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The future of the Apple II

Computer industry pundits have predicted the imminent death of the Apple II so frequently that I expect one of our subscribers to send in a ten-year seasonally-adjusted chart of the pronouncement rate any day now. Meanwhile, the Apple II continues to evolve from its humble origins in a California garage.

One of the primary people behind the Apple II's evolution is William Mensch of the Western Design Center in Mesa, Ariz. Mensch is the one-man microprocessor progenitor who designed the 65C02 and 65C816 microprocessors that Apple inserts at the heart of all of today's new Apple IIs.

Though an Apple representative once told Mensch that Apple would never use his 65816, the IIgs is based on it. Likewise, Apple has made no commitment to Mensch for any of the chips he is now developing. Nonetheless, Mensch's upcoming chips are designed to be inserted into the heart of tomorrow's Apple IIs.

Apple's leaders have repeatedly said that they expect to be producing Apple IIs though the late 1990s. But they've given us no hint of what vision they have for the II. Based on current trends at Apple, it's easy to imagine the II squeezed into the pre-school market, with the Macintosh being Apple's machine for business, home, and education.

In contrast, Mensch's vision for the Apple II will take your breath away. Mensch and his colleague David O'Brien were guests at a conference in the Apple II Programmer's and Developer's RoundTable on GEnie April 25. One of the upcoming chips Mensch talked about was the W65C832, the next generation of the 6502 family.

The "832" is pin-compatible with the "816" now used in the IIgs. This means a IIgs owner can pull out the microprocessor that came in her IIgs and plug in Mensch's new chip. That, by itself, won't do anything for the performance of the computer. But, with the addition of software that takes advantage of the 832's advanced features, a IIgs built today could become a screamer.

Like the 65816, the 65832 will be able to emulate the 6502. It will also be able to do everything the 65816 can do. In addition, the two unused operation codes on the 65816, WDM and COP (see August 1986, page 2.55), will be used as "prebytes" for new 32-bit instructions and for internal math coprocessor instructions.

Mensch expects the chip to compare favorably with the 32-bit 68030 microprocessor and the 68881 math coprocessor, which will probably be used in the next generation of the Macintosh. Prototypes of the 65832 are expected in about 18 months; production is expected to start in 1990 with 8Mhz chips (the 816 in today's IIgs is rated at 4 Mhz–a chip's Mhz rating is how fast it *can* run; the speed at which it actually *does* run depends on the design of the computer it's in; thus, pulling out a 4 Mhz chip and plugging in an 8 Mhz chip does nothing for the performance of an existing computer). Mensch says he eventually will produce chips capable of running at 20 Mhz. The price of the 8 Mhz chip, in large quantities, is expected to be about $25.

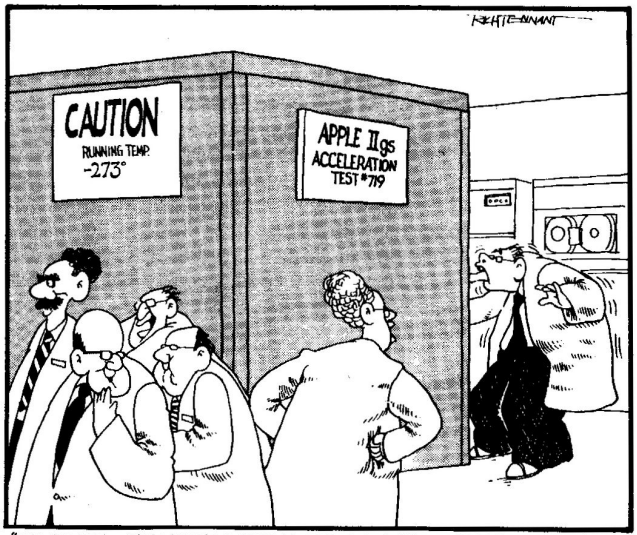
(Incidentally, Mensch said he thinks Apple could increase the speed of the IIgs to 8 to 10 Mhz with minor design changes, including static RAMs instead of dynamic RAMs and faster custom chips, in line with industry performance improvements since the IIgs was introduced.)

A second chip under development at Western Design is the W65C265. This chip, which Mensch calls the "265", is a static, one-chip microcomputer (yes, I said micro*computer*, not micro*processor*) designed to be used for parallel processing. "Parallel processing" means several microprocessors executing different parts of a program simultaneously. Each takes a share of the task. With a spreadsheet program, for example, one chip might do nothing but recalculations, another nothing but handle the keyboard and screen. Meanwhile, other processors in the computer might be left to handle such things as automatically saving your work to disk, receiving the electronic mail people are sending you, and managing the system as a whole. The concept of parallel processing is in its infancy. It has been used in experimental computers at universities and several companies are at work now using parallel processing to build supercomputers.

Western Design's 265 microcomputer will be based on the 65816 used in the Apple IIgs. In addition to its 816 heart, Mensch expects to be able to squeeze the equivalent of two serial chips, eight timers, a real-time clock, a token-passing local area network chip, and a high performance interface for parallel processing into the 265. It will even have 256 bytes of internal RAM, 4K bytes of ROM, and commands for multiplying and dividing 16-bit integers.

Mensch said that there doesn't seem to be any direct competition with the 265. Other major chip manufacturers are working on 32-bit data bus RISC (reduced instruction set) processors as their next generation. Mensch says his end product will be comparable to the parallel processor concepts of Cray on the high end and Apollo on the low end. Mensch says he expects 265-based machines to start out comparing favorably with products from Apollo, but at a much lower cost. His long term goal is to take on Cray's parallel machines head to head, using gallium arsenide technology, while remaining software compatible with the Apple II. How's that for vision?

Mensch's strategy is intriguing. The institutionally-oriented IBMs and InfoWorlds are forever talking about multiuser systems. Massive institutional systems have hundreds of terminals attached to them and



"OH GREAT! JUST WHEN WE'VE FOUND A WAY TO RUN THE SYSTEM AT HIGHER SPEEDS, YOU GUYS HAVE TO PLAY 'DOUBLE-DARE' WITH THE COOLING CHAMBER."

each user appears to have the system's full attention...until some guy in Lone Jack decides to sort his 200,000-name mailing list by zip code, at any rate, at which point everybody else remarks that the system seems to be pumping Crisco instead of electrons.

The two major jumps in computing technology (minicomputers and microcomputers) resulted in attaching *fewer* people to each computer. "One person, one computer!" has been the rallying cry of the microcomputer. Escaping from multiuser systems gives each of us consistent performance, better security, and greater control.

The IBMs and InfoWorlds within large organizations hate to see computers outside of their reach, however, so just as glaciers move downhill, institutional systems are always moving toward multiple users connected to each machine. This is the antithesis of the Apple II philosophy. Apple II users are committed to being in control of their own computers and most of us have begun to realize that one isn't enough. "One person, many computers!" is today's rallying cry.

Bill Mensch's low-cost multiple-processor vision for the Apple II could mean we'll have to extend that seasonally-adjusted chart of Apple II obituaries out for several more decades to come. The first product to use the 265 with parallel processing will be an experimental software development card for the Apple IIgs. The card will hold four 265s. Preliminary technical data for the 265 is available now to interested parties (Western Design Center, 2166 East Brown Rd, Mesa, AZ 85203 602-962-4545). The approximate cost for each chip is expected to be about $25 in large quantities.

The virus metaphor

A virus, a real virus I mean, is a submicroscopic packet of genetic material, wearing a protein coat, that sneaks inside a living cell and commandeers the cell's reproductive system. Rather than allowing the cell to continue making more cells, the virus tricks the cell into making more viruses. Then you sneeze and the baby viruses, dressed in their shiny little protein coats, fly off to find other cells and to make more babies.

Ideas act like viruses. Ideas infect people and cause us to make little idea packets to put in our children's lunches. I myself have recently been infected with the idea that ideas-act-like-viruses. And I'm about to infect you with it.

I caught the ideas-act-like-viruses idea-virus from "Memetics: The Science of Information Viruses," by Keith Henson. This article appeared in the August 1987 *ANALOG* and again in the winter 1987 *Whole Earth Review*. Memetics is the study of memes (sounds like beams), which is a new word that means idea-virus. Not all ideas are memes, only the infectious ones. For example, you may have an idea for a better mousetrap, but if the world doesn't beat a path to your door, all you have is an idea, not a meme. The essential characteristic of a meme is that it causes those it has "successfully infected to spread the meme....Such memes become more common in the culture pool."

Some viruses destroy the cell they have commandeered. Likewise, a few memes destroy the individuals they infect. These memes are so powerful they override human survival instincts. For example, there's the Kamikaze meme. There's the William Travis at the Alamo meme ("I now call upon every man who is determined to stay here and die with me to cross this line"). There's the Reverend Jim Jones and his People's Temple meme. Memes (and viruses) like these are virulent, but at least they are also self-limiting.

Some viruses destroy the cells adjacent to the cell they have commandeered. Likewise, some memes cause people to destroy other people in their community. As examples, Henson cites the Inquisition, the Pol Pot meme that infected Cambodia in the 1970s, and the Nazi meme.

Nonetheless, Henson says:

Most memes, like most microorganisms, are either helpful or at least harmless. Some memes may even provide a certain amount of defense from the very harmful ones. It is the natural progression of parasites to become helpful symbiotes, and the first such behavior that emerges in a proto-symbiote is for it to start protecting its host from other parasites. I have come to appreciate the common religions in this light. Even if they were harmful when they started, the ones that survive over generations evolve and do not cause too much damage to their hosts. Calvin (who had dozens of people executed over theological disputes) would hardly recognize Presbyterians three hundred years later. Contrariwise, the Shaker meme is now confined to books, and the Shakers are gone. It is clearly safer to believe in a well-aged religion than to be susceptible to a potentially fatal cult....

If most conflict in the world is an indirect effect of memes, memetics holds as much potential for reducing human misery as the germ theory for reducing disease. Just being able to model the interactions among the Soviets, the West, and the Islamic groups may make the world a safer place. Widespread understanding of hard-to-avoid human susceptibilities...may lead to the development of meme evaluating "mental health practices," just as knowledge of disease has changed our behavior in regard to drinking ditch water. If this article has succeeded in infecting you with the meme-about-memes, perhaps it will help you be more responsible about the memes you spread and less likely to be infected with a meme that will harm you or those around you.

There are two vigorous and robust memes currently causing mental influenza throughout the Apple II community. Neither one is life-threatening, but they do keep people up nights coughing and sneezing infectious packets through their modems and telephones.

One of these memes has to do with new Apple IIs. The second has to do with software viruses–yet another permutation of the viral epidemic model.

Like a Macintosh file, the new Apple II meme has two forks, the IIc fork and the IIgs fork. On the IIc fork is talk of an accelerated machine with a built-in 3.5 drive and a megabyte of memory. In its June issue (page 24), *A+* even predicted that Apple would announce this new IIc at Applefest. Since I'm writing this before Applefest and you're reading it afterward, I'd like to hide in the time warp on this one. I don't know anything about it.

Over on the IIgs fork we've had rumors of the obvious for months. Apple is going to speed up the IIgs, the rumors say. Since Apple is committed to the IIgs and it's selling well, and since its biggest limitation is the lethargic pace of the ProDOS 16 operating system, I'm absolutely positive we'll see a faster IIgs someday. The question is when and how much. Estimates range from last week to fall 1989 and from free to "more than I paid for it to begin with." My prediction is that the truth lies closer to the middle than to the edges of those guesses.

During mid-May, a message supposedly written by a software developer who had been seeded with a new "IIgs Plus" flashed from bulletin board system to bulletin board system around the world. The message talked about a IIgs with higher speeds, new super-hi-res graphics modes with more colors or 400 lines of resolution, better sound, reassignable slots, a built-in SCSI port, and more built-in RAM and ROM. I have no idea whether the message was accurate, but for the most part it was reasonable. It predicted a September 1988 announcement. The dangerous part of resneezing that meme is that if it doesn't come true there's going to be a lot of disappointment in sections of our community. But I couldn't help myself. It was just so infectious.

The second meme currently reaching epidemic proportions, not only in the Apple II community, but everywhere computers are used, is the software virus meme. A software virus is a small program that has the primary purpose of reproducing itself as much at it can. Given the panic about software viruses that's been sweeping the known universe since the first of the year, you'd think that every virus would have to be destructive, but that's not necessarily so. In fact, the most successful software viruses will be ones that never do anything other than reproduce themselves (unless somebody comes up with one that actually *helps* the system–it could prove very popular). Viruses that destroy files or otherwise harm systems are thereby discovered and eliminated.

What panics me isn't software viruses, but idea-viruses concerning software viruses. Up until January or so, when people encountered a problem with a program, they figured it was a "bug"–an unintentional programming error. Nowadays, when something goes wrong, people write and ask us if they have a "virus"–an intentional, self-replicating, destructive packet of code. Paranoia is mounting. And all the people who never understood how their computers worked to begin with now

have something new to blame every programming and operator error on.

The number of anti-reality idea-viruses concerning software viruses infecting today's computer users is stunning. In the last six weeks I've read articles that claim viruses can move from Amigas to IBMs to Apples. I've read articles that insinuate that a virus can infect your computer while you're online reading electronic mail. And I've read many articles that suppose that a single virus can infect any kind of file on a disk. All these idea-viruses are anti-reality because they consist of misinformation. Anybody got some aspirin?

Don't get me wrong–software viruses are real and they can be very dangerous to your computer system. But if you understand where they come from and how they work, you'll be less likely to participate in some of the stupid, superstitious rumors now popping up wherever computers are used.

First of all, understand that a software virus is a *program.* A software virus can't corrode the copper traces on your motherboard and it can't cause your monitor to explode.

Since a software virus is a *program,* it can't do *anything* until you "bring it to life" by running it. Since no one is going to purposely start up a software virus on their own computer, viruses will always be hidden inside other *programs.* A virus hidden inside a data file is dead meat. Since data files are never "executed", a virus hidden inside one could never "come to life" and could never have a chance to reproduce. You can bury your computer in data files teeming with viruses and still have absolute confidence that none of them will ever reproduce; none of them can do anything to harm your system. Think about it. Your computer can't catch a virus from a graphic file, from a sound file, from a spreadsheet file, from a word processor document, or from a database. It can't catch a virus while you're reading electronic bulletin boards or while you're transmitting files to other people. *The only way your computer can catch a virus is by* ***executing a program*** *that contains a virus.*

On the other hand, *any* program has the potential to contain a virus. But the journey from potential to actual is arduous. As a virus replicates itself and attaches itself to another program, it has to attach itself in such a way that it will be executed when the other program is run. At the same time, it has to attach itself in such a way that it will not damage the other program. If it causes damage, the user will stop executing the program and the virus will die.

Writing a short piece of code that's smart enough to attach itself to *any* Apple II program and satisfy these two requirements approaches the impossible. A successful virus is more likely to look for a specific program or a specific class of programs to infect. For example, imagine a virus embedded in a ProDOS 16 desk accessory. Whenever that desk accessory is used, the virus might look on all the disks attached to the system for the PRODOS file and reproduce itself there. Then, whenever you boot your system with that infected PRODOS file, the virus might reproduce itself on desk accessory files that it's familiar with. In this scenario, the virus would jump from system to system as disks containing infected PRODOS files or infected desk accessories were used on other computers.

This is scary and it's the kind of software virus we all need to protect ourselves against. However, it's not as scary as many of the idea-viruses about software viruses that are currently infecting society. Software viruses aren't magic. They don't have spiritual powers. They can't jump through the ether and they can't animate inanimate objects. They are just little programs, probably full of obscure little bugs, that need to write on disks to reproduce themselves.

Most of the virus attacks actually suffered by computers to date have been on mainframes, MS-DOS machines, and Macintoshes. As it turns out, it's quite a bit easier to write a virus for an "advanced" operating system than it is to write one for the Apple II. For example, most people think of a Macintosh Hypercard Stack as a data file, but it's really a program. Viruses have already been written that can jump from stack to stack.

But don't feel like the Apple II has been left out. Even if we've never had a widely-identified virus, we already have some sophisticated viral detection software. Remember that in order to reproduce itself, a virus has to write on your disk. Glen Bredon, of ProSel fame, has written a program called *Apple.Rx* that you can use to create a "snapshot" of the program files and other vulnerable areas on a disk. After that you run *Apple.Rx* in "check" mode–it will tell you if anything has been changed since the last snapshot was taken. Changed files are suspect and should be deleted and replaced with the original version.

(*Apple.Rx* will be available on disk directly from Bredon, 521 State Road, Princeton, NJ 08540, for $25 beginning in September. It requires a IIgs or an enhanced IIe or IIc with a 65802 microprocessor. A 65802 chip can be bought for under $20 and can be easily inserted in place of the 65C02 in the latter two machines. *Apple.Rx* is also available right now, for a $20 shareware fee, on the major online information services. On GEnie, search for the keyword "Apple.RX". Bredon asks in his documentation that *Apple.Rx* not be distributed on local bulletin boards or in the standard shareware manner because it is, itself, a prime target for attack by virus programmers. Unofficial versions may be bogus!)

Even without *Apple.Rx,* there are many sensible things you can do to protect yourself from viruses and other programs that could damage your system. *Apple.Rx,* for example, can do nothing about a non-viral but hostile program. It's easy to write programs that erase disks when they are run or after a certain date. This kind of program is hostile, but not it's not a *virus.* It can't reproduce itself.

The most important thing you can do to protect yourself is to keep backups of your disks. Write-protect all original commercial software disks before you even insert them in your computer. Make a copy and work from the copy. Avoid copy-protected software.

If you have a IIgs, try write-protecting your System Disk–the disk you boot ProDOS 16 with. There are several programs that legitimately write on the System Disk, however, so this suggestion may prove unworkable for some of you.

The most important safeguard is to avoid running software on your machine that is of dubious origin. While viruses have been found on commercial disks (not Apple II commercial disks, however), they are much more probable in the public domain. Pirate software that can't be traced back to any specific programmer is particularly suspicious. Rumors abound of software companies attacking piracy by uploading infected versions of their own programs to pirate bulletin boards.

Nonetheless, I think the more dangerous virus is the idea-virus about software viruses. Go out into the world with an understanding of how a software virus works, use care, and it's very unlikely your system will ever be infected. What I can't tell you is how to protect your mind. Nobody knows how idea-viruses work. That's what's really scary. If software viruses happen to lead to a better understanding of idea-viruses, any trouble they cause could be absorbed with a smile.

Miscellanea

What kind of computer would you buy if you wanted to do some image processing without spending wads of money? For $295, far less than the cost of most video cameras, you can get a card for your Apple II-Plus, IIe, or IIgs that can grab a "frame" of an electronic image (from a video camera or recorder) in 1/60th of a second, store it as a 256-by-256 pixel image, and display 190 lines of it on your computer's monitor (composite monitor required).

While 256-by-256 may seem like relatively low resolution compared to the 640-by-200 super hi-res mode on the IIgs, each of these pixels will be set to one of 256 levels of gray. This kind of gray-scale image looks like a black-and-white photograph on your monitor. You'd have to go to 4,096-by-4,096 pixels to get the same information content into an image in which each pixel could be only black or white (for example, a Macintosh or an Apple II in double-hi-res 560-by-192 monochrome mode).

Not only can you see the image, you can manipulate it. When an image is captured, the numerical values that tell the card what to display are stored in 64K of RAM on the card. You can transfer this information into your Apple, where different pictures could be compared, measured, or enhanced by special software (the card comes with a demonstration program). Images can also be transferred into a second, $129, false-color display board.

The manufacturer of these boards is Redshift Limited (P.O. Box 4335, Mountain View, CA 94040 415-322-7373). Redshift's largest customer uses them to build image processing systems that attach to microscopes. They have also been used in astronomy, satellite data analysis, and education. Other potential applications are robotics and

security. For more information, go to your local library and ask for the May 1988 issue of *Sky and Telescope,* and look at page 526, whereon some of ***Open-Apple's*** friends at the State University of New York at Geneseo have an article about how they use Redshift's equipment to teach and demonstrate image processing and measurement in an introductory college astronomy course.

Chinook Technology is a new start-up company building hard disk drives for Apple IIs. Their first product is a 20 meg external SCSI drive priced at $650 (10 meg drives are available for less, but cheaper 20 meg drives are hard to find). The drive comes with a SCSI controller card and cables. It also works with an Apple SCSI card. We've been beta testing one of these drives for the last couple of months, but couldn't come up with anything for Chinook to fix. It worked flawlessly. Compared to other hard drives on the market for the Apple II, the remarkable things about Chinook's drive is its size (7" high by 3" wide by 8 5/8" long), weight (under 5 pounds), and noise level (very quiet). Chinook is now at work on a 30 meg SCSI drive and on a hard drive for the IIc. As shipped, the drive doesn't support the DOS 3.3 or Apple Pascal operating systems, but software for putting DOS 3.3 on ProDOS devices is widely available, as mentioned in this month's letters. (Chinook Technology, 601 Main St, #635, Longmont, CO 80501 303-678-5544).

I've mentioned the magazine indexes available from Kula Software before, but they've added a few products some of you might be interested in. A unique feature of the Kula indexes is that they are distributed in AppleWorks database files (they require AppleWorks and a 55K desktop). Each index disk costs $6.95. The indexes are available by year (1985, 1986, 1987) or by publication type. The publication-type indexes include a range of years and are available for Apple II publications, general publications (*Byte, InfoWorld,* etc.), and entertainment publications (*Creative Computing, Softline,* etc.). Also available from Kula is an index that covers every issue of *Softalk,* if you remember that beloved magazine (Kula Software, 2118 Kula St, Honolulu, HI 96817 808-595-8131).

If you're an *Open-Apple* subscriber located outside of North America and you haven't yet heard of a company called MGA MicroSystems, I've got a tip for you. MGA is the largest Apple II mail order supplier in the UK. In addition to serving the United Kingdom, MGA imports from Apple II manufacturers and publishers and exports to Apple II users all over the world. All of MGA's marketing, advertising, and promotional materials are created on Apple IIs. The company has been supporting the Apple II since 1977 and intends to do so "just as long as we can obtain products," which I figure is about forever. MGA publishes a series of catalogs on different kinds of Apple II software and mails its customers a quarterly catalog, called *update //,* listing new Apple II goodies. This is a mailing list many of you ought to be on. Just write and ask to be added to it (MGA MicroSystems, Pear Tree, Appledore, Kent TN26 2AR, UK 0233-83571).

Ask (or tell) Uncle DOS

Copy II Plus changed

In reference to the "archive" feature of *Copy II Plus* that you mentioned last month ("*Copy II Plus* praised," page 4.31), version 8.2 of the program no longer has this feature. I kind of miss it and make a motion that the guys at Central Point put it back in.

Sven Barzanallana
El Paso, Texas

I wholeheartedly concur with recent reader comments about *Copy II Plus.* I find the "disk image" copy routine superb for loading my 768K RAMdisk from a 3.5 drive. I can restore my 768K RamFactor is less than three minutes.

The hitch that was unmentioned is that the new version of *Copy II Plus* (8.2) does *not* support disk image files. I keep two versions available. The new version, with its memory management and one-pass copy of 3.5 disks, is essential for backup. The older version is essential for dealing with my RAMdisk.

Eric T. Olson
Portland, Maine

Not Apple's fault

In regard to your comments about the 140-student high school that bought a Mac II, 60-meg hard disk, and LaserWriter (April, page 4.19)—no you are not crazy and yes, this is a waste of taxpayers' money. That is the easy part. The hard part is getting schools to buy computers in a rational, well-planned manner. We have been an Apple education dealer for over eight years. The situation is getting worse, not better.

The schools are at least as paranoid about purchasing computers as is the average individual. They are terrified of making the "wrong" decision, of buying the "wrong" computer. You and I know that this is hogwash, but these people don't. It is a decision that they would rather have someone else make for them. When in doubt, they try to err in the direction of the biggest or most common.

School systems are closer to being political entities than educational entities. Too many times we have seen school boards sharply divided over whether to purchase IBM or Apple. The decision ultimately depends on who gives the best discount, who includes the most free goods, and so on.

The teachers in most schools fit into two categories—they either love the computer or they wish it would go away and leave them alone. The administrators in most schools have their hands full of basketball, budgets, and school board pressures. They aren't eager to jump into the computer quagmire.

The real problem is that schools are not well-equipped to deal with technology and the decisions it requires. The school in question chose the Mac II because it was convinced that it was the best choice. Why and how the school arrived at this decision is unknown and irrelevant in the final analysis.

To blame Apple for the school's insecurity is neither fair nor reasonable. For comparison, you should see what the IBM guys stick schools with.

Vern L. Mastel
Bismarck, N.D.

More you can do with a II

We are communications consultants and one of the services we provide is to set up the routing instructions for telephone company digital central offices. In offices with new equipment, routing information is entered on a series of screens. The equipment uses the data to determine the proper path for a call.

What we do is query a working office, save the data, and then load it into AppleWorks. Next we make the needed changes. Finally, we send the information, one line at a time, to the new office. Depending on the type of translation we are doing, I sometimes build the file using a spreadsheet, because of the ease of copying columns. At other times I just use the word processor.

There must be a touch of irony somewhere there. Here we are using a $800 Apple II to program a million dollar computer and Apple wants to make the II into a games and sound machine. I'll never understand.

Pete Johnson
P.O. Box 84
New London, MN 56273

Johnson provides a disk recovery service for Apple II users, mentioned here back in November 1986, page 2.76, that we've heard good things about from the poor souls who've had need of his services. Other disk recovery services were mentioned in October 1986, page 2.68.

DB bug in SS, too

Regarding the problem of AppleWorks database crashes (March, page 3.87, 3.96; April, page 4.16)—it's not only a problem for database files, but also for spreadsheet files. A friend of mine lost a large spreadsheet document. Examination of the disk on the block level showed that AppleWorks wrote over the first 128 bytes of a block deep within the spreadsheet with the header data—the same 128 bytes found in the first block of the file. The problem seems to occur with AppleWorks 2.0 only (known as version 1.4 in Germany) on an Apple IIe or IIc. I couldn't duplicate the bug on the IIgs.

Regarding the control-@ patch you gave last month (page 4.29), the equivalent POKEs for the German 1.4 version are: POKE 12893,112 : POKE 11755,237. The BSAVE length also differs from version to version. The directory includes the exact specification.

Rudolf Rotering
Soest, West Germany

For the time being, it appears that you should never answer "YES" to the question "Insufficient room on this disk—is it okay to delete the old copy?" Always answer no, go into "Other activities," delete the file manually, and then save it. Were any of the rest of you who have had this problem using a IIgs?

Open-apple-V bug

There are three of us using AppleWorks to track circulation in a high school library. After many cries of "What happened!" and "Really, I didn't do anything," we've found a bug in AppleWorks that causes it to lock up. The bug is related to using open-apple-V to change standard values. We used to use OA-V to check to see if the checkout date were correct. With earlier versions of AppleWorks this never caused a problem.

Here's the sequence.

1. OA-V (change one of the values)
2. OA-S
3. OA-V (don't change any values)
4. OA-I or OA-V

You can prevent a crash by using OA-Insert between steps 2 and 3 or by actually changing something in step 3.

We like version 2.0 pretty well and we'll like it even better now that we know not to look at 'set standard values' unless we mean it.

Tom Whipple
Washington High School
Kansas City, Mo.

Feature disabled

The revised AppleWorks patch to avoid disabling of features at the end of a line, described in your May issue (page 4.29), works fine if you have the left margin set to zero. But if you have any margin at all, it prints an underline in the margin where no text exists. Any suggestions?

Tim Lamas
Puyallup, Wash.

If you want to be able to underline, don't make the patch for the underline command. The idea of these patches, inadequately explained heretofore, is to make it easier to use, for example, "Boldface Begin" and "Boldface End" for something like italics (if you own a printer that can do italics) rather than for boldface. You would have to go into "Other Activities", "Specify information about your printer" and substitute your printer's italics on and off codes for the existing boldface on and off codes.

The problem people have when they try to do this is that AppleWorks turns boldface, and thus italics, off at the end of each line. The patch we published avoids this. If you aren't trying to do tricks like these, the patch is worthless. Even people who are trying to do tricks like these will probably want to enter the patch for just one or two of the features, not all four of them.

Do not pass date, again

You've recently mentioned two things that cause AppleWorks to hang up at the date prompt ("Time stopped for ProDOS 1.1.1," page 4.2; "Time to set the clock," page 4.16) and I've recently discovered a third.

I came home and booted up AppleWorks a couple of days ago and waited for the date prompt. It came up and I tried to enter a date. "Peep," said the computer. No matter what I tried, I could not get past the date prompt. I made new copies of my program disk, I used other software, and everything worked, but I still couldn't get past the date prompt.

The first clue came when I booted up MultiScribe. It booted successfully, but when I tried to type in a phrase, all that happened was that various menus kept opening and closing. It was like my open-apple key was stuck. Out came the tools as I got ready to do some major surgery on the keyboard. Then I got clue number two.

Picture this. To the right of my Apple are two disk drives, side by side, with a joystick on top of the drives. On top of the joystick was a small binder. Removing the binder solved all my problems. It was pressing down one of the buttons on the joystick, which is functionally identical to holding down the open-apple key.

Sean Udell
Calgary, Alb.

Quicker numerical sorts

I have a rather large AppleWorks data base. It's large enough that a numerical sort takes well over two minutes. I've discovered that after padding numerical fields with blanks or zeros to give all numbers the same amount of digits, an alphabetic sort will work correctly. And AppleWorks' alphabetic sort is much quicker than its numeric sort. The difference between waiting 3 minutes and waiting 90 seconds made the conversion worth doing.

Richard Wigand
Sioux City, Iowa

Transferring values

How do you convert a line of calculated values in the AppleWorks spreadsheet into a line of new values for the next spreadsheet?

John E. Wolff
Hamilton, New Zealand

The easiest way is to use AppleWorks 2.0. It will ask you if you want to transfer "formulas and values" or "values only" when you copy or move spreadsheet rows from the clipboard. However, it can be tricky to get this feature to work. It appears that the material on the clipboard must include at least two rows. There has to be a formula somewhere within the rows, obviously, and there may have to be a "non-formula" as well. For example, in moving or copying a row of formulas and a row of repeated hyphens from the clipboard, I found that AppleWorks wouldn't ask me whether I wanted formulas or values when the formulas were at the top of the two rows. On the other hand, the formulas-or-values prompt did appear when the hyphens were on top. Looks like a bug to me.

If you can't seem to get AppleWorks to ask about formulas or values (and it ***never*** *will if you use a version prior to 2.0), another alternative is to print the row you want to move to a DIF file, create a new spreadsheet from that DIF file, then move the values from the new spreadsheet to wherever you want them. In this three-step process the formulas will be converted to values.*

In his book ***AppleWorks Tips and Techniques,*** *Robert Ericson gives another trick that's a bit simpler than the DIF journey. He calls it "flagging". For example, say you want to move a row of totals from line 100 of one spreadsheet to line 10 of another. Create a new row of @IF commands in your first spreadsheet that display the totals you want to move when the flag is set and their own values when the flag is clear. Set the flag, recalculate, clear the flag, recalculate, and then copy or move the flagged row to the new spreadsheet. The new spreadsheet will have a row of formulas not values, but each formula will point to itself and display the values "captured" from the original spreadsheet. For example:*

```
========A============B============C========D
  2|         2                 2         2
  3|         2                 2         2
  4|-------------------
  5|totals   @SUM(B1...B3)     4         4
  6|
  7|flag     @IF(A7=99,B5,B7)  0         0
```

When you change "flag" to "99", the answers in row 5 will be brought down to row 7:

```
========A============B============C========D
  2|         2                 2         2
  3|         2                 2         2
  4|-------------------
  5|totals   @SUM(B1...B3)     4         4
  6|
  7|99       @IF(A7=99,B5,B7)  4         4
```

Now change "99" back to "flag" (or "total" or whatever) and copy or move row 7 to your other spreadsheet. The correct answers will be trapped inside the self-referencing formulas.

Print date & time

Is there a way to put the date and time in an AppleWorks header?

Chuck Collins
Arlington, Va.

Most AppleWorks macro programs have keys that will type in the current date and time for you. For example, with Beagle Bros ***TimeOut UltraMacros,*** *solid-apple-' or " types in the date (Jun 1, 1988 or 06/01/88) and solid-apple-= or + types in the time (1:42 pm or 13:42).*

You didn't say whether you're looking for this ability in the word processor, database, or spreadsheet.

Whenever you print an AppleWorks database or spreadsheet document, you get an opportunity to "Type report date or press Return" (unless you've used open-apple-Options, PH to change "Print report Header at top of each page" to "No"). You can actually enter any string you want, up to 19 characters long, at the "Type report date" prompt. "My boss is an idiot", for example, would exactly fit in the space provided. For a 17-character date and time, on the other hand, just type solid-apple-', space, solid-apple-= at this prompt if you have ***UltraMacros.***

However, I suspect what you really want is to have the "print" date and time automatically included in the header of a word processing document. AppleWorks includes a word-processor printer option, "PP", that will print the current page number, whatever it is, in a header or anywhere else on a page. But nothing similar is built-in for date and time.

The best solution is to write a macro that can move the cursor to the position that you want the date and time to appear, erase what's already there, and insert the current date and time. For example, how about:

```
T:
<awp>      word processor only
<oa-1>     put cursor at top of document
<oa-f>     find
o            a printer option
he           Header, in fact
<rtn>      do it
n            not again
<down>     down to line under Header option
<ctrl-Y>   erase what was there from before
<date2>    put in an 8-digit date
<spc>        and a space
<time>       and the time
!          end of macro
```

You can execute this macro from inside the macro you use to automate printing, or you can embellish this one so that it enters all the commands for printing the document as well.

Print one page

I would like the "This page" selection of the AppleWorks 'Print from? command to print just one page—not keep going. Now I just turn off my printer at the end of the page. Is there an easier way?

Andrew Prinster III
Grand Junction, Colo.

Yes, there are a couple of ways. If you have a printer definition left, define a new printer just like the one you have, but specify "Yes" for "Stop at end of each page". When the printer finishes your page, press Escape, and AppleWorks won't bother with the rest of the document. Use this printer definition whenever you want to print just one page or when you want to print on single sheets rather than continuous paper. For another way to do the same thing, see the next letter.

Printing revisions

I regularly have to print up revision pages for a very long document. The easy way to do this using AppleWorks is to insert the open-apple-Options, PE (pause each page) command at the beginning of the document, use open-apple-Kalculate to define the pages, and open-apple-Find, Page, to go to the page you want to print. The Find will take you to the bottom of the page you want, so press the up arrow a couple of times and print "This page." I've even found that AppleWorks will number pages correctly when used like this.

Is there a way I can have Basic.system start up in 80-column mode instead of 40-column mode?

Larry Jorgensen
Vernal, Utah

Ericson's book gives a similar tip for printing a range of pages within a document. He suggests putting the PE command on the last page you want to print rather than at the beginning of the document. If you put it on page 15, for example, and print from page 12, you'll get just one pause, not four of them.

The easiest way to get Basic.system to start in 80-column mode is to write a short program like this one:

```
10 PRINT CHR$(4);"PR#3"
20 NEW
```

Name it STARTUP and put it in the same directory as Basic.system. Whenever you run Basic.system, this program will get control and will turn on 80-column mode and erase itself. You could add other features to it as well. For example, I have a program like this on my system disk that also does a PREFIX command to the subdirectory I use for testing Applesoft programs.

AppleWorks disassembled

Have you been following the disassembly of AppleWorks in *Apple Assembly Lines*? Pretty interesting stuff for a beginning-intermediate programmer like me.

Ron Berntson
Saskatoon, Saskat.

Yeah, there's some great stuff there. The series started in the December 1987 issue. I've always thought that the best way to improve your assembly language skills was to study the masters. And here you have one master, Bob Sander-Cederlof, disassembling and explaining the work of another master, Bob Lissner. Back issues are $2.40 and a one-year subscription is $24 in the U.S., Canada, and Mexico; $36 elsewhere (S-C Software, P.O. Box 280300, Dallas, TX 75228 214-324-2050).

DOS 3.3 and 3.5 drives

I have an Apple IIe with both 5.25 and 3.5 drives. Aside from AppleWorks, I much prefer DOS 3.3 for most of my work. How do I adapt my 3.5 drives to work with DOS 3.3?

William E. Coleman
St. Petersburg, Fla.

*There are a number of products that allow you to use DOS 3.3 on 3.5 drives; most were discussed here in October 1986, page 2.70. Shortly after printing that roundup, we got one more entry, **Oz DOS**, from Australian Richard Bennett. Because of our highly efficient materials storage system here at **Open-Apple**, I was able to find our copy of **Oz DOS** in one of the envelope boxes stacked under the folding table in the hallway in less than ten minutes. But dog gone it, there wasn't any address or price on the disk, which became separated from the letter that accompanied it months ago.*

*One new product in this category is Glen Bredon's **DOS.Master**, a $20 shareware utility that allows you to put DOS 3.3 "volumes" on **any** ProDOS device (521 State Road, Princeton, NJ 08540 or from our library on GEnie—search for uploads by BREDON).*

IIc entry points

Is there a source for an inclusive, explanatory list of stable CALL/entry point, PEEK, and POKE addresses for the IIc, other than the list Beagle Bros publishes?

Douglas Rochester
New York, N.Y.

If you want stability, the best choice is Apple's IIc Technical Reference from Addison-Wesley. It's one of the books we carry ($21). The addresses given are also inclusive and explanatory.

Video commands ignored

I've discovered that enhanced video firmware commands, such as PRINT CHR$(15) for inverse, are ignored if they follow immediately after a disk error. Why?

Doug Brower
Raleigh, N.C.

Dennis confirmed that the IIgs does this. An enhanced IIe does not. The problem is that something on the IIgs is clearing the high bit of a location called MSLOT (2040, $7F8), which causes the 80-column firmware to ignore video firmware control characters. We're at a loss to explain why it happens on a IIgs and not on a IIe, since the Applesoft and ProDOS code on the machines are identical. Perhaps it's a difference in the video firmware. A universal solution Dennis came up with is to add PRINT CHR$(0) to all error handling routines. The first character printed after the disk error fixes MSLOT. Otherwise, printing chr$(0) (control-@) has no effect on the screen.

Loading desk accessories

Is there a way to load a Classic Desk Accessory (or New Desk Accessory, for that matter) outside of the ProDOS 16 booting process?

Leh-Wen Yau
Riverside, Calif. 92505

*From ProDOS 8 you can load CDAs (but not ProDOS 16-only NDAs, obviously) with a $10 shareware program called **P8CDA**. The program was written by David Lyons. It's probably in your user group library, or you can download it from GEnie (search for files uploaded by D.LYONS2).*

*From ProDOS 16 you can load both CDAs and NDAs with a freeware (copyrighted, but may be used without fees) program called **INSTALLDA** by Tom Stechow. If you can't find this one locally we have it on GEnie (search for files uploaded by T.STECHOW).*

IIgs printer driver woes

It's my opinion that the situation regarding lack of Epson (and other) printer drivers for ProDOS 16 software is now at a *scandalous* state. There is no satisfactory reason I can think of why, this long after the release of the IIgs, the only printers supported by major software packages for the machine are the Imagewriter and the Laserwriter.

I, for one, am using an Epson LQ-1000 printer, which produces excellent letter-quality print and gives me wide-carriage capability for business reports. This printer represents a major investment and is only six months old (preceding my IIgs by four months). It just doesn't make sense for me to have to buy a new printer to get the most out of my software!

Is it possible that Apple is deliberately driving the software producers in this direction to boost their printer sales?

I fear for the future if the new machines can't be used with equipment made by independent manufacturers. My II-Plus, which I've owned since 1982, was supported by all sorts of peripherals made by independents. That's one of the things that made it such a good investment.

Mike Stupinski
Ellington, Conn.

While I agree that the lack of ProDOS 16 printer drivers is a serious problem, I think you're laying the blame at the wrong doorstep. Under ProDOS 16, Apple tells software developers, "your application doesn't need to know what kind of printer is connected to the computer."

ProDOS 16 printing is done by making a series of toolbox calls. The first call a printing routine is supposed to make puts a "Choose Printer" dialog box on the user's screen. This box allows the user to select a printer type (Imagewriter, Laserwriter, Epson LQ-1000, etc.)

and a printer port (printer, modem, AppleTalk). No matter what printer and port the user chooses, the application then proceeds in exactly the same way, making a series of toolbox calls that result in something being printed on your printer.

The trick is to get that "Epson LQ-1000" choice to appear in the Choose Printer dialog box. What appears there depends on what files you have in the SYSTEM/DRIVERS subdirectory of your System Disk (the disk you booted ProDOS 16 from). On the system disk Apple provides, you'll find five files in that subdirectory, all type $BB, called IMAGEWRITER, LASERWRITER, PRINTER, MODEM, and APPLETALK. These are the "driver" files for the two printers and three ports that show up in the Choose Printer dialog box. What you need is another file in that directory called EPSON.LQ.1000.

Where will that file come from? Since Apple sells its own printers, I don't think you'll see Apple develop one. And it would be a tremendous waste of energy for each IIgs software developer to develop one. I think the responsibility for providing the driver is Epson's, but like Apple, they'd rather see you buy one of their computers, so they're not going to do one.

I think the only possible source for the driver you need is some independent Apple II developer who's willing to risk several months of his or her life creating a driver in the hopes that you'll buy it. We haven't seen such drivers appear yet, however, because even now—a year and half after the introduction of the IIgs and ProDOS 16—Apple hasn't publicly released ***any*** *documentation on how to write such a driver. Our sources in Apple II developer technical support, however, say a 30-page tech note on the subject will be available by the time this newsletter reaches you.*

Back in the old days, one way to work around a lack of documentation was to disassemble Apple's existing drivers. According to the license agreement Apple and APDA enclose in all developer documentation nowadays, however, "YOU MAY NOT MODIFY, REVERSE COMPILE, (or) DISASSEMBLE...THE SOFTWARE, OR ANY COPY, IN WHOLE OR IN PART." The legal boys strike again. This clause is short-sighted and is more detrimental to Apple's customers than it is helpful to Apple.

Enough bad news. Here's a little good news. StyleWare, creators of ***MultiScribe gs*** *and other ProDOS 16 programs, got tired of waiting and pulled an Epson printer driver out of its hat. We know that this driver has been licensed to Activision and other software companies may pick it up, too. For more information, contact StyleWare at 5250 Gulfton, #2E, Houston, TX 77081 713-668-0743.*

More good news. You wrote to us in April (page 4.22) to say that Orange Micro's Grappler C/Mac/GS could squeeze no more than 9-pin output out of your 24-pin Epson. In response to your letter, subscriber John Wargo of Akron, Ohio wrote to tell us that Orange Micro has a separate interface, the Grappler LQ, for 24-pin dot matrix and Hewlett Packard LaserJet/DeskJet printers. Like the Grappler C/Mac/GS, the Grappler LQ converts serial into parallel. And it translates ImageWriter LQ commands into commands for supported 24-pin printers. Last month (page 4.30), one of our subscribers complained that the Grappler C/Mac/GS doesn't accurately translate a few text-mode commands, but we've heard nothing but good things about the device's ability to translate graphic commands.

More woes

I have an Apple IIgs (my third Apple in 6 years) and I am still waiting for a driver to come out that would allow me to use my Apple Dot Matrix Printer and Apple Parallel Card with gs-specific programs.

Lee Luker
Brandon, Man.

See above. Only this time what you really need is the Apple Parallel Card driver. The best guess down here on the bottom of the stack is that the ImageWriter driver would work fine on your printer as long as you didn't try to print in color.

Will anyone be supplying a driver so that the ImageWriter LQ can be used for printing on the IIgs?

Rupert F Goodspeed
Ojai, Calif.

See above. Only this time it's an Apple printer. Apple should have had a ProDOS 16 driver ready for this printer the day it was announced. Our sources at Apple say the ImageWriter driver will work, but at 9-pin, not 24-pin, quality. Apple's printer elves are reportedly working on a true LQ driver, but there's no estimated release date.

Can't dash P16

What's the Applesoft command to run a ProDOS 16 application? I use a small startup program that gives me a menu of my application software. However, "-WP.SYS16" (to run *WordPerfect*) gives a FILE TYPE MISMATCH error. BRUN doesn't work either.

Matt Cole
Lakewood, Colo.

You can't run a ProDOS 16 program until ProDOS 16 has been booted. You can, however, boot ProDOS 16, move over to ProDOS 8, run Basic.system and your Applesoft program selector, and then select a ProDOS 16 program. There are some tricks involved, however.

First of all, here's the quickest way to get your program selector running after you boot—make sure Basic.system is the first ".SYSTEM" or ".SYS16" file in your System Disk's root directory. Name your selector STARTUP. Now go into the subdirectory called SYSTEM and delete or rename the file called START. Boot this disk and you'll get ProDOS 16, then ProDOS 8, then Basic.system, then your own program selector.

Once ProDOS 16 has been booted, you can start a ProDOS 16 application with the following subroutine, which Dennis wrote. It expects the complete pathname of the application in P$:

```
100 REM  Run P16 application from P8
110 REM  P$=full pathname of application

120 POKE 768,32  : REM jsr MLI
121 POKE 769,0   : REM
122 POKE 770,191 : REM
123 POKE 771,101 : REM quit call ($65)
124 POKE 772,16  : REM parm list at
125 POKE 773,3   : REM      $310
126 POKE 774,0   : REM break on error
130 POKE 784,4   : REM parm count (4)
131 POKE 785,238 : REM enhanced quit id ($EE)
132 POKE 786,128 : REM pathname buffer
133 POKE 787,2   : REM      at $280
134 POKE 788,0   : REM zero the rest
135 POKE 789,0   : REM
136 POKE 790,0   : REM

140 POKE 640,LEN(P$)    : REM stuff pathname
141 FOR I=1 TO LEN(P$)  : REM     at $280
142 : POKE 640+I, ASC(MID$(P$,I,1))
143 NEXT I

150 CALL 768     : REM now do it
```

A limitation of this trick is that when you quit your ProDOS 16 program, there's no automatic return to your Applesoft selector program. You'll have to tell your IIgs manually to run Basic.system next. The solution to this is to...all together now... ***get ProSEL.***

IIgs modem cables

I recently purchased a modem from DAK Industries in hopes of using it on my Apple IIgs. At the time, I assumed (obviously incorrectly) that my computer had the same modem port connector as the IIc, with which this modem is compatible. Upon receiving the modem, it became obvious even to me that this cable would not work. I have tested the modem and cable on a IIc and all works perfectly, so I assume all I need is the proper cable, correctly wired. Am I correct or is there something here I don't quite understand?

Lee Bonnett
Rawlins, Wyo.

We haven't seen the DAK modem, but assuming it has a normal 25-pin RS-232 connector, it shouldn't be any problem to find a cable that will work. What you're looking for is a "Mini-DIN 8 to 25-pin modem cable". The Mini-DIN 8 connector is used by the newest Macintoshes as well as the IIgs, so a new-Mac-to-RS-232 modem cable is exactly the same as a IIgs-to-RS-232 modem cable. If your local Apple dealers can't come up with a cable that works, try our friends at Redmond Cable, 206-882-2009.

If you'd rather learn something and roll your own cable, the best place to start is with the $18.95 book ***The RS-232 Solution,*** *by Joe Campbell. (See our book list.)*

Downloading CP/M programs

I just installed an Applied Engineering Z-Ram 3 in my IIc. I am interested in downloading some CP/M programs but I don't have a CP/M terminal program to use, only ProDOS. Is it possible to download CP/M programs without a CP/M communications program and then convert them?

Allen Polansky
Baltimore, Md.

Dennis responds: Yes, you can download CP/M files and convert them, but (as you might expect), there are a few problems.

Here's how to do the transfer: download as normal using XMODEM. Next you need to copy/convert the resulting file to CP/M. Here's where the problem comes in. CP/M files don't have "file types" as we know them. CP/M file types are indicated by a three character filename suffix. If your ProDOS communications software stores what you download in a text file, your CP/M conversion program may attempt a text translation and destroy the file.

In order to prevent this, you need to change the filetype to something that the conversion program won't mess with. For DOS 3.3, use 'R'; for ProDOS use 'REL'. Programs to change file types are available in most public domain libraries. We also have them on GEnie (search for the keyword 'filetype').

Another solution would be to use the $25 shareware program ***CHAMELEON****, written by Ewen Wannop at Dark Star Systems in Britain. It is ProDOS-based and supports converting files between DOS 3.3, ProDOS, CP/M, and Apple Pascal. It includes a number of special features to control how data is altered or not altered during conversion, including forcing filetypes on both the source and destination disks. It will even convert directly from AppleWorks word processor files (type AWP) to text files in other operating systems.*

The only other problem is that most conversion programs don't support disk devices other than 5.25 drives, although ***CHAMELEON*** *apparently supports any ProDOS device. This limits the size of the files you can convert to 140K. In practical terms this may not be a big problem, as the only files I've run into that are this big are the SIG/M archive files (CP/M public domain software archives).*

Attacking the problem from a different direction, there are freeware and shareware CP/M-based communications programs for the Apple II available that support XMODEM. Some are available in ***Propacker*** *format. This means you can download a file containing the CP/M "disk image" under ProDOS; unpack it with* ***Propacker,*** *which is a ProDOS program; and end up with a CP/M 5.25 floppy containing the CP/M communications software (almost) ready to run.*

For example, take a look at file #4708 in the CP/M RoundTable on GEnie. The help files in the CP/M library have more information on this, or contact Jim Lill (JIMLILL), the CP/M RoundTable's Apple II assistant, for help. The ***Propacker*** *program and* ***CHAMELEON*** *are available in GEnie's Apple II library (search for the keywords PROPACKER and CHAMELEON).*

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Unable to copy

I have set up a second 800K drive using the internal IIgs RAMdisk rather than buying a second 3.5 drive. It works fine except when I want to copy a whole disk. Every time I've attempted to copy a disk to /RAM5 (using any number of utilities—*Copy II Plus, System Utilities, ProSel*) I get the same error message, UNABLE TO COPY - DEVICE SIZE MISMATCH. Is there any way around this problem? Is there any way to copy a 5.25 floppy onto a 3.5 disk?

Alan Zimbard
Scarsdale, N.Y.

Dennis tested ***Copy II Plus*** *and* ***ProSel*** *and found that if the* ***maximum*** *size of /RAM5 is set in your control panel to exactly 800K, "copy disk" will copy from a 3.5 to /RAM5. We recommend setting the minimum size to 800K as well, though that doesn't seem to be absolutely necessary in this case. Apple's new* ***FASTCOPY.SYSTEM*** *on the IIgs system disk, on the other hand, won't copy between unlike devices, even if they are the same size.*

ProSel's *copy program will also copy smaller volumes onto larger volumes, after asking you if that's what you really want to do, and can handle your 5.25 to 3.5 situation. Usually, however, when moving files from a 5.25 to a 3.5 it's better to do the copying on a file-by-file basis, rather than a whole disk at a time, to avoid erasing any other files already on the 3.5. ProSel's* ***CAT.DOCTOR*** *makes it easy to select all the files on a disk for copying—just press control-A(II).*

Rana schematics

I've heard that schematics and other maintenance information is available for Rana Three drives. We have six of them and are in need of help. Do you know where I can get this information?

Martin A Townsley
Destin, Fla.

Howard Sams Publishing's ***Computerfacts*** *series includes manuals containing all of the above for Rana Elite One, Two, and Three drives. Each manual is separate—they are $19.95 each. We can get them for you, as well as other esoteric Computerfacts manuals. The available Computerfacts manuals for Apple's equipment is listed on the back of our monthly book list, at the bottom of the page. If you need a manual for something not listed there, write and we'll let you know whether what you want is available and how much it costs.*

Sys.Utils and DOS 3.3

Try copying a DOS 3.3 file using the new System Utilities 3.0 that come on the IIgs system disk. Filenames come through with the high bit cleared, causing all sorts of problems with flashing/inverse characters and an unusable file. Not too friendly!

Dave Hill
Cape Elizabeth, Maine

Statistics, part III

Regarding the letters about statistical programs for the Apple II (April, page 4.20; May, page 4.30), it's true as you say that new languages and the IIgs will permit more powerful stat packs than those currently available. But there's plenty of power in the IIe and IIc using ProDOS 8 and Basic.system that hasn't always been available for statistical computation. The *Beagle Compiler,* for example, is a very significant resource for a statistical package. While it will not speed up raw floating-point computations, the fact is that these computations in practice can involve extensive integer (and sometimes string) variables—just those things that the *Beagle Compiler* shines at.

For example, a multiple regression program using the "sweep" procedure for matrix inversion requires several loops with integer control elements. A compiled version of such a procedure is significantly faster than it is in Applesoft. The same goes for analysis of variance for complex designs, in which there can be a considerable amount of juggling of integer subscripts. Add to this the use of /RAM under ProDOS to minimize data file disk I/O, and an AppleWorks connection, and you have possibilities for the IIe and IIc that weren't available for the first generation of statistical packages. And on a IIgs, you can achieve speeds exceeding that of compiled Basic on an 8088 machine.

I'd be happy to send a free demonstration version of such a statistical package to any of your readers who requests one.

Stephen Madigan, Ph.D.
The Data Mill
P.O. Box 2240
Culver City, CA 90230
213-836-9804

How to rescue /RAMdisks

What can I do about programs that trash ProDOS in my slot 7 RAMdisk? Can this be overcome? Every so often I boot a program from a 5.25 disk and it runs fine. But when I try a warm open-apple/control/reset reboot, I am greeted with "Unable to load ProDOS." Sometimes if I boot ProDOS from a disk I can recover the RAMdisk, but too often I lose it and must reload.

Robert D. Peterson
Bamberg, West Germany

The problem is that the firmware on Apple's memory card keeps some values in the "screenholes" to remind itself what's going on. Too many programs, particularly the copy-protected kind, assume they own the whole computer and walk all over the screenholes. When you try to reboot after using such a program, the RAMdisk appears damaged. But it's not, only the screenholes are.

The solution is to reboot ProDOS from one of your other disk drives. Then fill all the screenholes with $A0, the ASCII code for the space character. Next, catalog the RAMdisk. It will reappear, undamaged. Next you must press open-apple/control/reset to warm boot from your RAMdisk (and fix the screenholes).

Here's how to fill the screenholes with $A0:

```
100 FOR ADR=1144 TO 2040 STEP 128
110 : FOR I=0 TO 7
120 : : POKE ADR+I,160
130 : NEXT I
140 NEXT ADR
150 HOME
```