 2902 San Pablo Ave.; Berkeley, CA 94702; 415-526-9100
Requirements: Apple IIGS; 3.5-inch disk; 512K; RGB monitor recommended
Circle Reader Service Number 45

Product: Easy Street IIGS
Price: $49.99 retail
Company: Mindplay/Methods & Solutions, Inc.; 3130 North Dodge Blvd.; Tucson, AZ 85716; 800-221-7911 or 602-322-6365
Requirements: Apple IIGS; 3.5-inch disk; 256K; RGB monitor recommended
Circle Reader Service Number 46

Product: Explore-A-Classic (Stone Soup; The Princess and The Pea; The Three Little Pigs)
Price: $75 each retail
Company: William K. Bradford Publishing; PO Box 1355; Concord, MA 01742; 800-421-2009 or 617-862-2570 (in MA)
Requirements: Apple IIGS or other Apple II machines; 3.5-inch or 5.25-inch disks; 128K; color monitor and mouse recommended
Circle Reader Service Number 47

Product: Math Blaster Mystery
Price: $49.95 retail
Company: Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 800-556-6141 or 213-534-2250
Requirements: Apple IIGS and other Apple IIs; 3.5-inch or 5.25-inch disks; 128K; color monitor recommended; printer, joystick, mouse optional
Circle Reader Service Number 48

Product: World Geograph 1.1
Price: $139 retail
Company: MECC; 3490 Lexington Ave. North; Saint Paul, MN 55126-8097; 800-228-3504 or 612-481-3500
Requirements: Apple IIGS; 3.5-inch disk; 768K or more; RGB monitor; two disk drives recommended
Circle Reader Service Number 49



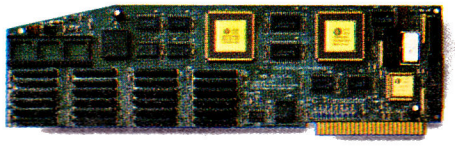
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PC Transporter costs less than even a stripped-down IBM clone. And when you add the host of expensive IBM-compatible peripherals you'd need to get the clone up and running, you're left with an expensive, cluttered desktop.

You don't have to buy new hardware to use PC Transporter.

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With PC Transporter, MS-DOS programs actually see your Apple hardware as IBM hardware, so you can use the same hardware and peripherals you have now.

With IBM software, your Apple hardware works just like IBM hardware. Disk drives, monitors, printers, printer cards, clock cards, serial cards and even hard disks look like IBM type hardware whenever the PC Transporter is activated.

You can use your IIe or IIGS keyboard with IBM software. Or use our optional IBM-style keyboard (required for the II+).

You can use your Apple mouse. Or an IBM compatible serial mouse.

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PC Transporter gives you 640K of user RAM and 128K of system RAM in the IBM mode.

PC Transporter works like an Apple expansion card, adding 752K of extra RAM in the Apple mode. The 752K is useable as a RAMdisk or as memory expansion to any program that follows the Apple Memory Expansion Card protocol (most do). The Apple memory expansion alone is a $500 value.



PC Transporter taps into the world's largest software library. Now your Apple can run most of the software you use at work. And it opens a new world of communications programs, games and bulletin boards.

Easy to install.

You can install PC Transporter in about 15 minutes, even if you've never added an expansion board. You don't need special tools. Simply plug it into an Apple expansion slot (1 through 7, except 3), connect a few cables, and go!

A universal disk drive controller.

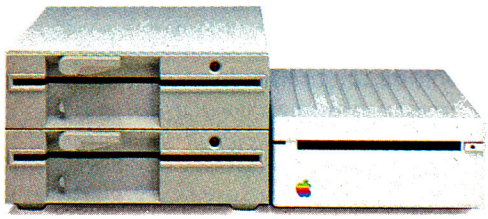
PC Transporter will run 3.5" IBM disks from your Apple (or compatible) 3.5" drive. And even if you want to run 5.25" IBM disks you can get our versatile 5.25" drive system and still run Apple 5.25" disks from an Apple 5.25" drive. In other words, when running 3.5" disks, your Apple 3.5" drive will run *both* Apple and IBM disks.

No matter what your drives, you can shift instantly between Apple ProDOS and IBM MS-DOS.

PC Transporter supports up to 5 drives in a number of combinations.

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 old Apple UniDisk 3.5) to the dual-drive system. For a fifth drive, you can even use a ProDOS file on a hard disk 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.



Versatile data storage.

You can store IBM programs and data on any ProDOS storage device including the Apple 3.5 Drive, Apple UniDisk 3.5, Apple 5.25 drive, SCSI or ProDOS compatible hard drives.

You can even use our 360K PC compatible drive for ProDOS storage and a 143K Apple 5.25 drive for MS-DOS storage.

Make your Apple speak IBM.

PC Transporter w/768K	**$499**

Note: 768K RAM in Apple mode translates to 640K RAM in the IBM mode because PC Transporter uses 128K for system memory.

IIGS Installation Kit	**$49**
IIe/II+ Installation Kit	**$39**

Optional 5.25 IBM Format 360K Drive Systems

Single-Drive System	**$259**
Dual-Drive System	**$389**

What the experts say:

"Gives Apple II users the best of both worlds ...an impressive engineering feat."
—A+

"It's ingenious...a remarkable success!"
—InCider

"When you buy a PC Transporter, you're not just giving your Apple the ability to act as a PC clone, you're upgrading your computer in a big way for all your Apple II computing."
—Nibble

"An excellent solution for at least half a million people who enjoy Apple II computing at home and endure MS-DOS at work."
—MicroTimes

"Extremely versatile...one of the most ingenious and exciting products we've seen." *—Classroom Computer Learning*

"PC Transporter has created quite a stir. It's accuracy guarantees a whole host of uses...a masterpiece of engineering."
—Apple Soft

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Apple II+ must be FCC certified.



PC Transporter produces better IBM graphics than IBM. Analog is sharper than digital. So with a IIGS analog RGB monitor, PC Transporter's CGA graphics and text are superior to IBM's digital display—even while running your IBM Software!

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The brains behind PC Transporter were also behind your Apple II.

The PC Transporter design team includes the former project managers for the creation of the Apple IIe and IIc. The co-designer of the Apple II disk controller. And the author of the ProDOS operating system.

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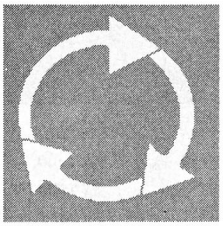
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Circle Reader Service Number 28

Solar-Powered Shareware



In November 1987, a happening in the Australian Outback sparked the imagination of scientific investigators, students and futurists the world over. The World Solar Challenge involved 24 solar-powered automobiles that raced 1,950 miles across some of the most desolate landscapes on Earth. A little more than five days after the race started, General Motors' Sunraycer was the first car to cross the finish line, averaging 41.6 miles per hour.

Since then, the Sunraycer has enjoyed attention throughout the world. Wherever it is displayed, questions are asked: How does it work? What makes it go? How fast does it go?

The continuing interest inspired General Motors, Hughes Aircraft and AeroVironment, the builders of the Sunraycer, to fund the development of a comprehensive multimedia package for classroom use. That package includes teachers' manuals, videotapes, posters, student handouts and Apple II software.

The software, created by science teachers and curriculum consultants, was produced by TelEd of Los Angeles and distributed to 65,000 teachers. It is now in the public domain and available from online services, bulletin-board services and user groups. It runs on any Apple II computer and requires a 5.25-inch diskette drive.

Two versions of the software were developed, one for elementary students and one for secondary students.

The secondary software contains a four-part interactive tutorial that combines many aspects of physical science, applied science and technology. Through the use of text, graphics, music and animation, it explains how the sun's high temperatures and high pressures combine to release vast amounts of energy. That energy is transmitted to the Earth's surface as sunlight. Through the use of solar collection panels and photovoltaic cells, that sunlight can be harnessed to produce sufficient amounts of electricity to power the Sunraycer.

The Sunraycer is 18 feet long, 6 feet wide and 3 feet high. It weighs less than 400 pounds. Its 8,800 solar panels collect sunlight, and photovoltaic batteries convert the sunlight to the electrical energy that powers the car. The vehicle's streamlined shape minimizes aerodynamic friction, resulting in one of the most efficient cars ever produced.

A major component of the software is the simulated Solar Challenge Race, putting the user behind the wheel of the Sunraycer. The race course is a 60-mile stretch of hills and desert, and the weather, on which solar energy is so dependent, is unpredictable. You can always radio to the overhead radar-equipped spotting helicopter for information, which will send back data on the weather and road conditions ahead. Those conditions will affect the performance of your vehicle, and adjustments to your driving style may be necessary.

As you proceed with the race, feedback is available from the various on-screen dials and displays, including a speedometer, odometer and clock. Solar-specific displays include an indicator to show the amount of charge the battery is holding; how many watts of electricity are being produced by the solar panels; and whether that electricity is needed by the engine or the batteries. If you are able to maintain enough energy, you can complete the course, despite the clouds that diminish your solar race car's efficiency. Upon completion, you will be notified of your average speed during the simulated race.

The disk supplied for elementary students contains The Solar Race Car Construction Kit, a stand-alone program. This module ties together all the other sections and allows you to apply your new- found knowledge of solar energy into building a solar-powered automobile. Constructing a solar race car is an endeavor that is fun, educational and a rewarding experience for students of all ages.

The Solar Race Car Construction Kit consists of three sections. The computer-aided Design Center is where you design and assemble your custom car by designating the major components to be used. Your choices determine what type of frame your car will have, what type of battery and engine will be used, and what type of solar panels will be employed. The Test Track is where you test your car under 14 different road and weather conditions. The Research Library, which can be visited at any time, provides useful information about the different design components.

As you construct different designs, you are encouraged to enter the test track to see how well your custom design performs. As each section of track is driven, a computer analysis is provided — showing the efficiency of your vehicle. At the conclusion of a test track run, a performance report is displayed that compares your design to the theoretically best possible design. If your performance rating isn't high enough, you can always return to the Design Center to implement changes.

After the successful completion of a test run, a personalized certificate of merit is issued to the designer, with a ranking that provides feedback on how well you have been able to apply your knowledge of solar-generated energy to the real job of building a solar race car.

Although the Sunraycer series is a premiere example of corporate sponsored freeware, it is by no means the only one. TelEd has also developed a series of Apple II software that was funded by DuPont, in conjunction with the National Educational Television series "Newton's Apple." That TV show focuses on scientific discoveries as applied to real-life applications. The subject areas of the disks available are: Bridges, The Effects of Cocaine, Probability, Mirrors, Inertia, Neon Lights and Tooth Decay.

We are also starting to witness government sponsorship of freeware. The finest example of this is the Federal Aviation Administration's seven-disk series of programs entitled: The Principles of Flight, Aerial Navigation and Flight Planning, and Aviation and the Environment.

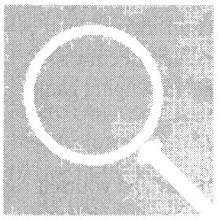
Because of the exceptionally high educational quality of the software we have seen to date, let's hope that corporate and government sponsorship of public domain software will continue to rapidly increase in the future. ■

— Joe Kohn

The author welcomes your contributions of shareware for this column. He can be reached via our editorial offices (24 New England Executive Park, Burlington, MA 01803).

Medley 2.0

Desktop Publishing Delivered



First Look is a forum reserved for previews of new products that are about to ship.

Medley 2.0 is a powerful, IIGS-specific integrated program that combines word processing, page layout and paint tools. It requires a minimum of 1.25 MB of RAM and comes with an 80,000-word spelling checker, as well as a thesaurus and a disk of clip art.

The program manual lists only the ImageWriter and LaserWriter printers as being supported, but the program also works well with the Epson driver.

Medley will be shipped with System Disk 5.0. We tested Medley with an early copy of 5.0 and the results were impressive. Utilizing the new Express Load feature, booting from a 3.5-inch disk took 34 seconds; 23 seconds when accelerated with a TransWarp GS. From a Sider D9 hard disk, booting took 15 seconds or 5 seconds when accelerated.

Medley makes getting started easy, because it comes with a tutorial that's supported by sample files. The tutorial provides the incentive to explore the program's many useful features, which are fully explained in the well-organized and indexed manual.

On-screen help provided enough information to help us use the program. As a result, we did not have to consult the program's 254-page manual too often.

Medley is designed so that when putting together a document, text should come first. The word processor is not quite as fast as some other programs of this type. Even under 5.0, it couldn't keep up with us. When we kicked in the TransWarp GS, however, the response was nearly instantaneous.

Medley imports text from any text file or directly from an AppleWorks word processor document.

The included paint tools are all you need to create your own art or customize imported pictures. You can choose a color from the palette and draw freehand with a pencil. You can also paint with a spray can that adjusts its amount of splatter. You can even brush with a choice of 48 brush shapes.

Art can be magnified and edited pixel by pixel, while you simultaneously view the full-size result. Art can be moved, duplicated and flipped. Various shapes can be drawn, stretched and color-filled. Color-selected text can be entered within art using any font or size.

Art, including digitized pictures, can be imported from any C0 or C1 type file. We found that most of the pictures imported from sources other than the supplied clip art were weirdly colored, because of the difference in Medley's palette and that of the imported picture. This could be a problem when printing in color, but for one-color printing, converting the graphic to a gray scale did the trick.

A page is put together by typing in your text and creating art areas of any size to hold the graphics or to serve as column dividers. When an art area is placed over text, the text compensates by wrapping itself around the area. Graphics can be cut and pasted into art areas.

There is no limit to the amount of art areas on a page, but there is a 32-page limit per document.

A major improvement over the prior version of Medley is that condensed printing is fully supported. Graphics are automatically resized. They appear stretched out on screen, but they print in the proper size.

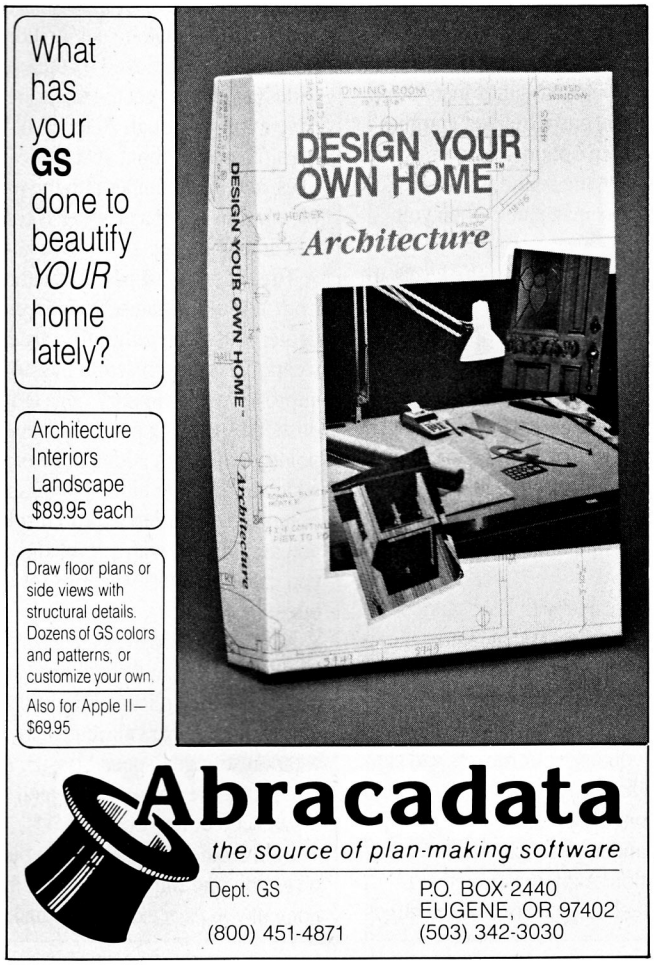
A possible drawback of Medley is that text can't be linked to different pages. This linearity approach makes a newspaper-like flow impossible. We hope this will be addressed in a future update.

We had mixed feelings about Medley being interruptible. This means that when a command is given, the program doesn't stop until it's done. It lets you continue working and finishes its task during your pauses. Putting some indication on screen that there is a function in progress would be a sizable improvement

In all, we were impressed with Medley. It is quite powerful and easy to use.■

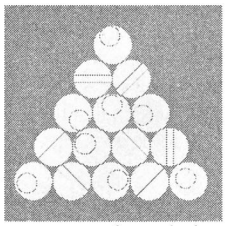
— David Winograd

Product: Medley 2.0
Price: $195
Company: Milliken Publishing Co.; 1100 Research Blvd.; PO Box 21579; St. Louis, MO 63132-0579; 800-643-0008 or 314-991-4220
Requirements: Apple IIGS; 1.25 MB of RAM; ImageWriter, LaserWriter or Epson printer that can use the GS/OS Epson Driver
Circle Reader Service Number 51



Circle Reader Service Number 29

Arcade Games, Where The Action Is



Coin-operated video arcade action games have been very popular for a number of years. After a hard day of work or school, many people seek the excitement associated with arcade games. Untold numbers of quarters are spent in playing them. One reason that home video game systems have become popular is that you can play "'til you drop" without worrying about running out of change. With the superb graphics and sound capabilities of the Apple IIGS, you can bring exciting arcade action home. Let's take a look at a few titles:

Taking Off

Datasoft's Tomahawk is a helicopter simulation based on the U.S. Army's AH-64A Apache, an advanced attack helicopter. Designed strictly for attack and destroy missions, it can seek and destroy aircraft, tanks, artillery and anything that stands in its way. Tomahawk delivers crisp, brilliant graphics on the IIGS. With an optional stereo card and amplified speakers, the sound is so realistic that your neighbors may panic when you play it.

Four missions and four difficulty levels are available. You can also select day/night and clear/cloudy conditions. The upper two-thirds of the screen display is the view out the front window of the Apache. The bottom of the screen displays the instrument panel and its many basic functions. The display includes the status of the craft, fuel level, speed, altitude, range, an artificial horizon and a compass. Along both sides is the failure status panel.

Tomahawk is armed with laser-guided Hellfire missiles, rockets and an automatic cannon. The easiest weapon to use is the Hellfire missiles. These babies automatically track the target and home into it. You'll score more points if you use your rockets and cannon, but you'll have to be much more accurate and fire from closer range.

The mouse and a host of keystrokes control the simulation. A joystick provides a more realistic feel in flight control and targeting, but the keyboard offers excellent response and control. You must use the mouse to handle such functions as weapon selection and engine power adjustment. Everything is laid out neatly, and Tomahawk is quite easy to play.

Tomahawk is the only flight simulation game available on the IIGS. Hopefully, other publishers will take note of the popularity of Tomahawk and release other programs.

Super Dogfighter

Sierra On-Line's Silpheed is full of action and excitement.

The second game licensed from Game Arts of Japan (Thexder was the first), Silpheed is an intense shoot-'em-up game with great graphics, lavish music, detailed animation and rapid-fire action.

You are the pilot of a Super Air Fighter SA-08 Silpheed prototype that just passed its initial function test. Your mission is to attack and destroy the Gloire, an incredibly powerful battleship employed by the brutal renegade Xacalite. To get to the Gloire, you'll have to blast through 20 levels of lesser enemies. There are about 16 varieties of enemies, and they number into the thousands. Clearly, this is not a task you'll complete the first time you play.

The action is fast paced. Enemies attack from all sides. Because your Silpheed Dogfighter starts with only a forward beam weapon, it's clear that you must quickly improve your weaponry. This is accomplished by earning points. For every 50,000 points earned, an additional weapon will be added to one side of the plane, so 100,000 points are needed to arm both sides. When you are finished with a level and docked, you can then select weapons for each subsequent level.

Aiding your progress are asteroid-like items called Golan. When these are destroyed, they release either bonus points or any of nine extra attributes: increased weapon strength, speed booster, automatic fire, protective barriers of several types, repairs and other goodies.

Unlike other games of this type, Silpheed gives you one ship. No multiple lives here, nor can you earn extras. This makes the game tougher, but in Silpheed scoring is everything. The instruction sheet even recommends using Applied Engineering's TransWarp GS for a real challenging game.

Down To Earth

For those days when you find yourself frustrated and wanting to pound on someone or something, Arcadia's AAARGH! will come in handy. You are a monster — either a big nasty ogre or a green giant lizard. You breathe fire and pound on walls, turning them into dust. The game starts in a quiet, forgotten island and includes people who live peacefully, but not for long. You start by kicking down the village wall and ruining their lives. In each city, you need to destroy the buildings until you find the Roc egg. There is an egg hidden in most, but not all of the cities. You will need to either punch the buildings to demolish them or set them aflame.

Underneath the buildings are huge hamburgers, pizzas and hot dogs. You'll need to eat them to increase your strength. If you like, you can eat the natives, too.

Naturally, the humans will not stand for it. They will struggle to get their catapult into play and try to destroy you. Other monsters, such as giant bugs and flying serpents, will take energy from you and try to make you fall down.

The most important part of AAARGH! is the Roc egg. When you collect one, you'll have to go back to the cave to store it. But there is a monster waiting there to take it from you. You have to fight head to head over the Roc egg. If you win, the egg will go into your collection. When you have collected five Roc eggs, it's time to go to the volcano to locate the golden Roc egg. You will then be the master of the forgotten island and the game starts over again, becoming even more difficult.

Joystick

As with any arcade action game, good control is a must. The Apple IIGS does not come with a joystick, although many games recommend using one. We highly recommend that you get a joystick for arcade action games. You'll find it easier to control

objects and vehicles and to avoid obstacles. Any Apple IIe or IIc joystick will work with the IIGS through the game port. CH Products' Mach III is a pretty good joystick. It matches the same platinum color as the IIGS. It has three firing buttons. Buttons one and two are on the base, and the third button is located on top of the control stick. This joystick features either automatic self-centering or free flowing.

We have only skimmed the surface of what is available for the IIGS. There are many more fun-packed games that have already been covered in previous issues of *The Apple IIGS Buyer's Guide*. The IIGS versions of Arkanoid and Tetris are good examples of games that are better on a computer than in an arcade.

You'll enjoy many hours playing with all these arcade action games, if you do not wear out your trigger finger first. ■

— Peter Chin

Peter Chin, a computer consultant working with mini and personal computers for a business consulting firm in New York, can be reached via electronic mail on CompuServe (71076,606) or GEnie (P.CHIN).

Products Mentioned

Additional company and product information is listed in the "Apple IIGS Hardware And Software Directory."

Tomahawk

Price: $39.95 retail
Company: DataSoft/IntelliCreations, Inc.; 19808 Nordhoff Pl.; Chatsworth, CA 91311; 818-886-5922
Requirements: Apple IIGS; joystick; 768K; ProDOS 16; copy protected
Circle Reader Service Number 52

AAARGH!

Price: $39.99 retail
Company: Arcadia, Virgin Mastertronic; 18001 Cowan, Ste. A; Irvine, CA 92714; 714-833-8710
Requirements: Apple IIGS; 512K
Circle Reader Service Number 54

Silpheed

Price: $34.95 retail
Company: Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-4468
Requirements: Apple IIGS; 512K
Circle Reader Service Number 53

Mach III Joystick

Price: $49.95 retail
Company: CH Products; 1225 Stone Dr.; San Marcos, CA 92069; 619-744-8546
Requirements: Apple IIGS
Circle Reader Service Number 55

How They Compare

Tomahawk



Performance: 8.0
Innovation: 7.0
Ease Of Use: 8.0
Documentation/Support: 7.0
Value: 8.0
Overall: 7.6

Silpheed



Performance: 7.0
Innovation: 7.0
Ease Of Use: 7.0
Documentation/Support: 7.0
Value: 8.0
Overall: 7.2

AARGH!



Performance: 6.0
Innovation: 7.0
Ease Of Use: 7.0
Documentation/Support: 6.0
Value: 6.0
Overall: 6.4

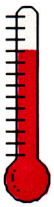
Mach III Joystick



Performance: 8.0
Innovation: 7.0
Ease Of Use: 8.0
Documentation/Support: 6.0
Value: 7.0
Overall: 7.2

Animal Tracker

Learn About Animals



Performance: 8.0
Innovation: 9.0
Ease Of Use: 9.0
Documentation/Support: 8.0
Value: 8.5
Overall: 8.5

Animal Tracker from Nature Boy Software is an excellent package that uses graphics and sound to aid students in learning about North American animals.

Animal Tracker shows students what animals look like, lets them hear what they sound like, shows them what kinds of tracks they make and offers fascinating facts about them.

To help students retain this knowledge, the program includes a variety of random quizzes that review the information covered.

One limitation of the program is that the current version (1.5) cannot be installed on a hard drive, resulting in a rather unwieldy way to use the software. The vendor assures us that Version 2.0 will work on a hard disk.

Animal Tracker has a large appetite for memory. If you only have 768K of RAM, all of it must be available. You may run into trouble if you have any desk accessories in use.

Once the program has been loaded, a variety of outdoor sounds are heard. At this point, the program is randomizing data so that no two quizzes will ever be alike. A demo lets you see various animal graphic and track patterns — and hear their sounds.

Because there is no user interaction with the demo, you may prefer to start with the Goodies menu and look up a particular animal. It is somewhat annoying at first that you must click on the animal name and then on Open.

Once you have opened the chosen animal file, you will see a nice graphic of it, plus the patterns formed by the various tracks (footprints). You will also hear an authentic recording of the animal and see the waveform of the sound. Studying the sound pattern may help later when you take a quiz.

Animal Tracker also lets you see how a particular animal moves at several of the



Animal Tracker

available speeds: walking, trotting, loping, galloping, running and irregular walking.

To learn some facts about the animal selected, pull down the Controls menu and select Information or press Open-Apple-I. You can then read the text file in the lower half of the screen or fill the whole screen, scrolling with the sliding bar on the right side of the screen. Each file includes a description of the animal and information about its size, range, habitat, dens, breeding, diet, predators and anything else of special interest.

If you have an Epson or ImageWriter printer, you can print the whole screen or any of the "windows," but there is presently a glitch that prevents you from printing text after you print a graphic. In Version 2.0, you will also be able to print in color and "better text," according to the vendor.

The Setup menu lets you censor anything you do not want included in the Custom Quiz, Lookup and Go Session events (the latter lets you see the animals one after another), thus varying the difficulty of a test and cutting down on disk access time. These settings are then saved on the disk.

Animal Tracker lets you change the program's volume level, which is a handy feature.

After a user decides to end a session, it is then time to take a quiz. Four quizzes are available and they can be taken by up to four people — the Animal Quiz, the Sound Quiz, the Tracks Quiz (which tests you on tracks and patterns) or the Custom Quiz.

The Custom Quiz varies the type of questions it asks, eliminating anything you may have excluded in the Setup. Each test uses a multiple choice quiz format offering you four choices for each sound, animal, track or pattern.

Feedback is immediate — if you guess incorrectly, you are politely told you are mistaken. If you make the right choice, the program congratulates you. You may repeat a sound and ask for a hint if you need help.

If you make a mistake, the animal in question will be repeated later, but possibly in a different way. When you have correctly answered the question twice, you have "learned" it.

You can check the status at any time to see how many questions have been asked, the number of right and wrong answers, how many you have "learned" and the number of hints you needed. You can also print the results.

Although Animal Tracker has a couple of minor bugs, we like it.

The graphics, which were done with Deluxe Paint II in 320- by 200-pixel mode, are excellent, although the colors are rather dull. That is not the fault of the program, however, because there isn't much anyone can do with a brown bear or a black and white skunk.

The information files about the animals need some polishing, as they contain some capitalization and grammatical errors.

The update is due in September. It will be sent free of charge to all registered owners. The company is receptive to any suggestions that might improve the program.

Future versions of Animal Tracker will be modular, so you will be able to purchase whatever data disks appeal to you. Bird Watcher, which will start with song birds, should be very exciting and have gorgeous colors and sounds.

If you have any need or desire to teach or learn about animals, you would be hard pressed to find a better method than Animal Tracker.

— Merry Perry

Product: Animal Tracker
Price: $79.95; $350 school site license
Company: Nature Boy Software; PO Box 596; South Lancaster, MA 01561; 508-481-2911
Requirements: Apple IIGS with 768K; 3.5-inch drive; no copy protection; supports stereo cards; recommended for third grade and above
Circle Reader Service Number 56

Great Western Shootout

A 'Shoot-'em-up' Arcade Game



Performance: 9.0
Innovation: 7.0
Ease Of Use: 9.0
Documentation/Support: 8.0
Value: 8.0
Overall: 8.2

One of the more fascinating periods of U.S. history was the westward expansion movement of the 19th century. Once that era was closed out in the history books, it entered American folklore.

Anyone who has studied the opening of the American West knows that life was difficult during those times. Few pioneers struck it rich in the gold fields, life spans were short and farming was difficult.

It's taken quite some time for a view of the old West to appear on computer screens, but — thanks to Britannica Software's Great Western Shootout — it's now there in all its blazing glory. Great Western Shootout is supplied on a single 3.5-inch, non-copy protected disk.

As soon as you boot up the game, you are greeted by the sheriff of Dodge City, who says, "Howdy Pardner." This greeting sets the tone of the game. You'll be recruited to "assist" the sheriff in ridding the town of bad guys, desperadoes, varmints, outlaws, bank robbers and gangs.

The bad guys, dressed all in black, look like bad guys. They've taken over the town. They are "hitting" the banks, invading the hotels and saloons, taking over the mines and hiding out at the caves outside town.

You and your trusty six-shooter are expected to clean up the town. There are hundreds of bad guys, so this isn't an easy task. You get no help from the sheriff, either.

The game is simple to operate. If you can use a mouse, you can play it. There are 10 levels of play, with each level being more difficult than the last. You use the mouse to accurately point your gun's sighting scope at your target and shoot. In many ways, Great Western Shootout resembles a shooting gallery at an amusement park.

The bad guys appear out of nowhere. They pop up from behind trees, stagecoaches, windows and doors. You have to be vigilant and keep careful watch on the whole screen, because these guys never miss!



Great Western Shootout

Each time you are shot, your Health rating goes down a notch. You can sustain a number of direct hits before you go to "that great roundup in the sky."

To help you hold out against the bad guys a little longer, a medicine bag with a Red Cross appears on screen at random intervals. The bag, if shot, will restore your health so you can continue the good fight a little longer.

With each succeeding level, the bad guys pop up quicker — in more positions than in the preceding levels. On some levels, it is harder to shoot the crooks, because they hide behind objects such as a bank-teller's cage, which has very narrow openings.

Great Western Shootout makes good use of digitized sounds. If you miss your target, you hear the sound of a ricocheting bullet. If you hit one of the bad guys, you hear him fall. If you hit an innocent bystander, you not only hear "whoops," you lose points from your total score. When you get killed, taps plays.

All in all, Great Western Shootout is an amusing game. Its quick, non-stop action contains good graphics and sound and exhibits a fine sense of humor. In these days of increasingly more complex computer games, it's refreshing to be able to play a basic shoot-'em-up arcade game.

— Joe Kohn

Product: Great Western Shootout
Price: $29
Company: Fanfare Software, a division of Britannica Software; 345 Fourth St.; San Francisco, CA 94107; 800-572-2272 or 415-546-1866
Requirements: Apple IIGS; 512K
Circle Reader Service Number 57

Jack And The Beanstalk

An Animated Storybook



Performance: 8.0
Innovation: 7.5
Ease Of Use: 8.5
Documentation/Support: 8.0
Value: 8.0
Overall: 8.0

Jack And The Beanstalk adds a new twist to the children's classic about a poor boy who strikes it rich with magic beans. In the Reading Magic Library edition, Jack still gets to outwit a misanthropic giant and live happily ever after. His adventures along the way differ somewhat from the original story, however.

The publisher exercises literary license and makes Jack a child of the 21st century. When his mother asks him to sell the family cow, Jack hops aboard his space cruiser to fly the mechanical-looking animal (aptly named Robocow) to the store. A sleazy salesman banishes Robocow to space-junk orbit in exchange for a few measly beans.

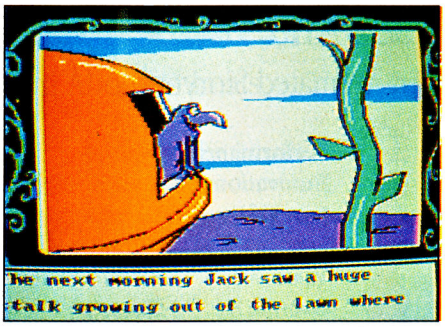
On the way home, Jack takes a side trip to the Space Zoo. Later, while hiding in a castle in the clouds, he sees the giant exercising on a huge rowing machine.

Jack escapes the castle's confines (with a fortune-telling gooselet in hand) by way of an automated trash disposer. On the run, he stumbles upon Robocow, grazing in the clouds. As luck would have it, his lost friend has landed near the giant's castle after falling out of space-junk orbit.

The publisher takes additional liberties with the classic children's tale. Most significantly, the narrative is now high tech! A 5.25- or 3.5-inch disk serves as the story medium, rather than a traditional book. Instead of mere text with passive illustrations, we participated in an animated, interactive electronic presentation and encountered the kind of "reading magic" that only a computer can generate.

Jack And The Beanstalk is what its creators call "lapware" — a new genre of computerized parent-child interaction. The stories are meant to be experienced by a young child (ages 2 to 6) while sitting in the lap of an adult. The child listens as the grown-up reads aloud. To advance the electronic pages, the youngster presses any key on the keyboard.

At several points in the narrative, the screen begins to flash, and the program calls



Jack And The Beanstalk

upon the child to decide what happens next. Single-word options appear at the top of the screen in large print, with the first letter of each word colorfully highlighted.

The story branches in different directions, depending on what word the child selects. For example, Should Jack head straight home or visit the zoo? Should he keep the beans or give them away? Should he get off the beanstalk halfway up or go all the way to the top? Should he return to the closet in the giant's castle or make a run for it?

The single-word options are more fully described at the bottom of the screen. After the adult reads the descriptions aloud, the child chooses the path to follow by pressing the first letter in the word of choice.

Nothing happens when the listener selects the wrong key. If the youngster chooses correctly, the tale continues, following the direction prompted by the response.

The special interaction among child, adult and computer helps young children develop an appreciation for written words. The parent (or adult) participates by reading the story, explaining the options and offering encouragement. The child evaluates how to proceed, determines the first letter of the selected word, figures out the keyboard location for that letter and types in a response.

Because the simple act of pressing a key decides whether or not the story continues, the software gives prereaders control over their learning environment and demonstrates that reading can be fun.

Jack And The Beanstalk takes about 10 to 15 minutes to complete. Colorful animated graphics and sound provide positive reinforcement throughout the presentation, although none of the graphics are IIGS specific. As a result, the program does not take advantage of super-high-resolution graphics or use the Ensoniq sound chip.

Because different versions of the story exist, children can return again and again to try out new directions. Or they can opt to follow the same path, deriving a sense of security from knowing that the narrative is predictable.

The program is available in both 5.25- and 3.5-inch editions. IIGS owners should order the 3.5-inch disk version, because it eliminates the need for disk swapping. Don't forget to enter the Control Panel and configure the system to Normal speed for slower animation and less high-pitched sound effects.

Jack And The Beanstalk succeeds because it reinforces reading skills in young children, while promoting shared moments between a parent (or other adult) and a child. The program strengthens letter and word recognition, builds vocabulary and encourages youngsters to make their own decisions.

— Carol S. Holzberg, Ph.D.

Product: Jack And The Beanstalk
Price: $34.95 retail; home edition
$44.95 retail; school edition
Company: Tom Snyder Productions;
90 Sherman St.; Cambridge, MA 02140;
800-342-0236 or 617-876-4433
Requirements: Apple IIGS; other Apple II models; 64K; 3.5-inch or 5.25-inch disk drive
Circle Reader Service Number 58

The New Talking Stickybear Alphabet

Fun With Letters



Performance: 8.5
Innovation: 8.5
Ease Of Use: 8.0
Documentation/Support: 8.0
Value: 7.0
Overall: 8.0

The best educational software entertains as it teaches. Children maintain their interest in, and want to repeatedly use, software that is fun. The Stickybear series is an example of such software.

When you boot the program, the familiar Stickybear character himself welcomes you. The program's speech and sounds are digitized and very easy to understand.

You will see Stickybear move up and down a ladder, which gives you a chance to select the activity you want. There are three "games" in the program, all designed to help a young child learn the letters of the alphabet and recognize simple words.

In the Alphabet game, pressing a letter key causes Stickybear to say the letter and a word beginning with that letter. Uppercase and lowercase versions of the letter are visible, and the word spoken by Stickybear also appears on screen — along with an enchanting animated picture.

Pressing another letter key brings forth a different display. Pressing the same letter key again also changes the "show," because there are two shows for each letter. Any child should be delighted with the exploding fireworks shown on screen, a cow that moos or an egg that bounces and then splats. The program's animation is excellent.

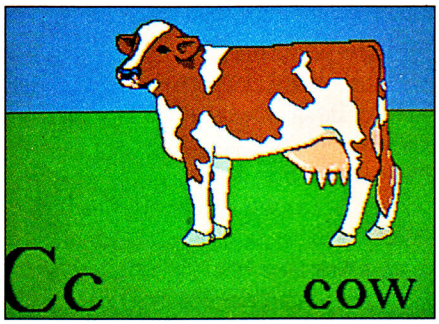
Letter Hunt is a more challenging and structured game. For example, Stickybear says to press the letter X (letters appear randomly). If the correct letter is chosen, an "Xray" will be displayed. If an incorrect key is selected, the correct letter appears on screen. A child is encouraged to try again. If the letter is missed again, the program moves on to a different letter.

Fast Letters is the least exciting activity in the program, but also the least distracting. A child presses any letter key (numbers and symbols are ignored throughout), and Stickybear will say the letter, which also appears on screen next to him. The child may move at his or her own pace.

The program usually works flawlessly, but we don't think copy protection is necessary. Children are much more likely than adults to damage a disk, and being asked to pay an extra fee for a backup disk increases the cost of the program.

Copy protection also decreases the convenience of running the program from a hard drive, because you must have the original disk available. If run from a program selector, you can exit back to Stickybear by pressing Escape from the Main menu, but the manual does not presently mention this fact. You must have more than the 512K minimum required for the program, however, because the selector uses part of the memory.

Our only other complaint is that the volume control is not part of the software. You must go into the Control Panel to change the volume, which has no effect if you are using a stereo card. You may turn off the sound



The New Talking Stickybear Alphabet

completely, if you wish, but you can't play Letter Hunt without it and you will decrease the fun of the program.

The manual is very small, but it thoroughly explains the various program aspects. It also includes suggestions for additional activities that will reinforce what a child has learned. The included stickers and poster also add to the fun.

Although you are unlikely to have any trouble with the program, a toll-free telephone support number is available.

This company knows what appeals to young children. The New Talking Stickybear Alphabet is a sure winner. Your child will learn visual and auditory letter recognition and have a good time in the process.

— *Merry Perry*

Product: The New Talking Stickybear Alphabet
Price: $49.95; $10 for backup disk
Company: Optimum Resource, Inc., Weekly Reader Software; 10 Station Place; Norfolk, CT 06058; 800-327-1473 or 203-542-5553
Requirements: Apple IIGS with 512K; 3.5-inch drive; copy protected, but can be installed on a hard drive; recommended for ages 3 to 6
Circle Reader Service Number 59

Where In The World Is Carmen Sandiego?

Geography With A Twist



Performance: 9.0
Innovation: 9.0
Ease Of Use: 8.5
Documentation/Support: 9.0
Value: 8.5
Overall: 8.8

Adults of any age will enjoy playing this game with children who have developed their reading skills and an interest in world geography (usually ages 7 and up).

As the newest employee of the Acme Detective Agency, you have been given the near impossible job of tracking Carmen Sandiego and her Villains International League of Evil (VILE). Carmen has been on the loose for five years, outwitting the brightest police in the world.

You have a chance to make your name at the Acme Detective Agency in one fell swoop. No law enforcement officers worth their salt go into the field alone chasing crooks, and you are no exception.
Your partner while chasing Carmen is the Acme Crime Computer. The computer lets you know what has been stolen, gives you some information on the suspects and tells you the deadline for catching Carmen.

You pursue Carmen, or one of her nine accomplices, through 30 cities worldwide. During your pursuit, you will learn a great deal about the countries and cities that you "visit."

The game makes learning fun by requiring you to unearth clues that eventually give the Interpol crime computer enough information to identify if it's Carmen you are pursuing, or one of her accomplices.

Once you have enough clues to identify the suspect, the Interpol Crime Computer will issue an arrest warrant. No due process problems here.

The clues are all entertaining and educational, such as which city has the Afield Tower, what country uses Kroner as its currency and where does the King Cobra live?

In addition to the crime computer, you have at your disposal a copy of the World Almanac and Books of Facts, which help you decipher clues, and a set of police dossiers on each of the 10 suspects.

The Almanac is the real source of value in chasing Carmen. You, or your children, will learn to rely on the Almanac for finding information that will lead you to Carmen and her gang of criminals.

In the process, you will learn a lot about world geography, cultures and facts. Using the Almanac for reference is fun and intuitive — it represents an important part of the learning process.

Carmen and her gang are modern-day criminals who always fly via scheduled airlines. Luckily, you can find out where all the



Where In The World Is Carmen Sandiego?

connecting flights from the city you are in are going, then follow their trails.

Each landmark you visit helps you learn more about the city or country you are in. Included in the documentation is a world map that lists all of the known VILE bases, as well as a hard copy of all of the police dossiers.

Where In The World Is Carmen Sandiego? has been a best-selling adventure game since its introduction on the Apple IIe/IIc. The IIGS version incorporates enhanced graphics and sound effects. These enhanced features add a great deal to the game and increase the game's appeal to your children.

The game can be played using the mouse, pull-down menus and icons, or it can be keyboard driven. Broderbund has done an admirable job converting the game over to the IIGS.

The combination of world travel; a gang of criminals; the requirement that you ferret out complex, educational information; and software that is easy to use and "bulletproof" adds up to a game that is not only fun, but a good test of logic.

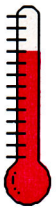
Your children won't have any trouble at all! ■

— *Ken Landis*

Product: Where In the World Is Carmen Sandiego?
Price: $44.95 retail
Company: Broderbund Software, Inc.; 17 Paul Dr.; San Rafael, CA 94903-2101; 415-492-3200 or 800-527-6263
Requirements: Apple IIGS
Circle Reader Service Number 60

Multi-Kache

Drive Accelerator



Performance: 7.5
Innovation: 9.0
Ease Of Use: 9.0
Documentation/Support: 7.5
Value: 7.0
Overall: 8.0

Have you ever wished you could get all your disk drives on your IIGS to run as fast as your RAM disk? Well, the Multi-Kache disk controller card from Ohio Kache Systems lets you do just that. It can control just about any disk drive for the Apple II and move data at RAM disk speed while doing it. The Multi-Kache card performs this feat by reading a disk into a large RAM buffer on the card. Disk reads and writes are done from the buffer.

Using the Multi-Kache card reminded us of watching a foreign movie where the words coming out of an actor's mouth hardly seem connected to the movement of his lips. Because of the way the card uses its RAM buffer to do background reads and writes, the disk was often spinning when the program wasn't doing any input or output. It took longer to get used to this than it did the improved performance.

We were most impressed with the card's performance. We tried booting every IIGS system disk version we could find. All of them booted in less than 15 seconds, and some in as little as eight seconds. Most ProDOS 8 disks booted to the first screen by the time we could get our fingers from the reset key back into typing position. AppleWorks classic loaded into memory, from the date screen, in less than two seconds.

Multi-Kache's looks are as impressive as its performance. It's a large, well-made card bristling with chips. In fact, Multi-Kache is so large that it has to be flexed slightly to clear one of the tabs, which holds the cover on in the front of the IIGS, when it's installed in some slots.

The card is a smartport device, so when we installed it in Slot 5, we were able to access up to four disk drives under ProDOS 8. When more than two drives were attached, the extra drives were assigned to Slot 2.

One problem that we encountered with Multi-Kache in Slot 5 is that we couldn't use the IIGS Control Panel RAM disk. Setting the access for Slot 5 to Your Card turned the RAM disk off. We didn't miss it though, because the Multi-Kache card made the attached drives just as fast.

Ohio Kache offers an optional disk expander card that can assign an extra slot to the Multi-Kache card. It would be useful accessing more than two drives under ProDOS 8, when the Multi-Kache card can't go in Slot 5 or under any operating system other than ProDOS or GS/OS.

A significant weakness to the board is that Multi-Kache has a difficult time running copy protected programs on 3.5-inch diskettes. Protected 3.5-inch diskettes always failed to run (although programs protected by simple password protection methods ran fine). Most of the diskettes the card had trouble with were games, but such popular programs as MultiScribe GS and Print Shop GS could not be run with Multi-Kache.

There are two ways to get around this problem. One is to switch the disk drives between the Multi-Kache card and the built-in disk port. Plugging and unplugging hard-to-reach cables is not easy, so Ohio Kache Systems sells an A/B switch box that can switch the drives between the Multi-Kache card and smart post-connections, even while power is on in the IIGS (just remember to turn off the computer while installing the switch box).

Another solution is removing the copy protection from software that has it. Information on how to modify protected software is widely available from user groups and online services. We had no problems running deprotected programs. A certificate good for a free copy of the special-interest magazine *Computist* is also included with Multi-Kache cards. One focus of *Computist* magazine is how-to articles on removing the protection from copy protected software.

Multi-Kache has little problem running copy protected software on 5.25-inch diskettes, because there's a way to boot them with the card's advanced features dormant. We were able to run a wide variety of protected software on 5.25-inch diskettes.

Just before this review was written, we received a preliminary version of the SCSI (Small Computer Standard Interface) adapter for the Multi-Kache card and a GS/OS native driver. In its final revision, the SCSI adapter should work with any hard drive that will operate with an Apple SCSI card. Though it would not work with all of the hard drives we had access to (Ohio Kache Systems is still working to make more drives compatible), it did provide an impressive boost for our oldest SCSI hard drive.

When used from the Multi-Kache SCSI adapter, the formerly slow drive became the equal of the impressive Sider D4T reviewed last issue. A limitation of the old drive's firmware prevented it from being optimized for use with the Multi-Kache card or the performance would have been even more impressive.

The GS/OS native driver added a nice boost to performance under GS/OS and worked with all drives connected to the Multi-Kache card. The native driver will be important in maintaining the performance advantage under System 5.0 when all disk drives with a native driver receive a performance boost.

Multi-Kache performance is not cheap. The card retails for almost $500 for the 1 MB model. We believe that this configuration is necessary for the best GS/OS performance. A low-end hard drive can be purchased for not much more than that.

The Multi-Kache card makes diskettes run faster than most hard drives, although diskettes are not as convenient as using a hard disk. On the other hand, the SCSI adapter breathed new life into an old, slow hard drive and should make high-performance hard drives astonishingly fast. The longer we used the card, the better we liked it, and the more prone we were to overlook its major shortcoming.

— Larry Miller

Product: Multi-Kache Card
Price: with 1 MB of memory, $550; with 256K of memory, $375; SCSI adapter, $95; Disk Expander, $40; A/B switch box, $40
Company: Ohio Kache Systems; 4162 Little York Rd., Ste. E; Dayton, OH 45414; 513-890-3913 or 800-338-0050
Requirements: Apple II computer with slots; one or more disk drives
Circle Reader Service Number 61

Vulcan

A Logical Storage Unit



Performance: 9.0
Innovation: 8.0
Ease Of Use: 10.0
Documentation/Support: 9.0
Value: 8.0
Overall: 8.8

The Vulcan internal hard disk drive from Applied Engineering is small enough to fit inside the Apple IIGS case, yet large enough to hold up to 100 MB of data. Extremely fast, the Vulcan provides an excellent solution to the problems of limited data storage space and a limited desktop area. Vulcan is available in 20, 40 and 100 MB sizes. We reviewed the 100 MB unit.

Installation is quite simple. With all power to the computer off, open the IIGS case, remove the power supply and replace it with the Vulcan. Attach the ribbon cable to the interface card and install the card in a slot. Close the case, and you're in business.

If you have a card in Slot 1, remove it while installing the Vulcan and replace it afterward. An insulator sheet is provided to prevent a Slot 1 card from touching the Vulcan.

We also found that if HyperStudio's sound digitizer board (see article, this issue) is installed next to the power supply, it must be temporarily removed to facilitate the removal and replacement of the power cable.

The manual explains every step in the installation process clearly. These steps are nicely supported by photos.

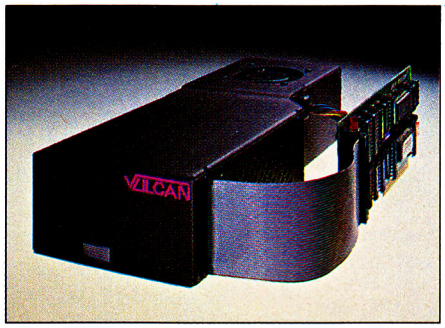
The unit includes an internal cooling fan for the drive and power supply, but the manual suggests a separate fan for the entire system if you have several cards in your machine.

The fan is a little noisy, handily drowning out our System Saver fan, a homebuilt SCSI (Small Computer Standard Interface) hard disk and its own internal fan. However, we quickly stopped noticing the noise, because we saw what this drive could do.

In replacing the power supply, the Vulcan also replaces the IIGS power switch. When you turn on the computer, you turn on the hard disk at the same time.

The system comes preformatted with Apple IIGS System Software 4.0 installed. A special device driver for this hard disk is also installed, which accounts for its performance.

As it comes out of the box, the Vulcan 100



Vulcan

is partitioned into four ProDOS volumes — three at 32 MB and one at about 4 MB. This is because ProDOS cannot yet access volumes larger than 32 MB.

The included partitioning software allows you to effectively split the drive into as many as 16 smaller drives. This means that you can have up to four ProDOS volumes, two DOS 3.3 volumes, two PASCAL volumes and four CP/M volumes — all coexisting happily. Other partitions can be defined, but are not available until you do some switching about. The sizes of these partitions are based on the restrictions of the operating systems.

Two included diskettes — a 5.25 inch and a 3.5 inch — contain the formatting and partitioning software in the event installation is ever again required.

The interface card can operate from any slot, but requires setting the Control Panel to use your card from that slot. This means that if, for example, you were to place the card in Slot 4, you would sacrifice the use of the mouse controller firmware. Slot 7 or 6 is recommended for the interface card.

An interesting feature is available if Slot 7 is open, but blocked by, say, an overhanging RAM card from the memory expansion slot. In this case, the interface card may reside in any available slot. Set a DIP switch, and the card will appear to be in Slot 7, without defeating the function of the occupied slot.

Software is also included for backing up the hard disk. Realize that if you fill up a 100 MB hard disk, it will take about 125 3.5-inch diskettes to make that backup.

An LED on the interface card glows when the drive is being accessed. Unless you're from Krypton, this is not very useful for an internal card. An optional extension is available to display an external LED. In addition, the manual describes a way to make your own.

Being an Applied Engineering product, it should come as no surprise that the Vulcan is quite compatible with the TransWarp GS and PC Transporter cards. The TransWarp, particularly, has a significant positive effect on the operation of the drive.

The drive also installs a Classic Desk Accessory (CDA) at start-up. This allows you to have some control of partitions, set the boot volume, see design credits and technical support info and park the heads. The manual recommends parking the heads if you are going to transport the IIGS, but says it is not necessary if the computer stays in one place.

We were impressed with Vulcan. It started up AppleWorks GS with all modules preloaded in 1:21. In comparison, the same operation from a RAM disk took 1:18. With the TransWarp at full speed, those operations took 42 seconds and 38 seconds, respectively. (By comparison, in Larry Miller's review of the Sider Turbo Drive in our Summer Issue, it took 1:33 to boot AppleWorks GS without a TransWarp.)

We also used the Finder's Verify Volume command, which many people use to judge a hard disk's speed under GS/OS. Here, the Vulcan surprised us by substantially outperforming the RAM disk. The process verified the Vulcan at a rate of more than 14,000 blocks (that's about 7 MB) per minute, and the RAM disk at just under 9,200. Again, using the TransWarp at speed, the numbers jumped to 20,200 and 16,600, respectively.

With the Vulcan, a RAM disk quickly ceases to justify its existence. And that's under System Software 4.0. At press time, System 5.0, which promises even faster performance, was not yet available.

Everything this drive does is fast. TimeOut modules, installed in AppleWorks and configured as disk-based, came up as fast as if they were memory-based. Graphics load almost immediately. Even that damnable lie "One Moment Please" suddenly delivers its promise.

The Vulcan comes with a one-year warranty. It's a lot of bang, but it takes a lot of bucks. At $1,795 for 100 MB, most of us would have to be certain of the need to commit to that kind of expense. Nonetheless, we recommend the Vulcan wholeheartedly. It offers much, and as we all know — Vulcans never bluff. ■

— Joe Walters

Product: Vulcan
Price: $1,795, 100 MB; $649, 20 MB; $849, 40 MB
Company: Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060
Requirements: Apple IIGS; IIe
Circle Reader Service Number 62

Apple IIGS Hardware And Software Directory

About This Directory

The Apple IIGS Hardware And Software Directory includes every Apple IIGS product for which we received a response from our most recent mailing to all Apple IIGS product developers. The products are listed alphabetically by category and within categories, primarily by product. The product directory also includes many products identified with a box (■). These are Apple IIGS products that are either new or listed for the first time in *The Apple IIGS Buyer's Guide*. These descriptions are longer than the others because they are appearing for the first time.

For a vendor's program to be listed in this directory, the product must either be Apple IIGS-specific or at least available on a 3.5-inch disk. This is because many Apple IIGS owners do not own 5.25-inch disk drives, or they may opt for two 3.5-inch drives rather than one 3.5-inch drive and one 5.25-inch drive. In addition, the program must be based on the ProDOS 8, ProDOS 16 or GS/OS operating system, or take advantage of IIGS-specific features, such as super-high-resolution graphics and sound.

Every effort has been made to verify this information for readers. However, neither Redgate Communications Corporation nor *The Apple IIGS Buyer's Guide* assume responsibility for the accuracy of the production descriptions nor the suitability of any product for specific tasks.

An electronic version of the Apple IIGS Hardware And Software Directory can be found on The Source. Type Applesig at any system prompt for additional information.

Accessories

A-B Box
Lets users connect two peripherals to one serial port or share one peripheral between two computers
Apple IIGS.
$99.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

Analog Edge; Analog Plus
Joysticks using Injected Resistor Technology
Apple IIGS; other Apple II models.
$29.99 retail; Analog Edge
$39.99 retail; Analog Plus
Suncom, Inc.; 290 Palatine Rd.; Wheeling, IL 60090; 312-459-8000

Anti-Glare Screen MFM12
Anti-glare screen featuring a fine crosshatch weave
Apple IIGS.
$23.95 retail
Data Spec; 9410 Owensmouth Ave.; Chatsworth, CA 91311; 818-701-5935

Apple IIGS Armor
Security system
Apple IIGS.
$165.95 retail
Omni Tech Corp.; 21850 Watertown Rd.; Waukesha, WI 53186; 414-784-4112

Apple IIGS Dust Cover
Cover for Apple IIGS computer, monitor and keyboard
Apple IIGS.
$13.75 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

Apple IIGS Dust Cover
Custom-sewn rip-stop nylon covers for IIGS and printers
Apple IIGS.
$15.95 to $27.95 retail
Computer Covers Unlimited; 7969 Engineer Rd., Ste. 113; San Diego, CA 92111; 619-277-0622

Apple IIGS Soft Keyboard Protector
Clear, precision-molded keyboard protector
Apple IIGS.
$29.95 retail
Computer Covers Unlimited; 7969 Engineer Rd., Ste. 113; San Diego, CA 92111; 619-277-0622

Apple Security System
Complete security kit that uses Apple's built-in security slots
Apple IIGS.
$49.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

AppleCenter Plus
Physical security system
Apple IIGS.
$69.95 retail
Doss Industries; 1224 Mariposa St.; San Francisco, CA 94107; 415-861-2223

AppleTalk Clips
Secures AppleTalk network connections
Apple IIGS; AppleTalk network.
$25 retail; 25 clips for plain cables
$13.75 retail; three clips for connection boxes, four clips for plain cables
$25 retail; 25 clips for connection boxes
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

Bose RoomMate Powered Speaker System (Special Platinum Edition)
Digital sound speakers with full range drivers, a dual-channel amplifier, an equalization network and distortion-limiting circuitry
Apple IIGS (plugs into headphone jack).
$229 retail; per system
Bose Corp.; The Mountain; Framingham, MA 01701; 508-879-7330

Cable Assemblies
Cable connections for the IIGS and peripherals
Apple IIGS.
$9.95 to $28.95 retail
Data Spec; 9410 Owensmouth Ave.; Chatsworth, CA 91311; 818-701-5935

■ **CCK 100 Universal Computer Care Kit**
Helps keep computers free of dust, dirt and static
The Universal Computer Care Kit is designed to keep computers and peripherals in top operating condition. Contained within a sturdy carrying case, the kit features an innovative battery-operated mini-vacuum cleaner with four attachments and a removable permanent-type dust bag. Also included are individual cleaning disks for disk drives, a quick-drying disk drive cleaning solution, anti-static cleaning solution spray, a miniature utility brush, lint-free wipes and five reusable cleaning swabs.
$29.95 retail
Scooter Products; a Div. of OHM Electronics, Inc.; 746 Vermont St.; Palatine, IL 60067; 312-359-6040 or 800-323-2727 (dealers)

Computer Accessories Cables
Cables
Apple IIGS.
$19.95 retail; C252-2 (Mini-DIN 8 to DB25 adapter)
$24.95 retail; C250-9 (IIGS to ImageWriter II; Apple modem)
$29.95 retail; C255-2 (IIGS to SCSI disk drive)
Computer Accessories Corp.; 6610 Nancy Ridge Dr.; San Diego, CA 92121; 619-457-5500

Computer Expressions Imprinted Mouse Pads
Customized with school seals and business logos
Apple IIGS; mouse.
$8.50 each; 12 pieces
$4.70 each; 72 pieces
$3.70 each; 144 pieces
Quantity discounts available
Computer Expressions; 3833 Chestnut St.; Philadelphia, PA 19104; 800-443-8278

Desktop Printer Stands
Modular, adjustable desktop printer stands available in beige (PRT-1B) or gray (PRT-1G)
$13.95 retail
Data Spec; 9410 Owensmouth Ave.; Chatsworth, CA 91311; 818-701-5935

Dilly Dolly Computer Cart
Two-wheel portable cart
Apple IIGS; other Apple II models.
$185 retail
The Dilly Dolly Co.; 2957 Mariposa Dr.; Burlingame, CA 94010; 415-697-9272

Accessories

Disk Drive Cleaner Model DSK156
3.5-inch disk drive cleaner
Apple IIGS; disk drive.
$8.99 retail
Data Spec; 9410 Owensmouth Ave.; Chatsworth, CA 91311; 818-701-5935

The DisKeeper
Organizes, stores and transports 3.5-inch disks
$6.95 retail; three pages
$19.95 retail; binder with five pages
Cobar, Inc.; 301 Highland Rd.: Cheltenham, PA 19012; 215-379-2440

DSM802 And DSM804 Data Switches
Two- and four-way compact data switches with 8-pin mini DIN connectors
Apple IIGS; peripherals.
$49.95 retail; DSM802
$59.95 retail; DSM804
Data Spec; 9410 Owensmouth Ave.; Chatsworth, CA 91311; 818-701-5935

Dust Covers
Protect your computer
Apple IIGS.
$29.95 retail
Co-Du-Co; 4802 W. Wisconsin Ave.; Milwaukee, WI 53208; 414-476-1584

■ **E-ZEE Inker II**
Ribbon inker

The E-ZEE Inker II is a ribbon re-inking device that is available in three models: a manual, hand-cranked model; an electric model; and the Ink Master, an electric model for commercial use.

The E-ZEE Inker II manual model is ideal for low-volume ribbon users at home or in the office. The electric model is deigned for higher-volume ribbon users. The Ink Master is designed for commercial use or to re-ink large cartridges or spool-type ribbons.
$39.50 to $189 retail
Borg Industries, Ltd.; 525 Main St.; Janesville, IA 50647; 319-987-2976 or 800-553-2404

Extra Long ADB Keyboard Cable
Eight-foot replacement keyboard cable
Apple IIGS.
$39.95 retail
Kensington Microware Ltd.: 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

Flightstick
Aircraft joystick with pistol grip
Apple IIGS.
$74.95 retail
CH Products; 1225 Stone Dr.; San Marcos, CA 92069; 619-744-8546

IIGS Anti-Glare Filter
Reduces glare reflected from a IIGS color monitor screen by 91 percent; easily attaches with included adhesive fasteners
Apple IIGS.
$49.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

The Incliner
Adjustable, portable computer cart
$699 retail
Jenston Mfg.; PO Box 34074; San Antonio, TX 78265; 512-653-0414

JuiceBox
Surge suppressor and fan
Apple IIGS.
$39 retail
Orange Micro, Inc.; 1400 N. Lakeview Ave.; Anaheim, CA 92807; 714-779-2772

Kablit
Computer and peripheral tie-downs
Apple IIGS; monitor; other peripherals.
$39.95 retail
Secure-It, Inc.; 18 Maple Ct.; E. Longmeadow, MA 01095; 413-525-7039 or 800-451-7592

Kensington Printer Accessories
Noise reduction by 75 to 85 percent; stands that raise printer and Printer Muffler 4 inches for paper storage underneath; and stand that raises printer 2.5 inches at the front and 4.5 inches at the back
Apple IIGS; printer.
$69.95 retail; Printer Muffler 80
$29.95 retail; Printer Muffler 80 Stand
$89.95 retail; Printer Muffler 132
$29.95 retail; Printer Muffler 132 Stand
$24.95 retail; Universal Printer Stand
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

Keyboard/Computer Vacuum Model MV5
Portable vacuum featuring a high-power motor and including brush/nozzle attachments
Apple IIGS.
$18.95 retail
Data Spec; 9410 Owensmouth Ave.; Chatsworth, CA 91311; 818-701-5935

Kraft Joysticks
Three-button joysticks
Apple IIGS.
$44.95 retail; Kraft Premium III
$29.95 retail; Kraft KC3
Kraft Systems, Inc.; 450 W. California Ave.; Vista, CA 92083; 619-724-7146

Kraft Premium II
Two-button joysticks with "center-lok" mode selector
Apple IIGS.
$32.95 retail; model 008-10
$39.95 retail; model 308
Kraft Systems, Inc.; 450 W. California Ave.; Vista, CA 92083; 619-724-7146

Kurta IS/GS
Cordless graphic input system: graphics tablet
Apple IIGS.
$395 retail
Kurta Corp.; 3007 E. Chambers St.; Phoenix, AZ 85040; 602-276-5533

LaserKleen
Laser printer cleaning and maintenance system
$39.95 retail
PerfectData Corp.; 1825 Surveyor Ave.; Simi Valley, CA 93063; 805-581-4000

Lynx Trackball
High-technology input device
Apple IIGS; other computers.
$99.95 retail
Lynx Computer Products, Inc.; A Div. of Asher Engineering Corp.; 15115 Ramona Blvd.; Baldwin Park, CA 91706; 818-960-4839 or 800-824-3522

Mac-Kit 3A
Security kit
Apple IIGS; Macintosh II.
$39.95 retail
Qualtec Data Products, Inc.; 47767 Warm Springs Blvd.; Fremont, CA 94536; 415-490-8911

Mach I And Mach I Plus
Analog joysticks
Apple IIGS.
$28.95 retail; Mach I
$34.95 retail; Mach I Plus
CH Products; 1225 Stone Dr.; San Marcos, CA 92069; 619-744-8546

Mach II and Mach III
Two- and three-button joysticks
Apple IIGS.
$39.95 retail; Mach II Joystick
$49.95 retail; Mach III Joystick
CH Products; 1225 Stone Dr.; San Marcos, CA 92069; 619-744-8546

Mach IV Plus
Professional mouse/joystick that includes an absolute mode, which tracks and acts like a mouse
Apple IIGS.
$89.95 retail
CH Products; 1225 Stone Dr.; San Marcos, CA 92069; 619-744-8546

MacPack
Micro maintenance kit for computers using 3.5-inch disk drives
$34.95 retail
PerfectData Corp.; 1825 Surveyor Ave.; Simi Valley, CA 93063; 805-581-4000

MicroClene And FloppiClene
Anti-static cleaning products
$24.95 retail; MicroClene CRT/Workstation Cleaning Kit
$24.95 retail; MicroClene Mouse, Printer And Keyboard Cleaning Kit
$34.95 retail; FloppiClene
Tech-Sa-Port; PO Box 5295; Pittsburgh, PA 15206; 412-661-2629

Mirage
Joystick/mouse interface
Apple IIGS; joystick.
$54.95 retail
CH Products; 1225 Stone Dr.; San Marcos, CA 92069; 619-744-8546

Modunet
Networking connectors
Apple IIGS; AppleTalk network.
$37.95 to $47.95 retail
Data Spec; 9410 Owensmouth Ave.; Chatsworth, CA 91311; 818-701-5935

Accessories

Mouse Pocket ADB
Mouse holder that keeps a user's mouse out of the way when not in use
Apple IIGS mouse.
$9.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

■ MouseCat
Mouse holder

The MouseCat is a kitten that holds the mouse device in its lap, wrapping its front paws around the mouse. It comes in either light gray or white with green eyes, a curling tail and pink ears, nose and paws. MouseCat attaches to the computer monitor or other flat surface with a velcro-type fastener.
$6.95 retail
H&H Enterprises; 4069 Renate Dr.; Las Vegas, NV 89103; 702-876-6292 or 800-242-6292

MousePouch
Mouse container that carries eight 3.5-inch disks
$5.95 retail
H&H Enterprises; 4069 Renate Dr.; Las Vegas, NV 89103; 702-876-6292 or 800-242-6292

Mousetrap
Copy stand; storage space
$39.95 retail
Gered Corp.; 2401 NE Cornell Rd., Ste. 125; Hillsboro, OR 97124; 503-591-8658

Mousetrap Jr.
Keeps the mouse in an enclosed, yet accessible area; copy stand
$19.95 retail
Gered Corp.; 2401 NE Cornell Rd., Ste. 125; Hillsboro, OR 97124; 503-591-8658

Mouseway
Mouse pad
$9.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

Mouspad
Mouse pads
$7.95 to $9.95 retail
Moustrak, Inc.; 930 Dowdell Ln.; St. Helena, CA 94574; 707-963-8179 or 800-221-6687

■ Nada-Chair
Legless chair that offers low-back support

The Nada-Chair is an ergonomic, leg-less chair for use at computer stations and other workstations. It is a soft back rest with two loops attached to it that slip onto the leg just below the knee. The reverse pressure between the legs and back pad create comfortable support for hours at the computer.

Because of its frameless design, the Nada-Chair can be used in conjunction with conventional chairs and to provide back support where none is offered.
$30 retail
Nada-Chair; 842 22nd Ave. SE; Minneapolis, MN 55414; 612-623-4436 or 612-623-0711

RamStar Group Disk Valets And Body Shields
Disk holders and body shields
$17.50 retail; Meeting Folder
$13.50 retail; 12 Pak
$8.50 retail; 6 Pak
$5 retail; 3 Pak
$7.50 retail; 12 Sofpak
$3 retail; Promo Sofpak
$18 retail; Dual Pak
$39.50 retail; Body Shield Apron
Ricks RamStar, Inc.; PO Box 759; Sardis, GA 30456; 912-569-9000 or 800-327-2303

Sta-Blk Ribbon Cartridge For ImageWriter I And II
Re-inking ribbon cartridge
ImageWriter I or II.
$59.95 retail
Chronos Computers; 4186 Sorrento Valley Blvd., Ste. H; San Diego, CA 92121; 619-455-8200

Star Fighter For Apple
Analog joystick
Apple IIGS; other Apple II models.
$24.99 retail
Suncom, Inc.; 290 Palatine Rd.; Wheeling, IL 60090; 312-459-8000

Static Controlling Cleaning Agents
Anti-static products
Call for pricing
Tech-Sa-Port; PO Box 5295; Pittsburgh, PA 15206; 412-661-2629

System Saver IIGS
Power control center offering four outlets, surge suppression, noise filtering and a whisper-quiet cooling fan
Apple IIGS.
$99.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

Tac1+
Joystick used with games and graphics
Apple IIGS; other Apple II models.
$29.99 retail
Suncom, Inc.; 290 Palatine Rd.; Wheeling, IL 60090; 312-459-8000

Tilt Swivel Base Model W30
12-inch tilt swivel base
$24.95 retail
Computer Accessories Corp.; 6610 Nancy Ridge Dr.; San Diego, CA 92121; 619-457-5500

Turbo Mouse ADB
Trackball offering auto-acceleration feature, 200 CPI pinpoint precision and two mouse buttons
Apple IIGS.
$169.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

Universal Copy Stand
Adjustable stand that attaches to the side of any monitor to place working copy next to the screen, directly in a user's line of vision
$29.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

Universal Security Kit
Physical security system
Apple IIGS.
$49.95 retail
Grimes Co.; 115 S. Arovista Cir.; Brea, CA 92621; 714-671-3931

Whimsical Computer Stationery
Computer stationery featuring boats, bears, butterflies, dinosaurs, holidays, sea gulls and banner paper
$12.95 retail
Computer Sensations, Inc.; PO Box 3744; Long Beach, CA 90803; 213-434-2655

Animation

Art And Film Director
Full-featured paint and animation package
Apple IIGS; 512K; ProDOS 16; not copy protected.
$79.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

Fantavision IIGS
Animation and special effects program; supports Apple IIGS sound capabilities
Apple IIGS; color monitor; 256K; ProDOS 8; copy protected.
$59.95 retail
Broderbund Software, Inc.; 17 Paul Dr.; San Rafael, CA 94903; 415-492-3500, 415-492-3200 (dealers only) or 800-521-6263

The Graphics Studio
Easy-to-use paint program with animation
Apple IIGS; 768K; ProDOS 16; copy protected.
$49.95 retail
Accolade, Inc.; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Iconix IIGS
Super-high-resolution graphics and animation interface for Applesoft Basic and the Apple IIGS
Apple IIGS; two 3.5-inch drives; RGB monitor; 512K; ProDOS 8; not copy protected.
$49.95 retail
So What Software; 10221 Slater Ave., Ste. 103; Fountain Valley, CA 92708; 714-964-4298, 714-963-3392 or 800-648-9621 (orders)

Supergraphix 256
Super-high-resolution access and development tool for Applesoft Basic
Apple IIGS; 512K; ProDOS 8; not copy protected.
$89 retail
Lynx Computer Products, Inc.; 15115 Ramona Blvd.; Baldwin Park, CA 91706; 818-960-4839 or 800-824-3522

VCR Companion
Creates colorful titles, credits, introductions, intermissions and endings for videotapes
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$49.95 retail
$59.95 retail; school edition
$119.95 retail; lab pack
Broderbund Software, Inc.; 17 Paul Dr.; San Rafael,

Animation

CA 94903; 415-492-3500, 415-492-3200 (dealers only) or 800-521-6263

Video Link
Provides access to video laser players while inside another software program
Apple IIGS; laser disc player; 512K; ProDOS 16; not copy protected.
$79 retail
Knowledgeware; PO Box 2292; Paso Robles, CA 93447; 805-238-5233

Viva
Interactive video authoring system
Apple IIGS; videodisc player; 512K; ProDOS 16; not copy protected.
$200 retail
Knowledgeware; PO Box 2292; Paso Robles, CA 93447; 805-238-5233

AppleWorks

1040Works-X
Integrated templates for preparing individual tax returns
Apple IIGS; other Apple II models; AppleWorks; 256K; ProDOS 8; not copy protected.
$27.95 retail; $3 for 3.5-inch disk
Personal Financial Services; PO Box 1401; Melville, NY 11747; 516-757-3201

1980 To 1989 Collectors Guide — Topps And Donruss Baseball Cards
Hobby software
Apple IIGS; other Apple II models; AppleWorks; 128K; ProDOS 8; not copy protected.
$24.95 each retail
$6 retail; updates
Pop-Fly Software; Div. of Product Control, Inc.; 345-B N. McLean Blvd.; S. Elgin, IL 60177; 312-741-5915

Agent Organizer Program
Insurance templates
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$69.95 retail
Info-Med; PO Box 24412; Jacksonville, FL 32241; 904-723-2771

AppleWorks Forum
Monthly newsletter
$3 retail; each monthly issue
$27 retail; one-year subscription
National AppleWorks Users Group; PO Box 87453; Canton, MI 48187; 313-454-1115

AppleWorks GS
Integrated software package
Apple IIGS; 1.25 MB; GS/OS; not copy protected.
$299 retail
(For AppleWorks GS upgrade information, call 800-544-8554)
Claris Corp.; 5201 Patrick Henry Dr.; PO Box 58168; Santa Clara, CA 95052; 408-987-7000

AppleWorks; AppleWorks/Network
Provides word processing, database management, mail merge and spreadsheet analysis; extends to the AppleTalk Network System
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$249 retail; AppleWorks 3.0
$1,414 retail; AppleWorks 10-pack
$1,616 retail; AppleWorks/Network
(For AppleWorks upgrade information, call 800-544-8554)
Claris Corp.; 5201 Patrick Henry Dr.; PO Box 58168; Santa Clara, CA 95052; 408-987-7000

FactWorks Volumes I - IV
More than 120 AppleWorks databases designed for student research
Apple IIGS; other Apple II models; AppleWorks; 128K; ProDOS 8; not copy protected.
$32.95 retail; per volume
ImagiMedia Software; 16640 Roscoe Pl.; Sepulveda, CA 91343; 818-894-1131 or 800-544-3228

The Kula Index
A series of AppleWorks database files that enables users to find articles and reviews that appeared in various computer publications
Apple IIGS; other Apple II models; AppleWorks; 128K; ProDOS 8; not copy protected.
$6.95 retail
Kula Software; 2118 Kula St.; Honolulu, HI 96817; 808-595-8131

Loan Qualifier
Spreadsheet template designed for mortgage brokers, loan officers and real estate agents
Apple IIGS; other Apple II models; AppleWorks; 128K; ProDOS 8; not copy protected.
$99 retail
Financial Microware; PO Box 40; Cupertino, CA 95015; 408-446-5639

Sports Scheduler
Creates league schedules for any sport; League/Team Standings allows quick entry of game results, then sorts, arranges and saves the data entered
Apple IIGS; other Apple II models; 80-column card; 128K; ProDOS 8; copy protected.
$99.95 retail; Sports Scheduler
$49.95 retail; Universal League/Team Standings
Sports Software Associates; 75 Recreation Park Dr.; Hingham, MA 02043; 617-749-7880

■ TimeOut ReportWriter
Adds relational report generating capabilities to AppleWorks
Apple IIGS; other Apple II models; AppleWorks; 128K; ProDOS 8; not copy protected.
TimeOut ReportWriter completely replaces AppleWorks' report formatting module with a relational report generator. It allows users to generate invoices, billing statements, order forms, parts lists, accounts receivable and accounts payable statements, form letters and more.
Features include: can use information stored in up to 11 separate source files to create comprehensive reports; users can access data in as many as 250 different database categories for each report; allows complete integration of word processor, spreadsheet and database information in reports; the report generator can post information into another file; contains math and string functions; the capability to calculate the total number of days between any two dates; and more.
$79.95 retail
Beagle Bros., Inc.; 6215 Ferris Sq., Ste. 100; San Diego, CA 92121; 619-452-5500, 800-345-1750 (orders) or 800-992-4022 in CA (orders)

The TimeOut Series
AppleWorks enhancements
Apple IIGS; other Apple II models; AppleWorks; 128K; ProDOS 8; not copy protected.
$49.95 retail; GS Font Editor
$49.95 retail; Program Writer
$49.95 retail; TimeOut DeskTools
$49.95 retail; TimeOut DeskTools II
$49.95 retail; TimeOut FileMaster
$89.95 retail; TimeOut Graph
$25 retail; TimeOut MacroTools
$25 retail; TimeOut MacroTools II
$49.95 retail; TimeOut PowerPack
$69.95 retail; TimeOut QuickSpell
$49.95 retail; TimeOut SideSpread
$59.95 retail; TimeOut SpreadTools
$69.95 retail; TimeOut SuperFonts
$49.95 retail; TimeOut Thesaurus
$59.95 retail; TimeOut UltraMacros
$79.95 retail; TimeOut ReportWriter
$69.95 retail; TimeOut TeleComm
Beagle Bros., Inc.; 6215 Ferris Sq., Ste. 100; San Diego, CA 92121; 619-452-5500, 800-345-1750 (orders) or 800-992-4022 in CA (orders)

■ TimeOut TeleComm
Connects AppleWorks to a user's modem
Apple IIGS; other Apple II models; AppleWorks; 128K; ProDOS 8; not copy protected.
TimeOut TeleComm links AppleWorks directly to a user's modem. It supports a wide selection of file transfer protocols, including Xmodem, 1K/CRC, ASCIIPro and Auto Binary II pack/unpack.
Features include: a text editor; a 4,000-line built-in review buffer to capture exceptionally large files; the capability to keep commonly used phone numbers in an AppleWorks database and let TeleComm dial the numbers; supports all Hayes-compatible AT command set modems; and more.
$69.95 retail
Beagle Bros., Inc.; 6215 Ferris Sq., Ste. 100; San Diego, CA 92121; 619-452-5500, 800-345-1750 (orders) or 800-992-4022 in CA (orders)

Vacation Orlando
Travel software series featuring hotel and resort listings, area attractions and shopping and dining guides for Orlando and Disney World
Apple IIGS; other Apple II models; AppleWorks; 128K; ProDOS 8; not copy protected.
$19.95 retail
Pop-Fly Software; Div. of Product Control, Inc.; 345-B N. McLean Blvd.; S. Elgin, IL 60177; 312-741-5915

WriteWorks
Turns the AppleWorks word processor into a more powerful and flexible word processing system
Apple IIGS; other Apple II models; 256K; ProDOS 8; not copy protected.
$29.95 retail
Mike Crane; 1110 W. Alamos; Fresno, CA 93705; 209-225-1394

Books And Publications

1001 Things To Do With Your Apple IIGS
Useful activities for an Apple IIGS user
$12.95 retail; paperback
$18.95 retail; hardbound (book no. 2886)
Tab Books, Inc.; Blue Ridge Summit, PA 17294; 800-822-8138

Advanced AppleWorks — 2nd Edition
Insight into AppleWorks
$17.95 retail (book no. 3048)
Tab Books, Inc.; Blue Ridge Summit, PA 17294; 800-822-8138

Apple 16, A Comprehensive Guide To IIGS Computing
A non-technical book that discusses the IIGS' use of color, paint and draw programs, desktop publishing, laser printing, telecommunications, music and more
$19.95 retail
The Archives Press; 140 University Ave., #38; Palo Alto, CA 94301; 415-326-6997

Apple Care Manual: Diagnosing And Maintaining Your Apple IIe, IIc And IIGS Computers
Teaches Apple II owners how to perform preventive maintenance, troubleshoot malfunctions and make simple repairs
$17.95 retail; paperback
Tab Books, Inc.; Blue Ridge Summit, PA 17294; 800-822-8138

Apple IIGS Assembler Toolbox Quick Reference; C Toolbox Quick Reference
Summaries of the toolbox calls
$20 each retail
APDA — Apple Computer, Inc.; 20525 Mariani Ave., MS 33G; Cupertino, CA 95014; 800-282-2732

Apple IIGS Assembly Language Programming
Assembly language tutorial
$24.95 retail
Bantam Books, Inc.; 666 Fifth Ave.; New York, NY 10103; 212-765-6500

The Apple IIGS Book
Chronicles the Apple IIGS computer from conception to development
$19.95 retail
Bantam Books, Inc.; 666 Fifth Ave.; New York, NY 10103; 212-765-6500

Apple IIGS Firmware Reference
Technical guide for programmers and hardware designers
$24.95 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

Apple IIGS Hardware Reference
Provides an extensive description of the mechanisms and internal operations of an Apple IIGS
$24.95 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

Apple IIGS Machine Language For Beginners
Assembly language tutorial for use with the Merlin 8/16 assembler
Apple IIGS; 512K for disk portion; ProDOS 16; not copy protected.
$19.95 retail; book
$15.95 retail; disk
Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522

Apple IIGS ProDOS 16 Reference
Technical reference source packaged with ProDOS 16 software and the System Loader
$29.95 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

Apple IIGS Technical Reference
Apple IIGS architecture overview
$19.95 retail
Free catalog is available
Osborne/McGraw-Hill; 2600 Tenth St.: Berkeley, CA 94710; 800-322-3007 or 800-227-0900

Apple IIGS Toolbox Reference Update
Update to the two-volume Apple IIGS Toolbox Reference
$30 retail
APDA — Apple Computer, Inc.; 20525 Mariani Ave., MS 33G; Cupertino, CA 95014; 800-282-2732

Apple IIGS Toolbox Reference, Vols. I And II
Toolbox description book in two volumes
$28.95 each retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

The Apple IIGS Toolbox Revealed
Introduces a reader to the toolbox and other IIGS circuits
$21.95 retail
Bantam Books, Inc.; 666 Fifth Ave.; New York, NY 10103; 212-765-6500

■ AppleWorks Made Easy, Third Edition
Tutorial that covers AppleWorks Version 3

AppleWorks Made Easy is an easy-to-learn tutorial that covers AppleWorks Version 3. Designed for users at all levels, the book is designed to teach: how to use AppleWorks, how to use the new features in Version 3 and how to apply AppleWorks to many business-related applications involving word processing, databases and spreadsheets. The final chapters cover the program's more sophisticated capabilities and how integration in achieved between the three components.
$19.95 retail
Osborne/McGraw-Hill; 2600 Tenth St.; Berkeley, CA 94710; 800-322-3007 or 800-227-0900

Discovering Science On Your Apple II, II+, IIc and IIGS
Guidebook designed for individual student use or as a supplemental text for use in middle or junior high school science classes
$14.95 retail; paperback
Tab Books, Inc.; Blue Ridge Summit, PA 17294; 800-822-8138

Exploring Apple GS/OS and ProDOS 8
Provides programming techniques for the GS/OS and ProDOS 8 operating systems
$21.95 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

Exploring The Apple IIGS
Graphics and sound programming guide
$22.95 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

GS/OS Reference, Volume I And II
Technical references to GS/OS
$35 each retail
APDA — Apple Computer, Inc.; 20525 Mariani Ave., MS 33G; Cupertino, CA 95014; 800-282-2732

Human Interface Guidelines
Defines the desktop interface used in Apple IIGS-specific programs
$14.95 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

ImageWriter LQ Reference
Technical reference source for printer
$22.95 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

Inside ProDOS 16
Examines the latest version of ProDOS 16
$24.95 retail; paperback
Tab Books, Inc.; Blue Ridge Summit, PA 17294; 800-822-8138

LaserWriter Reference
Technical resource for laser printers
$19.95 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

Programmer's Introduction To The Apple IIGS
Essential concepts for programming the Apple IIGS
$32.95 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

Programming The 65816
Teaching manual and reference guide for the 65816
$24.95 retail
Brady Books/Simon & Schuster; 1 Gulf + Western Plaza, 14th Fl.; New York, NY 10023; 212-373-8500

Programming The Apple IIGS In Assembly Language
Shows how to program the Apple IIGS in a step-by-step manner
$29.95 retail; book
$20 retail; disk (available from: Ron Lichty, author; PO Box 27262; San Francisco, CA 94127; 415-564-2697)
Brady Books/Simon & Schuster; 1 Gulf + Western Plaza, 14th Fl.; New York, NY 10023; 212-373-8500

Programming The Apple IIGS In C And Assembly Language
Source for programmers who want to program in C and integrate assembly language routines into their programs
$18.95 retail
Howard W. Sams & Co.; 4300 W. 62nd St.; Indianapolis, IN 46268; 317-298-5400 or 800-928-7267

Books And Publications

Technical Introduction To The Apple IIGS
Overview of the IIGS for programmers
$9.95 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

Using AppleWorks GS
Comprehensive guide to using the six integrated applications of AppleWorks GS
$19.95 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

Business Productivity

BusinessWorks
General Ledger, Accounts Payable, Accounts Receivable, Inventory Control, Payroll and the System Manager
Apple IIGS; two 3.5-inch disks or hard disk; 80-column printer; 128K; ProDOS 8; not copy protected.
$195 retail; each module
$95 retail; System Manager
$495 retail; complete system bundle (includes all except Payroll)
Manzanita Software Systems; One Sierra Gate Plaza, Ste. 200-A; Roseville, CA 95678; 800-531-3552 or 800-447-5700 in CA

CADApple 3.5
Contains sophisticated precision drafting tools for educational and professional use
Apple IIGS; Apple IIc and IIe; 128K; Pascal 1.3; not copy protected.
$395 retail
Versacad Corp.; 2124 Main St.; Huntington Beach, CA 92648; 714-960-7720

Calendar Crafter
Creates customized calendars
Apple IIGS; printer; 512K; ProDOS 16; copy protected.
$89 retail
$49 retail; home version
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Darad IIe
Database and report generator that features Search, Edit and Print modes
Apple IIGS; 256K; ProDOS 8; not copy protected.
$49.95 retail; Darad IIe
$89.95 retail; Darad IIe with Self Teaching Manual and Report Generator
$29.95 retail; Darad IIe Report Generator (for custom reports)
DAR Systems International; PO Box 16-4933; Miami, FL 33116; 305-529-3572

DB Master Version 5; DB Master Professional
Versatile database management systems; DB Master Professional brings multifile, relational capability to the DB Master user
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$179 retail; DB Master Version 5
$295 retail; DB Master Professional
$500 retail; DB Master Version 5/Multiuser
$500 retail; DB Master Version 5/Classroom
Stone Edge Technologies, Inc.; PO Box 3200; Maple Glen, PA 19002; 215-641-1825

Dental Office Management IIP
Integrated application for patient billing, claim-form preparation, appointment scheduling and more
Apple IIGS; SCSI hard drive; 3.5-inch disk drive; 130-column printer; 512K; ProDOS 16; not copy protected.
$1,995.95 retail
CMA Micro Computer; 55888 Yucca Trail; PO Box 2080; Yucca Valley, CA 92286; 619-365-9718

■ GeoCalc
Spreadsheet analysis and charting
Apple IIGS; other Apple II models; 128K (256K RAM expansion recommended); GEOS; not copy protected.
GeoCalc combines spreadsheet analysis with presentation-quality graphics. Features include: 28,672 cells (112 by 256); floating-point math to 16 decimal places of accuracy; minimal recalculation eliminates needless number-crunching; the capability to highlight cells with type styles; 14 different number formats, including user-defined; more than 30 built-in functions for arithmetic, statistical, financial, logical and trigonometric calculations; nine chart types; the capability to chart up to 80 values with four independent series; split the worksheet window to view two areas at once; freeze row and column titles; insert and delete entire rows and columns; sort ranges of data alphabetically or numerically; import AppleWorks and DIF files; and more.
$69.95 retail
Berkeley Softworks; 2150 Shattuck Ave.; Berkeley, CA 94704; 415-644-0883

■ GeoFile
Database and forms manager
Apple IIGS; other Apple II models; 128K (256K RAM expansion recommended); GEOS; not copy protected.
GeoFile is a database and forms manager that provides users with a convenient way to organize personal and professional information. The program manages all information in forms that a user creates on screen. Users simply decide what information they want and how they want it to look.
Users can arrange fields, add fonts, select type sizes and styles and add graphics. Fields can be rearranged or added at anytime, and up to 64 different layouts can be saved for the same data. Users can import existing AppleWorks files or start from scratch. GeoFile has room for more than 30,000 records and features multiple-level sorting and searching capabilities.
$69.95 retail
Berkeley Softworks; 2150 Shattuck Ave.; Berkeley, CA 94704; 415-644-0883

GS File
Graphical database management system designed for the IIGS
Apple IIGS; 768K; ProDOS 16; not copy protected.
$99.95 retail
Softwood Co.; PO Box 90331; Santa Barbara, CA 93190; 805-964-8622

■ The Invoicer With Accounts Receivable And Sales Tracking/Inventory
Small business accounting
Apple IIGS; 128K; ProDOS 8; not copy protected.
The Invoicer With Accounts Receivable And Sales Tracking/Inventory is a small business accounting system that allows users to keep a complete and accurate record of their business transactions.
Features include: flexible invoicing that handles both products and services; prints a user's checks and accepts manually written checks; prints on widely available forms, blank paper or company stationery; the capability to correct transactions instead of having to re-enter them; numerous reports; Help windows allow users to look up accounts, vendors, billing codes, etc., by name or the user-assigned ID; customer/vendor list management, including the capability to print mailing and shipping labels and Rolodex cards; and more.
$187.50 retail
MiccaSoft, Inc.; 406 Windsor Ln.; New Braunfels, TX 78132; 512-629-4341

List Plus
Database and report generator for business or personal records, mailing lists, labels and more
Apple IIGS; 768K; ProDOS 16; not copy protected.
$69.95 retail
Activision; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0500

Medical Office Management IIP
Medical office system for patient billing, claim-form preparation, appointment scheduling and more
Apple IIGS; SCSI card; SCSI hard disk; 130-column printer; 512K; ProDOS 16; not copy protected.
$1,995.95 retail
CMA Micro Computer; 55888 Yucca Trail; PO Box 2080; Yucca Valley, CA 92286; 619-365-9718

Notes 'N Files
Database filing system with a word processor-like editor and powerful mail merge
Apple IIGS; 512K; ProDOS 16; not copy protected.
$95 retail
DataPak Software, Inc.; 14011 Ventura Blvd., Ste. 507; Sherman Oaks, CA 91423; 818-905-6419 or 800-327-6703

Salary Magic
Spreadsheet/database program for the management of negotiation process/salary schedules
Apple IIGS; 512K; ProDOS 8; not copy protected.
$495 retail
Magic Software, Inc.; 1602 Cascio Dr.; Bellevue, NE 68005; 402-291-0670 or 800-342-6243

Tax Preparer
Fully automated tax preparation software designed to simplify tax calculations for professional tax preparers and individuals with involved returns
Apple IIGS; other Apple II models; 128K minimum; ProDOS 8; not copy protected.
$250 retail
$75 retail; annual updates
HowardSoft; 1224 Prospect St., Ste. 150; La Jolla, CA 92037; 619-454-0121

Trio Plus
Integrated word processor, database, spreadsheet, desk accessories
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$29.95 retail
Softsync, Inc.; 162 Madison Ave.; New York, NY 10016; 212-685-2080

Business Productivity

VIP Professional
Lotus 1-2-3-compatible spreadsheet with database and graphics features
Apple IIGS; extended memory card recommended; 512K; ProDOS 8; not copy protected.
$149.95 retail
ISD Marketing, Inc.; 2651 John St., Unit 3; Markham, Ontario, Canada L3R 2W5; 416-479-1880

Visualizer
Business graphics program
Apple IIGS; 512K; ProDOS 16; not copy protected.
$99.95 retail
PBI Software, Inc.; 1155A Chess Dr., Ste. I; Foster City, CA 94404; 415-349-8765

Creative

816/Paint
Color graphics program that supports all Apple color graphics modes
Apple IIGS; other Apple II models; color monitor; 512K; ProDOS 16; not copy protected.
$75 retail
Baudville, Inc.; 5380 52nd St. SE; Grand Rapids, MI 49508; 616-698-0888

Award Maker Plus
Graphics software for creating awards, certificates, licenses, coupons and more
Apple IIGS; printer; 64K; ProDOS 8; not copy protected.
$39.95 retail; Award Maker Plus
$24.95 retail; Sports Award Library
$24.95 retail; Education Award Library
Baudville, Inc.; 5380 52nd St. SE; Grand Rapids, MI 49508; 616-698-0888

BeagleDraw
Object-oriented drawing program
Apple IIGS; color monitor; 512K; ProDOS 16; not copy protected.
$89.95 retail
Beagle Bros., Inc.; 6215 Ferris Sq., Ste. 100; San Diego, CA 92121; 619-452-5500, 800-345-1750 (orders) or 800-992-4022 in CA (orders)

Car Builder
Scientific simulation program for designing, constructing, modifying and testing cars; ages 8 to adult
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Cartooners
Cartoon studio that allows children to create lively, animated productions; ages 6 to 12
Apple IIGS; ImageWriter optional; 1 MB; ProDOS 16; not copy protected.
$59.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Deluxe Library
Color clip art disks for DeluxePaint II
Apple IIGS; DeluxePaint II; 768K; ProDOS 16; not copy protected.
$29.95 each retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

DeluxePaint II
Paint software containing more than 90 painting tools and effects; optional 30-minute videotape of tips and techniques for using DeluxePaint II
Apple IIGS; color monitor; 768K; ProDOS 16; not copy protected.
$99.95 retail; DeluxePaint II
$19.95 retail; Video Guide to DeluxePaint II
$129.95 retail; DeluxeWrite/DeluxePaint II
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Design Your Own Home, Architecture
Allows users to draw floor plans, elevations and structural details
Apple IIGS; 768K; ProDOS 16; not copy protected.
$89.95 retail
Abracadata; PO Box 2440; Eugene, OR 97402; 503-342-3030

Design Your Own Home, Interiors
Allows users to design room interiors with color, patterns, shapes and furnishings
Apple IIGS; 1 MB; ProDOS 16; not copy protected.
$89.95 retail
Abracadata; PO Box 2440; Eugene, OR 97402; 503-342-3030

Design Your Own Home, Landscape
Allows users to plan the grounds around home or office
Apple IIGS; 1 MB; ProDOS 16; not copy protected.
$89.95 retail
Abracadata; PO Box 2440; Eugene, OR 97402; 503-342-3030

Design Your Own Home, Libraries
Seven disk libraries containing four dozen house plans, interior or landscape designs
Apple IIGS; one of the Design Your Own Home programs; 768K or more; ProDOS 16; not copy protected.
$29.95 each retail
Abracadata; PO Box 2440; Eugene, OR 97402; 503-342-3030

Draw Plus
Drawing program for use with Paintworks Plus, Writer's Choice Elite and Clip Art Gallery
Apple IIGS; 512K; ProDOS 16; not copy protected.
$69.95 retail
Activision; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0500

Hometown, U.S.A.
Creativity and learning program; templates that allow users to design and produce miniature buildings
Apple IIGS; standard GS paint program (i.e., Paintworks Plus); not copy protected.
$39.95 retail
Publishing International; 333 W. El Camino Real, Ste. 222; Sunnyvale, CA 94087; 408-738-4311

Image Master; Basic Paint
Paint program with up to 136 colors on screen at one time and eight million possible color mixtures
Apple IIGS; 512K; ProDOS 16; not copy protected.
$44.95 retail
Jada Graphics, Inc.; 7615 S. 48th St.; Omaha, NE 68157; 800-634-4552

Paint Write Draw
Three programs in one: Paintworks Plus, Writer's Choice Elite and Draw Plus
Apple IIGS; color monitor; 1.25 MB suggested when using Writer's Choice Elite; 512K; ProDOS 16; not copy protected.
$129.95 retail
Activision; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0500

Paintworks Gold
Sophisticated paint program
Apple IIGS; RGB monitor; 1.25 MB; ProDOS 16; not copy protected.
$99.95 retail
Activision; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0500

Paintworks Plus
Paint program containing clip art gallery of more than 650 images
Apple IIGS; 512K; ProDOS 16; not copy protected.
$79.95 retail
Activision; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0500

Postcards
Creative paint and print product for making postcards, invitations and more
Apple IIGS; Paintworks Plus; 512K; ProDOS 16; not copy protected.
$29.95 retail
Activision; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0500

ShowOff
Produces professional-looking overhead transparencies, 16-color printed sheets and IIGS interactive video slide shows (includes more than 400 graphics, 126 borders and an icon editor lets users create their own graphics)
Apple IIGS; 512K; ProDOS 16; copy protected.
$59.95 retail; consumer edition
$69.95 retail; school edition
$139.95 retail; Lab Pack
$10 retail; teacher's guide
Broderbund Software, Inc.; 17 Paul Dr.; San Rafael, CA 94903; 415-492-3500, 415-492-3200 (dealers only) or 800-521-6263

Slide Shop
Desktop presentations program for schools
Apple IIGS; 128K; ProDOS 8; not copy protected.
$79.95 retail; net to educators
$29.95 retail; Booster Packs
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

ThunderView
Low-cost program for creating personalized slide shows; designed for users of painting software and scanners
Apple IIGS; other Apple II models; RGB monitor recom-

Creative

mended; 64K; ProDOS 8; not copy protected.
$29 retail
Thunderware, Inc.; 21 Orinda Way; Orinda, CA 94563; 415-254-6581

Desk Accessories

CDA Power: Volume 1
Classic desk accessories: Text File Editor, ASCII Table, 65816 Reference Chart, KeyCaps, Scientific Calculator, Mini-GS/OS Shell and Communications Program
Apple IIGS; 150K RAM, in addition to the memory requirements of the primary application; not copy protected.
$59.95 retail
360 MicroSystems; PO Box 1192; Oviedo, FL 32765; 407-365-6714

DeskPak Desk Accessories
File tools, calculator, system security lock, file printer, appointment calendar, scrapbook and more under the Apple icon
Apple IIGS; 10K per accessory; ProDOS 16; not copy protected.
$89.95 retail
SSSI, Inc.; 4612 N. Landing Dr.; Marietta, GA 30066; 404-924-2667

The Desktop Manager
Accessories include: note pad, calculator, printer manager, envelope labeler, ASCII chart, screen print, cut and paste, appointment calendar, disk manager, communications manager and macro manager
Apple IIGS; 512K; GS/OS; not copy protected.
$39.95 retail
On Three, Inc.; PO Box 3452; Kirkland, WA 98083; 206-829-1874

Disk Initializer
Lets users initialize 3.5- and 5.25-inch data disks from within other programs; works with any program that is GS/OS compatible
Apple IIGS; GS/OS; not copy protected.
$12.50 retail
Seven Hills Software Corp.; 2310 Oxford Rd.; Tallahassee, FL 32304; 904-576-9415 or 800-627-3836

GS Calendar DA
Installs a calendar on start-up disks
Apple IIGS; 512K; ProDOS 16; not copy protected.
$25 retail
DataPak Software, Inc.; 14011 Ventura Blvd., Ste. 507; Sherman Oaks, CA 91423; 818-905-6419 or 800-327-6703

Softswitch
Desk accessory that allows users to switch among several applications loaded into RAM
Apple IIGS; 768K; ProDOS 16; copy protected.
$59.95 retail
Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522

TDM Super Accessories #1
Add-on ProDOS accessories: file type changer; character ruler; regular file viewer/printer; keyboard lockout; a clock with job timer capabilities; and more
Apple IIGS; The Desktop Manager; 512K; GS/OS; not copy protected.
$39.95 retail
On Three, Inc.; PO Box 3452; Kirkland, WA 98083; 206-829-1874

TDM Toolkit
Contains information needed to create a user's own desk accessories that work under The Desktop Manager
Apple IIGS; The Desktop Manager; APW assembler; 512K; GS/OS; not copy protected.
$39.95 retail
On Three, Inc.; PO Box 3452; Kirkland, WA 98083; 206-829-1874

Desktop Communications

ASCII Express
Advanced telecommunications program that supports data transfer speeds up to 9,600 baud
Apple IIGS; other Apple II models; modem; 64K; ProDOS 8; not copy protected.
$129.95 retail
United Software Industries; 22231 Mulholland Hwy., Ste. 212A; Woodland Hills, CA 91364; 818-887-5800 or 800-332-7244

Burple
Hardware/software attachment for the Apple IIGS that allows the micro to communicate with Burroughs mainframe computers using the Burroughs "poll select" protocol
Apple IIGS; DOS 3.3; not copy protected.
$495 retail
Midwest Data Source, Inc.; 1615 Burney Ave.; Cincinnati, OH 45230; 513-231-2023

MouseTalk
Telecommunications product with Mac-like user interface and pull-down menus that accommodates data transfer speeds up to 19,200 bits per second; mouse optional
Apple IIGS; other Apple II models; modem; 128K; ProDOS 8; not copy protected.
$119.95 retail
United Software Industries; 22231 Mulholland Hwy., Ste. 212A; Woodland Hills, CA 91364; 818-887-5800 or 800-332-7244

Point-To-Point
Versatile telecommunications program
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$99.95 retail
Beagle Bros., Inc.; 6215 Ferris Sq., Ste. 100; San Diego, CA 92121; 619-452-5500, 800-345-1750 (orders) or 800-992-4022 in CA (orders)

Proterm
Telecommunications program featuring scrollback buffer for capturing text on screen
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$129 retail
Checkmate Technology, Inc.; 509 S. Rockford Dr.; Tempe, AZ 85281; 602-966-5802 or 800-325-7347

Teleworks Plus
IIGS-specific telecommunications program
Apple IIGS; 512K; ProDOS 16; not copy protected.
$99.95 retail
Activision; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0500

Desktop Publishing

FingerPrint Slide-Show
Desktop presentation and computer slide-show software
Apple IIGS; FingerPrint GSi Version II; 256K; ProDOS 8; not copy protected.
$25 retail
Thirdware Computer Products; 4747 NW 72nd Ave.; Miami, FL 33166; 305-592-7522

Font Disks 1 And 2
Add-on printer fonts for use with Print-Quick's Quick-Font utility
Apple IIGS; other Apple II models; 64K; ProDOS 8; not copy protected.
$24.95 each retail
Third Wave Technology, Inc.; 11934 Lorain Ave.; Cleveland, OH 44111; 216-671-8991

■ **Font Factory GS**
Standard IIGS font editor
Apple IIGS; 768K; GS/OS; not copy protected.
Font Factory GS is a standard IIGS font editor that can be used to create new fonts or change existing fonts to customize desktop publishing, word processing and drawing programs. Users can automatically resize fonts and use "smoothing" to make larger fonts look even better. The fonts produced by Font Factory GS can be used with any Apple II program that supports standard IIGS fonts, such as SuperFonts.
$39.95 retail
Seven Hills Software Corp.; 2310 Oxford Rd.; Tallahassee, FL 32304; 904-576-9415 or 800-627-3836

GeoPublish
Graphically oriented desktop publishing
Apple IIGS; other Apple II models; 128K (256K RAM expansion recommended); GEOS; not copy protected.
$99.95 retail
Berkeley Softworks; 2150 Shattuck Ave.; Berkeley, CA 94704; 415-644-0883

Graph It!
High-impact presentation graphics
Apple IIGS; other Apple II models; printer; 128K; ProDOS 8; not copy protected.
$69.95 retail
Timeworks, Inc.; 444 Lake Cook Rd.; Deerfield, IL 60015; 312-948-9200

Graphics And Pictures Converter
Allows users to transfer a wide variety of graphic formats between Apple II programs
Apple IIGS; other Apple II models; 512K; ProDOS 8; not copy protected.
$9.95 retail

Desktop Publishing

Big Red Computer Club; 423 Norfolk Ave.; Norfolk, NE 68701; 402-379-4680

GraphicWriter Version III
IIGS-specific desktop publisher with combination page layout, graphics and word processing
Apple IIGS; 512K; GS/OS; not copy protected.
$149.95 retail
Seven Hills Software Corp.; 2310 Oxford Rd.; Tallahassee, FL 32304; 904-576-9415 or 800-627-3836

GS07 And GS08 Graphics For Print Shop IIGS
Two disks containing multicolor graphics, borders and fonts compatible with The Print Shop IIGS
Apple IIGS; 512K; ProDOS 8; not copy protected.
$7.50 each retail
Big Red Computer Club; 423 Norfolk Ave.; Norfolk, NE 68701; 402-379-4680

Labels, Labels, Labels
Makes labels, badges, postcards, name tags, price tags and more
Apple IIGS; other Apple II models; one disk drive; dot matrix printer; 128K; ProDOS 8; not copy protected.
$39.95 retail
Big Red Computer Club; 423 Norfolk Ave.; Norfolk, NE 68701; 402-379-4680

MagnaCharta
Presentation graphics program with Macintosh-like user interface
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$64.95 retail
Third Wave Technology, Inc.; 11934 Lorain Ave.; Cleveland, OH 44111; 216-671-8991

Medley
IIGS-specific integrated desktop publishing program combining word processing, artwork and page layout capabilities
Apple IIGS; color monitor recommended; 1.25 MB; ProDOS 16; not copy protected.
$195 retail
Milliken Publishing Co.; 1100 Research Blvd.; PO Box 21579; St. Louis, MO 63132; 314-991-4220 or 800-643-0008

Personal Newsletter
Graphics and page composition program
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$59.95 retail
$69.95 retail; academic
$174.88 retail; educational lab pak
Softsync, Inc.; 162 Madison Ave.; New York, NY 10016; 212-685-2080

Print-Quick
Five printer support programs used with word processors, databases and spreadsheets
Apple IIGS; other Apple II models; 64K; ProDOS 8; not copy protected.
$54.95 retail
Third Wave Technology, Inc.; 11934 Lorain Ave.; Cleveland, OH 44111; 216-671-8991

The Print Shop Graphics Library Sampler Edition
Clip art for The Print Shop IIGS
Apple IIGS; The Print Shop IIGS; 512K; ProDOS 16; not copy protected.
$34.95 retail
Broderbund Software, Inc.; 17 Paul Dr.; San Rafael, CA 94903; 415-492-3500, 415-492-3200 (dealers only) or 800-521-6263

The Print Shop IIGS
Personal publishing program with multicolor graphics editor that allows users to create, design and print out multicolor custom cards, signs, banners and letterheads
Apple IIGS; printer; 512K; ProDOS 8; copy protected.
$59.95 retail
Broderbund Software, Inc.; 17 Paul Dr.; San Rafael, CA 94903; 415-492-3500, 415-492-3200 (dealers only) or 800-521-6263

Printrix 1.1
Typesetter of word processing text files
Apple IIGS; printer; 128K; ProDOS 8; not copy protected.
$65 retail
Data Transforms, Inc.; 616 Washington St.; Denver, CO 80203; 303-832-1501

PS Lovers' Utility Set
Makes charts of Print Shop graphics, borders and fonts; also makes bookmarks, mailing labels and envelope cachets
Apple IIGS; other Apple II models; one disk drive; dot matrix printer; 256K; ProDOS 8; not copy protected.
$39.95 retail
Big Red Computer Club; 423 Norfolk Ave.; Norfolk, NE 68701; 402-379-4680

Publish-It! 2
Desktop publishing program that allows users to edit, design, lay out and print documents
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$129.95 retail
Timeworks, Inc.; 444 Lake Cook Rd.; Deerfield, IL 60015; 312-948-9200

Springboard Publisher
Desktop publishing program with full-featured page layout, word processor and graphics tools
Apple IIGS; other Apple II models; 128K minimum and a 1 MB RAM disk; ProDOS 8; not copy protected.
$139.95 retail
Springboard Software, Inc.; 7808 Creekridge Cir.; Minneapolis, MN 55435; 612-944-3915

Springboard Publisher Library
Add-on products to extend the capability of Springboard Publisher
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$39.95 each retail; Works of Art (Assortment Series, Education and Holidays)
$29.95 retail; Springboard Publisher Fonts
Springboard Software, Inc.; 7808 Creekridge Cir.; Minneapolis, MN 55435; 612-944-3915

SuperPrint
Curriculum-based printing program
Apple IIGS; 128K; ProDOS 8; not copy protected.
$69.95 retail; net to educators
$29.95 retail; graphics activity packs
$24.95 retail; graphics packs
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

Education

■ Algebra Shop
Introduces pre-algebra concepts; grades 7 to 10
Apple IIGS; 64K; ProDOS 8; not copy protected.
Algebra Shop encourages creative problem-solving while introducing pre-algebra concepts. As students serve customers in 10 different stores, their math skills are challenged in everything from multiplication of fractions to solving simultaneous equations, dividing whole numbers, factoring and solving functions. A correct answer fills the customer's order and allows the student to go on to progressively harder problems. Incorrect answers receive helpful on-screen messages and a chance to try again.
$69.95 retail; net to educators
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

■ Algernon
Students program Algernon to find his way through a maze
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
Lost in a "maze," Algernon asks students to program him to find the cheese. Mazes range from easy to hard, and an editor option allows players to make their own mazes.
$65 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

■ Animal Tracker
Teaches about North American animals; grade 3 to adult
Apple IIGS; 768K; not copy protected.
Animal Tracker teaches users about more than 40 North American animals, including their sounds, tracks, track patterns and specific information. The program is completely menu driven and features incredible graphics, digitized sound and friendly human voice interaction.
$79.95 retail; stand-alone version
$350 retail; school site license
Nature Boy Software; PO Box 596; S. Lancaster, MA 01561; 508-481-2911

Ant Farm
Helps students examine assumptions using trial and error; grades 3 to 12
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$65 retail; includes backup
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Atlas Explorer
World geography quiz
Apple IIGS; 128K; ProDOS 8; not copy protected.
$49.95 retail

Education

$100 retail; Lab Pack
Springboard Software, Inc.; 7808 Creekridge Cir.; Minneapolis, MN 55435; 612-944-3915

Audubon Wildlife Adventures: Grizzly Bears
Involves players in current issues on the effects of science and technology upon society
Apple IIGS; 512K; GS/OS; not copy protected.
$59.95 retail
Advanced Ideas; 2902 San Pablo Ave.; Berkeley, CA 94702; 415-526-9100

■ **Audubon Wildlife Adventures: Whales**
Involves students in current issues on the effects of science and technology upon society
Apple IIGS; 512K; GS/OS; not copy protected.
Whales uses the ecology of the whale to introduce players to a number of conservation issues. Through a series of four interactive stories, players learn the habits of different types of whales and they discover how humans continue to affect the whale. Playing the role of a marine biologist, a commercial whale-watch expedition planner or a member of the International Whaling Commission, players explore the conflicts between people and whales and they search for creative solutions to these problems.
$59.95 retail
Advanced Ideas; 2902 San Pablo Ave.; Berkeley, CA 94702; 415-526-9100

Bounce!
Introduces the concept of pattern and helps develop recognition skills
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$65 retail; includes backup
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

■ **Captain's Log**
Cognitive training system
Apple IIGS; other Apple II models; 64K; ProDOS 8.
Captain's Log is designed to train basic cognitive functions, including attention, concentration, memory, visual/motor, numeric and reasoning skills. It can be used to facilitate early learning or in the treatment of learning disabilities, strokes, head injuries or mental retardation. Captain's Log contains 28 programs in four modules.
$1,495 retail
Intuit Computing, Inc.; 1915 Huguenot Rd.; Richmond, VA 23235; 804-379-2253 or 804-794-4841

Checkerboard Trails
Game involving mathematical and problem-solving skills for grades 3 to 8
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49 retail
Focus Media, Inc.; PO Box 865; 839 Stewart Ave.; Garden City, NY 11530; 516-794-8900 or 800-645-8989

The Children's Writing And Publishing Center
Word processing and desktop publishing for ages 8 to 14
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59.95 retail; home edition
$89.95 retail; school edition
$159.95 retail; lab pack
The Learning Co.; 6493 Kaiser Dr.; Fremont, CA 94555; 415-792-2101

Classroom Jeopardy
Classroom review game
Apple IIGS; 128K; ProDOS 8; not copy protected.
$29.95 retail
DEC Software; 5307 Lynnwood Dr.; West Lafayette, IN 47906

■ **College Bound**
College preparation
Apple IIGS; other Apple II models; 64K; DOS 3.3; copy protected.
College Bound is designed to help students prepare for college life. The program covers being away from home, roommates, transportation, where to live and signing up for classes.
$82.50 retail
MCE, A Div. of Lawrence Productions; 1800 S. 35th St.; Galesburg, MI 49053; 800-421-4157

■ **College Life**
College orientation program; grades 11 and 12
Apple IIGS; other Apple II models; 64K; copy protected.
College Life is designed to help college-bound students prepare for life at college. Program segments cover going to class, studying, writing papers, taking tests, figuring grades and getting involved in campus activities.
$82.50 retail
MCE, A Div. of Lawrence Productions; 1800 S. 35th St.; Galesburg, MI 49053; 800-421-4157

Computer Mad Libs
Strategic word and party game using SmoothTalker
Apple IIGS; 768K; ProDOS 16; not copy protected.
$19.95 retail
First Byte; 3100 S. Harbor Blvd., Ste. 150; Santa Ana, CA 92704; 714-432-1740, 800-523-8070 or distributed by Electronic Arts (800-245-4525)

Conquering Decimals (+, -)
Mathematics; grades 4 to 6
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Conquering Fractions (+, -)
Mathematics; grades 5 to 8
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Coordinate Math
Teaches graphing points in a Cartesian coordinate system for grades 4 to 12
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

CSL Marks
Grading software for teachers
Apple IIGS; 128K; ProDOS 8; not copy protected.
$75 retail; individual teacher license
$250 retail; school site license
Chancery Software, Ltd.; 1122 Mainland St., 4th Fl.; Vancouver, BC, Canada V6B 5L1; 800-663-8831

Curious George Goes Shopping
Explores classification of objects
Apple IIGS; 64K; ProDOS 8; copy protected.
$24.95 retail
DLM Teaching Resources; One DLM Park; Allen, TX 75002; 800-527-4747

Curious George In Outer Space
Explores comparison skills
Apple IIGS; 64K; ProDOS 8; copy protected.
$24.95 retail
DLM Teaching Resources; One DLM Park; Allen, TX 75002; 800-527-4747

Curious George Visits The Library
Explores position words and concepts
Apple IIGS; 64K; ProDOS 8; copy protected.
$24.95 retail
DLM Teaching Resources; One DLM Park; Allen, TX 75002; 800-527-4747

Cyberlearn
Teaching system
Apple IIGS; 256K; ProDOS 8; not copy protected.
$295 retail; site license
Cyberlearn, Inc.; 20863 Stevens Creek Blvd., Ste. 330; Cupertino, CA 95014; 408-248-9000

■ **CyberWorld**
Geography
Apple IIGS; 256K; ProDOS 8; not copy protected.
CyberWorld rapidly teaches the names and locations of each of the world's continents, oceans and countries. World and continent maps are displayed with an "X" marking an ocean or country. Users simply type the name of the region indicated. Difficult items are repeated until mastered. Hints are available at anytime and positive feedback reinforces learning.
$49.95 retail
Cyberlearn, Inc.; 20863 Stevens Creek Blvd., Ste. 330; Cupertino, CA 95014; 408-248-9000

Dataflo Math Duo
First Math, an introduction to number concepts and more; Flash Math, tutorials for addition, subtraction and multiplication; features additional speech capability
Apple IIGS; other Apple II models; Applied Engineering's Phasor board for added speech capability; 64K; ProDOS 8; not copy protected.
$49.95 each retail
Dataflo Computer Services, Inc.; HC 32, Box 1; Enfield, NH 03748; 603-448-2223

Dataflo Spelling And Vocabulary Trio
Lelps, a word Scrambler; Spell and Tell, a series of blank spaces that, when filled, reveal the correct word; and Tell and Spell, a classic spelling bee simulation; available in English and Spanish; all feature additional speech capability
Apple IIGS; other Apple II models; Applied Engineering's Phasor board for additional speech capability; 64K; ProDOS 8; not copy protected.

Education

$49.95 each retail
Dataflo Computer Services, Inc.; HC 32, Box 1; Enfield, NH 03748; 603-448-2223

Decimal Concepts
Mathematics
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Designasaurus
Primary education program; composed of Walk-A-Dinosaur, Build-A-Dinosaur and Print-A-Dinosaur
Apple IIGS; 768K; ProDOS 8; not copy protected.
$49.95 retail
Britannica Software; 345 4th St.; San Francisco, CA 94107; 415-546-1866

Dinosaur Days
Graphic writing program
Apple IIGS; printer optional; Echo II synthesizer optional; 128K; ProDOS 16; copy protected.
$49.95 retail
Learning Lab Publishing/Pelican Software; 21000 Nordhoff St.; Chatsworth, CA 91311; 818-341-9611, 800-247-4641, or 800-222-7026 in CA

■ The Dinosaur Discovery Kit
Helps children build reading skills; ages 3 to 8
Apple IIGS; 512K; ProDOS 16; not copy protected.

The Dinosaur Discovery Kit presents children with a multimedia world full of realistic and imaginative dinosaurs. Zug is a talking Megasaur who helps children learn about dinosaurs and build early reading skills. With his ability to speak instructions, menu options and the children's own words, children can work independently to learn picture-word combinations, create stories by selecting picture icons, read simple sentences, read short stories and practice visual discrimination.
$39.95 retail
First Byte; 3100 S. Harbor Blvd., Ste. 150; Santa Ana, CA 92704; 714-432-1740, 800-523-8070, or distributed by Electronic Arts (800-245-4525)

Dinosaurs
Introduces preschool children to the skills of matching, classification, directionality, precounting and prereading
Apple IIGS; 512K; GS/OS; not copy protected.
$49.95 retail
Advanced Ideas; 2902 San Pablo Ave.; Berkeley, CA 94702; 415-526-9100

DiscoverCAD II And DiscoverCAD Courseware
Teaches students the fundamentals of computer-aided design
Apple IIGS; other Apple II models; 128K; Applesoft Pascal 1.3; copy protected.
$325 retail; DiscoverCAD II
$12.95 retail; DiscoverCAD Courseware
$335 retail; Discover CAD II and one copy of DiscoverCAD Courseware, student worksheets and instructor's guide
Hearlihy & Co.; 714 W. Columbia St.; PO Box 869; Springfield, OH 45501; 800-622-1000

DLM Math Fluency Program
Teaches math facts to children in special and remedial education
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$24.95 retail; Single Pack
$75 retail; Class Pack
$15 retail; Additional Student Disk
$225 retail; AppleShare Network
DLM Teaching Resources; One DLM Park; Allen, TX 75002; 800-527-4747

Dr. Peet's Talk/Writer
From letter recognition to word processing, "reads" all text and "sings" all menu items for children in grades Pre-K to 2
Apple IIGS; other Apple II models; Echo speech synthesizer; 64K; copy protected.
$69.95 retail; more than 100 other programs are available — call for catalog
Hartley Courseware, Inc.; Box 419; Dimondale, MI 48821; 517-646-6458 or 800-247-1380

Dueling Questions
Educational game where students compete to answer questions from selected categories
Apple IIGS; 512K; ProDOS 16; not copy protected.
$39.95 each retail
Coyote Computing; PO Box 265; Dewitt, NY 13214; 315-446-1035

Easy Street
Shape and number recognition with optional speech; ages 4 to 7
Apple IIGS; other Apple II models; color monitor recommended; Echo IIb board optional; 64K; DOS 3.3; copy protected.
$49.99 retail
Mindplay; 3130 N. Dodge Blvd.; Tucson, AZ 85716; 602-322-6163 or 800-221-7911

Educational Activities
Educational programs for pre-K to adult
Apple IIGS; 48K, 64K or 128K; DOS 3.3; copy protected.
$63 to $950 retail
Educational Activities, Inc.; 1937 Grand Ave.; Baldwin, NY 11510; 516-223-4666 or 800-645-3739

Electric Crayon Deluxe — Coloring Calendars
Computer coloring book that offers custom banner, calendar and poster-making capabilities
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$29.95 retail
Polarware, Inc.; 1055 Paramount Pkwy., Ste. A; Batavia, IL 60510; 312-232-1984

Electric Crayon Deluxe — Dinosaurs Are Forever
Teaches dinosaur evolution
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$29.95 retail
Polarware, Inc.; 1055 Paramount Pkwy., Ste. A; Batavia, IL 60510; 312-232-1984

Elfe
Grammar for French students
Apple IIGS; 512K; ProDOS 8; copy protected.
$440 retail; complete set
Conduit; The University of Iowa; Oakdale Campus; Iowa City, IA 52242; 319-335-4100

■ En Route And Caminando
French and Spanish simulation programs
Apple IIGS.

En Route and Caminando are French and Spanish simulation programs. In both games, players must learn to travel around town giving the correct directions, identifying local landmarks and following traffic signs.

The player is a tortoise who moves throughout a city, visiting four places: a school, a house, a restaurant and a train station. Along the way, players answer questions in the target language and must pass through all four places before returning to their original point and completing a game.
$37.95 each retail
Gessler Publishing Co., Inc.; 55 W. 13th St., Ste. 34; New York, NY 10011; 212-627-0099

Equation Math
Plotting algebraic equations
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

■ ESL Writer
Word processing program designed to help ESL (English as a Second Language) students write essays, reports, etc.
Apple IIGS; 128K.

ESL Writer is a word processing program customized for Hispanic and Asian students in grades five and up. Designed to help ESL students write essays, reports and stories, ESL Writer's most distinctive feature is its grammar and spell checker.

After students have entered their text, ESL Writer not only identifies the kinds of mistakes they most often make, but also uses phonetic inference (based on the student's native language) to suggest corrections.
$99.95 retail; net to educators
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

■ Ethics And You
Introduces students to the terminology and concepts associated with ethics; grades 5 to 6
Apple IIGS; 64K; copy protected.

Ethics And You is designed to help students learn the meaning of ethics, principles and values. Students learn the importance of thinking carefully before answering questions and learn to make ethical decisions. A printout gives students hints in developing their values; and it can be used by teachers to consider the student's moral and ethical development.
$69.95 retail
MCE, A Div. of Lawrence Productions; 1800 S. 35th St.; Galesburg, MI 49053; 800-421-4157

Explore-A-Science Series
Offers elementary and middle school students exciting and realistic reading/writing based scientific investigations
Apple IIGS; other Apple II models; 128K; ProDOS 8; program disk copy protected; student disk not copy protected.
$75 retail; academic
$39.95 retail; home version (available from William K. Bradford Publishing Co.; 800-421-2009 or 617-862-2570)
D.C. Heath and Co.; 2700 N. Richardt Ave.; Indianapolis, IN 46219; 800-334-3284

Education

Explore-A-Story Classics
Three classic children's tales; grades Pre-K through 3
Apple IIGS; other Apple II models; 128K; ProDOS 8; program disk copy protected; student disks not copy protected.
$75 each retail; Stone Soup, The Three Little Pigs or The Princess and The Pea
William K. Bradford Publishing Co.; 594 Marrett Rd.; Lexington, MA 02173; 617-862-2570 or 800-421-2009

Explore-A-Story Series
Reading and writing skills environment for elementary and middle school students; includes 12 titles based on an original storybook
Apple IIGS; other Apple II models; 128K; ProDOS 8; program disk copy protected; student disk not copy protected.
$75 retail; academic
$39.95 retail; home version (available from William K. Bradford Publishing Co.; 800-421-2009 or 617-862-2570)
D.C. Heath and Co.; 2700 N. Richardt Ave.; Indianapolis, IN 46219; 800-334-3284

Fact Blaster
Helps students learn facts; accommodates any subject
Apple IIGS; 128K; ProDOS 8; not copy protected.
$24.95 retail
DEC Software; 5307 Lynnwood Dr.; West Lafayette, IN 47906

File-Talk And Word-Talk
Talking database and word processor
Apple IIGS; other Apple II models; synthesizer; 128K (512K preferred); ProDOS 16; not copy protected.
$195 each retail
Access Unlimited-Speech Enterprises; 9039 Katy Freeway, Ste. 414; Houston, TX 77024; 713-461-0006

First Letters And Words
Alphabet learning program with talking narrator for children ages 3 to 6
Apple IIGS; 512K; ProDOS 16; not copy protected.
$49.95 retail
First Byte; 3100 S. Harbor Blvd., Ste. 150; Santa Ana, CA 92704; 714-432-1740, 800-523-8070 or distributed by Electronic Arts (800-245-4525)

First Shapes
Basic geometric shapes recognition; ages 3 to 8
Apple IIGS; 512K; ProDOS 16; not copy protected.
$49.95 retail
First Byte; 3100 S. Harbor Blvd., Ste. 150; Santa Ana, CA 92704; 714-432-1740, 800-523-8070 or distributed by Electronic Arts (800-245-4525)

■ First Words For The Apple IIGS
Language development
Apple IIGS; 512K; GS/OS; copy protected.
First Words uses colorful pictures, a friendly voice and the lovable Blob to teach and test 50 referential nouns. One hundred different pictures illustrate the words. Vocabulary covered includes animals, food items, body parts, household items, clothing, outside things, common objects, toys, utensils and vehicles.
$200 retail
Laureate Learning Systems, Inc.; 110 E. Spring St.; Winooski, VT 05404; 802-655-4755

■ First Words II For The Apple IIGS
Language development
Apple IIGS; 512K; GS/OS; copy protected.
First Words II continues the training started by First Words. Users will find the same carefully thought-out design and format as First Words, but a different animated creature, Breaker (he loves to break dance), and new pictures to teach and test 50 more basic nouns.
$200 retail
Laureate Learning Systems, Inc.; 110 E. Spring St.; Winooski, VT 05404; 802-655-4755

■ Food Chains
Helps elementary students gain an understanding of the relationships among organisms in a community
Apple IIGS; 128K; copy protected.
Food Chains introduces students to the flow of energy in an ecosystem. The program discusses producers, consumers and decomposers. Simple food chains lead to food webs, and students begin to see the true complexity of the energy flow in nature.
Energy pyramids help students understand the relationships between organisms at different trophic levels and the loss of energy that occurs with each energy transfer.
$59.95 retail
MCE, A Div. of Lawrence Productions; 1800 S. 35th St.; Galesburg, MI 49053; 800-421-4157

Fractal Explorer
High-resolution color graphic fractal generation program
Apple IIGS; 256K; ProDOS 8; not copy protected.
$39.95 retail
Eclat Microproducts; PO Box 570-756; Miami, FL 33257; 305-233-4666

Fraction Practice Unlimited
Develop fraction skills for children in grades 4 to 6
Apple IIGS; other Apple II models; 128K; CDOS; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Fractions Concepts, Inc.
Introduction to fractions for grades 4 through 6
Apple IIGS; other Apple II models; 128K; CDOS; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

The Game Show
Develops vocabulary, logical thinking and deductive reasoning skills for grades 3 to 8
Apple IIGS; other Apple II models; 64K; ProDOS 8; not copy protected.
$39.95 retail
Advanced Ideas; 2902 San Pablo Ave.; Berkeley, CA 94702; 415-526-9100

The Geometric Presupposer
Explores introductory topics in geometry
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$99 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

The Geometric Supposers
Includes triangles, quadrilaterals and circles
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$99 each retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Geometry
Interactive educational program designed to serve as an extension of classroom work, a refresher or a private tutor
Apple IIGS; 512K; ProDOS 16; copy protected.
$79.95 retail; consumer version
$89.95 retail; School Edition (includes backup disk and Teacher's Guide)
$179.95 retail; Lab Pack (includes Teacher's Guide and five disks)
Broderbund Software, Inc.; 17 Paul Dr.; San Rafael, CA 94903; 415-492-3500, 415-492-3200 (dealers only) or 800-521-6263

Gertrude's Secrets
Builds basic thinking and problem-solving abilities for children ages 4 to 7
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$39.95 retail; home edition
$59.95 retail; academic (includes backup disk, teacher's guide, online and offline student activities)
$129.95 retail; lab pak
The Learning Co.; 6493 Kaiser Dr.; Fremont, CA 94555; 415-792-2101

Gradebook Plus ProDOS Edition
Teachers' student management program
Apple IIGS; other Apple II models; 128K; ProDOS 8; individual version copy protected; school site license not copy protected.
$59.95 retail; individual version
$199.95 retail; school site license
E.M.A. Software; PO Box 339; Los Altos, CA 94023; 415-969-4679

Heath Reading Program's Read, Write And Publish
Process writing skills environment for grades 1 through 8; includes eight topics in each grade level package
Apple IIGS; other Apple II models; 128K; ProDOS 8; program disk copy protected; student disk not copy protected.
$75 retail; academic
$99 retail; Spanish Edition (also available from William K. Bradford Publishing Co.; 800-421-2009 or 617-862-2570)
D.C. Heath and Co.; 2700 N. Richardt Ave.; Indianapolis, IN 46219; 800-334-3284

Hide And Find
Memory game designed to reinforce recognition of the alphabetic and numeric characters and basic math symbols
Apple IIGS; other Apple II models; 64K; ProDOS 8; not copy protected.
$29.95 retail
Dataflo Computer Services, Inc.; HC 32, Box 1; Enfield, NH 03748; 603-448-2223

Homework Helper — Math Word Problems
Solving math word problems by building equations; grades 7 through 12

Education

Apple IIGS; 64K; ProDOS 8; copy protected.
$49.95 retail
Spinnaker Software Corp.; 1 Kendall Sq.; Cambridge, MA 02139; 617-494-1200

Homework Helper — Writing
Term paper program for students in grades 7 through 12
Apple IIGS; 64K; ProDOS 8; copy protected.
$49.95 retail
Spinnaker Software Corp.; 1 Kendall Sq.; Cambridge, MA 02139; 617-494-1200

Homeworker
Secondary education program providing Word Processor, Outliner, Flash Card Maker, Grade Keeper, Calendar and Calculator
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$49.95 retail; home edition
$179.95 retail; school lab pack (contains 10 disks and coupon for free teacher's resource guide)
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-2250 or 800-556-6141

Information Laboratory Software: Chemistry IIGS
Research database of comprehensive chemistry information and interesting facts; features interactive graphics and includes tutorial and problem-solving situations
Apple IIGS; 512K; GS/OS; not copy protected.
$96 retail; consumer
$77.76 retail; academic
Addison-Wesley Publishing Co., Inc. — Electronic Publishing; 2725 Sand Hill Rd.; Menlo Park, CA 94025; 415-854-0300 or 800-227-1936

Information Laboratory Software: Earth Science IIGS
Research database of comprehensive earth science information and interesting facts; includes interactive graphics
Apple IIGS; 512K; ProDOS 16; copy protected.
$96 retail; consumer
$77.76 retail; academic
Addison-Wesley Publishing Co., Inc. — Electronic Publishing; 2725 Sand Hill Rd.; Menlo Park, CA 94025; 415-854-0300 or 800-227-1936

Information Laboratory Software: Life Science IIGS
Research database of comprehensive life science information and interesting facts; features interactive graphics; includes tutorial and problem-solving situations
Apple IIGS; color monitor; 512K; ProDOS 16; copy protected.
$96 retail; consumer
$77.76 retail; academic
Addison-Wesley Publishing Co., Inc. — Electronic Publishing; 2725 Sand Hill Rd.; Menlo Park, CA 94025; 415-854-0300 or 800-227-1936

Information Laboratory Software: Physical Science IIGS
Research database of comprehensive physical science information and interesting facts; features interactive graphics and includes tutorial and problem-solving situations
Apple IIGS; 512K; GS/OS; not copy protected.
$96 retail; consumer
$77.76 retail; academic
Addison-Wesley Publishing Co., Inc. — Electronic Publishing; 2725 Sand Hill Rd.; Menlo Park, CA 94025; 415-854-0300 or 800-227-1936

Information Laboratory Software: World History IIGS
Research database of comprehensive world history information and interesting facts; features interactive graphics and includes tutorial and problem-solving situations
Apple IIGS; 512K; GS/OS; not copy protected.
$96 retail; consumer
$77.76 retail; academic
Addison-Wesley Publishing Co., Inc. — Electronic Publishing; 2725 Sand Hill Rd.; Menlo Park, CA 94025; 415-854-0300 or 800-227-1936

The Integrated Learning System
Integrated learning system that features a comprehensive K through 8 reading, writing and mathematics software curriculum; works in an AppleShare environment
Apple IIGS; 1.25 MB per workstation; GS/OS; copy protected.
Call for pricing
Jostens Learning Corp.; 6170 Cornerstone Ct. E, Ste. 300; San Diego, CA 92121; 619-587-0087

Joshua's Reading Machine
Reading program for ages 4 to 7
Apple IIGS; other Apple II models; color monitor; 128K; ProDOS 8; not copy protected.
$39.95 retail
$79.95 retail; academic (contains five sets of disks, scope and a sequence chart and an instruction manual)
Compu-Teach Corp.; 78 Olive St.; New Haven, CT 06511; 203-[illegible]38 or 800-448-3224

Keep Your Balance!
Students use deductive reasoning to solve balance equations; grades 5 to 8
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$65 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

KidsTime II
Number and letter sequencing, letter-recognition, keyboard skills and introductory music programs; ages 3 to 8
Apple IIGS; color monitor; 512K; ProDOS 16; not copy protected.
$39.95 retail
Great Wave Software; 5353 Scotts Valley Dr.; Scotts Valley, CA 95066; 408-438-1990

KidTalk
Talking notebook with word-oriented and picture-oriented pull-down menus
Apple IIGS; 512K; ProDOS 16; not copy protected.
$49.95 retail
First Byte; 3100 S. Harbor Blvd., Ste. 150; Santa Ana, CA 92704; 714-432-1740, 800-523-8070, or distributed by Electronic Arts (800-245-4525)

■ Krell Software
High school and college exam preparation
Apple IIGS; copy protected.
Krell Software offers a variety of preparation programs for high school exams (PRE GED, GED, ACT, SAT, PSAT, Grammar, Vocabulary Builder, Scoring Higher) and college exams (GRE, GMAST, LSAT, TOEFL, CBEST, PPST, NTE). They also provide studies in language arts (Spelling with Precision, Reading with Precision), math (Math Diagnostic, Math: The Fundamentals, Solving Logical Problems, The Language of Math), Computer Literacy (Krell Logo), cultural literacy (Connections In Time, Aristotle) and thinking skills (Plato's Cave, Isaac Newton, Botticelli, Plague Fighters, Adventures in Flesh, Electoral College, Pythagoras and The Dragon).
$59.95 to $399.95 retail
Krell Software Corp.; Flowerfield Bldg. #7, Ste. 1D; St. James, NY 10803; 516-584-7900 or 800-245-7355

■ Learn About Animals
Introduces children to animal life
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
Learn About Animals introduces children to animal life with lively animated on-screen animals. Players explore animal worlds, create real or imaginary animals and make animal masks.
$65 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Lego TC Logo Starter Pack
Educational construction set for children
Apple IIGS; Apple IIe; 64K; ProDOS 8; not copy protected.
$485 retail; school edition
Lego Systems, Inc.; 555 Taylor Rd.; Enfield, CT 06082; 203-749-2291 or 800-527-8339

Linkword Language Series
Foreign language tutorials
Apple IIGS; 512K; ProDOS 16; not copy protected.
$29.95 each course retail
Artworx Software Co., Inc.; 1844 Penfield Rd.; Penfield, NY 14526; 800-828-6573

Logo Plus
Allows students to create maps, animated stories, improved adventure games, detailed charts and graphs and more complex and realistic pictures
Apple IIGS; other Apple II models; 128K; ProDOS 8; single unit and lab packs copy protected; site license not copy protected.
$119.95 retail; single unit
$299.95 retail; lab pack (includes 10)
$399.95 retail; lab pack (includes 20)
$399 retail; site license
Terrapin, Inc.; 376 Washington St.; Malden, MA 02148; 617-322-4800

LogoWriter Software
Integrates word processing and graphics in the Logo programming environment
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$450 retail; site license (intermediate, secondary, primary)
$299 retail; primary lab pack
$299 retail; secondary lab pack
$299 retail; intermediate lab pack
$169 retail; primary set
$169 retail; secondary set
$169 retail; intermediate set
$549 retail; LCSI Logo II site license
$399 retail; LCSI Logo II lab pack
$99 retail; LCSI Logo II single user
Logo Computer Systems, Inc. (LCSI); 3300 Cote Vertu,

Education

Ste. 201; Montreal, Quebec, Canada H4R 2B7;
514-331-7090 or 800-321-5646

LogoWriter Home Edition
Integrates word processing, graphics and music in the Logo programming environment
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected
$99 retail
Logo Computer Systems, Inc. (LCSI); 3300 Cote Vertu, Ste. 201; Montreal, Quebec, Canada H4R 2B7;
514-331-7090 or 800-321-5646

■ **LogoWriter Spanish**
Combines Logo programming and graphics with word processing; grades 3 and up
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.

LogoWriter Spanish is a Spanish language version of LCSI's flagship product, LogoWriter. It is designed so that all the materials are familiar to a child studying in a Spanish environment, as English materials are to English-speaking children. With LogoWriter, students can write, edit and print a report or story; illustrate their writing with animated pictures; compose music to accompany their work; design charts, puzzles and graphs; and more.
$169 retail;-set
$299 retail; lab pack
$450 retail; site license
Logo Computer Systems, Inc. (LCSI); 3300 Cote Vertu, Ste. 201; Montreal, Quebec, Canada H4R 2B7;
514-331-7090 or 800-321-5646

■ **Magic Slate II**
Word processing program
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.

Magic Slate II is a word processing program that includes such options as a Fill-in mode, a Teacher Planner where undeletable directions and comments can be added to student text and a Student Planner for planning, brainstorming and notetaking.
$129 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Magic Spells
Sharpens spelling skills for children ages 6 to 12
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$39.95 retail; home edition
$59.95 retail; school edition (includes backup disk, teacher's guide and online and offline activities)
The Learning Co.; 6493 Kaiser Dr.; Fremont, CA 94555; 415-792-2101

Map Skills
Teaches and reinforces map reading skills; ages 8 and up
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Master Gradebook Plus
Automates the task of recording, calculating and averaging students' grades
Apple IIGS; 128K; ProDOS 8; not copy protected.
$29.95 retail
DEC Software; 5307 Lynnwood Dr.; West Lafayette, IN 47906

Math And Me
Builds early math skills for children ages 3 to 6
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$29.95 retail
$129.95 retail; school lab pack (contains five disks and coupon for free teacher's resource guide)
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-2250 or 800-556-6141

■ **Math Blaster Mystery**
Develops problem-solving skills, logical thinking skills and strategies for solving word problems; ages 10 and up
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.

Math Blaster Mystery features four learning activities that can be used at any one of four difficulty levels. Each level covers different areas, such as solving word problems and working with positive/negative numbers, fractions, decimals and percents. The program also develops inductive and deductive reasoning skills to help students determine the best strategy to solve a problem.
$49.95 retail
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-2250 or 800-556-6141

Math Blaster Plus
Addition and subtraction, multiplication and division, fractions, decimals and percents; for grades 1 through 6
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$49.95 retail
$149.95 retail; school lab pack (contains five disks and coupon for free teacher's resource guide)
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-2250 or 800-556-6141

■ **Math Blaster Plus IIGS**
Builds accuracy and speed as students master skills in addition, subtraction, multiplication, division, fractions, decimals and percents; grades 1 to 6
Apple IIGS; 512K; GS/OS; copy protected.

Designed for grades one to six, Math Blaster Plus covers all fundamental math skills in addition, subtraction, multiplication, division, fractions, decimals and percents. Math Blaster Plus IIGS also contains an easy-to-use editor that allows users to customize the program with special math equations, enhanced graphics and digitized speech and sound.

Additional features include record keeping, a test maker, easy-to-use pull-down menus and a certificate of excellence with graphics that may be printed out.
$49.95 retail
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance; CA 90505; 213-534-2250 or 800-556-6141

Math Masters
Consists of two programs that cover basic mathematical operations for numbers from 0 through 25
Apple IIGS; other Apple II models; 64K; ProDOS 6; copy protected.
$46 retail
DLM Teaching Resources; One DLM Park; Allen, TX 75002; 800-527-4747

Math Rabbit
Introduces key math concepts in a series of four image games; ages 4 to 7
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$39.95 retail; home edition
$59.95 retail; academic edition
$129.95 retail; lab pak
The Learning Co.; 6493 Kaiser Dr.; Fremont, CA 94555; 415-792-2101

■ **Math Shop Jr.**
Introduces math concepts; grades 1 to 4
Apple IIGS; 64K (128K recommended); ProDOS 8; not copy protected.

Math Shop Jr. encourages creative problem-solving while introducing math concepts. As students serve customers in 10 different stores, their math skills are challenged in everything from addition, subtraction, multiplication and division to identifying values of coins, factoring, estimation, ratios, proportions and time skills. A correct answer fills the customer's order and allows the student to go on to progressively more challenging problems. Incorrect answers receive helpful on-screen messages and a chance to try again.
$69.95 retail; net to educator
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

Math Word Problems
Provides practice at analyzing and solving math word problems for children ages 8 and up
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

MathTalk
Talking notebook featuring math tutorials, simulations and games
Apple IIGS; 512K; ProDOS 16; not copy protected.
$49.95 retail
First Byte; 3100 S. Harbor Blvd., Ste. 150; Santa Ana, CA 92704; 714-432-1740, 800-523-8070 or distributed by Electronic Arts (800-245-4525)

MathTalk Fractions
Talking notebook featuring decimals, fractions and percents
Apple IIGS; 512K; ProDOS 16; not copy protected.
$49.95 retail
First Byte; 3100 S. Harbor Blvd., Ste. 150; Santa Ana, CA 92704; 714-432-1740, 800-523-8070 or distributed by Electronic Arts (800-245-4525)

Mavis Beacon Teaches Typing!
Expert-system typing teacher
Apple IIGS; 512K; ProDOS 16; copy protected.
$49.95 retail
The Software Toolworks; 19808 Nordhoff Pl.; Chatsworth, CA 91311; 818-885-9000

Education

Miner's Cave
Physical science; grades 4 to 7
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Modular Management System For Schools (MMS)
Complete educational management system
Apple IIGS; monitor and printer; 1 MB; GS/OS; not copy protected.
$399 retail; Student Master File System
$449 retail; Attendance Reporting System
$349 retail; Discipline Reporting System
$949 retail; Grade Reporting System
$1,099 retail; Student Scheduling System
$449 retail; Tuition/Fee Accounting System
Computer Resources, Inc.; Rte. 125, PO Box 60; Barrington, NH 03825; 603-664-5811

Money Works
Teaches money recognition, counting and more; grades 1 to 4
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Monsters And Make Believe Plus
Graphic writing program
Apple IIGS; printer optional; Echo II synthesizer optional; 128K; ProDOS 8; copy protected.
$49.95 retail
Learning Lab Publishing/Pelican Software; 21000 Nordhoff St.; Chatsworth, CA 91311; 818-341-9611, 800-247-4641, or 800-222-7026 in CA

More Teasers From Tobbs
Decimal and fractions practice for grades 5 to 12
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$65 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Mr. Py And I Coloring Adventures
Educational learning series in the form of a coloring book
Apple IIGS; 3.5-inch disk drive; RGB monitor; 768K (1.25 MB suggested); ProDOS 16 and GS/OS; not copy protected.
$59 retail
Pygraphics Corp.; PO Box 639; Grapevine, TX 76051; 817-481-7536 or 800-222-7536

The Muppet Collection
Develops skills in sorting and classifying, determining likenesses and differences and more; grades K to 1
Apple IIGS; other Apple II models; works with regular keyboard, Muppet Learning Keys or Touch Window; 64K; ProDOS 8; copy protected.
$65 retail; Muppets On Stage (includes backup)
$65 retail; Muppetville (includes backup)
$65 retail; Muppet Word Book (includes backup)
$195 retail; Muppet Word Book lab pack (contains 10 programs)
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Mystery Objects
Physical science; grades 4 to 6
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

The New Talking Stickybear Alphabet
Talking upper and lowercase letter recognition for children ages 3 to 6
Apple IIGS; 512K; ProDOS 16; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

■ New Teasers From Tobbs
Addition and multiplication using whole numbers or integers
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.

Tobbs is ready to present students with new math challenges. This time, students put on their logical thinking caps to solve addition and multiplication problems using whole numbers or integers. The program comes with a scratch pad, and the capability to estimate answers is an option.

$65 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Newbery Adventures
Adventure series
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$65 retail; Mrs. Frisby and the Rats of NIMH
$65 retail; Island of the Blue Dolphins
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Once Upon A Time...
Desktop publishing program for ages 6 to 12
Apple IIGS; color monitor; 512K; GS/OS; not copy protected.
$39.95 retail; Once Upon A Time...
$99.95 retail; academic, Once Upon A Time...
$59.95 retail; Once Upon A Time... Talking IIGS
$129.95 retail; academic, Once Upon A Time... Talking IIGS
Compu-Teach Corp.; 78 Olive St.; New Haven, CT 06511; 203-777-7738 or 800-448-3224

One For The Books
Program that generates personalized book lists and motivates students to read; grades 3 to 6
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$149 retail
Focus Media, Inc.; PO Box 865; 839 Stewart Ave.; Garden City, NY 11530; 516-794-8900 or 800-645-8989

Patterns
Language arts; preschool
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Pfs: Write And Pfs: File/Report
Programs designed to help students in grades 7 through 12 master word processing, filing and reporting skills
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$79.95 each retail; net to educators
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

ProWords And ProBraille
Word processor and translator for the blind
Apple IIGS; other Apple II models; synthesizer (Echo or Slotbuster II); 128K per program (512K preferred); ProDOS 16; not copy protected.
$150 retail; ProBraille
$195 retail; ProWords
Access Unlimited-Speech Enterprises; 9039 Katy Freeway, Ste. 414; Houston, TX 77024; 713-461-0006

Punctuation Rules
Teaches and reinforces the proper use of punctuation; ages 8 to 11
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

■ The Puzzle Storybook
Helps children build early problem-solving skills; ages 3 to 8
Apple IIGS; 512K; ProDOS 16; not copy protected.

Zug the talking Megasaur is back with a puzzle storybook for young children. Combining language arts activities with geometric shapes and visual discrimination projects, Zug leads children through a graphic playground. Using Zug's Picture Library, children can choose backgrounds, friends, things that move and buildings to create their own pictures. Once created, the children's pictures can be used to create puzzles or as illustrations for their own stories. While writing stories, children can hear their text spoken letter by letter, word by word or sentence by sentence. Zug will read the entire text at a child's command.

$39.95 retail
First Byte; 3100 S. Harbor Blvd., Ste. 150; Santa Ana, CA 92704; 714-432-1740, 800-523-8070 or distributed by Electronic Arts (800-245-4525)

QuickTests
Test generator
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$180 retail; single user
$450 retail; unlimited copies per school or college department
Seven Hills Software Corp.; 2310 Oxford Rd.; Tallahassee, FL 32304; 904-576-9415 or 800-627-3836

Read 'N Roll
Reading comprehension program for grades 3 through 6
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.

Education

$49.95 retail
$149.95 retail; school lab pack (contains five disks and coupon for free teacher's resource guide)
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-2250 or 800-556-6141

Reader Rabbit
Talking early education program that reinforces reading, spelling and vocabulary skills; ages 4 to 7
Apple IIGS; color monitor recommended: 256K; ProDOS 16; copy protected.
$59.95 retail; home edition
$79.95 retail; school edition
$149.95 retail; lab pack
The Learning Co.; 6493 Kaiser Dr.; Fremont, CA 94555; 415-792-2101

Reading And Me
Prepares children ages 4 to 7 for reading
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$39.95 retail
$129.95 retail; school lab pack (contains five disks and coupon for free teacher's resource guide)
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-2250 or 800-556-6141

Reading Comprehension
Includes 29 high-interest story and question sets designed to help children learn important reading skills; ages 9 and up
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Reading Magic Library
Storybooks that let parents and their children choose what happens next
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$34.95 each retail
Tom Snyder Productions, Inc.; 90 Sherman St.; Cambridge, MA 02140; 617-876-4433 or 800-342-0236

Recycling Logic
Teaches basic principles of logic
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$65 retail; includes backup
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Report Card II
Teacher's grading system
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$59.95 retail
Sensible Software, Inc.; 335 E. Big Beaver, Ste. 207; Troy, MI 48083; 313-528-1950

Revolution '76
Historical simulation
Apple IIGS; 768K; GS/OS.
$49.95 retail
Britannica Software; 345 4th St.; San Francisco, CA 94107; 415-546-1866

■ The Rhyming Notebook
Provides users with an extensive rhyming dictionary; ages 8 to adult
Apple IIGS; 512K; ProDOS 16; not copy protected.
The Rhyming Notebook is an indispensable tool for anyone who writes words that rhyme. Its simple, easy-to-use format makes it a practical solution for anyone who needs quick access to an extensive rhyming dictionary. Its search and find capabilities allow writers to concentrate on the creative process by letting the computer do the mechanical work of presenting rhyming word options. Features include: an easy-to-use word processor with notepad, unlimited "voice-like" speech to hear all text and a 30,000-word rhyming dictionary.
$39.95 retail
First Byte; 3100 S. Harbor Blvd., Ste. 150; Santa Ana, CA 92704; 714-432-1740, 800-523-8070 or distributed by Electronic Arts (800-245-4525)

The Right Turn
Students learn mathematical concepts of rotation and transformation
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$65 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Rocky's Boots
Develops logical thinking and problem-solving skills for ages 9 and up
Apple IIGS; other Apple II models; color monitor; 128K; ProDOS 8; copy protected.
$49.95 retail; home edition
$69.95 retail; school edition
The Learning Co.; 6493 Kaiser Dr.; Fremont, CA 94555; 415-792-2101

Scorekeeper 3.0
Gradebook management system
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protection limited.
$79.95 retail
Stokes Publishing Co.; 1125 Robin Way, Ste. C; Sunnyvale, CA 94087; 408-736-4637

Sesame Street Series
Introduces children to ABCs, numbers and opposites
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$17.95 each retail; Letters For You, Numbers Count, Opposites Attract
Polarware, Inc.; 1055 Paramount Pkwy., Ste. A; Batavia, IL 60510; 312-232-1984

Sky Travel
Astronomy database program featuring 1,200 stars, 88 constellations and more
Apple IIGS; 256K; ProDOS 8; not copy protected.
$52.95 retail
MicroIllusions; 17408 Chatsworth St.; Grenada Hills, CA 91344; 818-360-3715 or 800-522-2041

SmoothTalker
Software-only speech synthesizer that converts text into speech
Apple IIGS; 512K; ProDOS 16; not copy protected.
$49.95 retail
First Byte; 3100 S. Harbor Blvd., Ste. 150; Santa Ana, CA 92704; 714-432-1740, 800-523-8070 or distributed by Electronic Arts (800-245-4525)

Solve It!
Teaches students how to search for information in a database; exercise logical thinking; organize and analyze data; and to enhance language art skills
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$75 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Space Waste Race
An animated storybook with learning games; preschool through grade 2
Apple IIGS; other Apple II models; 48K; ProDOS 8; copy protected.
$65 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

SpaceLace
An interactive kaleidoscope and Basic tutorial
Apple IIGS; other Apple II models; 64K; ProDOS 8; not copy protected.
$29.95 retail
Great Wave Software; 5353 Scotts Valley Dr.; Scotts Valley, CA 95066; 408-438-1990

Speller Bee
Incorporates talking notebook and graphics to improve spelling skills; for children ages 5 to 13
Apple IIGS; 512K; ProDOS 16; not copy protected.
$49.95 retail
First Byte; 3100 S. Harbor Blvd., Ste. 150; Santa Ana, CA 92704; 714-432-1740, 800-523-8070 or distributed by Electronic Arts (800-245-4525)

Spellevator
Spelling; grades 1 to 6
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Stars And Planets
Provides six educational games that reinforce particular learning skills; ages 2 1/2 to 6
Apple IIGS; 512K; GS/OS; not copy protected.
$49.95 retail
Advanced Ideas; 2902 San Pablo Ave.; Berkeley, CA 94702; 415-526-9100

Stickybear Math
Basic addition and subtraction; ages 6 to 9
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Stickybear Math 2
Basic multiplication and division for ages 7 and up
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.

Education

$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Stickybear Numbers
Counting and number recognition program; ages 3 to 6
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Stickybear Opposites
Teaches beginning learners about opposites; helps build reasoning skills; ages 3 to 6
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Stickybear Parts Of Speech
Helps children recognize parts of speech
Apple IIGS; other Apple II models; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Stickybear Reading
Builds word and reading skills; ages 5 to 8
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Stickybear Reading Comprehension
Multilevel reading program containing 30 stories; ages 7 to 9
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Stickybear Shapes
Helps children ages 3 to 6 identify shapes
Apple IIGS; 64K; ProDOS 8; copy protected.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Stickybear Spellgrabber
Builds spelling and vocabulary skills; ages 6 to 9
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Stickybear Town Builder
Teaches basic map reading skills to children ages 6 to 9
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Stickybear Typing
Typing instruction for all ages
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Stickybear Word Problems
Provides beginning practice at analyzing and solving math word problems for children ages 7 and up; rewards correct answers with animation
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Success With Writing
Four-module program that guides students through the writing process
Apple IIGS; printer optional; 128K; ProDOS 8; not copy protected.
$99.95 retail; net to educators (lab packs available)
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

Super Factory
Problem-solving strategies learned from observing a 3-D cube
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$65 retail; includes backup
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Super Story Tree
Interactive story maker that allows students in grades 4 through 12 to illustrate their stories with exciting graphics, music and sound effects
Apple IIGS; other Apple II models; joystick, mouse or Koala Pad; Epson or Scribe printer; 128K; ProDOS 8; not copy protected.
$79.95 retail; net to educators (lab packs available)
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

Talking Math And Me
Builds early math skills using digitized speech; ages 3 to 6
Apple IIGS; 512K; ProDOS 16; copy protected.
$49.95 retail
$149.95 retail; school lab pack (contains five disks and coupon for free teacher's resource guide)
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-2250 or 800-556-6141

Talking Reading And Me
Prepares children for reading using digitized speech; ages 4 to 7
Apple IIGS; 512K; ProDOS 16; copy protected.
$49.95 retail
$149.95 retail; school lab pack (contains five disks and coupon for free teacher's resource guide)
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-2250 or 800-556-6141

■ Talking Schoolhouse Series
10 software programs that use real human speech to teach basic skills
Apple IIGS; 512K.

The Talking Schoolhouse Series features 10 talking programs that teach children basic skills with a human voice and super high-resolution graphics.

The programs include: Talking Dinosaurs (K to 4), takes children back in time with Iggy the Dinosaur; Talking Speller (K to 3), children spell words as they hear them; Talking Colors and Shapes (Pre-K to 2), targeted for youngsters getting ready to read; Talking ABC's (Pre-K to 2), teaches the alphabet and early keyboarding; Talking Numbers (Pre-K to 2), teaches numbers one to nine and their values; Talking First Writer (1 to 4), helps kids build sentences; Talking First Reader (K to 3), a reading experience for beginning readers; Talking Reading Railroad (K to 4), builds early reading and word skills; Talking Clock (K to 3), helps children tell time; and Talking Money (K to 4), helps youngsters learn the use and value of money.
$49 each retail
$59 each retail; School Edition
Orange Cherry Software; PO Box 390; Pound Ridge, NY 10576; 914-764-4104 or 800-672-6002

Talking Text Libraries
Synthesized speech that reads stories aloud for young readers
Apple IIGS; other Apple II models; Echo IIb board; 128K; ProDOS 8; not copy protected.
$39.95 each retail; (net to educators); Beginning Classics (Grades K to 1), Classics for Young Readers (Grades 2 to 3), Discover History (Grades 2 to 4), Explore Science (Grades 2 to 4)
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

Talking Text Speller
Talking spelling tutor
Apple IIGS; other Apple II models; Echo IIb board; 128K; ProDOS 8; not copy protected.
$99.95 retail; net to educators (without board) for grade specific core package
$103.95 retail; Echo board net to educators
$59.95 retail; net to educators (additional list packages for grades 1 to 6)
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

Talking Text Writer
Combines word processing with the Echo board from Street Electronics
Apple IIGS; Echo, Cricket or PC2 speech synthesizer board; 512K; ProDOS; not copy protected.
$149.95 retail; net to educators
$103.95 retail; Echo board net to educators
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

Education

Test It! Deluxe
Allows teachers to create customized tests
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$59.95 retail
EduSoft; PO Box 2560; Berkeley, CA 94702; 415-548-2304 or 800-338-7638

The Thinking Machine
Educational system designed to help students use their brain more effectively
Apple IIGS; printer optional; 64K; ProDOS 8; copy protected.
$89.50 retail
Psychological Psoftware Co.; 312 Los Altos Dr.; Aptos, CA 95003; 408-688-6808

Think Quick!
Fast-paced adventure game that helps develop thinking skills for ages 7 to 14
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$49.95 retail
The Learning Co.; 6493 Kaiser Dr.; Fremont, CA 94555; 415-792-2101

Ticket To London
Adventure that teaches social studies, art and literature; ages 10 to adult
Apple IIGS; 512K; ProDOS 16; copy protected.
$39.95 retail
Blue Lion Software; 90 Sherman St.; Cambridge, MA 02140; 617-876-2500

Ticket To Paris
Adventure that teaches French and social studies; ages 12 to adult
Apple IIGS; 512K; ProDOS 16; copy protected.
$39.95 retail
Blue Lion Software; 90 Sherman St.; Cambridge, MA 02140; 617-876-2500

Ticket To Spain
Adventure that teaches Spanish, social studies, art and literature; ages 12 to adult
Apple IIGS; 512K; ProDOS 16; copy protected.
$39.95 retail
Blue Lion Software; 90 Sherman St.; Cambridge, MA 02140; 617-876-2500

Ticket To The National Parks
Adventure that enriches a user's knowledge of our country's natural resources as they experience the splendor of our nation
Apple IIGS; 512K; ProDOS 16; copy protected.
$44.95 retail
Blue Lion Software; 90 Sherman St.; Cambridge, MA 02140; 617-876-2500

Ticket To Washington, D.C.
Adventure that teaches social studies, art and literature; ages 10 to adult
Apple IIGS; 512K; ProDOS 16; copy protected.
$44.95 retail
Blue Lion Software; 90 Sherman St.; Cambridge, MA 02140; 617-876-2500

Tiger's Tales
Interactive adventure stories; grades K to 2
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$65 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

To Preserve, Protect And Defend
U.S. Constitution lesson
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Touch 'N Write
Penmanship practice; grades K to 3
Apple IIGS; other Apple II models; Touch Windou; 64K; ProDOS 8; copy protected.
$75 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Tutor-Tech 2.4
Apple IIGS hypermedia tool for educators featuring a toolbox of writing and drawing tools, text fonts, various buttons similar to HyperCard and more
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$195 retail; basic
$290 retail; complete with grade-book manager
Techware Corp.; PO Box 151085; Altamonte Springs, FL 32715; 407-695-9000

■ Type To Learn
Teaches typing skills
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
Type To Learn uses a language-based format to teach typing skills. Spelling, composition and punctuation skills are reinforced as the keyboard is mastered. The program includes a game menu and a mini word processor.
$75 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Typing Teacher
Typing tutor
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$29.95 retail
Future Age Computers; 3 McCrary Dr. SW; Rome, GA 30161; 404-235-4948

Typing Tutor IV
Customizing keyboard instruction
Apple IIGS; RGB color monitor recommended; 512K; ProDOS 16; not copy protected.
$44.95 retail
Simon & Schuster Software; 1 Gulf + Western Plaza, 13th Fl.; New York, NY 10023; 800-624-0023 or 800-624-0024 in NJ

Vocabulary Development
Increases vocabularies and strengthens reading skills; for ages 8 and up
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$49.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Where In The World Is Carmen Sandiego?
Players track Carmen and her gang of thieves around the world to recover stolen treasures
Apple IIGS; 512K; ProDOS 16.
$44.95 retail
$54.95 retail; School Editions
$109.95 retail; Lab Packs
Broderbund Software, Inc.; 17 Paul Dr.; San Rafael, CA 94903; 415-492-3500, 415-492-3200 (dealers only) or 800-521-6263

Winker's World Of Patterns
Offers three arenas for understanding patterns; grades K to 6
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$65 retail
Sunburst Communications, Inc.; 39 Washington Ave.; Pleasantville, NY 10570; 914-769-5030 or 800-431-1934

Wood Car Rally
Physical science; grades 4 to 7
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Word Attack Plus
Teaches students 700 new words and their definitions; grades 4 to 12
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$49.95 retail
$149.95 retail; school lab pack (contains five disks and coupon for free teacher's resource guide)
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-2250 or 800-556-6141

■ Word Attack Plus Spanish And French
Teaches students to master beginning foreign language vocabulary; grade 7 to adult
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
Word Attack Plus Spanish and Word Attack Plus French each offers five interactive learning activities covering more than 950 vocabulary words, grouped into 16 units. The learning activities include: Word Display, Multiple Choice, Sentence Completion, Word Match and Word Attacker Game.
$49.95 each retail
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-2250 or 800-556-6141

World GeoGraph
Social studies for students grade 6 to adult
Apple IIGS; two 3.5-inch drives recommended; color monitor; 768K; GS/OS; copy protected.
$139 retail; includes illustrated user guide
$19 retail; comprehensive classroom guide
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Education

Writer Rabbit
Builds reading comprehension and writing skills for ages 7 to 10
Apple IIGS; other Apple II models; 128K; ProDOS 8; copy protected.
$49.95 retail; home edition
$69.95 retail; school edition
$139.95 retail; lab pak
The Learning Co.; 6493 Kaiser Dr.; Fremont, CA 94555; 415-792-2101

Writer's Helper Stage II
Prewriting and revising software
Apple IIGS; two disk drives (hard disk drive optional); printer recommended; 128K; ProDOS 8; copy protected.
$120 retail
$240 retail; Educator Pack with six disks
Conduit; The University of Iowa; Oakdale Campus; Iowa City, IA 52242; 319-335-4100

■ **Your First Job**
Teaches students how to conduct a job search and to improve their chances of finding their first job
Apple IIGS; 64K; copy protected.
Your First Job is intended for secondary and adult students who want to find a job, but have little or no experience. While running this program, students get to know themselves. They learn about their skills and interests and use this knowledge to come up with a list of jobs for which they are qualified. Students also learn how to find out about job openings, how to call in and respond to an ad, how to handle walk-ins, how to fill out applications and how to act during an interview.
$69.95 retail
MCE, A Div. of Lawrence Productions; 1800 S. 35th St.; Galesburg, MI 49053; 800-421-4157

Zoyon Patrol
Game-like simulation that provides an environment for learning the scientific method
Apple IIGS; other Apple II models; 128K; MDOS; copy protected.
$59 retail
MECC; 3490 Lexington Ave. N; St. Paul, MN 55126; 612-481-3500

Entertainment

4th & Inches
Football simulation featuring 20 plays and 11 different formations
Apple IIGS; keyboard, joystick or mouse; 512K; ProDOS 16; copy protected.
$44.95 retail
$14.95 retail; Team Construction Kit
Accolade, Inc.; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

AAAARGH!
Arcade action game
Apple IIGS
$39.99 retail
Arcadia; 18001 Cowan, Ste. A; Irvine CA 92714; 714-833-8710

Alien Mind
Space arcade adventure game that challenges users to neutralize adversaries and regain control of a research space station
Apple IIGS; RGB monitor; SuperSonic stereo card recommended; 512K; copy protected.
$54.95 retail
PBI Software, Inc.; 1155A Chess Dr., Ste. I; Foster City, CA 94404; 415-349-8765

Arkanoid
Arcade action in which users must deflect an energy sphere and eliminate 33 complex, intricate barriers
Apple IIGS; 512K; GS/OS; copy protected.
$34.95 retail
Taito Software, Inc.; 206 - 267 W. Esplanade; N. Vancouver, BC, Canada V7M 1A5; 604-984-3344 or 800-663-8067

■ **Arkanoid II — The Revenge Of Doh**
Arcade action in which users must penetrate an alien ship and break down 67 energy barriers
Apple IIGS; 512K; GS/OS; copy protected.
Arkanoid II is set in hostile outer space, where the evil force Doh lurks in the mammoth alien spaceship Zarg, threatening intergalactic order. To destroy Doh, one or two players controlling the maneuverable Vaus II spacecraft must attempt to penetrate the ship and break down 67 energy barriers by deflecting multiple energy balls.
$34.95 retail
Taito Software, Inc.; 206 - 267 W. Esplanade; N. Vancouver, BC, Canada V7M 1A5; 604-984-3344 or 800-663-8067

■ **Balance Of Power: The 1990 Edition**
Global politics
Apple IIGS; 1 MB; ProDOS 16; copy protected.
Balance Of Power: The 1990 Edition is a realistic game of global politics and world struggles. Players assume the role of either the president of the United States or the general secretary of the Soviet Union. The players' twofold goal is to complete eight years in office without initiating a nuclear conflict and to accumulate more prestige points than the opposing superpower.
$49.95 retail
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, IL 60062; 312-480-7667

The Bard's Tale
Medieval adventure; the goal is to halt the evil magic spell spread by the wizard Mangar
Apple IIGS; 512K; ProDOS 8; copy protected.
$49.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

The Bard's Tale II: The Destiny Knight
Features new story line, more areas to explore and more magic items
Apple IIGS; 512K; ProDOS 8; copy protected.
$49.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Battle Chess
Animated chess game
Apple IIGS; 512K; GS/OS; not copy protected.
$49.95 retail
Interplay Productions; 1575 Corporate Dr.; Costa Mesa, CA 92626; 714-549-2411 (technical support) or 800-227-6900 (orders)

Beyond Zork
Adventure into the Great Underground Empire
Apple IIGS; 512K; ProDOS 16; copy protected.
$19.95 retail
Infocom, Inc.; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0800

Black Jack Academy
Card game on disk
Apple IIGS; 512K; ProDOS 16; not copy protected.
$39.95 retail
Microloglusions; 17408 Chatsworth St.; Grenada Hills, CA 91344; 818-360-3715 or 800-522-2041

Bridge 6.0
Bridge playing program
Apple IIGS; 512K; ProDOS 16; not copy protected.
$39.95 retail
Artworx Software Co., Inc.; 1844 Penfield Rd.; Penfield, NY 14526; 800-828-6573

Bubble Ghost
Bubble-blowing arcade action
Apple IIGS; keyboard or mouse; 512K; ProDOS 16; copy protected.
$34.95 retail
Accolade, Inc.; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

California Games
Games of skill: surfing; half-pipe skateboarding; roller skating and more
Apple IIGS; 512K; ProDOS 16; copy protected.
$44.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

Captain Blood
Science-fiction adventure
Apple IIGS; 512K; ProDOS 16; copy protected.
$44.95 retail
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, IL 60062; 312-480-7667

Cavern Cobra
Fast action arcade game involving a mission to destroy the world's most dangerous terrorist
Apple IIGS; 768K; ProDOS 16; copy protected.
$49.95 retail
PBI Software, Inc.; 1155A Chess Dr., Ste. I; Foster City, CA 94404; 415-349-8765

Club Backgammon
Accurate simulation of backgammon
Apple IIGS; 512K; ProDOS; not copy protected.
$39.95 retail
California Dreams; 780 Montague Expwy., #403; San Jose, CA 95131; 408-435-1445

Crossword Creator
Creates crossword puzzles
Apple IIGS; 128K; ProDOS 8; not copy protected.
$29.95 retail
DEC Software; 5307 Lynnwood Dr.; West Lafayette, IN 47906

Dark Castle
Adventure
Apple IIGS; supports SuperSonic Card; 512K; GS/OS; not copy protected.

Entertainment

$39.95 retail
Three-Sixty Pacific, Inc.; 2105 S. Bascom Ave., Ste. 290; Campbell, CA 95008; 408-879-9144

Defender Of The Crown
Adventure into the Age of Chivalry; battle against the Normans to save England
Apple IIGS; 768K; ProDOS 16; not copy protected.
$49.95 retail
Cinemaware Corp.; 4165 Thousand Oaks Blvd.; Westlake Village, CA 91362; 805-495-6515

Deja Vu II: Lost In Las Vegas
Mystery
Apple IIGS; RGB monitor; 768K; ProDOS 16; copy protected.
$49.95 retail
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, IL 60062; 312-480-7667

Deja Vu: A Nightmare Comes True
Murder mystery
Apple IIGS; RGB monitor; 768K; ProDOS 16; copy protected.
$49.95 retail
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, IL 60062; 312-480-7667

Destroyer
Action and simulation game involving a Navy destroyer
Apple IIGS; 512K; ProDOS 16; copy protected.
$19.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

Dondra: A New Beginning...
An animated graphics quest for the Apple IIGS
Apple IIGS; 768K; ProDOS 16; not copy protected.
$49.95 retail
Microlllusions; 17408 Chatsworth St.; Grenada Hills, CA 91344; 818-360-3715 or 800-522-2041

Dream Zone
Graphic adventure game with stereo sound
Apple IIGS; 512K; ProDOS 16; not copy protected.
$49.95 retail
Baudville, Inc.; 5380 52nd St. SE; Grand Rapids, MI 49508; 616-698-0888

The Duel: Test Drive II
Driving simulation
Apple IIGS; 512K; ProDOS 16; copy protected.
$44.95 retail
$19.95 each retail; California Challenge scenery disk or The Supercars car disk
Accolade, Inc.; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Famous Courses Volume II
Three golf courses for use with Mean 18
Apple IIGS; mouse; Mean 18; 512K; ProDOS 16; copy protected.
$19.95 retail
Accolade, Inc.; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Famous Courses Volume III & IV
Six golf course simulations for use with Mean 18
Apple IIGS; mouse; Mean 18; 512K; ProDOS 16; copy protected.
$34.95 retail
Accolade, Inc.; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

The Fidelity Chessmaster 2100
Computer chess
Apple IIGS; 512K; not copy protected.
$49.95 retail
The Software Toolworks; 19808 Nordhoff Pl.; Chatsworth, CA 91311; 818-885-9000

Final Assault
A mountain-climbing adventure
Apple IIGS; 512K; ProDOS 16; copy protected.
$19.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

Fire Power
Arcade tank battle game
Apple IIGS; 512K; ProDOS 16; not copy protected.
$24.95 retail
Microlllusions; 17408 Chatsworth St.; Grenada Hills, CA 91344; 818-360-3715 or 800-522-2041

Flintstones
Prehistoric adventures
Apple IIGS; ROM 1.1; 768K; ProDOS 16; not copy protected.
$39.95 retail
Microlllusions; 17408 Chatsworth St.; Grenada Hills, CA 91344; 818-360-3715 or 800-522-2041

Garfield Trivia Game
Mind-teasing questions about the world's favorite "fat cat"
Apple IIGS; printer; 64K; ProDOS 8; copy protected.
$24.95 retail
DLM Teaching Resources; One DLM Park; Allen, TX 75002; 800-527-4747

Gauntlet
Arcade game featuring attacks by ghosts, grunts, demons and sorcerers
Apple IIGS; 256K; ProDOS 16; copy protected.
$44.95 retail
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, IL 60062; 312-480-7667

■ **GBA Championship Basketball: Two-On-Two**
Basketball simulation
Apple IIGS; 512K; ProDOS 16; copy protected.
GBA Championship Basketball features genuine on-court action, lifelike graphics and a wide variety of shooting options and gives computer players control of two players on each team. Computer players can test themselves in practice sessions, head-to-head two-on-two games with a friend and league competition in the 24-team, four-division Gamestar Basketball Association.
$19.95 retail
Gamestar; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0800

■ **Gnarly Golf**
Miniature golf
Apple IIGS; color monitor; 512K; copy protected.
Gnarly Golf is a miniature golf game that consists of 18 hilarious and inventive holes in one fun-filled course. Each hole has a name, along with a clue to aid a player in locating the mystery cup. A player determines the spin, aim and force of the golf ball. Gnarly Golf can have up to four players, and a variety of tricky, hazardous dilemmas will impede a player's progress at each hole.
$29.95 retail
Britannica Software; 345 4th St.; San Francisco, CA 94107; 415-546-1866

GrailQuest
Interactive graphic adventure
Apple IIGS; 512K; ProDOS 16; not copy protected.
$29.95 retail
Artworx Software Co., Inc.; 1844 Penfield Rd.; Penfield, NY 14526; 800-828-6573

■ **Great Western Shootout**
Action-packed arcade game
Apple IIGS; color monitor; 512K; copy protected.
The Great Western Shootout is an arcade game with action similar to a carnival shooting gallery. The program consists of 10 different screens of a western genre. A player assumes the role of the bounty hunter hired by the sheriff to rid the town of a gang of hooligans. Aiming through a cross-hair scope that is controlled by the computer's mouse, a player shoots the bad guys by clicking the mouse button. However, certain factors must be taken into consideration before collecting the reward: ammunition, health supplies (the bad guys shoot back) and innocent bystanders who randomly appear on the screen.
$29.95 retail
Britannica Software; 345 4th St.; San Francisco, CA 94107; 415-546-1866

Hacker II: The Doomsday Papers
Strategic adventure to save the world
Apple IIGS; 512K; ProDOS 16; copy protected.
$19.95 retail
Activision; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0500

HardBall!
Baseball simulation
Apple IIGS; color monitor; 512K; ProDOS 16; copy protected.
$44.95 retail
Accolade, Inc.; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Hostage
S.W.A.T. terrorist attack
Apple IIGS; 512K; ProDOS 16; copy protected.
$39.95 retail
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, IL 60062; 312-480-7667

Hunt For Red October
Submarine combat simulation
Apple IIGS; 768K; ProDOS 16; copy protected.
$49.95 retail
The Software Toolworks; 19808 Nordhoff Pl.; Chatsworth, CA 91311; 818-885-9000

■ **Impossible Mission II**
Action-packed strategy game
Apple IIGS; 512K; ProDOS 16; copy protected.

Entertainment

Elvin returns after three years of plotting the ultimate takeover plan. He's built a futuristic fortress filled with the most sophisticated destructive devices. As a 25th century sleuth, you will feel the danger and excitement of this almost impossible mission: to find the secret code accessing the stronghold of Elvin, the malicious mastermind bent on world domination.
$49.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

■ Jack Nicklaus' Greatest 18 Holes Of Major Championship Golf
Golf simulation
Apple IIGS; mouse, joystick or keyboard; 512K; ProDOS 16; copy protected.

Jack Nicklaus' Greatest 18 Holes is a golf simulation that features graphically-detailed representations of the 18 most challenging holes in major championship golf as selected by Jack Nicklaus. Examples include Pebble Beach, St. Andrews, Riviera and Royal Lytham. Also included are two of the toughest and most scenic golf courses Nicklaus has ever designed — Castle Pines in Colorado and Desert Mountain in Arizona.

Jack Nicklaus Presents The Major Championship Courses of 1989 is an accessory disk for the Greatest 18 Holes that includes the three host courses of this year's U.S. Open, British Open and the PGA Championships.
$44.95 retail
$14.95 retail; add-on accessory disk
Accolade, Inc.; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Jigsaw! The Ultimate Electronic Puzzle
Puzzle game
Apple IIGS; color monitor; 768K; ProDOS; not copy protected.
$39.95 retail; includes 24 image disks
$19.95 retail; additional image disks
Britannica Software; 345 4th St.; San Francisco, CA 94107; 415-546-1866

■ KaleidoKubes
Strategy game
Apple IIGS; 512K; ProDOS 16; not copy protected.

KaleidoKubes is an addictive strategy game similar in concept to dominoes, but in color. Users must spin each four-sided playing piece so that its colors align with the pieces already on the playing board. Users must place their kube onto the playing area as quickly as possible. Kubes are randomly generated and can be rotated to best fit the kubes that have already been played. Players can play against the computer or another player, and the computer keeps track of the time and penalizes slow play and incorrect moves.
$29.95 retail
Artworx Software Co., Inc.; 1844 Penfield Rd.; Penfield, NY 14526; 800-828-6573

King Of Chicago
Struggle for power
Apple IIGS; 768K; ProDOS 16; copy protected.
$49.95 retail
Cinemaware Corp.; 4165 Thousand Oaks Blvd.; Westlake Village, CA 91362; 805-495-6515

King's Quest I
3-D medieval adventure that takes Sir Graham on a journey to find the magical items that will save the kingdom of Daventry
Apple IIGS; 512K; ProDOS 16; copy protected.
$49.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-4468

King's Quest II: Romancing The Throne
3-D animated adventure
Apple IIGS; 512K; ProDOS 16; copy protected.
$49.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-4468

■ Knights Of Legend
Journey through a medieval world of fantasy
Apple IIGS; 64K; ProDOS 8; copy protected.

Knights Of Legend takes a player on a dynamic journey through a medieval world of fantasy that has the authenticity of a real world environment with changeable weather, night/day sequences and the treatment of their effects on character development and emotion.
$49.95 retail
Origin Systems, Inc.; 136-B Harvey Rd.; Londonderry, NH 03053; 603-644-3360

■ LaserForce
Three-dimensional, arcade action game
Apple IIGS; color monitor; 1.2 MB; copy protected.

LaserForce is a fast-paced animated game in which a player must pick up a series of yellow energy squares while climbing ladders, ropes and disappearing into teleporters. In the quest for energy squares, a player goes through a series of game boards filled with enemy squares. A player is equipped with a laser to shoot at monsters and dangerous objects. LaserForce includes 75 game levels ranging in difficulty.
$29.95 retail
Britannica Software; 345 4th St.; San Francisco, CA 94107; 415-546-1866

The Last Ninja
Action/adventure martial arts game
Apple IIGS; 512K; ProDOS 16; copy protected.
$44.95 retail
Activision; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0500

Leisure Suit Larry
3-D animated adventure game featuring Larry, the nerd, in Lost Wages
Apple IIGS; 512K; ProDOS 16; copy protected.
$39.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-4468

Mad Match
Visual perception game
Apple IIGS; 512K; GS/OS; not copy protected.
$39.95 retail
Baudville, Inc.; 5380 52nd St. SE; Grand Rapids, MI 49508; 616-698-0888

Mancala
Comprehensive simulation of the national game of Africa
Apple IIGS; 512K; ProDOS; not copy protected.
$39.95 retail
California Dreams; 780 Montague Expwy., #403; San Jose, CA 95131; 408-435-1445

Marble Madness
Six levels of 3-D runway mazes with stereo music
Apple IIGS; 512K; ProDOS 8; copy protected.
$34.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Mean 18: Ultimate Golf
Realistic golf simulation
Apple IIGS; mouse; 512K; ProDOS 16; copy protected.
$44.95 retail
Accolade, Inc.; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Mines Of Moria; Mines Of Moria II
Fantasy adventure
Apple IIGS; 256K; ProDOS 8; not copy protected.
$19.95 each retail
DAR Systems International; PO Box 16-4933; Miami, FL 33116; 305-529-3572

Mini-Putt
Miniature golf simulation
Apple IIGS; mouse; 512K; ProDOS 16; copy protected.
$19.95 retail
Accolade, Inc.; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Mixed-Up Mother Goose
Transports children to an "adventure in Mother Gooseland"; for the home, nursery school and kindergarten class
Apple IIGS; 512K; ProDOS 16; not copy protected.
$29.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-4468

Monte Carlo
Blackjack, roulette, craps, baccarat, poker and trente-et-quarante
Apple IIGS; 512K; ProDOS 16; copy protected.
$39.95 retail
PBI Software, Inc.; 1155A Chess Dr., Ste. I; Foster City, CA 94404; 415-349-8765

Neuromancer
Role-playing adventure
Apple IIGS; 512K; ProDOS 8; not copy protected.
$49.95 retail
Interplay Productions; 1575 Corporate Dr.; Costa Mesa, CA 92626; 714-549-2411 (technical support) or 800-227-6900 (orders)

■ Omega
Players design the future's ultimate military cybertank
Apple IIGS; 64K; ProDOS 8; copy protected.

As an engineer for the Organization of Strategic Intelligence, your mission in the game Omega is to design the future's ultimate military cybertank. The cybertank, created via a point and click interface, can be designed with predesigned capsule routines for non-programmers or via a powerful and flexible, full-featured command language for those with a programming background.

Your cybertank can compete against more than a dozen predesigned cybertanks included on the disk or against other created cybertank designs, in solo, multiple-player and team competitions.

Entertainment

$49.95 retail
Origin Systems, Inc.; 136-B Harvey Rd.; Londonderry, NH 03053; 603-644-3360

Paperboy
Paper route packed with the unexpected
Apple IIGS; joystick; 256K; ProDOS 16; copy protected.
$39.95 retail
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, IL 60062; 312-480-7667

Pirates! IIGS
17th century Spanish adventure on and around the Caribbean Sea
Apple IIGS; 256K; ProDOS 8; copy protected.
$44.95 retail
MicroProse Software, Inc.; 180 Lakefront Dr.; Hunt Valley, MD 21030; 301-771-1151

Police Quest
3-D animated adventure featuring Sonny Bonds in an attempt to stop the flood of illegal drugs into his community
Apple IIGS; color monitor (SuperSonic stereo card optional); 512K; ProDOS 16; not copy protected.
$49.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-4468

■ **Questmaster I — The Prism Of Heheutotol**
First of a trilogy
Apple IIGS; joystick optional; 768K; GS/OS; not copy protected.
Questmaster I, the first of a trilogy, takes users to a world plagued by evil. Users must search for the Prism, the key to salvation, across a land of morbid whimsy. Success is achieved by solving puzzles and battling the twisted minions of the diabolical Colnar.
$49.95 retail
MicroIllusions; 17408 Chatsworth St.; Grenada Hills, CA 91344; 818-360-3715 or 800-522-2041

Questron II
Sequel to Questron
Apple IIGS; 512K; ProDOS 16; not copy protected.
$49.95 retail
Strategic Simulations, Inc.; 675 Almanor Ave.; Sunnyvale, CA 94086; 408-737-6800

Realm Of Altair Series
Trilogy of all-text adventures
Apple IIGS; 256K; ProDOS 8; not copy protected.
$69.95 retail
DAR Systems International; PO Box 16-4933; Miami, FL 33116; 305-529-3572

Roadwar 2000
Futuristic war game
Apple IIGS; 512K; ProDOS 16; not copy protected.
$44.95 retail
Strategic Simulations, Inc.; 675 Almanor Ave.; Sunnyvale, CA 94086; 408-737-6800

Rocket Ranger
Movie tale involving time travel, vile Nazis, mind control machines and a jet propelled rocket suit
Apple IIGS; 768K; ProDOS 16; not copy protected.
$49.95 retail
Cinemaware Corp.; 4165 Thousand Oaks Blvd.; Westlake Village, CA 91362; 805-495-6515

Scooby Doo
Join Scooby and the gang on four mysteries
Apple IIGS; ROM 1.1; 768K; ProDOS 16; not copy protected.
Call for pricing
MicroIllusions; 17408 Chatsworth St.; Grenada Hills, CA 91344; 818-360-3715 or 800-522-2041

Sea Strike
Arcade game involving oil tankers under attack
Apple IIGS; 512K; ProDOS 16; copy protected.
$39.95 retail
PBI Software, Inc.; 1155A Chess Dr., Ste. I; Foster City, CA 94404; 415-349-8765

Serve & Volley
Action/strategy tennis simulation
Apple IIGS; keyboard; 512K; ProDOS 16; copy protected.
$39.95 retail
Accolade, Inc.; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Shadowgate
Fantasy
Apple IIGS; RGB monitor; 768K; ProDOS 16; copy protected.
$49.95 retail
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, IL 60062; 312-480-7667

Shanghai
Derived from an ancient oriental game called Mah Jongg
Apple IIGS; 512K; ProDOS 16; copy protected.
$19.95 retail
Activision; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0500

Silent Service
World War II submarine simulation game
Apple IIGS; color monitor recommended; 256K; ProDOS 8; copy protected.
$39.95 retail
MicroProse Software, Inc.; 180 Lakefront Dr.; Hunt Valley, MD 21030; 301-771-1151

Silpheed
Shoot-'em action game
Apple IIGS; 512K.
$34.95 retail
Sierra On-Line; Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-4468

Sinbad And The Throne Of The Falcon
Epic seafaring quest in a search for the Caliph
Apple IIGS; 768K; ProDOS 16; copy protected.
$49.95 retail
Cinemaware Corp.; 4165 Thousand Oaks Blvd.; Westlake Village, CA 91362; 805-495-6515

Skate Or Die
Skateboarding competition
Apple IIGS; 512K; ProDOS 16; copy protected.
$39.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Solitaire And Cribbage
Card games
Apple IIGS; 512K; ProDOS 8; not copy protected.
$34.95 retail
Computrek; 28278 Enderly St.; Canyon Country, CA 91351; 805-252-4244

Space Quest I — The Sarien Encounter
Animated 3-D adventure game that features Roger Wilco, sanitation engineer turned space-age swashbuckler
Apple IIGS; 512K; ProDOS 16; copy protected.
$49.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-4468

Space Quest II — Vohaul's Revenge
3-D animated space adventure game with quality graphics
Apple IIGS; 512K; ProDOS 16; copy protected.
$49.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-4468

Star Saga: One, Beyond The Boundary
An interstellar, interactive, role-playing space opera set 800 years in the future; first of a trilogy
Apple IIGS; monitor; 512K; ProDOS 16; not copy protected.
$79.95 retail
Masterplay Publishing Corp.; 8417 Sun State St.; Tampa, FL 33614; 813-888-7773

■ **Star Saga: Two, The Clathran Menace**
Combines a captivating science fiction story with the tactics and strategy of a challenging board game
Apple IIGS; 512K; ProDOS 16; not copy protected.
Star Saga: Two, the second in a trilogy, is a computer role-playing game in which one to six players, each assuming the role of a futuristic space explorer, use his or her own abilities to strategize, interpret and improvise.
Each of the game's six characters has a history and a compelling personal motivation to learn new skills, solve unexpected problems and negotiate with other life forms and characters. Armed with new information, abilities and commodities that are accumulated as the saga continues, the players are driven by an increasing sense of urgency to achieve their individual goals, confront a surprising and powerful threat and influence the outcome of the game.
$79.95 retail
Masterplay Publishing Corp.; 8417 Sun State St.; Tampa, FL 33614; 813-888-7773

Stickybear Basketbounce
A multilevel game with bright graphics and animation for the entire family
Apple IIGS; other Apple II models; 64K; ProDOS 8; copy protected.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 203-542-5553 or 800-327-1473

Strategic Conquest II
Strategy war game with 2 billion different world maps and 15 levels of play
Apple IIGS; 128K; ProDOS 8; copy protected.
$49.95 retail
PBI Software, Inc.; 1155A Chess Dr., Ste. I; Foster City, CA 94404; 415-349-8765

Entertainment

Street Sports Soccer
Playing soccer with the old neighborhood gang
Apple IIGS; 512K; ProDOS 16; copy protected.
$19.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

Strip Poker II
Five-card draw poker game with some different stakes; for 18 years and older
Apple IIGS; 512K; ProDOS 16; not copy protected.
$39.95 retail; master disk
$19.95 each retail; data disk
Artworx Software Co., Inc.; 1844 Penfield Rd.; Penfield, NY 14526; 800-828-6573

Sub Battle Simulator
Command a Navy sub or German Kreigsmarine U-Boat between 1939 and 1945
Apple IIGS; 512K; ProDOS 16; copy protected.
$19.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

■ **Superpuzzle**
Fun and learning
Apple IIGS; color monitor; 512K; ProDOS 8; not copy protected.

Superpuzzle includes many variations of large and small puzzles. It slides pieces in place or exchanges pieces. Superpuzzle includes more than 35 unique pictures. It features sound effects, scores, hints, 14-levels of play and user-selectable piece size.
$44.95 retail
Lynx Computer Products, Inc.; 15115 Ramona Blvd.; Baldwin Park, CA 91706; 818-960-4839 or 800-824-3522

Superstar Ice Hockey
Multilevel ice hockey simulation
Apple IIGS; 512K; ProDOS 16; copy protected.
$44.95 retail
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, IL 60062; 312-480-7667

Sword Of Sodan
Action-packed, arcade adventure
Apple IIGS; joystick optional; 768K plus extra memory for two-hour instant replay mode; ProDOS 8; copy protected.
$49.95 retail
Discovery Software International, Inc.; 163 Conduit St.; Annapolis, MD 21401; 301-268-9877

Tetris IIGS
Game for developing quick reflexes
Apple IIGS; 512K; ProDOS 16; not copy protected.
$39.95 retail
Spectrum Holobyte; A Div. of Sphere, Inc.; 2601 Challenger Dr.; Alameda, CA 94501; 415-522-3584

Thexder
Pilot an armored robot through multiple attack scenarios and more
Apple IIGS; 512K; ProDOS 16; copy protected.
$34.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-4468

Ticket To Hollywood
Hollywood trivia; ages 15 to adult
Apple IIGS; 512K; ProDOS 16; copy protected.
$39.95 retail
Blue Lion Software; 90 Sherman St.; Cambridge, MA 02140; 617-876-2500

Tomahawk
Simulates the cockpit of the U.S. Army's AH-64A Apache helicopter
Apple IIGS; joystick; 768K; ProDOS 16; copy protected.
$39.95 retail
Datasoft/IntelliCreations, Inc.; 19808 Nordhoff Pl.; Chatsworth, CA 91311; 818-886-5922

The Tower of Myraglen
Adventure action game; revolves around a dying world known as Myraglen
Apple IIGS; 512K; ProDOS 16; copy protected.
$54.95 retail
PBI Software, Inc.; 1155A Chess Dr., Ste. I; Foster City, CA 94404; 415-349-8765

TrianGo
Futuristic game of strategy and cunning based on the ancient oriental game of "Go"
Apple IIGS; 512K; ProDOS; not copy protected.
$39.95 retail
California Dreams; 780 Montague Expwy., #403; San Jose, CA 95131; 408-435-1445

Trilogy
Sophisticated adventure game involving many intricate plot twists
Apple IIGS; 256K; ProDOS 8; not copy protected.
$49.95 retail
DAR Systems International; PO Box 16-4933; Miami, FL 33116; 305-529-3572

Uninvited
Supernatural graphic adventure
Apple IIGS; RGB monitor; 768K; ProDOS 16; copy protected.
$49.95 retail
Mindscape, Inc.; 3444 Dundee Rd.; Northbrook, IL 60062; 312-480-7667

Vegas Craps
Accurate simulation of craps as it's played in big Vegas casinos
Apple IIGS; 512K; ProDOS; not copy protected.
$39.95 retail
California Dreams; 780 Montague Expwy., #403; San Jose, CA 95131; 408-435-1445

Vegas Gambler
Enter the exciting world of a Las Vegas casino
Apple IIGS; 512K; ProDOS; not copy protected.
$39.95 retail
California Dreams; 780 Montague Expwy., #403; San Jose, CA 95131; 408-435-1445

Warlock
Arcade adventure that combines clever animation and humor
Apple IIGS; 512K; ProDOS 16.
$39.95 retail
Three-Sixty Pacific, Inc.; 2105 S. Bascom Ave., Ste. 290; Campbell, CA 95008; 408-879-9144

■ **Windwalker**
Adventure set in the third century B.C.
Apple IIGS; 128K; ProDOS 8; copy protected.

Surrounded by the culture, terrain, characters and social aspects of the third century B.C., Windwalker offers an innovative presentation weaving animated martial arts simulation into an Oriental tapestry of beautifully illustrated people, places and events. Windwalker is a fascinating game that requires quick reflexes and intense concentration for the combat sequences. A player will quickly discover a world of magic, conflict and emotion that is both fun and exciting to explore.
$39.95 retail
Origin Systems, Inc.; 136-B Harvey Rd.; Londonderry, NH 03053; 603-644-3360

Winter Games
Bobsledding, downhill skiing, ice skating, ski jumping and more
Apple IIGS; 512K; ProDOS 16; copy protected.
$19.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

World Games
International games
Apple IIGS; 512K; ProDOS 16; copy protected.
$19.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

World Tour Golf
Features the world's great courses, complete with hills, trees, sand traps and weather
Apple IIGS; 512K; ProDOS 16; not copy protected.
$39.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Zany Golf
A wacky fantasy into miniature golf
Apple IIGS; other Apple II models; 512K; ProDOS 8; copy protected.
$39.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Zoom!
Arcade action
Apple IIGS; joystick optional; 512K; ProDOS 8; copy protected.
$29.95 retail
Discovery Software International, Inc.; 163 Conduit St.; Annapolis, MD 21401; 301-268-9877

Hardware And Peripherals

A2S Series
20, 30, 45 and 60 MB external SCSI hard disk subsystems
Apple IIGS.
Call for pricing
CMS Enhancements, Inc.; 1372 Valencia Ave.; Tustin CA 92680; 714-259-9555

Hardware And Peripherals

Apollo PC Presenters For Apple IIGS
Allows users to display large-screen presentations; no special software required
Apple IIGS.
$1,369 retail; PC-9100GS (add-on)
$2,318 retail; PC-9601 (add-on)
$1,709 retail; PC-9250GS (built-into OHP)
$2,583 retail; PC-9296 (built-into OHP)
$2,498 retail; PC-9350GS (built-into OHP and portable)
$3,250 retail; PC-9396 (built-into OHP and portable)
$199 retail; PC-9670 Wireless Remote for PC-9601, PC-9296, PC-9396
Apollo Audio Visual; 60 Trade Zone Ct.; Ronkonkoma, NY 11779; 516-467-8033

Apple 3.5 Drive
The IIGS standard drive; provides 800K of program and file storage
Apple IIGS.
$429 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple 5.25 Drive
Runs earlier Apple II software released on 5.25-inch disks
Apple IIGS.
$329 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple Hard Disk 20SC And 40SC
Provides 20 and 40 MB of storage
Apple IIGS; Apple SCSI Card.
$899 retail; 20SC
$1,299 retail; 40SC
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple II SCSI Interface Card Revision C
Provides compatibility with high-performance peripherals that use the SCSI standard, including Apple's CD-ROM
Apple IIGS; SCSI System Cable.
$129 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

■ Apple II Video Overlay Card
Enables users to superimpose computer graphics over video images from an external source
Apple IIGS; 512K; ROM Version 01 or higher; AppleColor Composite or RGB monitor.

The Apple II Video Overlay Card for the Apple IIGS and IIe enables users to superimpose computer graphics (text, pictures and animation) over video images from an external source (VCR, videodisc, video camera or television signal) and view the result on a single screen.
$549 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple IIGS Memory Expansion Card
Extended memory board expandable to 1 MB using additional memory in 256K increments
Apple IIGS.
$229 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple IIGS System Fan
Cools Apple IIGS with three or more expansion cards
Apple IIGS.
$49 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple IIGS Upgrade
Transformer kit for Apple IIe; includes 256K of built-in memory, with RAM that is expandable to 8 MB
Apple IIe.
$499 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple MIDI Interface
Musical instrument digital interface (MIDI); includes one MIDI-In plug and one MIDI-Out plug
Apple IIGS; MIDI-equipped instrument; compatible software
$99 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple Personal Modem
1,200/300-baud modem
Apple IIGS.
$279 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

AppleCD SC
Optical disc storage device
Apple IIGS; Apple SCSI Card (Rev. C).
$1,199 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

AppleColor RGB Monitor
Displays high-resolution text and color graphics
Apple IIGS.
$599 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Audio Animator
MIDI device, stereo digitizer and stereo playback machine combined; includes software and external connector box
Apple IIGS; 768K; GS/OS.
$239 retail
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

ComputerEyes IIGS
Color video digitizer that captures images for use in popular desktop publishing and paint programs
Apple IIGS; video source; 512K; GS/OS.
$249.95 retail
Digital Vision, Inc.; 270 Bridge St.; Dedham, MA 02026; 617-329-5400

ComputerEyes/2
Video digitizer with GS software support that captures images for use in popular desktop publishing and paint programs
Apple IIGS; video source; 256K; ProDOS 8.
$129.95 retail; ComputerEyes/2
$19.95 retail; ComputerEyes/2 GS Support Package
Digital Vision, Inc.; 270 Bridge St.; Dedham, MA 02026; 617-329-5400

The CrystalPrint Publisher
PostScript language compatible page printer
Apple IIGS.
$4,499 retail
Qume Corp.; 500 Yosemite Dr.; Milpitas, CA 95035; 408-942-4000

CT-20; CT-40
20 and 40 MB external hard disk drives
Apple IIGS.
$759 retail; CT-20 (includes Apple SCSI card)
$999 retail; CT-40 (includes Apple SCSI card)
Chinook Technology; 601 Main St., #635; Longmont, CO 80501; 303-678-5544 or 800-727-5544

DataLink 1200 And DataLink 2400
Internal 1,200 bps and 2,400 bps modem boards complete with communications software
Apple IIGS; other Apple II models.
$179 retail; DataLink 1200
$239 retail; DataLink 2400
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

DCA1000
Six outlet strip with surge suppressors and phone/modem protection
Apple IIGS.
$59.95 retail
Data Spec; 9410 Owensmouth Ave.; Chatsworth, CA 91311; 818-701-5935

Deluxe Power Console-Plus Surge Suppressor And Noise Filter
Surge suppressor and noise filter
Apple IIGS.
$125.95 retail
Kalglo Electronics Co., Inc.; 6584 Ruch Rd.; E. Allen Township; Bethlehem, PA 18017; 215-837-0700 or 800-524-0400

Digitizer And Digitizer Professional
Two-channel multifunction audio digitizer; plugs directly into the Supersonic stereo card expansion connector
Apple IIGS; 512K; ProDOS 16.
$59.95 retail; Digitizer
$189.95 retail; Digitizer Professional
MDIdeas, Inc.; 1155A Chess Dr., Ste. H; Foster City, CA 94404; 415-573-0580

■ DoubleTalk
Speech synthesizer
Apple IIGS; other Apple II models; 64K; ProDOS 8.

DoubleTalk features two speech synthesizers on one plug-in card. A text-to-speech synthesizer, compatible with the company's Slotbuster card, automatically translates printed text output from any program (including AppleWorks) into high-quality, human-sounding speech. The card contains a 16-bit microprocessor running at 8 MHz and a sophisticated text-to-speech program, freeing the Apple's microprocessor and memory for other tasks.

DoubleTalk's second synthesizer is an LPC (Linear Predictive Coding) synthesizer, compatible with the Echo speech synthesizers. Although it can be used in text-to-speech applications, the LPC synthesizer is intended

Hardware And Peripherals

primarily for use with programs employing digitized speech, which is commonly used in Echo-compatible educational programs.
$249.95 retail
RC Systems, Inc.; 121 W. Winesap Rd.; Bothell, WA 98012; 206-672-6909

Echo IIb Speech Synthesizer
Text-to-speech board compatible with software written for the Echo II and Echo+ boards
Apple IIGS; 256K; ProDOS 8 and DOS 3.3.
$129.95 retail
Street Electronics Corp.; 6420 Via Real; Carpinteria, CA 93013; 805-684-4593

FingerPrint G+
Parallel graphic interface for parallel printers
Apple IIGS; printer.
$79 retail
Thirdware Computer Products; 4747 NW 72nd Ave.; Miami, FL 33166; 305-592-7522

FingerPrint GSi Version II
Screen dump graphic utility card
Apple IIGS; printer.
$129 retail
Thirdware Computer Products; 4747 NW 72nd Ave.; Miami, FL 33166; 305-592-7522

FingerPrint SuperSerial
Enhanced serial graphic printer interface card
Apple IIGS; printer.
$79 retail
Thirdware Computer Products; 4747 NW 72nd Ave.; Miami, FL 33166; 305-592-7522

FX/20
External SCSI hard disk drive; contains FX System Software on 3.5-inch disk
Apple IIGS; SCSI board.
$999 retail; FX/20
$30 retail; conversion kit
GCC Technologies, Inc.; 580 Winter St.; Waltham, MA 02154; 617-890-0880

Grappler C/Mac/GS
Universal parallel printer interface for Epson, Okidata, Star and other printers
Apple IIGS; parallel printer.
$119 retail
Orange Micro, Inc.; 1400 N. Lakeview Ave.; Anaheim, CA 92807; 714-779-2772

GS Juice Plus
Memory cards that provide 1 to 4 MB of memory expansion
Apple IIGS.
$299 retail; 1 MB
Applied Ingenuity; 14922M Ramona Blvd.; Baldwin Park, CA 91706; 818-960-1485 or 800-346-0811

GS-RAM And GS-RAM Plus
Extended memory boards; come with AppleWorks enhancement, graphic memory test and disk caching software
Apple IIGS; ProDOS 8.
$109 retail; 0K GS-RAM
$219 retail; 256K GS-RAM
$359 retail; 512K GS-RAM
$639 retail; 1 MB GS-RAM
$919 retail; 1.5 MB GS-RAM
$169 retail; 0 MB GS-RAM Plus
$599 retail; 1 MB GS-RAM Plus
$1,049 retail; 2 MB GS-RAM Plus
Call for pricing; GS-RAM 3-8 MB
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

GS-RAM Ultra
Memory expansion
Apple IIGS; ProDOS 16 or GS/OS.
$169 retail; 0K
$239 retail; 256K
$379 retail; 512K
Call for pricing; 1 MB to 4 MB
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

ImageBuffer
ImageWriter II printer buffer providing 64K (expandable to 128K) of buffer storage
Apple IIGS; other Apple models; ImageWriter II.
$79 retail
Orange Micro, Inc.; 1400 N. Lakeview Ave.; Anaheim, CA 92807; 714-779-2772

ImageWorks II Board
Gives the Apple IIGS advanced imaging and graphics capabilities
Apple IIGS; other Apple II models; 64K.
$350 retail; ImageWorks Board
$150 retail; ImageWorks II Color Adapter
Redshift Limited; PO Box 4335; Mountain View, CA 94040; 415-322-7373

ImageWriter II
Apple standard printer
Apple IIGS; other Apple models.
$595 retail; ImageWriter II
$99 retail; ImageWriter II 32K Memory Option
$225 retail; Sheet Feeder
$63 retail; Black Ribbon (pack of six)
$83.70 retail; Color Ribbon (pack of six)
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

ImageWriter LQ
Letter-quality, wide-carriage, dot matrix printer
Apple IIGS; other Apple models.
$1,399 retail; ImageWriter LQ
$299 retail; Sheet Feeder
$169 retail; Additional Bins
$49 retail; Envelope Feed
$114 retail; Black Ribbon (pack of six)
$150 retail; Color Ribbon (pack of six)
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Inner Drive
Internal hard disk drives
Apple IIGS; IIe.
$499 retail; 20 MB
$699 retail; 40 MB
Applied Ingenuity; 14922M Ramona Blvd.; Baldwin Park, CA 91706; 818-960-1485 or 800-346-0811

J/L 910
14-inch high-resolution color monitor on swivel; 1,120 by 750 pixels
Apple IIGS.
$1,495 retail
J/L International Trading Co. USA, Inc.; 8730 Sunset Blvd.; Los Angeles, CA 90069; 213-657-1836

KoalaPad+
Graphics input system for the Apple II family of computers
Apple IIGS; 48K; DOS 3.3.
$135.95 retail
Koala Technologies, A Pentron Co.; 70 N. 2nd St.; San Jose, CA 95113; 408-287-6311

Line-Saver Uninterruptible Power Systems (UPS)
Provide emergency power when the utility power fails or is unstable; Novell and Unix compatible
Apple IIGS; other Apple II models.
$549 retail; starting price
Kalglo Electronics Co., Inc.; 6584 Ruch Rd.; E. Allen Township; Bethlehem, PA 18017; 215-837-0700 or 800-524-0400

M300
3.5-inch 800K floppy disk drive
Apple IIGS.
$259 retail
SystemGate, Inc.; 1406 S. Raymond Ave.; Alhambra, CA 91803; 818-282-4720

MagniView 200
Computer-data display panel
Apple IIGS.
$1,095 retail
Dukane Corp.; 2900 Dukane Dr.; St. Charles, IL 60174; 800-634-2800 or 800-356-6540

Master Piece Remote
Two-part power center (outlet strip and remote control) with five outlets, surge, noise and modem protection
Apple IIGS.
$199.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

Meirick UPS Systems
Uninterruptible power system (UPS) that provides continuous computer-grade power during power failures, brownouts and surges
Apple IIGS; other Apple II models.
$449 retail; Meirick 400
$549 retail; Meirick 450 Slimline
$749 retail; Meirick 850 Slimline
$795 retail; Meirick 1000
$1,045 retail; Meirick 1400
Meirick, Inc.; Box 298; Frisco, CO 80443; 303-668-3251

MemorySaver
Hardware/software system that transforms standard IIGS memory boards into instant-access ROM disks
Apple IIGS; compatible memory card; 256K; ProDOS 8.
$149.95 retail
Checkmate Technology, Inc.; 509 S. Rockford Dr.; Tempe, AZ 85281; 602-966-5802 or 800-325-7347

MP6
5.25-inch diskette drive
Apple IIGS; other Apple II models.
$179 retail
Quality Computers; 15102 Charlevoix; Grosse Pointe, MI 48230; 313-331-0700 or 800-443-6697

Hardware And Peripherals

■ Multi-Kache Card
Multidisk controller
Apple IIGS.

The Multi-Kache Card is a multidisk controller that transforms the slow data transfer of the Apple disk drives into lightning fast transfers that make an Apple 3.5-inch disk drive outperform a hard disk drive by a factor of 3 to 1. The card replaces a user's current disk drive controller, controls both 3.5- and 5.25-inch drives and runs at 8 MHz.

Features include: can read an entire 3.5-inch disk from cache in 3.5 seconds; can run the ProDOS 16 Launcher from cache in under 15 seconds; will control up to eight assorted disk drives; can daisy-chain disk drives; can reduce or eliminate slot congestion; is compatible with all accelerators currently on the market; and more.
$375 retail; 256K
$550 retail; 1 MB
Ohio Kache Systems Corp.; 4162 Little York Rd., Ste. E; Dayton, OH 45414; 513-890-3913 or 800-338-0050

MultiRam GS
Extended memory board adding from 256K to 2 MB of memory
Apple IIGS; 256K; ProDOS 8.
$254 retail; 256K
$399 retail; 512K
$689 retail; 1 MB
$1,238 retail; 2 MB
$7.95 retail; MemorySaver Adapter
$39.95 retail; MemorySaver Extender
Checkmate Technology, Inc.; 509 S. Rockford Dr.; Tempe, AZ 85281; 602-966-5802 or 800-325-7347

OCS 2-40 Stereo Amplifier; JBL Control 1 Speakers
Stereo amplifier
Apple IIGS.
$179 retail; OCS 2-40
$239 retail; JBL Control 1 Speakers
Orange County Speaker, Inc.; 13686 Newhope St.; Garden Grove, CA 92643; 714-530-3860

OctoRam And OctoRam ESP
Extended memory boards; available with an optional Extended Static Ram Pack (ESP board)
Apple IIGS.
$199.95 retail; OctoRam with 256K
$899.95 retail; OctoRam with 2 MB (other configurations available)
$179.95 retail; 128K OctoRam ESP (requires OctoRam board)
MDIdeas, Inc.; 1155A Chess Dr., Ste. H; Foster City, CA 94404; 415-573-0580

On-Board
Extended memory board that provides up to 4 MB of memory; includes five-year warranty
Apple IIGS.
$149.95 retail; 0K
$349.95 retail; 1,024K
$549.95 retail; 2,048K
$949.95 retail; 4,096K
On Three, Inc.; PO Box 3452; Kirkland, WA 98083; 206-829-1874

Parallel Pro and Buffer Pro
Parallel printer interface and buffer
Apple IIGS; other Apple II models.
$99 retail; Parallel Pro
$109 retail; Buffer Pro Option with 32-page buffer
$169 retail; Buffer Pro Option with 128-page buffer
$239 retail; Buffer Pro Option with 256-page buffer
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

Passport MIDI Interface For IIGS (Serial Port)
Provides one MIDI In and one MIDI Out
Apple IIGS; any MIDI equipped synthesizer or drum machine.
$129.95 retail
Passport Designs, Inc.; 625 Miramontes St., Ste. 103; Half Moon Bay, CA 94109; 415-726-0280

Passport MIDI Interface With Drum Sync (Plug-In Card)
Provides industry standard MIDI In, MIDI Out and drum out connections
Apple IIGS.
$129.95 retail
Passport Designs, Inc.; 625 Miramontes St., Ste. 103; Half Moon Bay, CA 94109; 415-726-0280

Passport MIDI Interface With Tape Sync (Plug-In Card)
Provides industry standard MIDI In, MIDI Out, drum out and tape sync connections
Apple IIGS.
$199.95 retail
Passport Designs, Inc.; 625 Miramontes St., Ste. 103; Half Moon Bay, CA 94109; 415-726-0280

PC Transporter
Board that brings MS-DOS capabilities to the Apple IIGS
Apple IIGS; other Apple II models; 64K; ProDOS 8.
$499 retail; PC Transporter with 768K
$259 retail; 5.25" 360K Drive
$389 retail; Dual-Drive 5.25" System
$139 retail; optional IBM-style keyboard
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

Phasor
Speech and sound board that runs many sound-oriented software programs written for Apple II computers
Apple IIGS; 64K; ProDOS 8.
$169 retail
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

Power Director Model 25
Power protection and surge suppression with four-outlet power control center
Apple IIGS.
$99.95 retail
Computer Accessories Corp.; 6610 Nancy Ridge Dr.; San Diego, CA 92121; 619-457-5500

Power Tree
Outlet strip surge suppressors
Apple IIGS.
$29.95 retail; Power Tree 10
$49.95 retail; Power Tree 20
$99.95 retail; Power Tree 50
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 212-475-5200 or 800-535-4242

PowerLine
Surge suppressors
Apple IIGS.
$14.95 retail; PowerLine One Model S1
$29.95 retail; PowerLine Four Model S4A
$49.95 retail; PowerLine Strip Model S10
Computer Accessories Corp.; 6610 Nancy Ridge Dr.; San Diego, CA 92121; 619-457-5500

Professional Plus
MIDI interface
Apple IIGS; any MIDI-equipped synthesizer.
$125 retail
Opcode Systems; 1024 Hamilton Ct.; Menlo Park, CA 94025; 415-321-8977

ProGrappler
Parallel printer interface
Apple IIGS; Apple IIe.
$119 retail
Orange Micro, Inc.; 1400 N. Lakeview Ave.; Anaheim, CA 92807; 714-779-2772

ProModem 1200A/2
Hayes-compatible 300/1,200-baud internal modem with built-in ROM software that supports 80 columns and all modem functions
Apple IIGS; communications software; 64K.
$129 retail
Prometheus Products, Inc.; 7225 SW Bonita; Tigard, OR 97223; 503-624-0571

ProModem 2400A
Internal modem
Apple IIGS; other Apple II models; communications software; 64K.
$179 retail
Prometheus Products, Inc.; 7225 SW Bonita; Tigard, OR 97223; 503-624-0571

Proxim A Data Display A200SC
LCD display panel that projects computer images via an overhead projector
Apple IIGS.
$1,199 retail
Computer Accessories Corp.; 6610 Nancy Ridge Dr.; San Diego, CA 92121; 619-457-5500

Proxim A Intelligent Power Systems
Standby power supply
Apple IIGS.
$649.95 retail; Proxim A IPS 450+
$749.95 retail; Proxim A IPS 500+
Computer Accessories Corp.; 6610 Nancy Ridge Dr.; San Diego, CA 92121; 619-457-5500

RamKeeper
Constant power for RAM boards; provides instant access to programs
Apple IIGS; 256K; extended memory board.
$189 retail
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

RAMTalker
A SmoothTalking speech card
Apple IIGS; Apple IIe; 64K; ProDOS 8.
$159.95 retail
Electronic Learning Systems, Inc.; 2630 NW 39th Ave.; Gainesville, FL 32605; 800-443-7971

Hardware And Peripherals

RAMTalker Plus
All-in-one multifunction speech board that combines a battery-protected RAM Disk, high-quality SmoothTalker speech and a clock/calendar
Apple IIGS; IIe; 64K; ProDOS 8.
$260 retail; 128K Model
$340 retail; 256K Model
Electronic Learning Systems, Inc.; 2630 NW 39th Ave.; Gainesville, FL 32605; 800-443-7971

Serial Pro
Multifunction board combining a serial port with a functioning clock/calendar board
Apple IIGS; other Apple II computers.
$139 retail
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

Sider
External hard disk drive and tape backup system
Apple IIGS; IIe.
$595 retail; Sider Model D2 (20 MB/65ms)
$795 retail; Sider Model D4A (40 MB/61ms)
$995 retail; Sider Model D4F (40 MB/25ms)
$895 retail; Sider Model T6 Tape (60 MB/89 ips)
$1,195 retail; Sider Model D7T (70 MB/29ms)
$1,695 retail; Sider Model D9 (87 MB/18ms)
$2,495 retail; Sider Model C96 (87/60 MB combo)
First Class Peripherals; 2875 Northwestern Pkwy.; Santa Clara, CA 95051; 408-980-0200

■ SmartCard
SCSI board that allows the MacCrate external drives to be compatible with the Apple IIGS and IIe
Apple IIGS; IIe.
The SmartCard is a self-terminating board that provides compatibility between the Apple IIGS/IIe and the MacCrate 20, 40 and 60 MB external drives. The SmartCard includes utility software that allows up to nine partitions using GS/OS and comes complete with cables, a two-year warranty and toll-free technical support to complement the user's manual.
$129 retail; SmartCard
$645 retail; bundled with MacCrate 20
$840 retail; bundled with MacCrate 40
$939 retail; bundled with MacCrate 60
Crate Technology; 6850 Vineland Ave., Bldg. M; N. Hollywood, CA 91605; 818-766-4001

Smartmodem 1200A
Provides 1,200-baud communications and more
Apple IIGS; communications software.
$349 estimated retail; Smartmodem 1200A
$119 retail; Smartcom software
Hayes Microcomputer Products, Inc.; PO Box 105203; Atlanta, GA 30348; 404-449-8791

Sonic Blaster
Stereo digitizer that records, amplifies, allows editing and plays back in full stereo; includes software
Apple IIGS; 512K; GS/OS.
$129 retail
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

SoundAce 2.0
Audio digitizer that uses powerful mouse-and-windows software to record and edit sounds
Apple IIGS; 768K; GS/OS.
$34.95 retail; software only
$79.95 retail; with microphone and hardware
Parallax, Inc.; 6200 Desimone Ln., #69A; Citrus Heights, CA 95621; 916-721-8217

Studio Plus Two
MIDI interface
Apple IIGS; any MIDI-equipped synthesizer
$225 retail
Opcode Systems; 1024 Hamilton Ct.; Menlo Park, CA 94025; 415-321-8977

Super-Comm
Serial interface card that makes communications possible between any Apple or Franklin computer and a variety of devices
Apple IIGS; other Apple II models.
$89.95 retail
Sequential Systems, Inc.; 1200 Diamond Cir., Ste. M-2; Lafayette, CO 80026; 303-666-4549

Supersonic
Digitized stereo board; supports Ensoniq sound chip
Apple IIGS; 512K; ProDOS 16.
$59.95 retail
MDIdeas, Inc.; 1155A Chess Dr., Ste. H; Foster City, CA 94404; 415-573-0580

TeleSpiker
Surge suppressor/power line filter
Apple IIGS.
$85.95 retail
Kalglo Electronics Co., Inc.; 6584 Ruch Rd.; E. Allen Township; Bethlehem, PA 18017; 215-837-0700 or 800-524-0400

ThunderScan
Replaces an ImageWriter's ribbon cartridge with a digitizing scanning cartridge
Apple IIGS; other Apple II models; 64K; ProDOS 8.
$219 retail
Thunderware, Inc.; 21 Orinda Way; Orinda, CA 94563; 415-254-6581

TransWarp GS
Accelerator card that increases the IIGS' processing speed 2.5 times; compatible with all standard software and hardware
Apple IIGS.
$399 retail
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

■ Vulcan
Internal hard disk drives
Apple IIGS; IIe.
Vulcan is a high-speed internal hard disk that features capacities ranging from 20 to 200 MB. It replaces the power supply in the Apple IIGS and IIe with a heavy-duty power supply (rated in excess of 70 watts) and provides hard disk storage and a cooling fan. Vulcan supports GS/OS, ProDOS 8, DOS 3.3, CP/M and Pascal 1.3.
The drive interface features an intelligent 16-bit data bus controller card, is preformatted and comes complete with utility software that allows easy backup, reformatting and partitioning for multiple operating systems. Sixteen partitions are available, and any four are accessible simultaneously.
$649 retail; 20 MB
$849 retail; 40 MB
$1,795 retail; 100 MB
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

Æ 3.5 Drive
External 3.5-inch drive
Apple IIGS; Apple IIe.
Call for pricing
Applied Engineering; PO Box 5100; Carrollton, TX 75011; 214-241-6060

Music

A Guide To Computer Music
Introductory resource about musical electronics and MIDI
$16.95 retail
Sound Management; PO Box 3053; Peabody, MA 01961; 508-531-6192 or 800-548-4907

Diversi-Tune
Turns the Apple IIGS into a MIDI synthesizer and recorder; plays up to 32 channels simultaneously
Apple IIGS; MIDI interface optional; 512K; ProDOS 8; not copy protected.
$75 retail
Diversified Software Research, Inc.; 34880 Bunker Hill; Farmington, MI 48331; 313-553-9460

ECS Music Training Programs
Family of music training products
Apple IIGS; MIDI card; synthesizer; 512K; DOS 3.3; copy protected.
$39.95 retail; Keyboard Tutor-MIDI
$39.95 retail; Early Music Skills-MIDI
$79.95 retail; Keyboard Extended Jazz Harmonies-MIDI
$79.95 retail; Keyboard Fingerings-MIDI
$79.95 retail; Keyboard Chords-MIDI
$79.95 retail; Keyboard Arpeggios-MIDI
$79.95 retail; Keyboard Speed Reading-MIDI
$39.95 retail; Musical Stairs-MIDI
$39.95 retail; Note Speller
$99.95 retail; Elements Of Music
$99.95 retail; Music Flash Cards
$99.95 retail; Patterns In Pitch
$99.95 to $129.95 retail; 21st Century Music Series
Electronic Courseware Systems, Inc.; 1210 Lancaster Dr.; Champaign, IL 61821; 217-359-7099

Instant Music
Music creativity tool; up to four instruments can be played at once; uses colored bars in place of standard notation to allow anyone to make music quickly
Apple IIGS; 512K; ProDOS 16; not copy protected.
$49.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Instant Synthesizer
Turns the IIGS into a sampling synthesizer
Apple IIGS; 768K; ProDOS 16; not copy protected.
$79.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Music

Master Tracks Jr. For IIGS
Personal MIDI recording studio that provides tools for composing, recording and editing music with a graphical interface
Apple IIGS; MIDI interface; MIDI equipped instrument; 756K; GS/OS; not copy protected.
$149.95 retail
Passport Designs, Inc.; 625 Miramontes St., Ste. 103; Half Moon Bay, CA 94109; 415-726-0280

Master Tracks Pro
MIDI recording and editing package
Apple IIGS; Passport Serial Interface or compatible MIDI instrument(s); 1.25 MB; GS/OS.
$395 retail
Passport Designs, Inc.; 625 Miramontes St., Ste. 103; Half Moon Bay, CA 94109; 415-726-0280

Music Construction Set
Music composition system; 33 digitized instruments; MIDI output; and stereo music capability
Apple IIGS; stereo card and speakers recommended; 256K; ProDOS 8; not copy protected.
$49.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Music, Midi And Your Apple II
Informational newsletter
$14.95 retail; one-year subscription
$26 retail; two-year subscription
MMP Systems; 20681 Celeste Cir.; Cupertino, CA 95014; 408-996-9270

The Music Studio 2.0
Music creation program with pull-down menus, music paint box and more
Apple IIGS; 512K; ProDOS 16; not copy protected.
$99.95 retail
Activision; 3885 Bohannon Dr.; Menlo Park, CA 94025; 415-329-0500

MusicShapes
Creative learning environment that involves a user in the process of music making and idea development; uses Ensoniq sound chip; MIDI compatible — Apple MIDI device MIDI card
Apple IIGS; 512K; ProDOS 16; not copy protected.
$129 retail
Music Systems for Learning, Inc.; 311 E. 38th St., Ste. 20C; New York, NY 10016; 212-661-6096

Pyware Instrument Designer
Sound wave designer that enables users to create an infinite variety of synthesized sounds using the built-in Ensoniq chip; sounds can be ported to the Pyware Music Writer
Apple IIGS; synthesizer and printer optional; 512K; ProDOS 16; not copy protected.
$129 retail
Pygraphics Corp.; PO Box 639; Grapevine, TX 76051; 817-481-7536 or 800-222-7536

Pyware MIDI Translator
Converts sequencer files into notation files to be used with Pyware Music Writer
Apple IIGS; synthesizer and sequencer program; 768K; ProDOS 16 and GS/OS; not copy protected.
$79 retail
Pygraphics Corp.; PO Box 639; Grapevine, TX 76051; 817-481-7536 or 800-222-7536

Pyware Music Writer
Professional music writing program designed for the IIGS; any type of markings and notations are available; tutorial on basic music theory available with Level I
Apple IIGS; printer; optional MIDI compatible synthesizer; 768K; ProDOS 16 and GS/OS; not copy protected.
$119 retail; Limited Edition
$295 retail; Special Edition
$595 retail; Professional Model
Pygraphics Corp.; PO Box 639; Grapevine, TX 76051; 817-481-7536 or 800-222-7536

Sonix
Music interface for Basic programs
Apple IIGS; two 3.5-inch drives; RGB monitor; 1 MB; ProDOS 8; not copy protected.
$59.95 retail
So What Software; 10221 Slater Ave., Ste. 103; Fountain Valley, CA 92708; 714-964-4298, 714-963-3392 or 800-648-9621 (orders)

■ Supermusic
Adds six music commands to Applesoft Basic
Apple IIGS; 512K; ProDOS 8; not copy protected.
Supermusic is music utility software that adds six music commands to Applesoft Basic. Features include: complete control of all 30 oscillators: independently set the volume, frequency, resolution and waveform of any oscillator; play up to 30 oscillators at the same time (all from Applesoft Basic); and digitize any analog message from any source.
$39.95 retail
Lynx Computer Products, Inc.; 15115 Ramona Blvd.; Baldwin Park, CA 91706; 818-960-4839 or 800-824-3522

Networking

AppleShare File Server V2.0
Workgroup file server software
Apple IIGS; other Apple computers.
$799 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

AppleShare IIGS Workstation Software
Workgroup software
Apple IIGS; other Apple models.
$99 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

AppleShare Print Server
Network print server; enhanced version of LaserShare
Apple IIGS; other Apple computers.
$299 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Aristotle
Provides educational institutions with access to ProDOS applications stored on an AppleShare File Server
Apple IIGS; other Apple II models.
$199 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

ELAN Networking System
Educational Local Area Network (ELAN)
Apple IIGS; other Apple II models; one Satellite board; one expander card; twisted pair cable; AROS III software; 128K; ProDOS 8; DOS 3.3; copy protected.
$267 retail; per remote station
Lan-Tech, Inc.; 11811 N. Tatum Blvd., Ste. P-150; Phoenix, AZ 85028; 602-953-6300

Inter•Poll Network Administrator's Utility
Contains tools that an AppleTalk network administrator can use to implement a network support program
Apple IIGS; workstation software.
$129 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

MouseFiler Network Utilities
Enables an Apple II user to work with an AppleShare server over the AppleTalk network; Macintosh-style desktop using windows, pull-down menus and the mouse
Apple IIGS; AppleShare Server, AppleTalk Network and Apple II Workstation board; 128K; ProDOS 8; not copy protected.
$199.95 retail; institutional POs accepted
Harbor Software, Inc.; 403 Great Rd., Ste. 8; Acton, MA 01720; 508-263-1870

Q-System II
Printer sharing network
Apple IIGS; 64K; ProDOS 8.
$495 retail; 256K
Sequential Systems, Inc.; 1200 Diamond Cir., Ste. M-2; Lafayette, CO 80026; 303-666-4549

Online Databases

AppleLink — Personal Edition
Allows users to access Apple-specific and general online information and resources
Apple IIGS; other Apple II models; one disk drive.
$35 retail; includes software, user guide, first year's subscription and the monthly AppleLink Update magazine
$35 retail: annual subscription fee
$6 retail; per hour (6 p.m. to 7 a.m. weekdays and all day on weekends)
$15 retail; per hour (prime time use)
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Boston CitiNet
Free online information service
ASCII terminal with modem.
Free to access
Boston CitiNet; Ste. 717, World Trade Center; Boston, MA 02210; 617-439-5678 or 617-439-5699 (modem)

CompuServe Information Service
Online telecommunications with several Apple forums
Apple IIGS; modem; communications software; Vidtex communications software available.
$39.95 retail; Subscription Kit

Online Databases

CompuServe Information Service; PO Box 20212; Columbus, OH 43220; 614-457-0802 outside U.S. or 800-848-8199

GEnie
Online database with an Apple II special interest group
Apple IIGS; modem.
$5 per hour retail; after hours
$35 per hour retail; prime time
General Electric Information Services Co.; 401 N. Washington St.; Rockville, MD 20850; 800-638-9636

The Source/Applesig
Telecomputing network; includes Apple II forum (Applesig); only place one can electronically access *The Apple IIGS Buyer's Guide* database, in which this database version is more extensive than the magazine version
Apple IIGS; other Apple II models; 64K system and a ProDOS terminal program is necessary to download software from Applesig's library; modem; communications software.
$29.95 retail; one-time membership dues
$6 per hour; 300-baud on evenings and weekends
$7.80 per hour; 1,200-baud on evenings and weekends
$9 per hour; 2,400-baud on evenings and weekends
The Source; 1616 Anderson Rd.; McLean, VA 22102; 703-821-6666 (membership), 703-734-7500 (business office) or 800-336-3366

Other Software

Apple IIGS Software Library
Total of 100 disks of public domain software and shareware
Apple IIGS; 512K; ProDOS 16; not copy protected.
$9 each retail
$39.95 retail; IIGS Editor's Choice Set (six-disk set featuring six reviews: Wheel, Iconed, Bounce-It!, Firace, Viewer and Control Panel NDA)
Write or call for free catalog
$3 retail; P.D.E.'s Guide to Affordable IIGS Software (contains detailed descriptions of nearly 1,000 files from 100 P.D.E. IIGS public domain and shareware disks)
P.D.E.; 2074C Walsh Ave., Dept. 155; Santa Clara, CA 95050; 408-496-0624 or 800-331-8125

Public Domain Catalog
Public domain software catalog
Apple IIGS; other Apple II models; 512K; ProDOS 8 or ProDOS 16; not copy protected.
$7.50 retail; each disk
Catalog free on request
Big Red Computer Club; 423 Norfolk Ave.; Norfolk, NE 68701; 402-379-4680

Public Domain Software On File CD-ROM
CD-ROM public domain software
Apple IIGS; other Apple II models; color or monochrome monitor; Apple II SCSI Card, Rev C; CD-ROM drive with compatible SCSI interface; printer optional; 64K; ProDOS 8 or ProDOS 16; not copy protected.
$195 retail
Facts On File, Inc.; 460 Park Ave. S; New York, NY 10016; 212-683-2244

UpTime, The Disk Monthly
Disk-based magazine
Apple IIGS; 128K; ProDOS 8; not copy protected.
$9.95 per issue retail
Viking Technologies, Inc.; 6 John Clarke Rd.; Newport, RI 02840; 401-847-2455

Personal Productivity

Address Master
Integrated name and address database
Apple IIGS; printer optional; 512K; ProDOS 16; not copy protected.
$39.95 introductory retail
Prelude Software, Inc.; PO Box 1317; Costa Mesa, CA 92628; 714-751-5736

Dollars And Sense 2.0
Financial management package
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$119.95 retail
Monogram; 531 Van Ness Way; Torrance, CA 90501; 213-533-5120

Family Matters
Household organization
Apple IIGS; 128K; ProDOS 8; not copy protected.
$49.95 retail
Springboard Software, Inc.; 7808 Creekridge Cir.; Minneapolis, MN 55435; 612-944-3915

The Food Processor II
Nutrition and diet analysis with 2,400 foods and 30 nutrients
Apple IIGS; other Apple II models; one or two disk drives; 128K; ProDOS 8; not copy protected.
$295 retail; free demo available
ESHA Research; PO Box 13028; Salem, OR 97309; 503-585-6242

Genealogical Data Base System (GDBS) 2.0
Genealogical software for novices or professionals
Apple IIGS; other Apple II models; 48K; ProDOS 8 and DOS 3.3; not copy protected.
$99.95 retail
Data Base Systems; PO Box 7263; Huntsville, AL 35807; 205-881-6957

L.I.F.E. Diary
Diary text, idea and reminder files, tables and graphs, etc., for understanding stress
Apple IIGS; other Apple II models; 64K; ProDOS 8; not copy protected.
$24.95 retail
Maretech; 325 Newell St., Dept. A3; Walla Walla, WA 99362; 509-529-1894

Managing Your Money 4.0
Financial planning, budgeting and checkbook and small business package combining nine integrated programs into one
Apple IIGS; two disk drives; 256K; ProDOS 8; not copy protected.
$149.95 retail
MECA Ventures, Inc.; 355 Riverside Ave.; Westport, CT 06880; 203-226-2400

Nutriplan
Diet and nutritional analysis software
Apple IIGS; printer optional; 128K; ProDOS 8 and DOS 3.3; not copy protected.
$75 retail
Micromedx Computer Software Corp.; 187 Gardiners Ave.; Levittown, NY 11756; 516-579-6392

Personal Accountant 2.0
Personal accounting system for personal and small business use
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$49.95 retail
Softsync, Inc.; 162 Madison Ave.; New York, NY 10016; 212-685-2080

Quicken
Single-entry bookkeeping software for small business and personal use
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$49.95 retail
Intuit, Inc.; 540 University Ave.; Palo Alto, CA 94301; 415-322-0573

TaxView
Tax preparation and planning
Apple IIGS; 512K; ProDOS 16; two 3.5-inch disk drives or hard disk drive; not copy protected.
$99 retail
Softview, Inc.; 4820 Adohr Ln., Ste. F; Camarillo, CA 93010; 805-388-2626 or 800-662-6829

Total Stress Management System
Covers many techniques to reduce stress and tension
Apple IIGS; printer optional; 64K; ProDOS 8; copy protected.
$89.50 retail
Psychological Psoftware Co.; 312 Los Altos Dr.; Aptos, CA 95003; 408-688-6808

Programming And Utilities

360 Text Toolkit V2.0
System library for APW/ORCA-based languages
Apple IIGS; APW or ORCA development environments; GS/OS; not copy protected.
$64.95 retail; Library with Assembly Macros
$24.95 retail; ORCA/Pascal Interface (requires Library)
$24.95 retail; APW C Interface (requires Library)
360 MicroSystems; PO Box 1192; Oviedo, FL 32765; 407-365-6714

AC/Basic Compiler
Basic compiler
Apple IIGS; 512K; ProDOS 16; not copy protected.
$125 retail
Absoft Corp.; 2781 Bond St.; Rochester Hills, MI 48309; 313-853-0050

Apple IIGS Icon Editor
Tool to create and modify icons
Apple IIGS; 512K; ProDOS 16; not copy protected.

Programming And Utilities

$25 retail
APDA — Apple Computer, Inc.; 20525 Mariani Ave., MS 33G; Cupertino, CA 95014; 800-282-2732

Apple IIGS Source Code Sampler, Volume I
Contains source code for IIGS applications that use the desktop interface
Apple IIGS; ProDOS 16; APW native or MPW IIGS cross-development system; not copy protected.
$30 retail; includes two 3.5-inch Apple II disks and one 3.5-inch Macintosh disk
APDA — Apple Computer, Inc.; 20525 Mariani Ave., MS 33G; Cupertino, CA 95014; 800-282-2732

Apple IIGS System Software (GS/OS) Version 5.0
Increases the speed and performance of an Apple IIGS
Apple IIGS; 512K.
$39 retail; documentation and disks
(Software available separately, free of charge, from Authorized Apple Dealers)
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

APW C: Apple IIGS Programmer's Workshop C V1.0.2
APW C compiler
Apple IIGS; APW; 1.25 MB; ProDOS 16; two 3.5-inch disk drives or one 3.5-inch disk drive and a hard disk drive; hard disk drive highly recommended; not copy protected.
$100 retail
APDA — Apple Computer, Inc.; 20525 Mariani Ave., MS 33G; Cupertino, CA 95014; 800-282-2732

APW: Apple IIGS Programmer's Workshop V1.0.2
Software development system
Apple IIGS; 1.25 MB; ProDOS 16; two 3.5-inch disk drives or one 3.5-inch disk drive and a hard disk drive; hard disk drive highly recommended; not copy protected.
$100 retail
APDA — Apple Computer, Inc.; 20525 Mariani Ave., MS 33G; Cupertino, CA 95014; 800-282-2732

Call-Box
Multilanguage Toolbox programming system
Apple IIGS; two 3.5-inch drives; RGB monitor; 1 MB; ProDOS 8, ProDOS 16 and GS/OS; not copy protected.
$99 retail
So What Software; 10221 Slater Ave., Ste. 103; Fountain Valley, CA 92708; 714-964-4298, 714-963-3392 or 800-648-9621 (orders)

Copy II Plus 8.4
Backs up copy protected disks
Apple IIGS; other Apple II models; 64K; ProDOS 8; not copy protected.
$39.95 retail
Central Point Software, Inc.; 15220 NW Greenbrier Pkwy., Ste. 200; Beaverton, OR 97006; 503-690-8090

Cross-Works
Utility that exchanges AppleWorks with IBM PC software
Apple IIGS; 128K; ProDOS 8; not copy protected.
$79.95 retail
SoftSpoken Co.; PO Box 97623; Raleigh, NC 27624; 919-878-7725

Directory Labeler II V2.0
Disk labeling utility
Apple IIGS; other Apple II models; 80-column card and Apple-compatible printer interface card; 128K; ProDOS 8; not copy protected.
$24.95 retail
Sourceware; 6899 S. Yukon Ct.; Littleton, CO 80123; 303-933-9148

Disc Commander
ProDOS disk editor
Apple IIGS; two 3.5-inch disk drives; RGB monitor; 512K; ProDOS 8; not copy protected.
$39.95 retail
So What Software; 10221 Slater Ave., Ste. 103; Fountain Valley, CA 92708; 714-964-4298, 714-963-3392, or 800-648-9621 (orders)

Disk Util II
Backs up copy protected software
Apple IIGS; 3.5-inch disk drive; 512K; GS/OS; not copy protected.
$59.95 retail
FWB, Inc.; 2040 Polk St., Ste. 215; San Francisco, CA 94109; 415-474-8055

The Diversi Series
Family of utility software designed to enhance performance of the Apple IIGS and disk drives
Apple IIGS; 512K; ProDOS 8; not copy protected.
$45 retail; Diversi-Key (requires 512K)
$35 retail; Diversi-Cache (requires 512K)
$30 retail; Diversi-Copy (any Apple II)
Diversified Software Research, Inc.; 34880 Bunker Hill; Farmington, MI 48331; 313-553-9460

EasyDrive
Software interface for hard disk drives
Apple IIGS; 3.5-inch disk or hard disk drive; 128K; ProDOS 8. ProDOS 16 and GS/OS; not copy protected.
$69.95 retail
Quality Computers; 15102 Charlevoix; Grosse Pointe, MI 48230; 313-331-0700 or 800-443-6697

Fasthouse
Software program for controlling the X-10 Powerhouse
Apple IIGS; other Apple II models; disk drive; X-10 Home Control Interface; 64K; ProDOS 8; not copy protected.
$34.95 retail; includes cable
$39.95 retail; X-10 Home Control Interface
KADO Systems; PO Box 1115; Pflugerville, TX 78660; 512-990-2390

File Utilities I & II
Shell utilities for APW/ORCA programming environments
Apple IIGS; APW or ORCA development system; GS/OS; not copy protected.
$34.95 each retail
360 MicroSystems; PO Box 1192; Oviedo, FL 32765; 407-365-6714

Graphic Environment Operating System (GEOS)
Operating system that brings a Macintosh-like graphic interface to all Apple II computers; key features include word processor, spell checker, mail merge, paint program and desk accessories
Apple IIGS; other Apple II models; 128K; not copy protected.
$69.95 retail
Berkeley Softworks; 2150 Shattuck Ave.; Berkeley, CA 94704; 415-644-0883

The Graphic Exchange
Universal graphics conversion utility
Apple IIGS; 768K.
$49.95 retail
Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522

Graphics Supermarket
Paint/animation program that also converts images into assembly or C source code
Apple IIGS; 512K; ProDOS 16; not copy protected.
$49.95 retail; program only
$149.95 retail; program and source code
Abracadata; PO Box 2440; Eugene, OR 97402; 503-342-3030

GS Memory Test
Performs diagnostic tests on extended memory boards
Apple IIGS; extended memory card; 512K; ProDOS 8; not copy protected.
$19.95 retail
On Three, Inc.; PO Box 3452; Kirkland, WA 98083; 206-829-1874

GSBug And Debugging Tools V4.0B1
Machine language debugger
Apple IIGS; 512K; GS/OS; not copy protected.
$30 retail
APDA — Apple Computer, Inc.; 20525 Mariani Ave., MS 33G; Cupertino, CA 95014; 800-282-2732

HyperLaunch
Launcher/program switcher
Apple IIGS; two 3.5-inch drives; RGB monitor; 512K; ProDOS 16 and GS/OS; not copy protected.
$49.95 retail
So What Software; 10221 Slater Ave., Ste. 103; Fountain Valley, CA 92708; 714-964-4298, 714-963-3392 or 800-648-9621 (orders)

HyperStudio
Hypermedia authoring system
Apple IIGS; 1.25 MB.
$129.95 retail
Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522

KeyLisp
Advanced Lisp programming language; 424-page bound manual
Apple IIGS; other Apple II models; 64K; ProDOS 8; not copy protected.
$149 retail; single (or first) copy
$39 retail; manual only for additional user (site license)
XPrime Corp.; 10835 Santa Monica Blvd., Ste. 204A; Los Angeles, CA 90025; 213-470-4663

LifeGuard
File recovery software for files deleted under ProDOS 8, ProDOS 16 and GS/OS
Apple IIGS; 256K; ProDOS 16 and GS/OS; not copy protected.
$29.95 retail
MindCraft Publishing Corp.; 52 Domino Dr.; Concord, MA 01742; 508-371-1660

Programming And Utilities

Lisa 816 V5.0
Apple IIGS native mode release of the Lisa interactive assembly language development system
Apple IIGS; 512K; 1 MB recommended; ProDOS 16; not copy protected.
$70 retail
H.A.L. Labs; 9472 Magnolia Ave.; Riverside, CA 92503; 714-359-8480

MacroMate
Universal macro program
Apple IIGS; 768K.
$49.95 retail
Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522

Menu Maker
Allows users to design custom pull-down menus
Apple IIGS; two 3.5-inch drives; RGB monitor; 512K; ProDOS 8; not copy protected.
$20 retail
So What Software; 10221 Slater Ave., Ste. 103; Fountain Valley, CA 92708; 714-964-4298, 714-963-3392, or 800-648-9621 (orders)

Merlin 8/16
Includes two versions of Merlin 8 for assembling 8-bit ProDOS and DOS 3.3 programs and Merlin 16 for assembling 8- and 16-bit ProDOS programs
Apple IIGS; other Apple II models; 128K; ProDOS 8, ProDOS 16 or DOS 3.3; not copy protected.
$124.95 retail
Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522

Micol Advanced Basic 3.0
Allows programmers to write Basic programs that operate specifically for the IIGS
Apple IIGS; not copy protected.
$145 retail
Micol Systems; 9 Lynch Rd.; Willowdale, Ontario, Canada M2J 2V6; 416-495-6864

Micol Macro
Integrated text editor, monitor/shell and self-relocating macro assembler; designed for programmers working in assembly language
Apple IIGS; 512K; ProDOS 16; not copy protected.
$99.95 retail
Micol Systems; 9 Lynch Rd.; Willowdale, Ontario, Canada M2J 2V6; 416-495-6864

MouseFiler 2.0
Replaces the Finder in the Apple IIGS with a much faster desktop; includes program selector, find file searching and more
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$69.95 retail
Harbor Software, Inc.; 403 Great Rd., Ste. 8; Acton, MA 01720; 508-263-1870

MPW IIGS
Cross-development system; development environment; cross-development assembler; cross-development C compiler; cross-development Pascal compiler
Apple IIGS; Macintosh with 2 MB of RAM; MPW 2.0.2 or later; MPW IIGS Tools; not copy protected.
$50 retail; MPW IIGS Tools V1.0
$100 retail; MPW V3.0
$100 retail; MPW IIGS Assembler V1.0
$150 retail; MPW IIGS C V1.0.1
$175 retail; MPW IIGS Pascal V1.0B1
APDA — Apple Computer, Inc.; 20525 Mariani Ave., MS 33G; Cupertino, CA 95014; 800-282-2732

■ ORCA/C
ANSI C compiler
Apple IIGS; 1 MB of RAM.
ORCA/C is a full ANSI C compiler with complete support for the Apple IIGS toolbox. Sophisticated compiler optimizations enhance the speed of programs and compact a user's code. The source-level debugger allows users to view program variables; watch their values change during execution; set and clear break points; and step, trace and execute some or all of the program at full speed.
The package comes with two environments: a Macintosh-like desktop development system and a Unix-like shell environment.
ORCA/C features function prototyping and standard ANSI C libraries, plus numerous extensions to support the Apple IIGS toolbox. It includes an inline assembler and a separate samples disk filled with source code. ORCA/C is upward compatible with APW C, so most programs can be ported from that compiler with very little effort.
$150 retail
The Byte Works, Inc.; 4700 Irving Blvd. NW, Ste. 207; Albuquerque, NM 87114; 505-898-8183

ORCA/Desktop For The IIGS
Programming environment for APW compatible languages
Apple IIGS; memory depends on language used; ProDOS 16; not copy protected.
$60 retail
The Byte Works, Inc.; 4700 Irving Blvd. NW, Ste. 207; Albuquerque, NM 87114; 505-898-8183

ORCA/M Assembler For The Apple IIGS
Complete development environment for assembly language programming
Apple IIGS; 512K; ProDOS 16; not copy protected.
$69.95 retail
The Byte Works, Inc.; 4700 Irving Blvd. NW, Ste. 207; Albuquerque, NM 87114; 505-898-8183

ORCA/M Support Programs
Adds 12 new commands to the ORCA/M, ORCA/Pascal or Apple Programmer's Workshop shell; library contains the source code to the ORCA/M and ORCA/Pascal; takes Merlin source code and translates it to ORCA/M source code
Apple IIGS; ORCA/M For The Apple IIGS; 512K; ProDOS 16; not copy protected.
$39.95 retail; Utility Package #1
$39.95 retail; Subroutine Library Source
$29.95 retail; Merlin to ORCA Source Code Translator
The Byte Works, Inc.; 4700 Irving Blvd. NW, Ste. 207; Albuquerque, NM 87114; 505-898-8183

ORCA/Pascal For The IIGS
Pascal programming language with desktop programming environment and source level debugger
Apple IIGS; 768K for text environment; 1,024K for desktop environment; ProDOS 16; not copy protected.
$150 retail; ORCA/Pascal with desktop and debugger
The Byte Works, Inc.; 4700 Irving Blvd. NW, Ste. 207; Albuquerque, NM 87114; 505-898-8183

The Power System
Programming systems: UCSD Pascal, PDQ Pascal, Modula-2, Fortran 77, Basic and C
Apple IIGS; other Apple II models; ProDOS 16; not copy protected.
$249.95 retail
Pecan Software Systems, Inc.; 1410 39th St.; Brooklyn, NY 11218; 718-851-3100 or 800-637-3226

RamUp 4.0
Organizes and speeds up RAM disks
Apple IIGS; Applied Engineering or Checkmate RAM card; 128K; ProDOS 8; not copy protected.
$39.95 retail
Quality Computers; 15102 Charlevoix; Grosse Pointe, MI 48230; 313-331-0700 or 800-443-6697

Screen Thief
Captures/saves any super high-resolution screen image to disk
Apple IIGS; two 3.5-inch drives; RGB monitor; 1 MB of RAM; ProDOS 8; not copy protected.
$20 retail
So What Software; 10221 Slater Ave., Ste. 103; Fountain Valley, CA 92708; 714-964-4298, 714-963-3392 or 800-648-9621 (orders)

TML Basic V1.10
Full-featured 16-bit Basic compiler
Apple IIGS; 768K; GS/OS; not copy protected.
$125 retail
TML Systems, Inc.; 8837-B Goodbys Executive Dr.; Jacksonville, FL 32217; 904-636-8592

TML Pascal II V1.0
Complete Pascal programming environment
Apple IIGS; 768K; GS/OS; not copy protected.
$125 retail
TML Systems, Inc.; 8837-B Goodbys Executive Dr.; Jacksonville, FL 32217; 904-636-8592

TML Source Code Library II V1.0
Set of more than 15 example programs written in TML Pascal II
Apple IIGS; TML Pascal II; 768K; GS/OS; not copy protected.
$49.95 retail
TML Systems, Inc.; 8837-B Goodbys Executive Dr.; Jacksonville, FL 32217; 904-636-8592

TML Speech Toolkit For The IIGS V2.0
Adds the latest in English text-to-speech technology to programs written in TML Basic or TML Pascal II
Apple IIGS; TML Basic or TML Pascal II; 768K; GS/OS; not copy protected.
$69 retail
TML Systems, Inc.; 8837-B Goodbys Executive Dr.; Jacksonville, FL 32217; 904-636-8592

UniDOS Plus
Allows users to use 3.5-inch disks with DOS 3.3
Apple IIGS; 64K; DOS 3.3; not copy protected.
$39.95 retail
MindCraft Publishing Corp.; 52 Domino Dr.; Concord, MA 01742; 508-371-1660

Word Processing

//Write
Full-featured word processor with Macintosh simplicity
Apple IIGS; 128K; ProDOS 8; copy protected.
$93.27 retail
$186.60 retail; lab pak
McGraw-Hill Educational Resources; PO Box 408; Heightstown, NJ 08520; 800-722-4726

Bank Street Writer III
Word processing program featuring integrated 60,000-word spelling checker and a 50,000-synonym thesaurus; for primary and high school students
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$89.95 retail; net to educators
Scholastic, Inc.; PO Box 7501; 2931 E. McCarty St.; Jefferson City, MO 65102; 800-541-5513 or 800-392-2179 in MO

The Character Factory
Lets users print special characters used in math, science, foreign languages, etc.
Apple IIGS; other Apple II models; 64K; ProDOS 8; not copy protected.
$24.95 retail; single user
$49.95 retail; unlimited copies per school or college department
Seven Hills Software Corp.; 2310 Oxford Rd.; Tallahassee, FL 32304; 904-576-9415 or 800-627-3836

DeluxeWrite
Word processor that combines text and graphics to create documents for letters, school reports, business reports and more
Apple IIGS; 768K; ProDOS 16; not copy protected.
$79.95 retail
$129.95 retail; DeluxeWrite/DeluxePaint II
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

MouseWrite Version 2.6
ProDOS moused-based word processor with print spooling, spelling checker, mail merge, AppleWorks conversion and more
Apple IIGS; other Apple II models; extended memory card recommended for expanded desktop (384K); two disk drives; 128K; ProDOS 8; not copy protected.
$149.95 retail
Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522

Sensible Grammar
Proofreading program that checks word processing files for common grammatical errors
Apple IIGS; word processing program; 128K; ProDOS 8; copy protected.
$99.95 retail
Sensible Software, Inc.; 335 E. Big Beaver, Ste. 207; Troy, MI 48083; 313-528-1950

Sensible Speller For ProDOS
Electronic dictionary containing the 80,000-word Concise Edition of the Random House Dictionary on disk; RAM compatible
Apple IIGS; word processing program; 64K; ProDOS 8; copy protected.
$125 retail
Sensible Software, Inc.; 335 E. Big Beaver, Ste. 207; Troy, MI 48083; 313-528-1950

Sensible Writer
Word processor featuring built-in mail merge and automatic envelope addressing; shares data with AppleWorks
Apple IIGS; 128K; ProDOS 8; not copy protected.
$99.95 retail
Sensible Software, Inc.; 335 E. Big Beaver, Ste. 207; Troy, MI 48083; 313-528-1950

Wordbench
Word processing program
Apple IIGS; other Apple II models; 128K; ProDOS 8; not copy protected.
$149 retail
Addison-Wesley Publishing Co., Inc.; 1 Jacob Way; Reading, MA 01867; 617-944-3700

WordPerfect For The Apple IIGS
Full-featured word processor with more than 110 features
Apple IIGS; two disk drives or a hard disk drive recommended; additional memory card recommended; 512K; GS/OS (System 5.0) compatible; not copy protected.
$179 retail
WordPerfect Corp.; 1555 N. Technology Way; Orem, UT 84057; 801-225-5000

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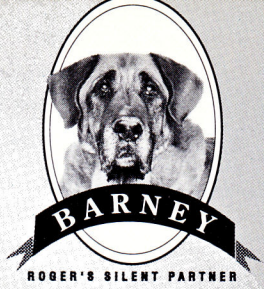
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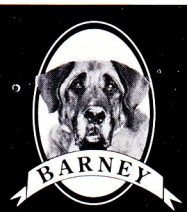
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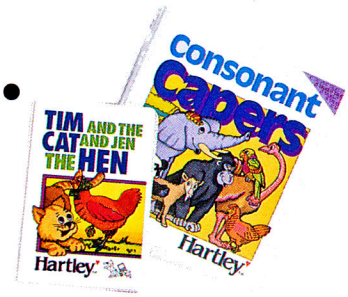
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