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A journal and exchange of Apple II discoveries

Desktop video arrives

Apple introduced a new 'genlock' video card for the Apple IIe and IIgs on April 3. Called the Apple II Video Overlay Card, it allows users to display a full-color NTSC video signal (from a camera, VCR, or video disk) on their computer's screen and to combine color computer graphics with the video signal. The combined results are displayed on the computer's screen and can also be recorded on a VCR or broadcast for NTSC television. The card's suggested retail price is \$549.

The card isn't a 'frame grabber'-it can't capture video images and store them inside the computer's memory. The only way to save the combined video/graphic images is on video tape. Likewise, the video images themselves can't be manipulated, except for standard TV-like tint and color adjustments. These adjustments are made using *VideoMix* software that comes with the card in both New Desk Accessory (for GS/OS) and stand-alone ProDOS 8 versions. The *VideoMix* software also provides control over video/graphic mixing.

'NTSC' describes the standard television signal used in North America and Japan. Other parts of the world use other video standards. Apple's new card supports only NTSC.

The new card can be used in two fundamentally different ways. First, it can be used in a 'desktop video production' environment. In this usage, the computer and its graphics are used to enhance materials created with a video camera. Enhancements can include the addition of titles, line drawings such as the football-play analysis done by television commentator and former coach John Madden, graphics such as logos, or full-blown animation (during development, Apple employees used code names such as 'Roger Rabbit' and 'Jessica' to refer to this card).

The second way the card can be used is to turn your computer into a 'Multimedia Machine'. In this environment, television-quality video images (either still pictures or movie sequences) appear on your computer screen. The images that appear are controlled by commands you enter on the keyboard or with a mouse. This environment requires additional hardware and software, however. Required hardware, in addition to the video overlay card itself, include a controllable video source, such as a video disk player or perhaps some new type of CD-ROM. Required 'software' would include both something for the computer and something for the video source itself.

In a Multimedia Machine environment, your computer's monitor can take the place of your television screen. For example, by connecting a VCR to your Apple IIgs, you can watch Roseanne or Indiana Jones on your computer screen. Unfortunately, you can't also hear them, unless you hook your VCR up to your stereo system and turn that on, too. The video overlay card neither captures nor enhances the sound portion of the NTSC signal, but it does pass it through from video-in to video-out.

Making the connection. On the IIgs, the Apple II Video Overlay Card must be installed in slot 3. On the IIe, it may be installed in any slot except 1; slot 3 is recommended. Since the card includes no firmware, it doesn't interfere with the Apple II's built-in slot-3 80-column firmware. Two short cables attach to the card. One brings two 'RCA phone plug' jacks to the back panel of the computer (video-in/video-out). The other brings a DB-15 analog RGB connector to the back panel. If you have an analog RGB monitor, you must disconnect

it from its normal position on the back of your IIgs and plug it into the card's RGB connector. If you have a composite monitor, you must disconnect it from its normal position and plug it into either the video-out connector on the card or to the video-out connector on the VCR you intend to record output on (in this case, you must also run a cable from the card's video-out to the VCR's video-in).

When used on a IIe, the card can also function as an analog RGB card. In fact, the card can bring IIgs-quality Super High Resolution graphics to the IIe, but no software has been written to support that feature. The card produces high quality video output and improves the display on both the Apple IIe and the IIgs. When the card receives input that meets National Television Systems Committee RS-170A specifications, it produces RS-170A output which can be broadcast for NTSC television.

VideoMix. The *VideoMix* software Apple provides with the card has three functions. First, it allows you to select a 'key color'. You can select the key color from a color chart or by pointing to it in your graphic. All other colors are called 'non-key colors'.

You create overlays by using the second function of *VideoMix* to make either the key color or the non-key colors transparent. The video source shows through the transparent colors. You can use *VideoMix* to independently set both the key and non-key colors to transparent (video shows through), opaque (graphics hide the video), or five levels of translucence (blends of video and graphics).

The third function of *VideoMix* allows you to control the color and tint of the video image as it appears on your computer screen.

Graphics for use with the video overlay card can be created with any existing Apple II graphics package. Expect to see these packages slightly enhanced for use with the card, however. For example, most of them need a feature to hide the cursor or mouse pointer. Other software may make more advanced use of the card. For example, the upcoming Hypercard-like *HyperStudio* from Roger Wagner Publishing will include commands for controlling video-disk players.

Markets and Uses. In a press release announcing the product, Apple said it expects the card to be used primarily in elementary and



"APPLE COMPUTER TO DISCONTINUE APPLE II, ... O.K., GO WITH IT."

high schools and in homes, the two markets with the largest installed base of both Apple II computers and video equipment. The installed base of Apple II computers in homes and schools is almost 5 million machines. According to industry research firm Market Data Retrieval, Inc., 60 percent of the computers in U.S. primary and secondary schools are Apple II computers, Apple said. According to Talmis, a Link Resources, Inc. subsidiary, 89 percent of U.S. public schools owned VCRs, and 9 percent owned videodisc players in 1988. Nielsen Media Research found 62 percent of U.S. households owned VCRs in November 1988, and 15.2 percent of those also owned video cameras.

Additional information about the card will be available from the Apple Programmers and Developers Association. The material will include a technical description of the card's architecture and a description of the Apple II Video I/O Toolset.

Miscellanea

While Apple itself is slowly retreating from the \$1 billion-a-year Apple II market around the world, other companies have begun to understand the potential that an easy share of this market could have on their bottom line. At an online conference on GEnie March 14, representatives of Laser Computer made it clear that they, at least, are happy with Apple's lack of interest in evangelizing the Apple II.

Among other interesting things, the Laser representatives said that all outstanding legal issues between Apple and Laser's mother-company, Video Technology, had been settled. At the price of some persistence, I was able to obtain confirmation from Apple that the lawsuit the companies had been involved in, officially known as *Video Technology Computers v. Apple Computer*, filed in the Northern District of Illinois, was quietly settled last summer. Apple said that as part of the settlement Video Technology obtained licenses to manufacture computers that use Apple II technology.

Laser currently is importing three A2-compatible models, the original Laser 128, the Laser 128EX, and the Laser 128EX/2. All three are about the size of the Apple IIc, except wider; each has an Apple II-like keyboard, including numeric keypad; and each has a single slot on the left side. The 128EX also includes an accelerator and a built-in memory board (1 meg max). The 128EX/2 adds a clock and a MIDI interface to the EX and gives the buyer a choice of either a 3.5 or 5.25 internal disk drive (other models are restricted to a 5.25 drive). The EX/2 isn't shipping in the U.S. yet, pending FCC certification.

Laser also sells MS-DOS computers and other consumer electronics. About half its revenue comes from its A2-compatible products. One interesting comment the Laser representatives made was that they could sell separate MS-DOS and A2 machines for much less than a single machine that was compatible with both. Laser has dealers all over the world. There are over a thousand in the U.S. alone, including most Sears stores (550 E. Main St., Lake Zurich, IL 60047 312-540-8911).

Another company going after A2 market share is Zuckerman Computer. Kind of an "Applied Engineering" of the MS-DOS and Tandy worlds, Zuckerman recently bought the rights to the A2 compatibles formerly made by Franklin computer. It has reintroduced them under the trademark Study Mate II (2160 Old Oakland Road, San Jose, CA 95131 408-433-0371).

Apple has updated its 15-inch ImageWriter LQ to improve quality and performance in the upper and lower areas of the page. Noise level has also been reduced. Current owners who are experiencing printing or noise problems and who purchased an ImageWriter LQ between August 11, 1987 and March 7, 1989 are eligible to receive a free exchange to the enhanced version. Exchanges are backed by a renewed 90-day warranty. The ImageWriter LQ can print 216 x 216 pixels to the inch whereas the ImageWriter's maximum resolution is 160 pixels per inch horizontally and 144 pixels per inch vertically. Apple has yet to release a GS/OS printer driver that takes advantage of the additional resolution, however. Suggested retail price on this printer is \$1,399.

AppleFest update. The east coast AppleFest '89 is May 5-7 at Boston's World Trade Center. I'll be helping out at GEnie's exhibit, as will **A2-Central** staffer Tom Vanderpool. Tom Hoover, author of *GEnie Master*, an *AppleWorks/UltraMacros/Talk Is Cheap* "front end"

for quickly and easily accessing information from GEnie with an Apple II, will also be there. Stop by and say, "Hi, Toms!"

News from Claris. Claris has decided not to exhibit at May's Boston AppleFest but will be going to Boston for the National Educational Computing Conference June 20-22. Claris is sending free updates to all registered *AppleWorks GS* users this month. The update includes faster printing, better handling of colors and cropping in imported graphics, and an enhanced "match records" command that adds some of the record selection rules available in *AppleWorks*. The update disk also includes a stand-alone program for testing RAM chips for CAS before RAS problems, which Claris thinks is the problem at the root of many of the technical support calls it gets regarding *AppleWorks GS*. Claris also is planning a new educational site licensing program for both *AppleWorks* and *AppleWorks GS*. Expect an announcement within 90 days. And look for an *AppleWorks 3.0* update later this year.

Tidbits from Tech Tidbits. Sue Goodin and the technical support gang at Apple's Charlotte office produce an interesting little newsletter we get irregularly here at **A2-Central**. The last batch reminds us that:

- IIC or IIgs users who complain that the letters that appear on their screen don't match the keys they're pressing on the keyboard probably have accidentally changed their keyboard to the Dvorak layout. To fix, press the button called 'keyboard' on a IIC or change the keyboard 'option' in the IIgs control panel.
- the GS/OS Epson printer driver is supposed to support the RX-80, FX-100, FX-850, FX-1050, LQ-850, LQ-1050, and LX-800 printers. The 'parallel' driver was designed for the Practical Peripherals Graphic Card (but can also be used with other parallel cards by changing an ID byte, see "GS/OS parallel driver" in our February issue, page 5.6)
- unlike the earlier IIC, the IIC-Plus can use either Apple 3.5 or UniDisk 3.5 drives. Apple 3.5s should be connected first, then UniDisk 3.5s, then 5.25 drives. The IIC-Plus will support three external drives in almost any combination (with a maximum of two 5.25s among the three, however.) The internal drive is configured to slot 5, drive 1 and can be booted with a PR#5. The first external 3.5 is configured to slot 5, drive 2. The first external 3.5 will boot when you turn on the power or press open-apple/control/reset (but not with PR#5), if the internal 3.5 is empty (great if you use Chinook's CT-20c hard drive for the IIC).
- Under GS/OS, if a 5.25 disk connected to the slot 5 SmartPort chain is write-protected, 3.5 drives appear to be write-protected as well. The opposite is also true. The cause is a bug in the APPLE-DISK5.25 driver. The result is that if you are copying between 5.25 and 3.5 disks using the *Finder* and you have write-protected the original disk to protect it during the copy process, the *Finder* will be unable to write to the destination disk because GS/OS will say it's write-protected. Until the bug is corrected, the suggested work around is to go naked into the world and un-write-protect your original disk (gulp).

A number of adapters that allow Apple IIs to use RGB color monitors are available from Telemac, P.O. Box 339, Washington, PA 18976 215-343-3000. Among the most interesting are the 'Peacock' module for the IIC and IIC-Plus, which allows those machines to use either a digital or an analog RGB monitor (\$199), and the VGA-1000 video distribution amplifier, which amplifies the IIgs analog RGB signal enough to drive one local and up to three remote monitors (\$295). Products for the IIC-Plus and IIE are also available. The adapters appear to be widely used with LCD overhead projector panels (see "A new generation of data projection panels," November 1988, page 4.74).

Kodak, one of the companies behind those overhead projector panels, has also come up with an infrared Apple Desktop Bus remote control. The infrared receiver is about the size of a mouse and plugs into the keyboard on a IIgs (or Macintosh). The hand-held remote includes a touchtone-phone-like numeric keypad, four arrow keys, and two control keys. The remote transmits "up to 35 feet."

Kodak developed the device for use with their projection panels during presentations, but it could be used with any type of software that can be controlled with the keys Kodak has made available. (We're not sure what those are, exactly—the data sheet shows keys marked "menu", "sel", "*", and "N" in addition to four arrows and 10 digits. The sheet says "*" sends "*" and "N" sends "RETURN". "SEL" sends a signal to the receiver telling it to wait for the next key to see what to send

down the ADB," the sheet says. No mention is made of what 'MENU' does, but wouldn't it be wonderful if it sent 'ESCAPE'? You can go pretty far in the Apple II world with four arrows, RETURN, and ESCAPE, but the Macintosh didn't even have an ESCAPE key until Apple standardized its keyboards.)

The device is officially called a Kodak Datashow Presentation Remote, catalog number 828 4671, from the Motion Picture & Audio-visual Division, Eastman Kodak Company, Rochester NY 14650.

The internal 3.5 drive on the Apple IIc-Plus can't handle 400K (single-sided) disks. This isn't a very big deal, since officially all Apple II 3.5s are double-sided 800K disks. However, part of the information placed on a disk when it's initialized is whether it's single or double sided, so single-sided disks are theoretically possible. The lack of support on the IIc-Plus came to light because some versions of Central Point Software's *Copy II Plus* are distributed on single-sided disks. Since the UniDisk 3.5 and the IIgs can handle single-sided disks just fine, thank you, the solution is to copy Central Point's 400K disk from an external UniDisk to the internal IIc-Plus drive, or make a copy on a IIgs.

GEnie is changing its access charges as of May 1. Day time rates will be reduced nearly 50 per cent, 2400 baud non-prime rates will be reduced 20 per cent, and 1200 baud non-prime rates will be

increased 20 per cent. The new price schedule follows:

GEnie U.S. price schedule, effective May 1, 1989

baud rate	non-prime	prime
300	\$5/hour	\$18/hour
1200	\$6/hour	\$18/hour
2400	\$10/hour	\$18/hour

Non-prime time is 6 pm to 8 am local time, Monday through Friday, and all day on Saturday, Sunday, and holidays. Prime time is 8 am to 6 pm local time, Monday through Friday.

The best way to take advantage of the new schedule is to obtain the shareware program GEnie Master, by Tom Hoover. It automatically logs onto GEnie and downloads exactly what you are interested in as quickly as possible. At 2400 baud it doesn't take long. You can then read and use the downloaded material offline, on your own time, using AppleWorks. GEnie Master requires AppleWorks v2.0 or higher and *Talk Is Cheap* v3.0 or higher. It's available in our library on GEnie—look for uploads by TOM.HOOVER. Hoover will also be demonstrating GEnie Master in GEnie's booth at Boston's Applefest. (And he'll be demonstrating how to write complicated UltraMacros programs like this one at our developer's conference this summer.)



Ask (or tell) Uncle DOS

Whoops. Get a pencil and make the following correction/apology to last month's issue, page 5.21. Apple does provide dealers with technical information on changing the battery on the IIgs motherboard in **Technical Procedures, Apple II Family, Volume 1**, on page 5.2. The battery contains lithium, which is highly explosive if it comes in contact with water, and should be treated as hazardous waste. Dealers can return old batteries to Apple for proper disposal. Apple does list IIgs batteries separately in its dealer service parts list. Its part number is #742-0007. One of our subscribers reports being charged \$6.72 for a new one (plus a \$25 labor charge to solder it in.)

The bad news is that Apple doesn't require dealers to have service technicians who know how to solder. Apple makes it the dealer's option to repair dead batteries by soldering in new ones or by replacing the entire motherboard. If your dealer wants to replace your motherboard to fix a dead battery, we highly recommend getting a new dealer or using one of the tips in the following letters.

IIgs battery follow-up

After writing you last month, I repaired my IIgs myself by replacing the lithium battery with two AA alkaline batteries. I purchased a battery holder from Radio Shack, clipped the old battery leads, soldered the leads from the battery holder to the leads on the motherboard, and inserted the batteries. I taped the battery holder

down under the power supply. It works great. Next time all I have to do is replace the two AA batteries.

Leon Munn
Inglewood, Calif.

Let us know about how long the alkaline batteries last between fill-ups. Two AA batteries supply 3.0 volts, which is 20 per cent less than a lithium battery. We can't find any data on what voltage the clock and battery RAM on the IIgs prefer.

Apple II kicks in France

I'm well known as a guy who calls a cat a cat and a liar a liar. Many times I've asked Apple France for better support for the Apple II. However, three of the letters you published last month are misleading.

A French version of GS/OS isn't available at this time but the U.S. version is sold by the French APDA clone:

D.D.A. Prim'vert
36 rue des Etats Generaux
78000 Versailles, France telephone (1) 48 87 96 18

The UniDisk 3.5 is available in France directly from Apple France or from Bregoux SA.

I don't know about the rest of Europe, but the Rev C SCSI ROM is sold in France as a replacement part for about 60 francs. It's difficult to get from retailers but one may order one directly from Apple France.

About 100,000 classic Apple IIs were sold in France and about 10,000 Apple IIgs models. Apple France has published a free book, named *Le Guide*, that presents all kinds of information for people looking for programs, hardware, books, or other information about the Apple II. It has 81 pages and says it's the 'First Edition,' allowing us to hope there will be more. However, so far Apple France has received fewer than 1,000 requests for the book. This low response may convince them that the Apple II market is dead.

The IIgs battery problem is slightly different here. Retailers generally know that the battery can be changed, but Apple seems to be surprised by the number of failures and they are out of stock. The problem isn't specific to the IIgs, it's the same for the Mac. An additional problem is that these are lithium batteries that

must be returned to the vendor when buying a new one (environmental protection rule).

For my own use, I've replaced the IIgs battery with three 1.2 volt rechargeable batteries. This gives me 3.6 volts which seems to be close enough to the 3.8 volts delivered by the lithium battery. It works fine, it's cheap, and it's easy to reload.

Incidentally, a friend of mine got a letter from Claris saying they are not planning to release a French version of *AppleWorks GS*.

Yvan Koenig
Vallauris, France

Editing ink and SEG.PR

After reading your comments on the MacInker ('Yorkshire ribbons,' pages 4.93-4.94), I feel compelled to make a few of my own. I have used a 'Universal' MacInker for Epson-type and ImageWriter II ribbons for nearly three years, and I consider it one of my better investments. The multicolor 'adapter,' however, deserves some caveats.

Single color ribbons are very forgiving with re-inking errors. The opposite is true of ImageWriter multicolor ribbons. My first and subsequent attempts ended in disaster. The wider ribbon does not ride properly on the inking head, and it 'creases' or curls up, neatly applying a color to the wrong band. The inks have different viscosities, which means erratic application to the band. There appears to be no way to adjust the cassette/ribbon or 'adapter' to work properly with my setup. I wrote to Computer Friends about this problem in December, and have received no reply. I guess it's another 50 bucks down the 'black hole.'

On another subject...after updating my Extra Custom Printers utility recently (see December 1987, page 3.87, 'Multiple custom printers') to work with AppleWorks v2.1, I discovered a fantastic utility that will not only permit three (actually more) custom printers, it will allow one to enter, essentially, any printer option into any printer data table...including proportional printing (if you can use the proportional tables in SEG.PR), slashed zeroes, half-height super/subscripts, colors, etc. It will resolve most of the custom printer questions which have appeared repeatedly in your 'Ask Uncle Dos' columns.

The utility, written by Nevin Diener, is available on GEnie in a file named SEG.PR.EDITOR.BNY. It will work with AppleWorks versions 1.2 through 2.1. This utility belongs in the library of every serious AppleWorks user.

Garth Shultz, M.D.
Kalamazoo, Mich.

Some years ago I noticed that the printer head on my MX-80 makes a track about 20 per cent of the width of the ribbon, which does not have the Moebius twist. Once, when a ribbon began to grow faint, I thought maybe I could get more from it by twisting the exposed part of the ribbon and winding it back into the cartridge. I did succeed in printing on the other edge of the ribbon, but the printing was no darker. I concluded that, in normal usage, capillary action distributes the ink uniformly, so you don't really gain much by using the other edge.

So I bought a MacInker, with the same highly satisfactory experience you describe.

Paul Nix
Summit, N.J.

Yorkshire revisited

Thanks for publishing my letter in your January issue. I've had requests for the Cirtech reviews from France and Brazil and a reader in Australia sent an answer to my problem with the ImageWriter LQ black ribbon. This validates the theory that every problem with an Apple computer has probably already been solved by someone else and that many users already know the answers to other people's problems. That's the real value of **A2-Central**.

It turns out the problem with my printer was that the tab on a black ribbon was touching the ribbon-type microswitch sensor but not depressing it. I adjusted the position of the switch and the automatic ribbon shifting started working correctly.

The best part is that a friend who lives only five miles away and who subscribes to **A2-Central** saw my letter and gave me the name of a Scotsman living in Yorkshire who reinks ribbons for £1.50 each plus postage—Jack Birse, 178 Long Lee Lane, Keighley, West Yorks BD21 4TT England. I sent one and it came back printing denser than a new ribbon.

Geoff Wood
Stockport, U.K.

We've learned a few more details about how the LQ's ribbon shifting works. Apparently the shift from the top part of the ribbon to lower positions occurs on a page-by-page basis. When you turn the printer off, it restarts at the top of the ribbon. People who print nothing but a page or two each time they turn their printer on might do better to leave the printer on all the time so it can remember what part of the ribbon to print on next. (And don't miss the announcement about Apple's ImageWriter LQ exchange program in this month's *Miscellaneous*.)

31 days hath October

The ProDOS FST on GS/OS System Disk 4.0 refuses to recognize dates greater than 30. This can be a problem in months that have 31 days. Here's a patch that fixes the problem. From the Applesoft prompt, enter:

```
POKE 768,32
```

```
BSAVE /your.sysdisk.name/SYSTEM/FSTS/PRO.FST,
```

```
T$BD,A768,L1,B$5CD
```

Don't do this to the original copy of your System Disk 4.0; you'll want that as a backup in case something goes wrong. I take no responsibility for the consequences if you type my patch wrong! Actually, I take no responsibility for it even if you type it right, but it works for me.

David Lyons
North Liberty, Iowa

Fonts and classic Apples

With so much attention to the IIGs these days, sometimes I'm not sure what applies to the IIE. February's article on fonts is a good example. I assume your collection of fonts is strictly for the IIGs and won't work on my IIE. If I'm mistaken, let me know.

Joe M. Steele
Iowa City, Iowa

Is the *Font Doctor* program you mention in your February issue also for the Apple IIc? What's the price?

Franz Lindau
Bern, Switzerland

For about an hour after receiving my **A2-Central** February issue and disk I was in hog heaven converting all the fonts I've collected for use with *MultiScribe* so they'd also work with *Publish It!* But what a great disappointment at printout time. All the characters in the fonts I converted were much narrower under *Publish It!* than they had been with *MultiScribe*. Is there any software that can make the necessary adjustments?

Bobby Adrian
Key West, Fla.

Software is available for classic Apples that uses standard IIGs fonts, so our fonts article is relevant to IIE and IIc owners. For example, *SuperFonts* from Beagle Bros allows you to duplicate "Macintosh" output on an *ImageWriter*, using an Apple IIE or IIc (or IIGs), *AppleWorks*, and standard font files. *Publish It!* is another program for classic Apples that can use standard fonts (only a file-type change is required).

Font Doctor, however, is a IIGs-only program. But since our February issue was published we've discovered a ProDOS 8 font editor that will work on a IIE or IIc. It's a shareware program and we included it on our April disk. The shareware fee is \$20 (this doesn't include a disk or shipping). The author is John Thomas, 38 Sunnybrae Blvd, Trenton, N.J. 08620.

Those tall-skinny characters you get when printing with *Publish It!* are a result of the tall-skinny 11:5 pixels we have on the Apple II. Most IIGs fonts are Macintosh conversions and were originally designed to look good with that machine's square 1:1 fonts. *MultiScribe* lets you print at 1:1 but it can't show you exactly what that will look like on the screen. *Publish It!*, on the other hand, prints at 11:5 and duplicates what's on the screen exactly. What we need are more 11:5 fonts—fonts designed to look good when displayed with Apple II pixels that are a little more than twice as high as they are wide—and fewer 1:1 Macintosh conversions. Our February fonts article explains all this in more (maybe too much?) detail.

Image manipulations

I recently purchased *Publish It!* from TimeWorks. I am considerably impressed with the capabilities of the program. My problem is that I

have been trying to convert my numerous volumes of *Print Shop* graphics for use with *Publish It!* I have been able to convert *Print Shop* graphics to high-res and then to ProDOS, but when viewed or printed by *Publish It!* the graphics are elongated. Do you know of a process or program to meet my needs?

Keith Schlenker
FPO New York

Publish It! 2, the new version of the program (see February, page 5.7) includes the ability to import *Print Shop* graphics directly from DOS 3.3 disks.

The Big Red Computer Club sells a program called **GAP** (\$9.95) that can read DOS 3.3 *Print Shop* graphics and convert them to ProDOS single- or double-high-res. We don't know if it solves the distortion problem. The November 1988 issue of *Washington Apple PI's* newsletter includes a patch to **GAP** that inverts the graphics so they become dark lines on a white background.

The neatest solution we've found, though, is *The Graphics Exchange*, by John MacLean, from Roger Wagner Software. It can read virtually any Apple graphic file—whether DOS 3.3, ProDOS, or Macintosh *MacPaint* (including *Print Shop*, *Print Shop GS*, *Newsroom* clipart, and *Newsroom* photos)—and convert to any other format (except Macintosh). It allows you to clip a portion out of a graphic, to rescale a graphic, to invert colors in a graphic, and to drop out background colors. It does require a 768K minimum IIGs; however. For further information, see this month's **A2-Central** catalog.

Self-made hard drives

I would like to add to the generic hard drive discussion ("An introduction to SCSI," December 1988, page 4.85; "Yes, you can do a low-level format of SCSI hard disks," January 1989, page 4.90; "Some stuff about SCSI," February 1989, page 5.7). Acting on the recommendation of one of your readers, I purchased a drive case from the Tulin Corporation in San Jose. Although most of the comments were true, other readers might be interested in several things I found out the hard way.

The Tulin cases do not come with all the necessary hardware and cables that you will need (the AC power cord is optional as well as the brackets and connectors needed for a two-drive installation). However, these items are available at extra cost. What does come with the Tulin case is an internal SCSI cable, which is no more than a couple of standard connectors and a short piece of ribbon cable to run between the hard drive assembly and an external connector on the back panel of the Tulin case.

Although a 30-watt power supply can handle two drives, it will be running near maximum output, which is a well-documented cause of power supply failure. If you intend to run two drives now or in the future, Tulin recommends a 65-watt power supply, which, incidentally, is the only one they had in stock when I called to place my order.

Using the Tulin case requires a slight modification of the drive assembly. Although it's a simple modification, it could void the warranty. If you buy a drive assembly from Tulin they will do the modification for you, however, their drive prices are higher than other sources.

One point on which I differ with other comments is the appearance of the case. I can't call it 'beautiful', it's functional at best. The appearance is ruined by a poorly designed front cover assembly. This consists of two pieces of stamped sheet metal held together crudely with two screws and spacer washers, which form a full-length quarter-inch gap in the center of the front panel. I assume the gap is for cooling. The power switch is located in this gap as is the power-on LED (the square LED is glued in place and one must take care not to break off the protruding leads).

The front panel is held onto the rest of the case with three screws, which incidentally are the screws that must be removed to gain access to anything inside the case. These screws get covered by a decal supplied by Tulin. As the instructions that came with the case state, make sure everything works before applying the decal. If you want your finished drive to look homebrew or if you plan to hide it out of sight these concerns may not be important.

I called Tulin to express my displeasure and discovered they do not accept returns of merchandise, period. They would repair any item that did not work under warranty, however. I offered to pay a restocking fee, no dice.

There are other manufacturers selling less expensive drive cases. Wetex International (213-728-3119) has an ad in Computer Shopper offering a dual-drive case with 60-watt power supply for \$79 versus Tulin's price tag of \$169.

Lou Wozniak
Albany, N.Y.

I have successfully put together a SCSI 64-meg drive for my IIGs, thanks to your newsletter. You might be interested in my experiences.

In looking for a hard drive, I spent considerable time reviewing information on various drives. Seagate was kind enough to send me a catalog (408-438-6550, 800-468-3472).

Although Seagate drives are not the very cheapest, they have been around a long time and have a very good reputation. This is important as I expect to have it many years and it will probably need repair someday. Seagate provides a one-year warranty on all their products. Also, there are many people who will repair a bare Seagate drive and a generic power supply.

The cheapest possible drive would be a 20-meg unit (ST-225N), which would run around \$300. A 43-meg unit (ST-251N) would cost around \$400. Although I didn't need so much storage, I settled on a 64-meg, 28 ms ST277N, at about \$450, from LYCO Computers in central Pennsylvania (717-494-1670, 800-233-8760). They were recommended by the Seagate representative and were very easy to deal with.

The drive came within a week and was supplied with a 12 inch cable and MS-DOS partitioning software. Instructions were simple and clear.

The hardest part of building a drive turned out to be selecting the case. I settled on the Apple Hive by Tulin Corp in San Jose (408-432-9025). This is a very nice unit, which is about the same size and color as the IIGs. They have sold many units for the IIGs and knew all about it. The case comes with an internal cable, a back panel unit number switch set, a 30-watt power supply, quiet fan, on/off switch, and indicator light. (They said to hook up the indicator light to the drive, but I didn't want to remove the circuit board and clip the LED leads, so I just hooked up the light as a power on indica-

tor.)

The only trouble with the Tulin unit is that it's expensive—over \$170 delivered. While the Apple Hive itself was only \$119, I also spent \$25 on a 6-foot SCSI cable, \$4 on an (optional) AC power cord, \$20.21 on freight, and \$6.57 on a bank card surcharge. They said there was a two-week back order and it was delivered in 15 days.

Another possibility would be a power supply and cabinet from Walker Electronics in Dallas (214-339-8003). They'll provide a unit with cables and shipping for under \$120.

I got my Apple SCSI card from a Columbus Apple dealer for \$129. They are hard to find—a special order would probably take five to six weeks.

It's amazing just how fast my drive is. GS/OS loads in a few seconds. Although I have *ProSEL-16*, the *Finder* is almost as fast, easier to use, and it will run in 512K—which *ProSEL* won't. The *Finder* is a fairly good program selector, but a *really great* file utility. It excels at copying and moving files and programs. An Apple IIGs with a 28 ms drive is much faster than the IBM ATs I have used. The only time that the AT would have an advantage would be in calculating a large spreadsheet or some other CPU-bound process. The only thing that still takes a significant amount of time is to return from ProDOS 8 to GS/OS.

I have no use for 60-meg of space at present. I have loaded all of my programs and data files—over 350 files—and have used only 10 per cent of the space. It is unlikely that I'll use much more unless I get into desktop publishing or sound, as graphics and sound data files take up a lot of space. Backing up the disk takes some time, however, the Apple *Backup II* program that comes with the SCSI card is very nice. It allows incremental backups and restoring of individual files.

To get a system up and running, **A2-Central's** low-level disk format program is essential (January, page 4.90; also on our February disk—OTHER.PROGS/SMARTPORT.SCSI). If you have a IIGs, you can then boot a system disk that includes Apple's SCSI.DRIVER in the SYSTEM/DRIVERS subdirectory, use the GS/OS Advanced Disk Utilities to format (a second time—this puts on the directories) and partition the drive, and then use the *Installer* to put GS/OS (don't forget SCSI.DRIVER) on the drive. Reboot and watch (don't wait):

Power on to Finder	37 sec
Finder to AppleWorks	8 sec
return to Finder	30 sec
ProSEL-16 to AppleWorks	9 sec
return to ProSEL-16	18 sec

Ken Lessing
Fresno, Ohio

As you use more and more subdirectories on your 64-meg drive, I suspect you'll be less and less happy with the Finder as a file utility. Copying a file that's several subdirectories down on one disk to a subdirectory that's several levels down on another disk can be trying—newly opened subdirectory windows inevitably cover up one of the subdirectory windows you want to drag something to or from. Yes, you can solve this by moving windows around, but simply selecting the subdirectories you want from the trees that ProSEL and Copy II Plus offer is much easier.

I purchased a complete hard drive from Tulin

Corp. They sold me a 65-meg drive 'kit' which was already assembled and included cables, cabinet, formatting software and Apple's SCSI card, currently unavailable through dealers and mail order, at several hundreds of dollars less than comparable drives from leading manufacturers. I don't know what I'll ever do with all that space but give me time.

Serendipity played its hand, for the May issue of *A+*, which includes an article about hard drives, arrived the day after the drive and before I could get it to operate (I had received a bad cable which Tulin promptly replaced; my knowing how to check continuity didn't hurt their response.) The cover story, 'Home Brew Hard Drive,' by Owen Linzmayer and Tim McGraw, pages 38-41, contained downright essential information for anyone wanting to know about hard drives. Not only did they review the very drive I purchased, but they wrote an excellent piece on formatting.

They pointed out that Apple's *Advanced Disk Utilities* by itself is a poor tool for low-level formatting, a necessary first step in setting up the drive. They recommended two programs by Joe Jaworski, *Hacker* and *DisktimerGS*; Jaworski's files are available on GENie (check for uploads by JVAWORSKI) and CompuServe (73307, 310). *Hacker* allows choosing any interleave ratio for the drive where *Advanced Disk Utility* has few options; *DisktimerGS* tests the interleave. After using *Hacker* and *DisktimerGS*, then use *Advanced Disk Utility* for partitioning and high-level formatting. *Hacker* requires Apple's SCSI card.

For no good reason I partitioned my hard disk into four sections and then discovered some limitations. My SCSI card is in Slot 7 and I boot from Scan. I have a 3.5 drive in S5, D1, a 5.25 in S6, D1, and /HARD1 in S7, D1, /HARD2 in S7, D2. AppleWorks and *Copy II Plus* will not recognize /HARD3 or /HARD4, but *Prosel-16* will. If I put the SCSI card in Slot 5 then all partitions are recognized in slots 5 and 2, but my 3.5 drive disappears. Are /HARD3 and /HARD4 wasted space? Can you recommend a better configuration?

Quentin Packard
Troy, N.Y.

GS/OS programs, such as ProSEL-16, can handle any number of disk 'devices' or partitions per slot. ProDOS 8 (and software that runs under it, such as AppleWorks and Copy II Plus) can handle only two per slot, except for slot 5. If more than two devices are found in slot 5, ProDOS 8 will 'remap' the third and fourth devices to slot 2. You can save /HARD3 and /HARD4 for GS/OS files, or you can repartition your drive so it has just two partitions.

I'm building a hard disk drive as you described in December ('An introduction to SCSI,' pages 4.85-4.86). Do you have any ideas on how to park the heads before shut down? I am going to use a Seagate ST-277N.

Lawrence E. Hott
Dallas, Texas

The ST-277N includes automatic 'head parking' so you don't need to do anything special before turning the unit off.

AppleWorks and big RAMcards

The problem you encountered with AppleWorks 2.1 crashing after you added more than two megabytes of memory to your standard-slot memory card (February, page 5.6) isn't new. It's

been lurking inside AppleWorks' initialization routine since support for this type of memory card was introduced in AppleWorks 1.3. In a nutshell, the program expects the card to be formatted as a ProDOS disk, but provides for no more than one volume bitmap block. This means AppleWorks imposes an artificial limit of 4,096 blocks or...you guessed it...2 megabytes. Even if the disk's volume header shows more than 4,096 blocks, AppleWorks still tries to use the same volume bitmap block. I can't give you all the gory details as to the manner of death, but I'm sure it's painful.

The code that sets up the file SYS.DESKTOP is quite large, over 1K, and would require major surgery to fix this.

John D. Smyth
Blackburn, Vic.

(Pssst, Claris, if you're listening—it's not really necessary to patch AppleWorks so it can use more than 2 megabytes for its desktop. Whatever memory is left in the first volume bitmap block is plenty for SYS.DESKTOP. Just don't crash on us when there's even more memory there. And Pssst, TimeWorks, if you're listening—why did you also call your desktop-expansion file SYS.DESKTOP? You may think people can't run AppleWorks and Publish II! at the same time, but with SoftSwitch you can and it would be neat. In your next revisions, in addition to support of 4- (or even 16-) meg slinky-type cards, we'd like to see users have the ability to specify how much expanded RAM your programs should grab—rather than you just grabbing it all—and more original names for the desktop files. Thanks.)

Ilc upgrade routes

I own a Ilc and would like to double its memory and speed it up. To date I haven't modified it in any way. Applied Engineering sells two memory enhancement packages for the Ilc, RamExpress and Z-Ram Ultra. Which one would you suggest? Does RamExpress have a Zip Chip?

Robert Waldo
APO Miami

None of the Applied Engineering products you mention includes a Zip Chip or other type of accelerator. You'll have to buy that separately. Either a Zip Chip or a Rocket Chip will work in any Ilc except the Ilc-Plus, which is already accelerated.

Applied Engineering's Z-Ram Ultra series comes in three models. Ultra 1 is a memory card only, 512K maximum. Ultra 2 includes memory and a clock, 1 megabyte maximum. Ultra 3 has memory, a clock, and adds CP/M capability to your Ilc, 1 meg maximum. (Applied Engineering also sells a card called Z-80c that adds CP/M capability to a Ilc, but includes no memory or clock.)

The Ultra cards are software compatible with Applied Engineering's RamWorks cards for the Ilc. These cards use the Ilc's "auxiliary slot". Our experience is that users have more difficulty taking advantage of this memory than memory on "standard slot" cards, such as Applied Engineering's RamFactor for the Ilc. Since RamExpress is software compatible with the easier-to-use RamFactor, we lean toward it. Applied Engineering also has a clock option available for RamExpress. Ilc-Plus users, incidentally, have no choice. They must go with RamExpress, as the Ultra series of cards won't work in that machine.

RamExpress, however, does require a Ilc with an internal memory expansion connector. Early Ilc's didn't include one of these. To figure out if your Ilc has one, type the following at the Applesoft ']' prompt: PRINT PEEK(64447). If the number that is printed is 255 or 0, you don't have one (your Apple dealer can upgrade your machine for you, however—last time we checked the upgrade was still free). If it's 3, 4, or 5, you already have an internal connector and don't need a motherboard upgrade. If it's anything else, you either typed the command in wrong, you're not using a Ilc, or the future has caught up with us.

Checkmate Technology also makes a memory-only aux-slot type card for the Ilc called the MultiRam CX, 1 megabyte maximum. Checkmate is designing a RamExpress-like card for the internal Ilc connector, but shipments won't start till much later this year.

Chinook Ilc hard drive, cont.

What do you mean (December, page 4.86-4.87) when you write "If you trade your Ilc later, Chinook can turn its CT-20c into a regular SCSI drive for you"? Could I put a stamp on my Ilc, mail it to Chinook, and have them build a true SCSI host adapter into it instead of SmartPort?

What changes must be made to get the Chinook hard disk running on SCSI and SmartPort? My dream is to work in my office on my Ilc with a Chinook hard disk and then on weekends connect it to my Ilc (with a SCSI card) at home. Is it possible to make such a modification, so this device will be switchable between SmartPort and SCSI?

Thomas Guth
Ansbach, West Germany

Chinook's CT-20c is a SCSI drive at heart. Chinook has developed a SmartPort to SCSI converter that they build into the drive. Thus, turning a CT-20c into a true SCSI hard disk is a simple matter of removing this board. We suspect that building the card into the Ilc rather than the drive is infeasible from either a technical or marketing standpoint, if not both, but only time will tell for sure.

The simple solution to your problem is to buy a UniDisk 3.5 controller, rather than a SCSI card, for your Ilc. You can connect the CT-20c to that (or to the SmartPort drive connector on the Ilgs) and it will work fine. However, the speed is closer to that of a 3.5 drive than that of the typical hard drive. If your primary goal is to amass a lot of data on one device (rather than speed), this is an easy solution. The CT-20c is smaller than the binder you keep your back issues of A2-Central in, so it's very easy to move around if you buy an extra set of cables. You'll have to ask Chinook if they can provide a drive with a 220 volt power supply (601 Main St, #635, Longmont, CO 80501 303-678-5544 800-727-5544).

We haven't tried our CT-20c on a Ilc, but it's worked flawlessly on a Ilc, a Ilc-Plus, and a Ilgs. (But GS/OS currently has a problem with the CT-20c if it's the second drive on the Ilgs SmartPort chain; expect this to be fixed in upcoming versions of GS/OS.)

Desktop video/Ilc power

What software and hardware is available for the Ilgs that can generate and mix text and graphics with a video source to create video titles and credits that can be recorded on standard video equipment? How about software to

produce and scroll large-sized text to simulate a teleprompter?

Could you provide me with the pin diagrams for the Ilc back-panel power input, its power consumption specifications, and a source for the plug itself? Also, what products are available to make a Ilc completely portable?

Keith Gillette
St Croix Falls, Wisc.

Apple's new Apple II Video Overlay Card, mentioned elsewhere in this issue, is a good Ilgs solution to the graphics/video mixing problem. Any software that can create screen images of the text you want will work with Apple's card.

Apple's card also works with the Ilc. Similar, but more expensive, cards for the Ilc (\$1,795) and Il-Plus (\$1,695) are made by Video Associates Labs, 3933 Steck Ave, B109, Austin, Texas 78759 512-346-5781.

Two sources for teleprompter software are John Stanley, 208 Charter Oaks Circle, Los Gatos, CA 95030 408-374-1235 and Beacon Software, P.O. Box 751, Milwaukee, WI 53201 414-355-4460. Stanley provides teleprompter services to video production companies in the San Francisco area using Apple II-based equipment; he sells software and plans for building teleprompters using Apple's discontinued small-screen Ilc monitors. Beacon makes two products called AUTOPrompter+ (\$295, 64K) and AUTOPrompter Deluxe (v2.0, \$375, 128K). The deluxe version includes a word processor for writing scripts in two columns and "story list management" software that allows you to bring up scripts in any order onto the teleprompter (used, for example, by radio stations for on-air advertising scripts). The word processor, AUTO-Scripter, is available separately for \$95.

According to Apple's Peripheral Interface Guide, the 7-pin Ilc power connector works like this:

Pin #	Signal	Description
1	NC	no connection
2	GND	signal ground
3	GND	signal ground
4	SGND	shield ground
5	+15V	+15 volts DC
6	+15V	+15 volts DC
7	NC	no connection

No figure is given for power consumption, but a look at one of our Ilc power bricks reveals the output rating is 15 volts DC, 1.2 amps, 18 watts. Since I've successfully used the Ilc for long periods plugged into a car's 12 volt cigarette lighter, I suspect the Ilc can adapt to a range of voltages.

For the latest information and prices on making the Ilc portable, including where to get the power supply connector, contact Roger Coats, P.O. Box 171466, San Diego, CA 92117 619-274-1253.

AppleTalk questions

I notice you sell AppleTalk connectors. What good are they for individuals? How do you write programs that use AppleTalk? Will an Applesoft program that prints using the PR#I command work with an AppleTalk printer?

Jeff Imig
Normal, Ill.

If you want to set up an AppleTalk network you need a "connector" for each machine in the

network. The prices on Apple's own connectors and cables are amazing. We sell cheaper connectors that don't require special cables (interior telephone cable from a hardware store works fine).

If you only have one computer, an AppleTalk network is pretty useless. They make sense for attaching several IIGs computers to one printer, particularly if the printer is an expensive LaserWriter that you can only afford one of. You can also use IIGs, but not IIGs, on an AppleTalk network, but that requires a \$249 Apple Workstation Card in each IIG (enhanced IIGs only). The IIGs has AppleTalk built in and doesn't require this card. LaserWriters also have AppleTalk built in. ImageWriters don't. For \$139, however, you can get a card for your ImageWriter that adds this ability.

We tried a simple AppleTalk network in our office that included an ImageWriter, a IIGs, and a Macintosh SE. It worked, but it was impractical for us because AppleTalk on the IIGs enables some interrupts that conflicted with various software packages and because it effectively used two slots on the IIGs. On the IIGs, your programs print over AppleTalk just as with any other printer, but you must change your PR# command to PR#7 (instead of PR#1) because AppleTalk "appears" in slot 7. For additional information, see our March 1988 issue, page 4.11.

There are other ways to attach several computers to one printer besides AppleTalk. A number of companies make "automatic printer switches" that can monitor a number of computers (usually up to 4 or 8) and automatically connect any computer that's trying to print to the printer. These switch boxes use the standard serial connections on your computers and printers. Cables are relatively inexpensive, but are more complicated than AppleTalk to install. We've also set up a network using one of these; it includes an ImageWriter, a IIG, a IIG, a IIGs, and Macintosh SE. None of the computers "knows" the switch is in use, so we've experienced zero compatibility problems. AppleTalk can attach more computers to a printer (and can handle multiple printers as well), is a little less expensive, and is a lot easier to install than an automatic printer switch. Nonetheless, the printer switch solved our printer-sharing problem to our satisfaction; AppleTalk didn't. For more information, see "Mini-8 ImageWriter dealers" in our October 1988 issue, page 4.70.

You can also use an AppleTalk network to share a hard disk among several computers (see April 1988, page 4.17). This requires a Macintosh and AppleShare File Server 2.0 software. We're tentatively trying this system out now and comparing it to other methods of sharing a hard drive and its files among several computers. More on this another time.

Guess who answered 911

I solved my problem with the IIGs Fatal System Error 0911 (July 1988, page 4.47) by buying an IBM power supply (\$70) and an IBM XT case (\$35) and rebuilding the IIGs inside it.

Steffan Plotnek
Northfield, Mass.

We haven't heard of a definitive Apple solution to the 911 error, but users have reported good results by either adding a cooling fan or changing to a more robust power supply.

Modem skips characters

My Applied Engineering modem keeps dropping letters in received transmissions. What can I do?

Joel Weddig
Waltham, Mass.

This is a common problem that has nothing to do with your modem. What you need to do is get enhanced ROMs for your Apple IIe. The enhanced ROMs support interrupts better, and good interrupts will prevent characters from getting lost on their way into your computer.

Lego vs. Fischer

I was delighted to see more about Logo in your December issue (page 4.92). I am only mildly dismayed at your slim Logo coverage, because it was in your newsletter that I learned of both LCSi and ICCE (October 1987, page 3.70), for which I am grateful. These firms spe-



cialize in Logo whereas you cover the entire Apple Orchard. The people at ICCE are very helpful with one's problems. Maybe that's why you don't hear much from Logo sloggers.

I was particularly interested in your further reference to Lego TC Logo. I have not bought it, because the price "makes me wince" also (July 1987, page 3.43.).

This raises a very curious issue. Fischertechnik also has a computer kit with interface, software (using Basic) and special pieces. I have purchased this kit—it's complete cost was \$190, compared to the \$450 you quoted for Lego's. It works fine and includes enough parts to make a preprogrammed robot. With a few additional parts I built a model that played a mean game of TicTacToe. The interface has eight digital and two analog inputs, which makes it powerful for many applications.

A version of the Fischertechnik kit is also advertised as available in either Terrapin or LCSi Logo. I don't know the price because their dealers seem very slow to answer inquiries. I really want to know because I like LCSi Logo very much, and I can hardly wait to crank up my Fischertechnik interface using Logo.

But here is the mystery of mysteries. For \$190 I got a big box of special parts plus an Apple II interface with four motor outputs (DC, polarity reversible), eight digital inputs, and two analog inputs. The higher-priced Logo interface has one fewer motor output (also DC and reversible) and just two inputs for sensors.

Keith Cameron
Spring Hill, Fla.

The March 7th issue of the Wall Street Journal had a major front page article on the Lego-Logo connection. The author gives a complete overview of where both Lego and Logo came from and how they got together. Incredibly, the article goes on for over 50 column inches without once mentioning the Apple II by name—it's just a "computer".

AppleWorks numbering, again

When printing out a long text file—over 100 pages—with AppleWorks 2.1, the page incre-

ments went 49, 49, 306, 51, 52. This has happened to me twice now. The first time I thought I had done something wrong. This time I'm certain that it's a bug in the program. Has anyone else run across the anomaly?

Sidney A. Powers
Valencia, Calif.

We've heard about odd page numbering on long documents with previous versions of AppleWorks, but we've never been able to consistently replicate it. It's a difficult bug to catch because it takes so much time and paper to test. If you have a file that will produce the bug consistently (particularly when printing to the screen as well as on paper) by all means, send it to Claris, I'm sure they'll be very interested.

Apple-Mac file conversion

At home I have an Apple IIc and at work I have a Mac SE. I often write things at home on the IIc that I'd like to take in to work the next day and print, using MacWrite. I'm looking for a program that can translate AppleWorks files to MacWrite files without losing all the layout information.

I know I can print the AppleWorks document to a text file and then convert this to Macintosh format using Apple File Exchange (one of the Macintosh system utilities), but there must be a better solution that doesn't lose all the underlining, indentations, and so on.

Mario von Allman
Ennetbuergen, Switzerland

Are you aware of any translator file that can be used with Apple File Exchange on the Macintosh to convert AppleWorks word processor files to a Mac word processor such as MacWrite, or Microsoft Word? My school's LaserWriter is hooked up only to a Mac.

Alan Hirshfeld
Newton Highlands, Mass.

The company that wrote Microsoft Works for Microsoft also wrote an Apple File Exchange translator that translates from AppleWorks to Microsoft Works without losing formatting. Since it's to Microsoft's advantage to limit the usefulness of AppleWorks, the translator only goes one way—it won't transfer Microsoft Works files back to AppleWorks format. Claris would be wise to provide a two-way translator for its Apple II/Macintosh products simply for competitive reasons, but hasn't done so that we're aware of.

GS/OS damage detectors

In your March issue a reader says that GS/OS sends "false messages that my disk is damaged" (page 5.13). In fact, GS/OS is almost certainly detecting problems with one or more directories, problems that are missed or ignored by ProDOS 8. For example, if the backward chain pointer to the previous directory is invalid, then GS/OS will complain, but ProDOS 8 will not. I have found other such errors, but I cannot remember the exact details. The bottom line is that GS/OS is probably telling the truth. I have (very rarely) seen circumstances where rebooting was enough to clear the problem (ie. memory had been corrupt, not the disk), but if the problem still exists after a reboot, then copy the files to another disk under ProDOS 8 as soon as possible (or maybe use a directory fixer such as FIXCAT from Bag of Tricks).

It's worth noting that even ProDOS 8 had similar foibles. Once I couldn't understand why an apparently good disk wouldn't boot under Pro-

DOS 8 (I think the symptom was that it could not find a .SYSTEM file that was present). The answer was that despite the fact that there were only three or four files on the disk, all four directory blocks were being checked for validity and the fourth directory block had invalid data in it.

Peter Watson
Box Hill North, Vic.

Now what do I do?

In your January issue you say, 'If you get an I/O error...you'll have prepared your disk for slow but sure destruction, file by file.' In the darker recesses of my mind something is trying to correlate this with one or more inexplicable happenings for which I could find no reason at the time.

Soooo—the first thought that comes to mind is, why don't you tell us what to do about it. It's kind of frightening to know you might be setting yourself up for a real headache and only be left with the 'now what?' feeling.

Keith Whaley
Los Angeles, Calif.

You need only worry (about **this** bug, anyhow) if the I/O ERROR happens during an attempt to DELETE a file. Nonetheless, we should have added to the original report that ProSE's Mr. Fixit will verify and fix the volume structure if it happens. Or you can simply use any file-copy program to move all the files except the one you were trying to delete to a new disk. Then erase the old one.

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Written, edited, and published by:
Tom Weishaar

with help from:

Dennis Doms	Sally Dwyer	Dianne Plumberg
Tom Vanderpool	Steve Kelly	Joyce Hammond
Dean Esmay	Jean Weishaar	

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International situation, cont.

I bought a IIGs here in Australia in November. GS/OS wasn't supplied. I just purchased it. The Australian price was \$99—about \$80 U.S. Perhaps one of your sources can explain the amazing markups for Apple Australia products. It's enough to drive you to purchase overseas!

T.C. Dawbarn
Spring Bluff, Qld.

We in Japan second the concerns expressed by you and your readers. All Apple II and Macintosh owners ought to write Apple urging them to support all Apple computers. Lack of support means loss of sales and defection of loyal Apple owners. This means a weaker company and less interest on the part of third-party developers. Urge Apple to support the II and Mac worldwide.

Ron St. Pierre
Kobe, Japan

I am the proud owner of an Apple IIe but lately I'm becoming more disenchanted with Apple USA. I had planned on upgrading my IIe to a IIGs, but after hearing how Apple is abandoning the Apple II in Europe I wonder what's next. So I'm giving the Commodore Amiga serious consideration.

Michael Hall
Rancho Cucamonga, Calif.

The problem of lack of Apple II support (April, page 5.23-5.24) exists right here in the U.S., too.

I tried to buy a LaserWriter for my IIe and every dealer I talked to—even Apple computer's 'technical support' line—told me it wouldn't work. One dealer refused outright to sell me the printer even after I assured him I knew how to operate it with my system. The technical people at Apple and another dealer told me a IIe couldn't do PostScript! So I went out and bought a NEC PostScript printer for my Apple IIe and am having a ball with it. It turned out to be a heckuva lot cheaper than Apple's anyhow.

Rumor has it that the next IIGs will be the last Apple II and that the Apple II line will be discontinued within a year. This comes from **MacWeek**; you've probably read it. I've talked to so many Apple II people who refuse to move to a Macintosh that I don't see how Apple can continue to profit without them. I'm doing everything possible to keep my IIGs and IIGs healthy. When they die, it's gonna be IBM for our family.

C. Roberts
Lafayette, Calif.

The idea that you can't hook a LaserWriter to an Apple II is part of the great Macintosh mythology. Look at the following excerpt from the new book **West of Eden: The End of Innocence at Apple Computer**, by Frank Rose:

Woz had gone to work at the Triangle Building that morning and found the engineers in a bad state because they'd been left out of the (1985) stockholders' meeting the day before. They'd wanted to show that an Apple II could run a LaserWriter as well as a Macintosh, but the demonstration had been yanked at the last moment. Instead, the II had barely been mentioned all morning. Woz himself was used to this kind of treatment—the II had been shoved aside for years, first in favor of the III, then for Lisa, now for Macintosh. But the others weren't, and it made him angry to see them so demoralized. Some of them were saying

they were going to write a protest letter to Sculley. When he heard that, he went straight for the phone, because he knew his voice would be heard.

When Sculley got on the line, Woz said, "As Apple's third-largest stockholder for the past eight years..." He knew that would get the guys' attention. And he knew that the thing the board of directors—any board of directors—feared the most was a lawsuit alleging deceptive actions. So he told Sculley that the stockholders' meeting had presented a deceptive and fraudulent portrayal of the company's earnings (a year after the Macintosh was introduced, the Apple IIe was the only Apple hardware product exceeding sales projections and was supporting the entire company). He told him that the people who own the company ought to be given an accurate picture of where their earnings were coming from. John tried to tell him it was just event marketing—that the Apple II had gotten its day in April at Moscone Center (when the Apple IIc was introduced) and this new product announcement just happened to coincide with the annual meeting. Woz pointed out that Jobs had had plenty of time to talk about Macintosh at the Moscone event, and besides, the II wasn't even mentioned during the formal business session, when the officers got up to report on the state of the company. John tried to argue; Woz wouldn't have it. John tried to tell him they were providing the analysts with the numbers: There, at least, the II was getting fair credit. But he found himself talking to a dial tone.

Woz had hung up on him.

The continuing success of the Apple II is very troubling to the Macintosh community. They've learned to live with the idea that the Macintosh isn't going to wipe out MS-DOS, but the fact that thousands more Christmas buyers went with the Apple IIGs than with the cheaper Macintosh Plus gives them ulcers. **MacWeek** isn't the only magazine having some success at trying to do in the Apple II. I spoke on a panel of computer journalists at the 10th anniversary of the Washington D.C. Apple user group, Washington Apple Pi, in December. Each of the panelists was asked to spend a couple of minutes introducing himself, then we were to take questions as a group. The editor of **MacWorld** introduced himself by saying the Apple II had at most a year of life left before Apple discontinued it. That's how much the Apple II's success bothers these people.

The Apple II produces \$1 billion a year in revenue for Apple. If you pulled the Apple II out of Apple Inc., the spin-off would be the 327th largest company on the Fortune 500. It would be twice the size of all of Atari and 45 per cent larger than Cray Research. The year before John Sculley came to Apple, the whole company's revenues were only half of what the Apple II alone produces today.

If you really believe Apple is going to discontinue the Apple II, you should invest everything you own in a Hong Kong stock called Video Technology Holdings Ltd. On the other hand, those who believe Apple is doing more than a mediocre job of promoting the Apple II, enhancing it, and pushing it into new markets should invest their money in U.S. Savings Bonds before some fast-talking promoter takes advantage of their gullibility.