The electronic frontier

One of my favorite sayings was immortalized in the movie *The Adventures of Buckaroo Banzai*: "No matter where you go, there you are". When I went on my normal Labor Day vacation at the World Science Fiction Convention (WorldCon), this year held in Chicago, sure enough, there I was.

The serendipity is that several of the science panels centered around computers. That in itself wasn't particularly noteworthy (computers are the hot topic of today's technology), but many of the computer topics were not about the technology itself. Instead they dealt with the debate over privacy, computer crimes, and law enforcement search and seizure practices.

I've tried to stay clear of this issue for some time because it catches me between two worlds. I used to work as forensic chemist; someone who tested evidence and testified in legal proceedings. As such I participated in law enforcement investigations and search and seizure in the interest of protecting the public. It's very hard for me not to sympathize with the investigative problems that law enforcement agencies have to solve in order to track and catch someone who can cover their tracks by encrypting a file or erasing a disk.

Then again, I'm also a computer user who's concerned about the protection of individual rights (including mine). I am not a lawyer, but current debate seems to indicate that the relevance of our Electronic Communications Privacy Act of 1986 and other protective measures to computer communications are not universally clear here in the U.S.

In this country, issues of the protection to be afforded computer bulletin board systems and networks are still being defined in the courts. There are currently three available communications models which can be used to decide how to treat computer network communications.

Common carriers are services that facilitate the "transportation" of messages. The most familiar example is our phone service. These services do not attempt "prior restraint" of the content of messages. Communications that use these mediums are considered private and secure.

Publications, such as newspapers, operate under some general limitations regarding unacceptable content, such as obscenity and libelous statements. But a publication's general right to print and distribute without prior restraint is guaranteed by the First Amendment.

Broadcast media, such as television and radio stations, are regulated under more stringent conditions of content. You don't see the range of material appearing on a local television broadcast that you do on a cable movie channel, for example, because the network has to cater to a more selective code of "public decency".

As you look through these models you see the constraints become greater as the effort of access decreases. In other words, the more public the forum the more likelihood there is of constraint. Usually we communicate over the phone on a personal (one-to-one) basis or in small conference calls. Magazines and newspapers play to a wider audience. Broadcast television and radio play to anyone within the visual or auditory range of a receiver.

Whether or not you agree that the various models, or the relative constraints on them, represent reasonable stratifications, these models are what computer-network litigation will be drawing on until new laws catch up. And, as often happens with technology, the laws aren't catching up fast enough.

Looking at it from a knowledgeable user's standpoint, computer networks bridge all three models. And since computer networks are also interactive, they have unique situations.

Electronic mail (private mail sent between individuals or small groups of users) resembles a common carrier model. Participating individuals have a reasonable belief that they are communicating *privately* with one another. Ideally, electronic mail should not be purposefully reviewed by anyone except the correspondents. The Electronic Communications Privacy Act delineates this type of protection for common carrier mediums such as phone conversations.

It isn't quite that cut and dried for the home computer owner operating an electronic mail system. After all, the owner does generally have the *ability* to monitor the mail. Some software may make it difficult to avoid seeing mail items inadvertently, since reading items without warning users that their "private" mail may be read would be as unethical as a switchboard operator clandestinely monitoring a phone conversation.

It is not automatic that the current legal system will assert that someone's wholly owned computer bulletin board system running over their home phone line qualifies as a "common carrier". Until legal protection is specifically afforded to such systems, whether or not they are connected to a broader network, law enforcement officials may decide to consider the contents of the system your property, under your control, and hold you responsible for the contents of the system.

With such an interpretation, can the sysop be held accountable for the use of the private mail system in the commission of a crime? Most computer users, trusting that a system administrator would not routinely commit the ethical transgression of reading private messages, would say "no". But law enforcement officials, seeing the system sitting within obvious control of the owner, may feel that the administrator is responsible for **all** of the system's contents. The right of officials to confiscate and examine a sysop's system requires an interpretation
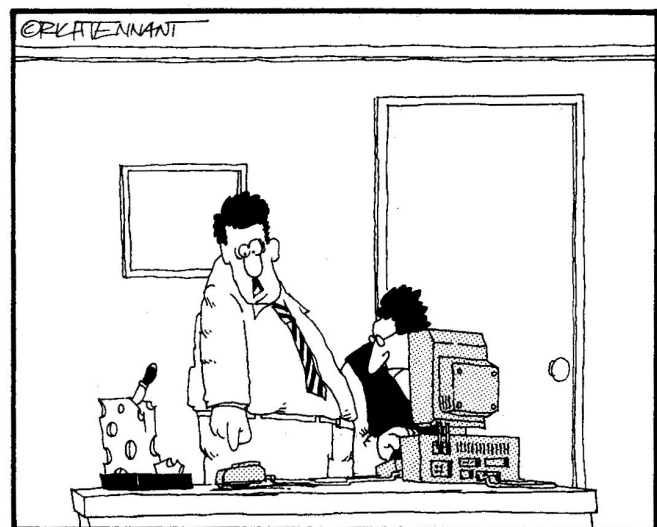
"THERE! THERE! I TELL YOU IT JUST MOVED AGAIN!"

of the Fourth Amendment of the United States Constitution as it pertains to search and seizure practices.

Another problem is the responsibility for the content of publicly accessible network areas. Public areas logically follow the publication and broadcast models, but with a degree of control limited by which model you assume. The extent to which the First Amendment to the Constitution protects "free speech" in this context is being debated.

Most systems have a public "bulletin board" area where various users can post messages. Usually these messages are automatically posted for viewing without human interaction. Indeed, on larger networks it is inconceivable that all messages could be "screened" before posting (this same argument could be added to the arguments against screening electronic mail).

Imagine a large bulletin board out in front of a grocery store where anyone can walk up and post a message. Now imagine thousands of messages being posted *each day*. Then imagine the owner of the store being held accountable for the contents of each and every message.

The problem is usually managed by reviewing the message base periodically and removing messages deemed to contain offensive content. Normally the policy of the host network's administrators determines what constitutes an "offensive" message; this policy is often (but possibly not solely) based on the same criteria used by publications or broadcast media.

But there are opposing interpretations. Some users consider themselves to be the "publishers" of their own message and therefore responsible for its content and eligible to protection as the right to free speech (these users consider the system to be a "common carrier"). On the other hand, since the network is the distribution medium, some say the system administration is accountable for "offensive" messages found on the system. As an additional twist, even if the administrator deletes the offending message at the first opportunity, some may argue that even the brief presence of the message on the system is an offense.

File download areas also seem to fall into the broadcast or publication models. Most larger networks maintain their file areas in such a way that files placed on the system by users are not immediately available for general access. Instead the file is put into a private "holding" area where the administration can examine the file before determining if it is suitable for general release. If not, the file can be deleted before numerous users have a chance to see it.

For example, when we started our association with GEnie, we decided to adopt a publication model for the bulletin board systems and file areas we manage. While we don't "edit" the contents of GEnie as closely as we do our publications, we do occasionally delete messages and refuse to release files that don't meet our editorial standards. We have no control over, or access to private mail, which remains **private**, unless you send it to us. In that case, we react as if it came to us on paper – letters received on GEnie are used in *A2-Central*. But just as with our written mail (which we've made clear we like to use in print), we don't disclose information that seems intended to remain private. (Some readers even mark passages that they want kept private.)

Until our legislators and courts learn to cope with the new technology, system administrators and users are in limbo. Users aren't going to be able to be completely sure that their electronic mail messages are indisputably private if the possibility exists that the storage medium containing them can be seized and searched en masse. Administrators can't be completely sure of their liability for the contents of their system, or their ability (or even responsibility) to review and control those contents.

There are legitimate needs for law enforcement officers to have the ability to monitor certain aspects of the networks. Crimes that can be conducted over a network, such as the duplication and transmission of proprietary materials ("information theft", for lack of a better phrase) and breaking into other systems (the computer equivalent of burglary), do occur and have to be dealt with.

"Information theft" may be broader than first realized. The first thought may be of copyrighted programs or database files illegally being distributed. But with today's sophisticated systems, pictures and sound can also be digitized and reconstituted with little loss in quality. Michael Whelan, multiple winner of Hugo awards as Best Science Fiction Artist, related at one WorldCon panel how he discovered a copy of his artwork (which had been digitized and retouched) on a network. The accountability for blame also has to be decided: should the host system have known better than to release the file (even if it is an altered copy of the original) or is the uploader solely responsible? In terms of copyright, it is possible to be in violation unknowingly, even when the assignment of responsibility affects the assignment of penalties?

Difficult questions are also arising as to what qualifies as the "fair use" of snippets of art and sound within the expanding field of hypermedia, just as the sampling of commercial music for use in other songs has become a point of litigation in the recorded music industry. And eventually digitized video segments are going to be part of the argument.

Entering someone else's system without invitation is another hot arguing point. A few years ago, "hacking" into a remote system and exploring it was considered an educational experience by some yet often an irritation by the "host". Given the number of computer systems in use today the irritation factor is winning; even if the unauthorized entry is "harmless", the expense of identifying the "harmlessness" of an intruder is no longer something that businesses can expect to bear, and you can expect laws to further discourage uninvited entry.

Will encryption save private mail? Maybe not; subscriber Robert Benson of Toledo, Ohio wrote to mention U.S. Senate Bill S266, which would ask that electronic encryption vendors make decoders available to the government to facilitate searching encrypted files. This sounds suspiciously close to requiring anyone using scrambling circuitry on their phone to supply a duplicate of the scrambler to the government "just in case" they need to tap your phone line. Of course, legal wiretaps require a court order justified by reasonable cause, along the lines of a search warrant.

Encryption also has problems related to the international nature of computer networks. Some types of encryption (specifically DES) are considered protected technology that cannot be exported to certain areas of the world and so should not be freely distributed on international networks.

What we need is a good working set of rules for the new "cyberspace" medium that computers are generating. Computers transmit data that can represent text, pictures, programs, and other entities. Some delineation of this cyberspace model will have to emerge that protects innocent administrators who are trying to keep up with a flood of information passing through their systems and that allows users to have some knowledge of how their contributions will be treated as they pass through the network. So far, it isn't clear that the U.S. legal justice system has a strong handle on the finer points.

Consider the well publicized case of Steve Jackson Games. Steve Jackson is a game designer who had his office computer systems and other materials confiscated by the Secret Service and held for several months. During the interim Steve Jackson suffered severe hardship trying to maintain his business. The confiscation was apparently conducted on the basis of the alleged involvement of one of Jackson's employees with the possession of a copy of *Phrack* (an electronically distributed publication) that contained information purported (by the investigators) to have been improperly obtained from a BellSouth computer.

The ringing questions are whether such a large-scale seizure was legitimate under the Fourth Amendment, and whether First Amendment rights should protect the contents of the confiscated files. A suit was filed in May of this year against the Secret Service and others in regard to the incident. Supporting the suit is the Electronic Frontier Foundation (EFF), a nonprofit organization that desires to better define these questions by establishing the necessary legal precedents.

The EFF was established in 1990 to promote the development of computer-based communications; its goals include trying to encourage the free and open use of computer communications. Part of that involves supporting reasonable mechanisms to prevent computer crime, but it also involves ensuring that civil rights issues are properly grafted into the dominion of the new technology. Among the forces

behind the EFF are Mitch Kapor (founder of Lotus Development Corporation, the Lotus 1-2-3 folks) and Steve Wozniak (principle designer of the Apple II and co-founder of Apple Computer).

If you are already using a modem to communicate with others, you probably can see the applicability of these issues. Many of us communicate electronically on a daily basis and want to be relatively confident of the nature of privacy and responsibility assigned to our communications.

Even if you don't use a modem yet, there is a high likelihood that you may in the future. The cost of using commercial services has been declining in recent years, and as home systems become more common the number of systems linked through personal systems like *ProLine* (for the Apple II) or *FidoNet* (for PC compatibles) will increase. Such networks already transcend continents.

If you are interested in finding out about the issues, pick up the September 1991 *Scientific American* Special Issue on "Communications, Computers, and Networks" which contains a pertinent suite of articles under the title of "Computers, Networks, and Public Policy".

You can reach the Electronic Frontier Foundation at 155 Second St., Cambridge, Mass. 02141, 617–864–0665 or FAX 617–864–0866. You may find copies of their electronically distributed newsletter on any networks you frequent.

Also keep an eye out for pending legislation regarding personal computers and the information networks and forward your opinions to your legislators. Participation in the extension of basic rights to the electronic world is necessary to ensure that those less well-versed in the medium or less well-intentioned about its accessibility will not be the ones to decide its future.—DJD

Miscellanea

If you're using HyperCard IIgs, stay away from the *Write-It!* NDA. Chris Haun's shareware *Write-It!* NDA editor for the IIgs has been popular for working with text from within other desktop applications, but it and HyperCard don't get along. Some users have been experiencing crashes when exiting *Write-It!* back to HyperCard; the problem appears to be a memory use conflict.

Also, there's a gotcha in HyperMover you may run into. HyperMover disassembles stacks on the IIgs or Mac into pieces that can be reassembled by the companion HyperMover on another system. We've used it several times and it handles a lot of the work in translation automatically. Exceptions we've learned to handle ourselves are XCMDs and XFNCs (these elements are external program supplements that don't transfer between systems) and graphics (differences in the IIgs and Mac screens, plus the presence of color in the IIgs version, usually forces some manual cosmetic cleanup to be performed).

GEnie participant Kevin Flynn found another problem related to the ordering buttons and fields. HyperMover preserves the relationships of the hierarchy (the order in which overlapping buttons or fields receive messages) of buttons and fields *within* the card and background layers. However, if you use the "Bring Closer" or "Send Farther" commands in HyperCard's Objects menu to re-order the buttons or fields so that card objects receive messages after background objects, the relationship of those items will be lost when the stack is processed with HyperMover. Tim Swihart of Apple clarified that this occurs because the interlayer ordering is not identifiable from a script and HyperMover can't detect a crossover in the layers. When the stack is rebuilt, all card objects will be "in front" of the background objects by default. The solution is to compare the execution of the rebuilt stack with the original and correct any ordering conflicts as they occur.

Vernier Software (2920 S.W. 89th Street, Portland, Ore. 97225, 503-297-5317) has two new products for Apple II users.

Chaos in the Laboratory and 13 other Science Projects Using the Apple II ($25.95, including disk) is a 288-page book with a series of electronics projects that can be performed using the Apple II (all models except the IIc) game port. Projects include digitized sound and an analog to digital converter as well as sensors for light, (barometric) pressure, and magnetic fields.

The *MultiPurpose Lab Interface* ($290) is a 12-bit analog-to-digital interface for the Apple II that allows the collection of information from a wide range of sensors. Up to three signals can be sampled simultaneously at intervals ranging from days to 22,000 times per second. Available sensors can sample voltage, pH (a measure of the acidity of a substance), force,

temperature, light, magnetic fields, pressure, and sound. Software to collect and graph samples is included; the system also supports a "storage oscilloscope mode".

Barney Stone is retiring *DB Master* (and himself) from the Apple II world. He is selling remaining copies of *DB Master Professional* at $100 each plus $5 shipping. Remaining copies of the *BASIC Programmer's Pak* or *Developer's Pak* are $50 each, and copies of the *Medical Billing Template* are $75 each. Barney will use the proceeds toward Stone Edge Technologies's (P.O. Box 3200, Maple Glen, Pa. 19002) accrued debt.

Barney hasn't been able to draw a salary from *DB Master* sales for over a year. His next product is a patented envelope printer for personal computers that he has developed over the last 18 months. He plans to be in production early next year under the company name of AddressEase, Inc.

8/16-Central subscribers will be getting unhappy news. Tom Weishaar can explain it better than I can:

When we took 8/16 over from Ariel last fall, it had about 1,000 subscribers. We had hoped we could keep them, but we couldn't. We now have about 350 paid subscribers and are losing money by the bucketfull each month. Subscribers who didn't renew said they wanted a paper version and a lower price. We can't envision a scenario in which we could cover our costs under those conditions.

However, there is a paper/disk publication that already exists in the Apple II market, that costs less than 8/16-Central on an annual basis (it comes out 6 times a year rather than 12 so a 1 year subscription is about half as expensive), and that includes lots of information for programmers. That publication is GS+. I'm happy to say we've made arrangements for GS+ to fulfill the remaining 8/16-Central issues we owe people.

Some 8/16-Central subscribers are Apple IIe/IIc programmers who may not find the programming information in GS+ useful. If they would prefer to receive one of our other publications, they can write to us and we can switch them over. In addition, because GS+ is considerably heavier than 8/16-Central., subscribers outside the U.S. and Canada will have to pay additional postage to receive it. The postage is $1.50 per issue remaining for surface shipment, or $5 per issue remaining for airmail shipment. Alternatively, these subscribers can switch to one of our other publications at no cost by writing us.

Since we know how vicious the rumor mill can get, please let it be clear we are talking about 8/16-Central, our monthly programmer's publication, in this announcement. Our other publications, including the A2-Central newsletter, A2-Central on Disk, Stack-Central (soon to be known as Studio City), Script-Central, TimeOut-Central, and Hyperbole are all covering their costs and will continue to be published as before. Only 8/16-Central has been losing money, and only 8/16-Central is ceasing publication.

So far *Resource Central* has managed to expand despite the downturn in the Apple II market. However, we are starting to see the pinch that has affected other Apple II companies. To ensure our survival, in the coming months we will investigate starting new publications not specifically related to the Apple II. As a result, we're about to do some personnel shuffling both to facilitate these new directions and to prevent the burnout that seems to occur after about a few years of monthly deadlines.

Next month, Jay Jennings, who had been editor of *8/16-Central*, will begin a stint as the editor of *A2-Central*. I'm a bit envious since there will be a lot of new ground to cover, but my duties will be switched to starting a new publication.

It's also become clear that we're either going to have to raise the prices on our Apple II publications or change the way we mail our issues. We'd like your input on this. We've absorbed two major increases in postage rates since the last time we raised subscription prices. The second increase, which occurred early this year, is becoming increasingly difficult to swallow. We need to either raise subscription prices or switch to 3rd class bulk mailing in lieu of first class (or perhaps both). If we switch to 3rd class, subscribers outside the U.S. would have to pay extra for airmail delivery. If you feel strongly about this, let us know how you feel.—DJD

Ask (or tell) Uncle DOS

In "Apple's developer message" in the last issue we stated that half the Mac LC's sold had IIe Cards in them; that should be corrected to reflect that half the Mac LC's sold **to schools** have IIe Cards in them.

In the Hallucinations 'R' Us category, we thought we had seen a reference to plotter support for **CADDraw** in the Kitchen Sink Software catalog. Guy Forsythe of Kitchen Sink called to let us know that neither **CADDraw** or **AccuDraw** has ever supported plotters. The call did give us a chance to ask Guy if we could look at **AccuDraw** for a future issue, and he agreed without much arm twisting.

We got Larry Beyer's address for B&D Computer Repair wrong in "Sider/RamFast support" (p. 7.54, August 1991); it's actually 6115 S. **Massahoit**, Chicago, Ill. 60638. Larry also let us know he's doing repairs on Applied Ingenuity and SCSI drives.–DJD

32-bit Apple II?

The future for IBM compatibles seems to be 32-bit systems using Intel's i386 and i486 chips. Is there a 32-bit future for the Apple II?

Maj. Carl E. Bergsagel
Novato, Calif.

It's doubtful we'll see a 32-bit incarnation of the Apple II, due to a combination of technical and market issues. This is our supposition (Apple does not comment on unannounced products), but here's our reasoning...

There is a proposed 65832 from Western Design Center (WDC), but it will likely have a multiplexed 8-bit data bus and be pin compatible with the 65816. That would make it useable in the current IIgs design.

However, even if it appeared, at this point it's unlikely Apple will design a "next generation" Apple II, or even next generation IIgs software, to use the 65832 specifically. Apple is concentrating more on other products (even now, with the IBM alliance, the emphasis seems to be shifting to **successors** to the Mac). Even if the 65832 was available soon, Apple seems too entrenched in other markets to look back.

It's important to point out again that there is nothing inherently "superior" to the width of the architecture of the chip; if there were, the 16-bit TI-99 (or the IBM PC, or many other systems) designs would have knocked out all 8-bit competition early in the 1980's. There are many aspects to the performance issue, especially when the complete system is taken into account. Looking at the system software Apple has been able to write for the IIgs, we still believe the 65816 has not been pushed to its potential. Also observe that HyperCard IIgs

performs respectfully on the 65816 at 2.8 MHz (a Zip or TransWarp IIgs makes it almost "snappy") in comparison to it's Mac-based companion (yes, Mac HyperCard is even snappier on a IIci, but look at the relative cost of the hardware). All other things being equal, an 80386SX outperforms an 8088, but things get a lot fuzzier when you compare distinct architectures. (The 65816 uses fewer clock cycles to perform many basic operations than the Intel or Motorola architectures.) Check the performance of Windows on various IBM platforms compared to the desktop on even a 2.8 MHz IIgs system.

The biggest limitation to the 65816 in the IIgs is probably its overall throughput, which could be solved if faster versions (10 MHz or higher) were being manufactured in quantity. There's a "chicken and egg" problem here: Apple is currently the biggest market for the 65816, and Apple hasn't placed a quantity order for chips because they're not sure WDC can deliver them. WDC isn't going to gear up for mass production of a product when they have no orders. Maybe if Nintendo does a 10 MHz upgrade on their game system...–DJD

PostScript transportation

Today I succeeded in using Appleworks GS to print a PostScript file to disk at home, send the file to work, download it onto a 386 clone, and send it out to a Laserwriter!

The printing-to-disk explanation came from other people on GEnie and from **A2-Central**. All you do is rename the Laserwriter driver to something else (mine is now called LASER). Then it no longer asks for AppleTalk when you access it. It becomes just another printer choice (like the Imagewriter). In AppleWorks GS, as you're about to print, you hold down open-apple-F and click the "Print" button. The entire PostScript file prints to the /System/Drivers directory as "POSTSCRIPT.GS00". Each page apparently makes its own file, so you might have POSTSCRIPT.GS01, etc. I haven't figured out if you can avoid this part, and it refuses to print more than two pages at a time, but these are minor obstacles.

At the PC end, I just used the IBM copy command to copy the file to the printer port like this: "COPY MYFILE COM1:". That was it, with one small exception. It didn't get a few of the fonts at first, but I discovered that what the library font files name the fonts and what the Laserwriter expects them to be called are different in some cases. For example, what the font files call "AvantGarde-BoldItalic" had to be changed to "AvantGarde-DemiOblique". This is the registered Adobe name for the font. I think it works because it's being sent directly to the printer as a text file, and the fact that it comes from an IBM clone is irrelevant. I am designing a macro for my text editor at work to change all the font names after I get the file there. Many of the fonts have identical names and require no additional attention.

The only other thing I did was add a control-D at the end of the file to tell the printer it was over (more advice from GEnie). Oh, and I tried gluing two files end to end to see if I could make one print job. It worked!

Why figure all this out? Cause the results are absolutely beautiful. We're not talking about "smoothing" or "better text". These fonts are built into the printer, and when you send them a message they recognize, you get 300 dpi characters that almost look typeset. Of course, if I had a laser printer at home I could save a few steps, but this is almost as easy. I'm not even using special software on the IBM, just the DOS "COPY" command that's

built into the system software.

I don't understand enough about the PostScript language to explain the font names business, but I'm pleased as punch that it works. I downloaded two more of the fonts tonight. I know this is of limited interest, so if there's anyone out there who could use more information, contact me through E-mail and we'll stop boring everyone else!

Thanks again to those of you who helped out!

Daryl Morgan
Turlock, Calif.

We've been over parts of this before, but you've put all the pieces together and described actual success with the process. Thanks.

The font naming issue is complicated but suffice it to say that font styles (bold, underline, italic, and so on) are not named in a consistent enough fashion to make them predictable from the font's "unstyled" name. The Mac uses a resource-based mechanism to deal with this. Resources are a relatively recent addition to the IIgs operating system and the mechanisms are not yet in place to allow a similar approach on the IIgs. If you stick to using fonts that are specifically resident in the LaserWriter (which the IIgs Print Manager is prepared to handle) it shouldn't be necessary to worry about the naming conventions.–DJD

June cartoon secrets

What was the cartoon on the cover of the June issue all about? Why would "GUI" stand for Gumby User Interface and what was the "thing" in the witness box? Perhaps it is an Americanism that didn't survive the trans-Antlantic crossing?

Philip A. Tyler
Manchester, England

"Gumby" is a character familiar (at least here in the 'States) from children's programs. He appears as a clay figure brought to "life" by stop-motion animation (position the character, take a picture for that frame of the film, move the character incrementally to the next position, take the next picture, and so on).

The cartoon was designed as a pun on the "Graphical User Interface" acronym (GUI), which has been showing up lately wherever computer pundits are found.

But we actually ran the cartoon because of an inside joke that the cartoonist wasn't aware of. "Gumby" was one of the code names for the IIgs while it was under development.–DJD

DOS 3.3 "find"?

I would like to have a general string search utility for DOS 3.3 disks. What I need was described in your issue (Vol 4, No. 4, pp. 4.28-29); it was called FastData and was sold by FastFind Co., but their phone has been disconnected and there has been no reply to my written inquiry.

I'd be happy with a DOS 3.3 version of that program or any other program that would do the same thing (I'm not interested in the ProDOS version).

Alan G. Hill
Bay City, Mich.

We do have a new address for the **FastData** folks; it's 916 Deacon Circle, Columbus, Ohio 43214. Maybe owner Jim Hammond still has the DOS 3.3 version available; this is the first request we've seen for it in recent memory.–DJD

Resolute graphic problems

For the past several months I've been reading, rereading, and endlessly experimenting with the material in Apple IIe Technical Note #3: Double High Resolution Graphics. The reason is that I can simply not obtain the result of a cleared double-high-resolution screen; every other column has solid-white bars.

Having developed a few text and graphic routines on my enhanced IIe and noticing how they ran differently on a IIgs, I wonder: Does Apple actually test their IIe and IIc software on IIe's and IIc's? Or do they develop on the IIgs and assume it **should** work on earlier machines?

Donald Drews
Brown Deer, Wisc.

Actually, if you're seeing white bars, you do have double high resolution graphics enabled. The double high resolution display is obtained by taking a byte from the high resolution display page area ($2000-$4000) in the auxiliary memory of a 128K Apple II The white bars are the other "half" of the double high resolution graphics screen being displayed.

Here's a program that will test your system. First, the double high-resolution mode uses memory also used by the ProDOS /RAM disk, so we want to check to see if /RAM is there and empty of files:

```
1000 REM == display double high-res ==
1010 DIM B(7): REM use for parsing byte to bits
1020 TEXT : HOME
1030 IF PEEK ( - 1101) < > 6 THEN PRINT "Requires
     128K Apple IIe/c/gs.": STOP
1040 GOSUB 1410: IF (MEM < 128) THEN PRINT "Requires
     128K!": STOP
1050 PRINT "Checking for empty /RAM..."
1060 PRINT CHR$ (4);"BLOAD /RAM,A$2000,L512,TDIR"
1070 IF ( PEEK (8192 + 37) + 256 * PEEK (8192 + 38))
     THEN PRINT "/RAM not empty!": STOP
```

If /RAM is empty then we save a "dummy" file to occupy the first 8K of /RAM, which Apple has cleverly mapped to occupy the alternate memory portion of the double high-resolution screen.

```
1100 PRINT CHR$ (4);"PR#3": REM activate 80-column
     firmware
1110 PRINT : REM send something through COUT to
     initialize firmware
1120 REM (above also initializes 80STORE)
1130 HGR : REM activate high-res
1140 PRINT CHR$ (4);"BSAVE /RAM/HR.X,A$2000,L$2000":
     REM reserve DHR page in aux mem
```

Next we activate the double high-resolution screen using the switches documented in the technical note:

```
1150 POKE 49246,0: REM activate double high-res
1160 REM (You may want to select "full page" here, too.)
1170 REM (For more information, see the appropriate
     Hardware Reference)
```

To verify that we have both the auxiliary memory and main memory portions of the screen visible, we'll draw a set of vertical lines first and save them into the auxiliary memory:

```
1200 HCOLOR= 3: REM white1
1210 FOR I = 3 TO 279 STEP 7
1220 : HPLOT I,0 TO I,160: REM vertical line
1230 : NEXT I
1240 PRINT CHR$ (4);"BSAVE /RAM/HR.X,A$2000,L$2000":
     REM copy page to aux mem
```

Now we clear the main memory portion of the screen again and draw a set of horizontal

lines:

```
1250 HGR : REM clear main mem screen
1260 HCOLOR= 3: REM white1
1270 FOR I = 10 TO 160 STEP 10
1280 : HPLOT 0,I TO 279,I: REM horizontal line
1290 : NEXT I
```

Then we wait for a keypress:

```
1300 POKE - 16368,0: WAIT - 16384,128: POKE
     -16368,0: REM wait for keypress
```

We'll assume you're done when a key is pressed. The following routine will turn off the double high-resolution mode and also delete our dummy file. We also turn off the 80-column firmware, but we leave the HGR screen enabled so you can see the change in going to normal high-resolution:

```
1330 POKE 49247,0: REM deactivate double high-res
1340 PRINT CHR$ (4);"DELETE /RAM/HR.X": REM remove
     our file
1350 PRINT : PRINT CHR$ (21): REM turn off firmware
1380 VTAB 22: REM leave HGR on
1390 END
```

There are two "miscellaneous" subroutines. One checks the ProDOS MACHID byte to see if we're using a 128K Apple II. Otherwise, double high-resolution is not available:

```
1410 REM — get memory size from ProDOS (MACHID) —
1420 MACHID = PEEK (49048): REM $BF98
1430 BYTE = MACHID: GOSUB 1470: REM parse byte into bits
1440 MEM = 0: IF (2 * B(5) + B(4)) = 3 THEN MEM = 128
1450 RETURN
```

The other breaks apart the MACHID bits for us to check:

```
1470 REM — parse byte into bit array —
1480 FOR I = 0 TO 7
1490 NBYTE = INT (BYTE / 2)
1500 IF (BYTE < > (NBYTE * 2)) THEN B(I) = 1
1510 BYTE = NBYTE
1520 NEXT I
1530 RETURN
```

If you type in this Applesoft program and RUN it, you should see the graphics screen blank to black. Quickly thereafter a set of vertical lines will be drawn, followed by a set of horizontal lines. As you look at the screen, the vertical lines are in the auxiliary memory "half" of the double high-resolution screen, and the horizontal lines are in the main memory "half". The horizontal lines will appear to be "broken" into dashes by the vertical lines since the two "halves" of the screen are alternately interleaved. (As you move across a line, one byte comes from auxiliary memory, the next from main memory, and so on.)

(The "white" vertical lines will appear in alternating colors on a color monitor. Don't adjust your set; this is an artifact of the way colors are generated on the Apple II.)

When you press a key, double high-resolution is disabled and the vertical lines disappear.

We draw into main memory and copy the drawing to auxiliary memory because Applesoft does not support drawing to the double high-resolution screen. Drawing techniques for double high-resolution graphics are complex and we usually refer users to commercial programs that support this mode. But this program should at least allow you to establish whether your hardware is working. That Apple Technical Note is a good reference to start with.

*We **are** interested in hearing about compatibility problems, even if we don't always know what to do about them. If you think you've found one, send us a copy of the smallest programming example you can find that illustrates it.—DJD*

High drives

I have tried for several years, in vain, to upgrade my Apple IIc (non-UniDisk 3.5 ROM) to use with a 3.5 drive. At last, it appears that the quest might be over ("Orphans abroad (and here)", p. 7.31, May 1991).

I notice advertisements for Toshiba 1.44 MB 3.5 drives at $69, while everything for the Apple seems to be 2-5 times as much. Why is this? And would it be possible to modify some other 3.5 drive for use with the Apple?

David E. James.
Peterhead, Aberdeenshire
Scotland

There are a several factors making the (external) Apple 3.5 drives so expensive.

*The price you are comparing to is a **raw** drive. Prices for even MS-DOS external 3.5 drives (with case, cable and power supply) are much higher. (External MS-DOS drives are rare, but the ads we have seen place them in the $200-$300 range.)*

The Apple drives are a little more complicated since they vary drive motor speed to get slightly more storage (800K versus 720K) on a diskette when working at the "low density" mode. Some have questioned whether the extra complexity (for 12% more storage) is worth the extra cost.

The UniDisk 3.5 is a special exception since it also includes its own microprocessor to allow it to work on 1 MHz Apple II's (our understanding is that a 1-MHz computer is not fast enough to keep up with handling the 3.5 drive timing itself, so the task was delegated to an intelligent drive mechanism for the UniDisk 3.5 for the IIc). This again adds to the cost.

These are some clarifications, but our intent is not to defend Apple's pricing policies; Apple has to find its own way of justifying the use of proprietary technology and pricing to remain competitive. There are non-intelligent third-party 3.5 drives available from Applied Engineering and AMR for use on the Apple II with an intelligent controller like the Universal Disk Controller; but the UniDisk's intelligence probably involves proprietary features that haven't been legally "cloned" by other companies. It would be nice if Apple would have found a way to lower the price (and to improve availability) of their products to obtain greater market share, but this obviously was not a major aim of the company. (Apple likes to compare its prices to those of IBM and Compaq, which also don't reflect the mass-market pricing many users seek.)—DJD

Program solutions

I am looking for a financial program that can calculate a moving average for the stocks in my portfolio. Know of any?

Adolf Brandt
Bethel Park, Penn.

We don't, but maybe a reader does...

The science and artistry of stock analysis is outside our realm of endeavor, but we looked up the definition of a moving average. The
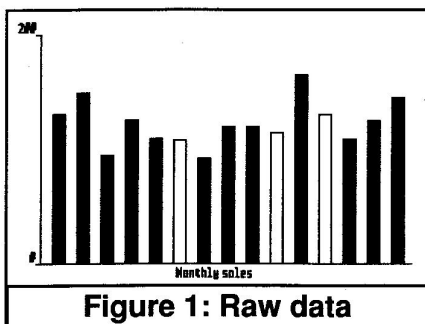
Figure 1: Raw data

Figure 2: Averaged data

algorithm is straightforward; you add the results for a constant number of periods together and divide by the number of periods. If you want to get fancy, you can multiply each period by a "weighting factor"; for example, if you are averaging sales over 12 months and you know that sales in the summer months are usually 20 per cent higher than the rest of the year you may want to seasonally adjust the figures through weighting.

We use moving averages to "smooth" our monthly sales figures. If you plot dollar sales per month, our graphs tend to look like a mountain range. By averaging each month with the previous 11 months (for example, adding up monthly sales for June 1990 through May 1991 and dividing by 12 for the May 1991 average) the graph smooths into an identifiable trend. What you start to see is the trend of the current month over that of the adjacent months since the remaining 11 months used in the calculation are the same.

Knowing what a moving average is makes it possible to write your own program to analyze the data. Back in the Olde Days someone may have written a specialized commercial program to do this, but these days it's more likely going to be left up to a user to fend for themselves because the ability to use a spreadsheet template or HyperCard (HyperTalk) program to analyze the data might destroy the market for a specialized program. This was part of the point of "The People vs. Programming" in the August issue.

Actually, a spreadsheet is probably the cleanest way to handle this since it's nearly an ideal way to enter arrays of numbers. Here's how we laid out the template for a simple example:

	A	B	C	D	E	F
	Month	Sales	Weight	Wt. Ave.	S*W	Wt. Avg.
1	Jan	130	1		130	
2	Feb	150	1		150	
3	Mar	95	1	125	95	125
4	Apr	125	1	123.33	125	123.33
5	May	110	1	110	110	110
6	Jun	108	1.25	123.33	135	114.33
7	Jul	92	1.25	120	115	103.33
8	Aug	120	1.25	133.33	150	106.67
9	Sep	120	1	128.33	120	110.67
10	Oct	115	1	128.33	115	118.33
11	Nov	165	1	133.33	165	133.33
12	Dec	130	1	136.67	130	136.67
13	Jan	110	1	135	110	135
14	Feb	125	1	121.67	125	121.67
15	Mar	145	1	126.67	145	126.67

Column A is a listing of 15 months just to index the numbers. Column B is a (fabricated) sales figure for the month. Column C is the "weight" to be applied to that month's figure;
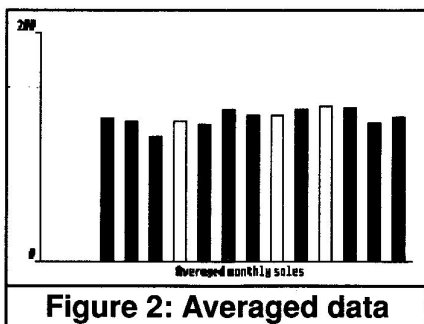
our figures assume that sales are historically lower in the three summer months and therefore need to be multiplied by 1.25 to approximate the average of the remaining nine months.

Column D contains the weighted average over each three-month period, rounded to two decimal places. The formula used in cell D5 was

$$@AVG(+B3*C3, +B4*C4, +B5*C5)$$

This formula was copied to cells D5 through D17 with all cell references relative.

You'll notice that the jump between the figures is less "bumpy" than for the raw sales figures. This is especially easy to see graphically; we imported the data into **AppleWorks GS** to graph (you can do this in **TimeOut Graph** within AppleWorks; we used **AppleWorks GS** because it's easier to get the Super High Resolution graphics into something we can print). Figure 1 is the graph of the raw sales figures; Figure 2 is the graph of the averaged data (bars for the first two months are "missing" since there was not enough data in our table to generate averages for those months).

If you want to average over a longer period of time, summing each month may get tedious. The simplest way we could find to facilitate summing a larger range is to create a new column which contains the product of the sales and weighting factor for that month (our column "E"), and then use @AVG with a relative range for the new column (for example, "@AVG(B3..B5)").

Okay, so maybe someone should write a program that will call Dow Jones, download the figures automatically, and reduce them into this data. For someone who has a specialized need we'd like to see that program for the Apple II. But the lack of the program doesn't necessarily mean the computer is incapable of doing the work; it often means that either the problem is so hard to solve that a developer doesn't feel possible sales will recoup the costs of development, or that it's so easy to do that people will just use existing tools and won't buy the product.—DJD

Disk space forecasts

What utility can be used to identify the amount of storage needed for all programs in a given directory plus all subdirectories thereof, etc., to the end of the path?

Perhaps I haven't seen this because the answer is obvious. I know that you can find it by counting, but both *ProSel* and *Copy II Plus* seem to directly provide only the space used within a directory or that available on the current volume. As I use both a hard disk and a 3.5 to store data my motivation is, of course, that if the space needed is equal to or less than 796K the files will fit on a 3.5 disk, and I try to

keep my subdirectories small enough so they'll fit.

J. D. Holdeman
North Ridgeville, Ohio

From the programs you mention It sounds like you need an 8-bit utility to do this, and we don't know of one. Many file utilities don't bother to look inside folders to count file sizes, probably to save time and effort in reading the contents of all the folders.

The IIgs Finder will give you roughly this information if you select the desired folder, use the "Icon Info" item of the Special menu to bring up the information dialog, and then click the "calculator" icon in the lower right corner. After a few seconds Finder will report the total of the file lengths (how long each file will appear if you open and read it) and the total space occupied by the files on the disk (this figure may be less than the file lengths on volumes where sparse files are supported). Given that GS/OS supports different file systems, the storage required for a file may vary slightly when moved from one file system to another and checking the sizes still may not guarantee they'll fit on the target volume.—DJD

Binary II and *AppleWorks GS*

First, I would like to start by saying that I think your monthly newsletter is the best Apple II publication on the market. I have every issue from Day One and I am continuously rereading them both for my enjoyment and to further my knowledge on Apple II computers. I have found no other source of information as comprehensive as your publication on Apple II's.

Second I would like to further "IIgs modem help" (May 1990, p. 6.32). Peter Orio should be aware of a possible deficiency in the Apple-Works GS communications module that may prohibit the downloading of BXY files. I have written to Claris Technical Support and received a verbal response that BXY wasn't written into the "filters" of the communications module. I have written them a second letter asking for more information since the phone call was pretty vague.

David C. Frye
Waldorf, Md.

AppleWorks GS won't automatically unpack Binary II files "on the fly" unless you use the special "Receive Binary II" item on the Transfer menu within the communications module. If you use this mode and the file has a Binary II header on it, *AppleWorks GS* will receive and save the files within the Binary II package. Like most Apple II communications programs, it looks for the Binary II header rather than just a ".BXY" at the end of the filename.

We found an exception to AppleWorks GS's tolerance for Binary II files: it doesn't appear to like to save files that don't have filenames acceptable to the receiving volume. Since names like "Space Left Here" (with blanks in the name) can be legitimately created and archived on AppleShare volumes, there needs to be some sort of renaming convention so that they can be downloaded to other file systems. As it is, AppleWorks GS just gives up with an "Unable to complete transfer" message.—DJD

Hard time with hard drive

My hard drive (a 60 megabyte Seagate ST277N, about two years old) is giving me a hard time. Sometimes it won't start when power is applied, so I give the case an impact adjustment and then it starts to spin. At other times while it is running and I am in the middle of a program it will act like it was just started and make its throaty chirping sounds that end with a "beep-beep" (is that the stepper motor moving the head?). Once in a while the drive will start to scream and then run quietly. What's going on? Is it dying?

Quentin Packard
Rhineneck, N.Y.

We have several Seagate ST-series drives here and they tend to be a bit noisy when powered up.

The Seagate mechanisms will try to insure the drive's read-write head is at a "safe" location if the drive is idle for several minutes. This does sound somewhat like the throaty "clicking" of the drive head retraction when you start up the drive.

You may also hear an occasional high-pitched "whine". We've been told this comes from the resonance of a static discharge device from within the drive and doesn't indicate anything wrong with the drive.

My oldest drive has made both of these sounds since I purchased it over two years ago and continues to work reliably. If you are not experiencing errors in reading or writing to the disk and you haven't lost any data, everything is probably fine. Checking the hard disk for errors periodically with a disk repair utility is a good precaution in any case.

The problem with the drive not starting on power-up may indicate something more serious. The drive head in the sealed-unit "Winchester" drives like the Seagate "floats" above the disk platter while the drive is running, but rests on the disk media when the drive is powered down. There are occasional instances where the drive head on some Seagate drives will start "sticking" to the platter itself when the drive is powered down for several hours. We've only heard about this occurring specifically with 30 megabyte Seagate drives, and we've watched it happen to a drive Jay Jennings used. The symptoms were just as you describe occurring with your drive.

For the short term, your method of "tapping" the drive will allow it to start, but rapping on a mechanically sensitive device is a risky business. Instead, you can try flipping the power on and off to use the drive motor to repeatedly "nudge" the head free.

Jay managed to make his drive start for several months by repeatedly cycling the power to get the drive going and then leaving it running. But eventually he had to turn the drive off and the head stuck for good.

We can guess at another possibility; the drive may not be starting because the power supply is weakening and the drive is not getting quite enough power to torque the platter into motion from a standing start. If a technician determines that the power supply is within specifications, then it may be time to be diligent about backups and to start saving for a new mechanism.—DJD

Words of praise

Kudos to the *Quickie* scanner and the program *InWords*. Until now I had no time to try them out, but this weekend I loaded them into my old IIe and...everything worked fine!! It surprises me that nobody thought of the great help this combination would be for entering text, especially text that does not make sense like some hexdumps you find in magazines. Due to a head injury I have some difficulty adapting my sight from the monitor to the listing and vice versa. Until now I had either to go through long typing sessions or ask somebody to read me the text. Thanks to *InWords* this is over now. Even if the program cannot read the text, the display gives the necessary help to go on without going back to reading the paper.

Sure, there are things I dislike. For example, you have to go through the whole menu each time you make a scan. I see no possibility to save, export, or import a scan, and no macros. Why do I have to attend the keyboard selecting "scan" and then press the start button on the scanner? It would be nice to do the scans in advance, save them, and have them processed during the night! But I am sure these things will come if some people really work with the program.

I have tried some of the common OCR programs on IBM clones but none of them offered nearly as good a performance. So congratulations to Alan Bird—he has done it again.

And there is another thing I have to get off my soul. Here in Germany Apple has lost its market to the IBM clones. Certainly they have gained a certain position now with the low priced Macs but with respect to the Apple II family everything is dead. Last week one of our IIc's failed and I determined the IWM (disk controller chip) was defective. We had to go asking and begging until the dealer (he sold hundreds of thousands of Deutschmarks of Apple II equipment to our company) agreed to provide us with a replacement.

So, when I decided it was about the time I buy my next computer many different brands crossed my mind. The only thing I was sure about was "no MS-DOS". I was working on MS-DOS computers all the day, therefore I know them well enough to not let them enter my home.

In spite of the warnings of all of my friends (most of them IIc owners) I bought an Apple IIgs. What a beautiful experience! Everything worked from the beginning. The UniDisk, printer, and hard disk did not even have to be configured. The old 5.25 disk drive (vintage 1979) works, the screen is wonderful, and it is certainly faster than my old IIc. No problems with the memory setup (have you ever tried to make a RAM disk, EEMS, expanded or extended memory match on an MS-DOS system just to discover that a LAN manager or Windows or whatever will mix up the whole system another way?).

Yes, of course I will have to put another plug onto the printer cable. But besides these minor things the Apple IIgs is worth its price. It is the continuation of the original idea of the bicycle of the mind (only it is no "bicycle" anymore) and it is not deserving of all the criticism it has received. Here's hoping that many more people discover that it does not have to be a Mac if it is an Apple (especially Apple Germany).

Peter Zechner
Munich, Germany

Good news from abroad

As I was in Kuwait for all of the war, mostly in hiding, I am very out of touch with Apple II news. I hope that it and you are still surviving in the face of cut-price Macs.

My Apple IIgs was in my office, which was totally trashed during the war. All my IBM-type machines and associated equipment were taken, but miraculously most of my IIgs survived. I found the CPU, hard disk, color monitor, and one UniDisk in different places, protected by rubbish and broken furniture. But when I hooked them up and obtained a new keyboard, etc., it all worked, save that yesterday my P.C. Transporter card packed up. So the Apple II can survive even war and pillage.

Bruce Parry
Safat, Kuwait

More *SuperWorks* comments

When I read your mention of *SuperWorks* last month I immediately contacted Remarkable Technologies. After some delays due to the unavailability of manual binders I was able to pick up the package (I'm about 20 minutes away from the company).

I disagree with Derek Sutton's letter. I don't think it is reasonable to expect the *SuperWorks* developers to attain the workability of Apple-Works 3.0 plus *TimeOut* in version 1.0 of their product. I remember AppleWorks 1.0. It was better than a lot of other Apple software but there was lots of room for improvement. I'm not prepared to wait five years for *SuperWorks* to achieve the current functionality of Apple-Works, but if it takes them a year or two I'm willing to be patient.

One of my main concerns is Apple's and Claris's willingness to let *SuperWorks* improve or even exist. Apple is notoriously litigious. Anything that makes buyers interested in buying MS-DOS machines affects their sales of Macs. They may be willing to let the Apple II lines be compromised, but they have gone to a lot of trouble to protect their Mac sales. Shawn Connolly, the *SuperWorks* product manager, said Claris is well aware of the existence of Super-Works. I can't help wondering when Apple will decide to blow them out of the water.

My own personal decision to buy MS-DOS instead of Macintosh was affected by a number of factors. First, Macs cost quite a bit more. Second, a year ago when I was diversifying, there were indications Apple might not be able to survive the recession. That was complicated by the lower profit margin on the new Macs. In my profession (law) the PC is the standard. Besides, it seemed more disloyal to the Apple II to follow the Pied Piper of Cupertino into the Macintosh sunset. If Apple comes to think that by discouraging Apple II users they might lose them entirely as customers, they may have more interest in us. Just because I have bought one MS-DOS machine doesn't mean I'm ready to quit Apple II's. I have invested in three Apple II's, not to mention the time spent tailoring AppleWorks to my uses.

I want to take this opportunity to tell you that I really look forward to receiving *A2-Central* every month. Although about thirty percent of the material is over my head or in areas not of interest to me (like hypermedia), I think you folks do a great job.

William R. Postman, Jr.
Hasbrouck Heights, N.J.

*We think it's useful to point out perceived shortcomings of **SuperWorks** in comparison to AppleWorks 3.0 and **TimeOut** since many of our readers will undoubtedly want to know how much of a shock the transition will be. But it's also fair to remember SuperWorks is still relatively new.—DJD*

IIe Card update

I primarily use AppleWorks 3.0 with many of the *TimeOut* applications (including *Ultra-Macros, SideSpread, Graph*, etc.) and would appreciate hearing from you as to whether *TimeOut* applications can be used, without complications, with the Macintosh LC with the Apple IIe Card.

A. J. Sherwood
Los Angeles, Calif.

I appreciated the article about the Mac LC and the Apple IIe emulation card. Something your didn't mention that we have been told is that all the printouts using the emulation mode and an ImageWriter II are graphics dumps. Is this true?

We have a problem trying to print from the Mac LC using AppleWorks 3.0 onto a Hewlett-Packard *DeskWriter*. (The *DeskWriter* is the Mac version of the Hewlett-Packard ink jet printer.) This is an AppleTalk compatible printer. Have you any suggestions?

Could you clarify something else. When we set up an expansion card of 512 kilobytes for the IIe to use for AppleWorks 3.0 does this mean that this memory is set aside even when

the card is not being used? We received some memory error message when we set the size at 1024K. (MultiFinder may have been turned on.)

R. F. Chatterton
Berwick

*AppleWorks 3.0 and **TimeOut** worked during our brief tests. We should clarify that we don't use the IIe Card on a routine basis; we acquired one primarily for review and for checking problems that readers may report. We prefer to use real Apple II systems for Apple II work.*

Since we don't use the IIe Card as our primary system we are not going to be a source for general compatibility testing. You should probably check with you Apple dealer to see if they have compatibility information (this may have the desirable effect of forcing the Apple dealer to use an Apple II once in a while). If they don't know, give us a try; if we've used the software on the IIe Card we can pass on our experiences. But the chances of us having tried every combination are not high; there just aren't enough hours in the day for an operation like ours to do detailed software testing as a reader service.

As far as we can determine, the IIe Card uses the Mac printer drivers to communicate with the printer port, but not to "image" the printed document as a Mac graphic before printing. Data is generated on the IIe side and sent through to the printer. We have noticed for the network LaserWriter that the ImageWriter emulator is automatically downloaded if not present in the LaserWriter when you start to print.

We don't know how well this sequence works with third-party printers and drivers. Apple has released a version 2.0 of the Apple IIe emulation software for the Mac LC that is intended to provide support for more printer models. In addition, support for using ProDOS partitions on the LC's internal hard disk has been added.

The IIe Card contains its own memory for the basic 128K IIe emulation. The "expansion card" memory is allocated from Macintosh memory which is not being used for other things, such as the operating system (Multi-Finder uses more memory than Finder) and any programs that are loaded. The IIe application itself will have to be resident during the emulation, of course.

Without getting into a long discussion of Macintosh mechanics, it turns out that you may need to adjust the amount of memory that the Macintosh will allocate for the IIe application's use. From the Mac side (before starting the IIe Card) click once on the "IIe Startup" icon to highlight it, Next type open-apple-I to display the file information. In the lower right-hand corner you'll see a "Memory" box with a displayed "Suggested size" of 656K. On our system, the suggested size allowed us only a 256K RAM disk even though we had plenty of memory. So we entered "1424" into the "Current size:" box just below the "Suggested size" figure; this is the way we tell the Macintosh operating system to make sure we have plenty of memory available (656K plus 768K is enough for the 1024K RAM disk). The next time IIe Startup is run, assuming there's enough free memory to launch it unimpeded, you should be able to increase the RAM disk size.

On a stock two megabyte LC with System

6.0.7 we found that we didn't have quite enough memory for a 1024K RAM disk emulation under MultiFinder. If you've added many system enhancements like desk accessories, extra fonts, and so on you may find out you won't have 1024K available even under Finder. (The Apple desktop's memory-gobbling habits are more familiar to IIgs owners than IIe users.)

A final reminder: the contents of the RAM disk will be lost when you quit the IIe application. This seems rational to us since you're effectively "turning off" the virtual IIe, but some users seem to have been unhappily surprised by this.—DJD

Blank screen

I'm interested in "blanking" my screens from Applesoft. I'm POKEing 49186,0 to get black on black and restoring with 192 for yellow on black. This is better than nothing but leaves my border on my IIgs and won't work on my IIe. *UltraMacros* does a good job on both but the question is **how**??

Joe Douglas
Baton Rouge, La.

Part 1: the memory location you're playing with on the IIgs controls the screen color. It doesn't work on the IIe because the IIe does not have these hardware color controls.

Location 49186 ($C022) contains the text and background color. The border color is part of the data in the border color register at 49204 ($C034). Since the border color register also contains some control bits for the real time clock, you need to only change the part of the value that controls the border color. Here's an example in Applesoft:

```
1000 TB = PEEK (49186): REM get text/background color
1010 POKE 49186,0: REM set text/background to black
1020 BC = PEEK (49204): REM get border color
1030 CL = BC - INT (BC / 16) * 16: REM save border
     color
1040 POKE 49204, INT (BC / 16) * 16 + 0: REM set border
     color to black
1050 POKE - 16368,0: WAIT - 16384,128: POKE
     -16368,0
1060 BC = PEEK (49204): REM get border color
1070 POKE 49204, INT (BC / 16) * 16 + CL: REM reset
     border color
1080 POKE 49186,TB: REM reset text/background colors
```

Notice that each time we change the border color register we read its value, strip off the lower half of the 8-bit value (by dividing by 16 and only keeping the integer portion, then multiplying by 16) and add our color value (from 0 to 15) to the result. That way the clock bits aren't changed.

*Part 2: **UltraMacros** blanks the screen by saving the current screen somewhere safe in the Apple memory and then just clearing the screen. When you reactivate the screen, **Ultra-Macros** restores it from the "safe" area and puts everything else back the way it was (the cursor, etc.). You can do this, too, if your program can allocate and hold a storage area to save the screen. This is left as an exercise <grin>.—DJD*