

"NAAAH - HE'S NOT THAT SMART. HE WON'T BACK UP HIS HARD DISK, FORGETS TO CONSISTENTLY NAME HIS FILES, AND DROOLS ALL OVER THE KEYBOARD"



Ask (or tell) Uncle DOS

The lead article in last month's issue of **A2-Central** stated that the new IIGs would be supplied with an Apple IIGs Memory Expansion card to achieve the new standard 1.125 megabyte RAM memory configuration. The memory is actually installed on the revised motherboard. The current Apple memory expansion card can be used with the new IIGs to augment the total IIGs memory available.

Memory cards that use their own address decoding circuitry rather than working solely from the address information supplied at the IIGs's internal memory expansion connector may not work with the new motherboard. This includes many current memory cards that use more than four banks of either 256 kilobit or 1 megabit memory chips. If your old memory board won't work in a new IIGs, contact the manufacturer to see if that's the problem.

We also addressed a problem with renaming IIGs disk volumes from the Finder in "System Software 5.0" (page 5.63). The procedure from Finder is to double-click on the name of an unhighlighted icon (if the icon is already highlighted, click on the desktop to remove the highlight). The pointer should change into the "I-beam" cursor when you move the pointer over the highlighted name box, indicating that you can edit the text within the box. Users without the System 5.0 manuals who are having trouble renaming files or disks should notice that you need to actually press the "Return" (or "Enter") key to make a name change take place. If you click the mouse somewhere else on the desktop, the new highlighted name will revert to its unhighlighted original.

In addition to the IIG/IIc/IIGs version of **ShrinkIT** ("Checking out **ShrinkIT**", page 5.63), Andy Nicholas has written a separate II-Plus (ProDOS) version of his utility to "unshrink" files and disks. These should be appearing on most commercial information services. Andy also mentioned that a special "2.1a" version of **ShrinkIT** is meant only for use in conjunction with AppleLink-Personal Edition and should not be uploaded elsewhere.—DJJ

Ile extensions

The IIGs isn't the only Apple that can support multiple keyboards/monitors. ("ADB Cable length", Sept. 1989, page 5.63.)

You can add multiple keyboards to both the Ile and IIc by merely hooking another keyboard in parallel with the original keyboard on the machine. There is a distinct distance limitation though. The keyboard on the Ile and IIc is connected directly to the keyboard encoder. In practice, a distance of 10-12 feet from the computer to keyboard seems to be the maximum that will work. Longer lengths usually send the

key encoding into another time dimension. The result is the same however as reader Bilgrien reports. Along with an auxiliary video output (a simple modification) the multiple keyboard option can make one computer do the work of two.

On the subject of the Works/Works translator: the Apple File Exchange version of the Works/Works translator comes with **Microsoft Works** version 2.0. Going from **Works** to **AppleWorks** is much harder than from **AppleWorks** to **Works**. If you have (or can round up) enough computers, go from **Works** to **DOS** to **Apple II**.

Vern L. Mastel
Mandan, N.D.

Assuming "DOS" means "MS-DOS", the reason for interposing another operating system in the translation chain is unclear. Are there any details on this?—DJJ

AppleShare simplified

Just read your piece on AppleShare and was particularly interested in your "vision" of the AppleShare office. The primary reason for this interest centers around the fact that I am heavily involved in establishing an AppleShare network for the School of Education at Georgia College which is predominantly Apple II oriented.

Our decision to adopt the Apple IIGs as the "standard issue" computer was a clear one for us. Our primary constituency is to be found in the K-12 education community and the Apple II is the dominant computer in that environment. We felt that, as teacher educators, we needed to be familiar with the machines our constituency was using most frequently. We also decided that buying just the IIGs CPU from Apple and getting monitors, drives, and memory chips elsewhere gave us an excellent price-to-performance ratio.

There is an excellent and vastly more powerful alternative to the Aristotle interface. It's called *Let's Share* and it is a product of Russ Systems, Inc. Call Curtis Kopple at (408) 458-5080 or write to him at 1344 Pacific Avenue, Suite 103, Santa Cruz, CA 95060.

Let's Share is a highly developed descendant of *Let's Talk* (a.k.a. *MultiTalk*, a.k.a. *Data Broadcasting System*), one of the most innovative ProDOS BBS systems ever devised. We're using DBS with three incoming lines running on a Corvus network with the GC EduNET project. *Let's Share* uses virtually the same easily learned scripting language to collect, organize and present information as *Let's Talk* does. Additionally, *Let's Share* will launch applications, search AppleWorks databases without having to launch AppleWorks, and it will support CD-ROM.

Currently, we're trying to convince Russ Systems to write a telecommunications module for *Let's Share* so that we may integrate a wide area network (soon to be state-wide in Georgia) with our local area network. Integrating these two networks (the LAN and the WAN) would mean that faculty would have access and be accessible to any other educator in the state, right from their own desktop.

The WAN currently services over 700 members and the LAN connects over 70 offices and classrooms. The state-wide WAN will certainly grow very rapidly in the coming year, perhaps to 2,000 members. We're using a Macintosh IIx with 160 megabyte internal drive as the primary file server. Farallon Star Controllers and PhoneNET wiring link classrooms and offices.

We included classrooms so that our faculty could use LCD panels with overhead projectors to present information and demonstrate software.

Let's Share is definitely worth looking into. Another dimension of the interface question might involve *HyperStudio*. I have a preliminary version of this program and, according to the docs I was given, it is AppleShare aware. *HyperStudio* could work in concert with *Let's Share* or in its place. I'll need to investigate further to have definite opinions on this aspect of *HyperStudio*, but as a stand-alone application, it's going to be a world-beater in the Apple II world if Apple doesn't undercut it by releasing a IIGs *HyperCard* product that would be bundled with new systems. I have heard rumors to that effect.

System 5.0 arrived in our offices without documentation and less the disk to install it on the AppleShare network. Our normally very resourceful dealer has been, so far, unable to pry any information or disks away from Apple corporate. Nonetheless, it is an awesome product, especially in conjunction with AppleShare. I boot my system from a hard disk each AM and, since it "remembers" my name and password, all is quick and automatic. The hard disk (could be a floppy) is like the key disk to a car, if you've got it you can ride, if not, you gotta walk.

Finally, let me tell you that we are noticing that features in 5.0 are presaging features promised for the Mac Finder. Right now, it's easier to use a GS WorkStation to change access than it is to use a Mac workstation. System 7.0 for the Mac will, I predict, handle access and such in the same ways as GS/OS 5.0 does now.

If you wind up trying *Let's Share*, I have all sorts of script files for e-mail, forums, automatic testing, surveys and electronic product ordering. **A2-Central** might consider taking credit card orders electronically. Of course, to get this capability, Russ Systems will have to write that telecommunications module for *Let's Share* that I was talking about.

Dr. Frank Lowney
Assistant Dean
Georgia College
Milledgeville, Ga.

BASIC conversions

I've just completed a package of programs for doing high school and college math. I wrote them in AppleSoft BASIC in DOS 3.3, then used the *Beagle Compiler* to compile them under ProDOS. I've no commands in them more esoteric than POKE 36,N and PEEK(-16384).

I'd like to expand my marketing horizon for this writing them in GW-BASIC, thereby making them available also for running on MS-DOS. To do this, I'll need a book which will instruct me in how to translate commands from AppleSoft BASIC into GW-BASIC (and which will also tell me when I can't).

Are you aware of any book like this?

Spence Earnshaw
Richmond, B.C.

We don't know of such a book currently available on the market, but maybe a reader does. Nominally, we've found it easiest to buy a copy of the reference manual for each language and compare commands ourselves, due to the complications of converting the PEEKs, POKEs, and CALLs often found in Applesoft

programs. Many reference manuals have a table listing available commands that can be used for finding common correlations quickly.—DJJ

Pascal conversions

How compatible is ORCA/Pascal with Apple Pascal (ORCA for the GS, Apple for the II)? Can I take programs written for Apple Pascal and compile them on my GS with ORCA/Pascal?

Shangtul Nigam
Southington, Conn.

By and large, you can translate your **Apple Pascal** programs to **ORCA/Pascal** fairly easily if they do not use the Apple-specific units such as **APPLESTUFF** or **TURTLEGRAPHICS**, and if you run them under the **ORCA** shell environment rather than as "standalone" applications. This will likely limit "easy" conversions to applications that use the text, not graphics, screen.

The primary syntactic differences between **ORCA/Pascal** and **Apple Pascal** come from the different "standards" on which each version of the language is based; **ORCA** is an ISO standard Pascal, while **Apple Pascal** follows the UCSD conventions. Common extensions for each of these languages (such as strings) may also be handled slightly differently, though **ORCA/Pascal** does support the UCSD string structure.

The Apple-specific extensions added to **Apple Pascal** include high-res drawing routines, etc., designed for use on (usually) the 64K Apple II 8-bit "base" machine model. **ORCA/Pascal** instead has extensions oriented toward supporting the IIgs toolbox and the GS/OS environment. As part of this, the device access for **ORCA** is very different from that for **Apple Pascal**. The **ORCA** shell, for example, implements an environment for communicating with devices and files that **ORCA/Pascal** uses in place of the UCSD "shell" of **Apple Pascal**. If you write programs for **ORCA/Pascal** that are not intended to run under the shell, you'll need to use the IIgs tool calls to perform many functions, such as using the GS/OS Console Driver to send output to the text screen. Or you may prefer to update your program to use the IIgs graphics desktop interface as you make other modifications.—DJJ

ProPascal

I recently bought a IIc Plus. The demo disk which came with it is marked "Version 1.0 ProPascal Based". The disk catalogs like a normal ProDOS disk, with **BASIC.SYSTEM** as the only system program in the root directory.

Two of the subdirectories, **AT.WORK** and **PRESENTING**, contain one system program, a bunch of files with no type, and a number of **TEXT** files. When I check the disks which came with my original IIc three years ago, the **AT.WORK** and **INTRO** disks are indeed Pascal disks.

Does this indicate that a new Pascal which will run under ProDOS 8 is in the works? I haven't heard of a **ProPascal**, and there is nothing about it in the APDA catalog, nor can I find any reference to it in your back issues. It would certainly be nice to have, though.

Richard D. Jay
San Diego, Calif

ProPascal generates files that execute on an Apple II under ProDOS, but the compiler actually runs on an MS-DOS machine to create the files, which can then be transported to ProDOS. A compiler that runs on one computer

but generates code for a different system is called a **cross compiler**. **ProPascal** is intended as a development system to aid in moving **Apple Pascal** programs to the ProDOS environment for compatibility with the current software base. The supplier is Component Software, and the address we have is 137 Centre Street, Mountain View, Calif. 94041 Hang on to your hat...this is a full professional development system (including run-time duplication licensing and consultant-quality support) and it goes for (are you ready?) \$4200. We tried to contact Component Software to see if that included a computer (we doubt it), but the number was disconnected.—DJJ

Lost disassembler

By typing "F666G" in the monitor on an Apple II-Plus you used to be able to get into a mini-assembler.

Was this feature removed in the Apple IIe's or has the location changed (an enhanced or unenhanced IIe will just hang)?

Louis Rau
Armidale, N.S.W.

Actually, the miniassembler was originally part of some utilities in the Integer BASIC ROMs installed in the original Apple II (no "Plus"), not the monitor ROM (\$F666 is not within the monitor's address range of \$F800-\$FFFF). The Applesoft in ROM on the Apple II-Plus took up almost all of the 12K ROM space other than the 2K allocated for the monitor ROM and the miniassembler was not present in Applesoft. However, the miniassembler remained in the Integer BASIC ROMs and was also loaded as part of the **INTBASIC** file under DOS 3.3 on a 64K Apple II system. Integer BASIC isn't loaded under ProDOS, so the miniassembler **INTBASIC** contains isn't accessible.

The first Apple IIe's and IIc's did not have Integer BASIC in the motherboard ROM and also lacked the miniassembler unless **INTBASIC** was loaded. As the ROM space for these computers was later expanded beyond the original 12K limit (on the enhanced IIe and the IIc motherboards other than the first version) the miniassembler was added back into the ROM. To see if it exists in your system, get into the monitor and type "I". If the computer responds with a "I" prompt, then the miniassembler is present (the one on the IIc even supports 65C02 codes). If the computer beeps and responds with the monitor's asterisk ("*) prompt, it's not there.

For information on the Apple II monitor, see "A Song Called the System Monitor" (February 1985) and "A Song Continued" (March 1985). The IIgs has a greatly enhanced monitor and miniassembler which handles 65816 code; see "Verses added to a golden oldie" in the May 1987 issue.—DJJ

Epic modem quest

Our Apple user group heard several rumors that Epic Technologies had gone out of business. We think that their **Epic Classic II** is the best Apple II modem on the market and we hate to see such a fine product disappear. Will some other manufacturer take over from Epic?

Glenn Kopraske
Fenton, Mo.

We've also heard Epic is gone. We haven't heard of another company picking up the product line; possibly a reader knows of any support organizations.—DJJ

BASIC editing

If you write a program in Applesoft BASIC using ProDOS on an Apple IIc and then have the need to renumber program lines to facilitate insertion of other program lines, how can you (a) renumber every line in the listing without typing line numbers? (b) Put a space of 10 line numbers between existing consecutive line numbers without retyping each line number.

Gerald L. Hoffman
Houma, La.

If you have not tried **Beagle Bros Program Writer** do it! I've used it to clean up and modify all my programs. It has to be the neatest thing since sliced bread.

Barry Choate
Lumberton, Texas

Beagle has released an upgraded version of **Program Writer** with some new features, including the much needed ability to "cut and paste" a range of Applesoft lines between programs. The **ProBASIC** bonus language ("BASIC choices", Dec. 1987, page 3.88) is no longer included with the new version, though.

Some Applesoft program editors such as **Program Writer** allow you to renumber all or part of a program, keeping all GOTO and GOSUB references to the numbered lines updated. There are also standalone utilities that will renumber a program, but we find an actual editor so useful that we haven't used a standalone version in recent memory.—DJJ

OKS MultiKache Card

AppleWorks and **Beagle Bros TimeOut** series are my main software - good review of AppleWorks 3.0. I have recently installed an Ohio Kache disk controller card with 256K in my IIe. I'm impatiently waiting for an Apple 3.5 drive. The card really does speed up disk access. It seemingly hands me the disk menu file card as if to say "Isn't this what you wanted?".

J. Pollard
Mogador, Ohio

Ohio Kache Systems's **Multi-Kache** board replaces the functionality of your normal 3.5 and 5.25 drive interfaces and adds intelligent disk caching.

Like the more common software caching systems such as **Diversi-Cache**, the **Multi-Kache** retains the most recently accessed disk information in RAM memory specially reserved for the process, and uses this readily available image to supply the information to the computer on subsequent requests the computer makes for information from the disk. If the information is already in the cache, it is accessed without having to physically access the disk drive again, which gives the appearance and function of having a faster disk drive in most common situations.

Unlike the more common software methods, the **Multi-Kache** contains its own microprocessor and cache RAM to store the disk information it reads. Since the card contains its own "computer", it can actually work with the disk drive while the computer is doing other things; for example, you can insert a new disk and the **Multi-Kache** will automatically start to read and buffer the information. The larger the amount of cache RAM you have installed on the card, the more of the disk information it can read, and the more likely it is that the

information you request will be in the fast cache memory. The automatic start/stop of the disk drive is a bit unnerving, but you get used to it, and the information comes in blindly fast from the cache.

There are options available to support SCSI hard disks, and those offered by Applied Ingenuity (**InnerDrive**) and Applied Engineering (**Vulcan**). Ohio Kache also has newer models that work only with the hard disk (no floppy support) at a lower price than the **Multi-Kache** with the hard disk option. Their address is 4162 Little York Road, Suite E, Dayton, Ohio 45414-2566, (800) 338-0050.-DJD

Small Launcher

With RAMKeeper cards, what is the smallest launcher (**ProSel**, **Squirt**, etc.) that will reside in backed-up RAM and still launch any program?

William Lang
Statesboro, Ga.

Assuming a need to support launching GS/OS programs, the smallest self-contained program appears to be the 6K **LAUNCHER** program supplied on **Ilgs System Disk 3.1**.-DJD

Data sharing

I just received Barney Stone's newspaper and I wish him well. However, my particular situation isn't precisely reflected in this first issue, and I'm sure my equipment isn't unique. My "business" (Stetson University) is committed to IBM and Macintosh equipment. At work I use an IBM PS/2 Model 50. At home I can use whatever I want, of course, but before I'm able to choose Apple two things must be true: (1) I need software sophisticated enough to meet my requirements, and (2) I need an efficient way of sharing data.

Stone seems to focus mainly on (1), and that's clearly important. But for people like me (2) is the real key. The question has two "sub-considerations". The first is mostly a matter of software compatibility. For example, if I spend a lot of time laying out a syllabus or proposal on my Apple, I don't want to lose all the formatting when I transfer the data to the IBM. There are some good signs here. For example, if I use **WordPerfect** at home, the files will be compatible with **WordPerfect** at the office. If I use **AppleWorks**, I can still use **SoftSpoken's** new program to translate the files for **WordPerfect**.

But that's where the second sub-consideration arises. To use **CrossWorks**, I have to put my two computers physically together or to fuss with modem transmissions. That's a pain. What I want is to save a file at home on a 3.5" disk, then to take that disk to the office, stick it into an MS-DOS or Macintosh drive, and read the file directly into the other computer.

Again, there are signs, but we are far from Nirvana. For instance, the **MatchPoint** controller is an excellent device, but it won't work in my MCA bus. Will the next GS use Apple's "universal" drive? Will it be able to read 720K MS-DOS disks. More to the point, will it be able to WRITE them? Those are the kinds of questions that are crucial for those of us who want to use our Apples at home for business we have bought home from the office. Those are among the issues I would like to see addressed both in **A2-Central** and in **II at Work**.

Wayne Dickson
Deland, Fla.

First, let's point a finger at one basic problem: as long as Apple Computer refuses to

change its marketing emphasis for the Apple II to encourage the development of serious (business) software, the problems you mention will be severe (because companies probably won't worry about Apple II conversions). A change depends on Apple's belief in the Macintosh maturing enough to stop protectionist marketing postures opposing its own products and users.

Second, let's look at some ways to deal with your specific request from among two options: hardware and software to carry out the transfer on a single CPU and facilitating the transfer between two CPUs.

For transferrals between an Apple II and a Mac, the file contents of 3.5" (800K) ProDOS disks can be exchanged with 3.5" (800K) Mac disks on the Mac using **Apple File Exchange**, which is supplied as part of the Mac system software. Converting the files to and from forms that the different system's applications can handle is left to translation utilities that work with AFE. In most cases, you'll need to pressure the application's publisher to generate a translator in both directions (see "More on Works to Works" in the previous issue).

A Macintosh system that includes the Apple FDHD drive can also access 3.5 MS-DOS disks in the 720K and 1.44 megabyte formats. The Apple PC 5.25 drive enables a Mac to read and write 360K MS-DOS format disks. In both cases access and translation is achieved through use of **Apple File Exchange**. But at a suggested retail cost of \$629 for the FDHD and \$528 for the Apple PC drive, these are hardly inexpensive solutions. For MS-DOS machines with a "standard" PC bus (this eliminates the **Micro-Channeled Model 50**), the **Central Point Option Board Deluxe** includes software to import/export Mac files using a PC's 3.5 drive. No data format conversions are performed, separate utilities have to be written if your application can't work with the file format used for saving the data.

The future Apple **Ilgs** solution will probably involve a GS/OS FST for the Mac HFS and MS-DOS operating system formats if Apple develops these tools. The **Ilgs** can read Mac disks directly on the current Apple 3.5 drive (the missing link is the HFS FST). MS-DOS machines use a different recording format which may require a more specialized drive; this might be a drive like the FDHD or something like a SCSI-based MS-DOS drive.

If you want to look into a current Apple II solution, consider the new reduced pricing on an **Applied Engineering PC Transporter**.

	Price	Total
PC Transporter	\$499	\$499
Ilgs PCT kit	49	548
PCT TransDrive	259	807
Apple 3.5 drive	399	1206

These are not the lowest prices. The AE **Ille/II+ PC Transporter** installation kit is \$39 instead of the \$49 for the **Ilgs** version (though you may also want to allow for an external PC keyboard). Mail order discounts for the **PC Transporter** have been seen at \$359. **Kinson Products** advertises a 5.25" (Meiji) drive subsystem for the **PC Transporter** at \$169. If you have a **Ilgs**, you probably already have the Apple 3.5 drive and can delete it from the list. The **PC Transporter** system with both 5.25 and 3.5 drives is only slightly more than the \$1157 combination of the Apple FDHD and 5.25 drives. The **PC Transporter** includes circuitry

and software to allow it to read and write 'standard' MS-DOS 720K format 3.5 disks, though you may need to format the disks on an MS-DOS machine to insure reliability. (You can also buy 3.5 disks pre-formatted for MS-DOS if you don't have the extra CPU lying around.) Plus you can actually run the original programs.

There's another option. Looking at the older (higher) **PC Transporter** prices, I decided to buy an inexpensive laptop MS-DOS machine and use **CrossWorks** to transfer files between my Apple II and 3.5 MS-DOS disks. Besides having the requisite 3.5 720K drives (and an expansion port for a 5.25 drive), the laptop has the advantage of being portable and battery powered for trips. Low-end MS-DOS laptop prices are hovering just above the price of the Apple FDHD, starting in the \$700-\$800 range. Not wanting to get too involved in MS-DOS (I've used it for several years in relation to various projects but prefer my Apple IIs, thank you!), I picked up **Central Point Software's PC Tools** which contains a simple program selector and file utilities in addition to a small but useable set of mini-applications (word processor, database, outliner, appointment scheduler, and telecommunications software). This gives me a portable "file translator" which doubles as remote terminal and simple text editor. I'd rather have a laptop Apple II and **AppleWorks** as the portable system, but Apple hasn't responded to this "niche".-DJD

LaserWriter woes

The printer is down and the kids have pinched all my pens, so here I write in pencil.

How do you connect a LaserWriter to a **Ille**? (For use with **AppleWorks** or other programs.)

Brian Noller
Lake Albert, N.S.W.

How come I can't get **TimeOut Graph**, **SideSpread**, and **SuperFonts** to print from a **Ilgs** over **AppleTalk** to a LaserWriter? I can get plain **AppleWorks** text to go with bold, 15 CPI, etc., but when I set up the **TimeOut** stuff to go, it won't.

A. Stephen Sockoloski
Mansfield, Conn.

The LaserWriter incorporates two interfaces; an RS-232/RS-422 serial interface compatible with most computers, and an **AppleTalk** interface. The interface to use can be selected via DIP switches (refer to the **LaserWriter Technical Reference**).

When you use the serial interface, the LaserWriter supports a mode where it emulates a **Diablo 630**, a classic letter-quality printer. This printer was not formerly supported in **AppleWorks's** "Select Printer" menu, but **AppleWorks 3.0** has a printer installation option for the command-compatible **Juki 6000** series printers. This combination gives high quality output within the constraints of the **Diablo 630** emulation.

For other programs, accessing the LaserWriter in this mode depends on their configuration options for printing. As far as hardware connectivity, the **Diablo** emulation will work from almost any computer. All you need is a RS-232 or RS-422 serial interface that can run at 9600 baud and a printer cable (the receptacles on the LaserWriter are a female DB-25 and a female 8-pin mini-DIN). The RS-232 interface is also useable at 1200 baud with a different

switch setting on the LaserWriter.

For the IIe, the Apple II Workstation card can also be used to connect the LaserWriter as an alternative to a serial interface; the Workstation card contains both a serial and an AppleTalk interface. In order to print, you should run the supplied Chooser program to select the printer interface you are intending to use; if you choose AppleTalk, you'll need to select the printer. You'll also either need a program that supports using the LaserWriter in its native PostScript mode, or you'll need to let the Chooser download the ImageWriter Emulator and use the LaserWriter as a very expensive AppleTalk ImageWriter.

The ImageWriter emulator only provides an ImageWriter I emulation; ImageWriter II features like color printing are not available. Obviously, ImageWriter emulation will be compatible with most software, unless the software tries to access the WorkStation Card via unsupported hardware methods (Apple recommends using documented firmware routines; an example for the Advanced Interface appears in the January 1988 issue of **A2-Central**).

PostScript is a computer language designed for the description of a graphical 'page'; the LaserWriter can print using information supplied in the form of PostScript instructions. Programs that support PostScript printing are much rarer on the Apple IIe and IIc than those that work with the ImageWriter emulator. One we've used is **Publish-It!** version 2.0; unfortunately, its version of LaserPrep (a Postscript language file used to initialize the printer for use) drives some of our other workstations to distraction, forcing them to re-initialize the LaserWriter before they can print. **Springboard Publisher** and Berkely Softworks's **GeoPublish** also advertise LaserWriter support.

Beagle Bros acknowledges that some of the current **TimeOut** applications have problems with the AppleTalk interface on the IIgs. The next version of **SuperFonts** will include a special driver for AppleTalk to solve the problem.

The penultimate authority on direct PostScript programming is Don Lancaster. His company, Synergetics, Box 809, Thatcher, Ariz. 85552, (602) 428-4073, produces many how-to books and programming examples. Don also writes a monthly column for Computer Shopper with emphasis on PostScript techniques. Don uses a IIe for much of his work and practices what he preaches; he publishes books using a LaserWriter.-DJJ

TDD info, please

Can you provide me with any information about TDD's (Telephone Device for the Deaf) and how I could use my Apple IIe to connect with these devices? My wife works with hearing impaired people and, currently, the only way she can talk to them over the phone is to use a local service (Gryphon Place in Kalamazoo) to relay messages. Needless to say, this can get to be a real pain.

With my IIe, I have a DataLink 1200 modem and a number of different terminal programs. I also have an old Micromodem IIe that I could use, if needed. I haven't been able to find out what the needed baud rate and data format are. All the telephone company will tell us is that we should rent a TDD from them. I'm not adverse to buying a different modem or modifying the Micromodem, if needed, to be able to operate

at some 'odd' baud rate.

A search of your back issues (on disk) doesn't show that you have ever covered any of this information. I'm sure that other readers would also like to know more about being able to use their computers to communicate with people using these devices. (I know that it can be done, but not how.) Any information that you can provide will be greatly appreciated.

James A. Ketchum
Kalamazoo, Mich.

We don't have any information on TDD ourselves, but possibly a reader can help.

Speed versus speed

I currently am operating with an Applied Engineering enhanced AppleWorks 2.0 on an Apple IIgs with an AE 2 meg expansion card and CMS hard disk.

Some operations (such as copy to clipboard) in AppleWorks's data base, when I enter a document of about 2400+ records of 12 fields, have been slowed to an unacceptable speed, apparently due simply to the document size. I know this seems like a small gripe but this is used with almost every records search; we almost always require five selection rules so we copy to a dummy document made just for this overflow.

What are your suggestions for increasing speed (even to changing software type, as long as present records may be transferred without rekeying)?

I just added an AE TransWarp GS. It increased the speed of the operations, but I foresee this slowdown again in the future when this data base is increased in size a few more times.

Bill Long
Tupelo, Miss.

"Classic" AppleWorks may actually run faster on a IIe or IIc accelerated with the newer 8 megahertz **Zip Chip** or 10 megahertz **Rock-etChip** replacements for the 1 megahertz 65C02 than it does on a IIgs with a 6.25 to 7 megahertz IIgs. We haven't actually compared benchmarks, though, and the IIgs memory expansion card isn't equivalent to the IIe/IIc memory expansions.

Assuming everything is acceptable for now, the **TransWarp GS** is upgradeable to a faster clock speed when 65816 chips capable of working reliably at the higher speed are available. Applied Engineering will certainly announce any upgrade when this occurs.-DJJ

More label options

Concerning the letter in your August 1989 issue from reader M. Nelson regarding 3-up AppleWorks labels: in addition to the methods you detailed, there is another way to generate multiple column labels, and this method may be better for some users.

I am the author of *Listworks*, a shareware program for the Apple II that will print a database 'labels style' report in any number of multiple columns that you want. *Listworks* prints information in a column oriented sequence, i.e.

A	D	G
B	E	H
C	F	I

I understand from earlier correspondence with you that AppleWorks 3.0 will print 3-up labels ONLY with a row oriented sequence, i.e.

A	B	C
D	E	F
G	H	I

This is also the sequence that will result from your '3 into 1' AppleWorks 2.x work-around that you described in the August issue.

Obviously, the sequence may not be important for real mailing labels, but for multiple column printouts of database lists (inventory lists, rosters, etc.), the row oriented sequence is not satisfactory, and the column oriented sequence that *Listworks* provides is much more desirable.

I thought this letter would serve to inform your readers of the row oriented nature of AppleWorks 3.0 and the *Listworks* alternative. *Listworks* is shareware, and is available from all major public domain software sources, such as GEnie, Big Red Computer Club, National AppleWorks User's Group, etc.

Andrew Mackie
Ottawa, Kan.

Manx Apprentice C

I saw someone's recommendation of Manx's *Apprentice C* compiler a while ago, and went ahead and bought it for the bargain price of \$19. The letter mentioned that it had 'lousy docs'; either I have different standards or Manx has improved them a lot: it has one of the best manuals I have seen recently, having about 200 pages of introductory material, technical stuff, etc., all in a 3-ring binder. It also compiles roughly 8-10 times faster than APW, making it nice for the beginner (i.e. me). Yes, it's DOS 3.3, and thus can be only put on a 5.25 disk, and it has a few quirks, but it's well worth many times the price.

I thought I had found a bug in AppleWorks 2.1 when I got it a few months ago. When I pressed OA-H to print the screen, everything was fine, except the last character of most lines was missing. After a bit of experimentation, I found the problem was not AppleWorks (darn!) but rather a combination of program-printer/etc. I was in zoom mode (word processor), and most of the lines were followed by carriage returns. It happens that AppleWorks sends the blips as ASCII 255, which is the Epson FX command to purge the last character in the line buffer, causing my problems. Zooming back out solved the problem.

Henry Throop
Corvallis, Ore.

Manx has a range of C products for the Apple II (and other) computers. Their Apple II products also include DOS 3.3 versions **C Prime** (\$75) and a DOS 3.3 developer's package (\$199) as well as a ProDOS 8 based development system (\$299). Contact Manx Software Systems, One Industrial Way, Eatontown N.J. 07724, (201) 542-2121 and (800) 221-0440 for more information on these products.

The two current C compilers for the IIgs are **APW C**, available through APDA, and **ORCA/C** from The Byte Works, 4700 Irving Blvd. N.W., Albuquerque, N.M., 87114, 505-898-8183.-DJJ

AppleWorks 3.0 wishes

Here are some comments on AppleWorks version 3.0. Overall, it is probably the most

practical integrated management tool available anywhere.

Word Processor: Either Delete or Apple-Delete should remove a paragraph-ending marker. Version 3.0 requires Apple-D and Return to remove the marker, which makes it awkward to fit paragraphs and line segments together.

Spelling Checkers: Dictionaries should be optimized for efficiency, not word count. Overall, the dictionary on the 5.25" disk is faster than the much larger one on the 3.5" disk. Like QuickSpell, the smaller dictionary wisely omits "fro" (the most common misspelling of "for"). Sometimes less is more; in this case you get better error trapping.

Data Base: if you print multi-column labels, you cannot remove empty lines in those label.

Integration: The data base still has no label and value typing, but the new intelligent clipboard avoids the transfer problems of DIF files. The new clipboard preserves spreadsheet number labels that include a hyphen or trailing space: 333-22-444 for Social Security, 800-333-444 for telephone, 05555-4444 for ZIP codes. You can write a five-digit ZIP code with a trailing space instead of the hyphen.

Robert Ericson
North Providence, R.I.

Still no date

I would like to bring to your attention a problem with all the versions of AppleWorks including 3.0. I found this problem while working on AppleWorks data bases of planned US space launches from now until the year 2000. (I have this data base and many others on space information to sell on a shareware basis.)

The problem is in the date format in a data base in which only the last two digits of the year are only used so that if you have 3 dates like:

April 3 1889
April 2 1989
April 1 2089

will be changed to:

Apr 3 89
Apr 2 89
Apr 1 89

and when sorted chronologically you get:

Apr 1 89
Apr 2 89
Apr 3 89

which is wrong, since April 3 1889 came before April 2 1989.

When I saw the new information on AppleWorks 3.0 which listed four different date formats, two of which have a four digit year (Exp. MMM DD YYYY), I thought Claris had caught on and the problem was fixed. It's too bad since Claris just did a mass mailing for version 3.0, and the year 2000 is only a decade away.

I hope in any future versions of AppleWorks this will be solved.

Keith J. Scala
Bridgeport, Conn.

The date format appears to be for the word processor. Apparently there are still a few "wish list" items to be ironed out. AppleWorks 3.0's database also still truncates years ending in "00" ("2/3/2000" becomes "Feb 3").-DJJ

Little (irritating?) boxes

The little boxes which have started decorating most columns do not enhance the readability of the articles. I believe most of your readers

will read each article in its entirety without trying to grab the reader's attention with the highlighted box. I find the boxes very distracting and hope that you leave these to magazines whose audience is just scanning them at the doctor's or dentist's office.

Keith Belkofske
Cincinnati, Ohio

Objection noted. Just to clarify (and explain an "insider's trick" regarding desktop publish-

We could change the look of the box so we don't have to wrap text around it...

ing), the real intention of those boxes is to break of the solid text content of the page a bit; this is recommended to improve the "aesthetics" of the page when viewed as a whole. We could change the look of the box so we don't have to wrap text around it...

...or maybe we should go back to the woodcuts.-DJJ

Beyond the Ilgs

I am renewing my subscription because **A2-Central** is the best available, and I appreciate what you are doing for Apple II users. This letter is being written using AppleWorks 3.0 obtained via your offer. Thanks.

Just one comment- I am much more interested in learning how to better use what I now have (a IIe, not a Ilgs) than I am in reading about new products for the Ilgs. Your first three years were wonderful, but it seems to me that the last year you have gone very heavy on the Ilgs and on new product reviews. Could you provide more coverage for us old timers that have older systems and are not looking to buy the very latest?

Robert L. Carney
Auburn, Wash.

The pro/con Ilgs content will probably join the pro/con AppleWorks and the pro/con "highly technical" debates as the source of much mail. We walk a razor's edge with each of these areas; any time we have an issue that "breaks" one way or the other (which most do), we get complaints. We can only ask that if you feel the balance is heading too far in one direction, please let us know before you abandon us. And we're always open to the suggestion of topics, though some complicated reasoning may go into what we select to cover.

The contents of **A2-Central** are largely determined by reader mail, which averages about 50% of our content over time and influences what we see as "salient" topics. Currently that mail tends to fall almost overwhelmingly into three areas: AppleWorks, printer questions (most of which we can't answer because we don't have the printer hardware), and Ilgs-specific questions. As an overall trend, the ratio of "beginner" questions compared to "advanced" questions also seems to be increasing; there has been a strong jump in the last couple of years.

The Apple II and II-Plus were eventually overwhelmed by the number of products that required a minimum of a 128K enhanced IIe to operate. To allay fears of current Apple IIe and IIc owners, there are still many solid products-being produced, such as AppleWorks 3.0, that don't require a Ilgs.-DJJ

ProSel-16 and System 5.0

In the latest issue of **A2-Central**, you recommend using the supplied Installer for all installations because file copy utilities like Copy II Plus will not copy extended files.

But what about using the Utilities portion of ProSel-16. It seems to me that since ProSel-16 runs under GS/OS, it should be able to handle the extended files. Is this true?

John R. Baskwill
York, Pa.

Some utilities will copy the extended files correctly, but that's only a part of the issue. There are 93 files on /System.Disk and 74 files on /System.Tools supplied with System Software 5.0. The number of combinations of files that are possible is large, and trying to debug errors in installation on a file-by-file basis often takes longer than using the Installer in the first place. There is no compelling reason not to use the Installer (other than a mild case of "disk swap elbow" on a single-drive system) unless it is physically incapable of completing the installation. In that case, Apple should be notified of the problem so they can resolve it. The Ilgs System Software appears to be approaching (or surpassing?) the complexity of the Macintosh System Software, and the Installer is the accepted tool for installation.

Glen Bredon has just released version 7.4 of ProSel-16, which does handle the extended format files. The core of ProSel-16 is a START file containing the main program and utilities that cover the scope of the 8-bit utilities supplied with ProSel-8 (Backup, Restore, Cat.Doctor, Mr.Fixit, Beachcomber, and so on) and more. The ProSel-8 selector and many of the ProSel-8 utilities are also included with ProSel-16, along with utilities to allow you to switch between the two selectors. ProSel-16's selector menu is still text-based as an alternative to the Ilgs Finder (or adjunct; you can still run Finder from ProSel-16 or vice-versa). It also includes a "shell" interface where you can type commands in response to a prompt.

ProSel-16 is \$60 from Glen at 521 State Road, Princeton, N.J., 08540. ProSel-8 is still available at \$40; upgrades from ProSel-8 to ProSel-16 for current ProSel-8 owners are \$20.-DJJ

ProDOS 8 v1.8 Better Bye

I unshrunk System 5.0 and tried to update ProDOS 8 1.8 with Bird's Better Bye, but now it crashes. Is there a new address to load BBB into or will it not work with version 1.8 or did I just mess up? I did notice that the new P8 is slightly longer than the old, but I am no good at dissecting ML.

Steven Eric Schwartz
Simi Valley, Calif.

The location of the ProDOS 8 quit code has moved again; with version 1.8, it's now \$100 bytes further into the file. To update version 1.8, use our earlier instructions but substitute \$5A00 for \$5900 for the address. Assuming you have ProDOS 8 in a file named "ProDOS":

BLOAD PRODOS, A\$2000, TSYS

Then insert your copy of a disk with ProDOS 8 v.1.8 and type:

BSAVE BBB,A\$5900,I\$300
 BLOAD PRODOS,A\$2000,TSYS
 BLOAD BBB,A\$5A00
 BSAVE PRODOS,A\$2000,TSYS

(if you're using ProDOS 1.1.1 or earlier substitute "\$5700" for "\$5900" above).-DJJ

AppleWorks 3.0 file formats

I would like to obtain the file format for AWP files for AppleWorks 3.0 so that I can update my program CHANGE-FILE. Can you tell me the procedure for obtaining the formats? Thanks.

Harold D. Portnoy
 Bloomfield Hills, Mich.

Apple II DTS is currently working on describing the file formats in an upcoming set of Apple II File Type Notes; they will hopefully be ready for the September Apple II Technical Notes update release.

Another source reported to us is the **National AppleWorks Users Group**, Box 87453, Canton, Mich. 48187. For \$10 to NAUG members (\$12.50 to non-members), NAUG will send 30 pages of information about the AppleWorks 3.0 data and printer files. Additionally, NAUG has 35 pages of documentation on AppleWorks 3.0 entry points and "hooks" available separately for the same price.-DJJ

Printer Wishes

Is there a driver (for the IIgs) that gives output on the ImageWriter LQ that is as good as the LQ can output? (Better than possible with an ordinary ImageWriter.)

Christine R. Laing
 Ann Arbor, Mich.

Along with the writers in your August issue I would like to see more software which works with the Hewlett-Packard DeskJet printer. This printer is compatible with Hewlett-Packard laser printers and hence software written for them will also work with the DeskJet (and DeskJet Plus). The only piece of Apple II software I have which uses the full 300 dpi capability of this printer is Printrix which you reviewed on page 3.59.

Like Ken Mirabella I want to do 300 DPI desktop ping and to this end I promise to buy whichever of Publish-It! or Springboard Publisher first includes this ability for the DeskJet printers.

Robert Sheehan
 Titirangi, Auckland

We get many, many letters regarding printer support. Apple's technical responsibility here is to provide enough information to allow a company to create Apple II compatible products. In the case of printer support for ProDOS 8 applications, such responsibility probably ends at providing a method to send information to the printer; the problem of creating the image on the printer falls on the shoulders of the software company. For example, Claris has created drivers for several printers for use in AppleWorks, and programs such as Printrix dump graphics to several popular models.

For IIgs (GS/OS) applications, the printer driver software has become part of the operating system, and Apple's technical responsibility increases to explaining what that driver software must do to be supported from GS/OS.

In both cases, Apple has met these requirements in the Apple manuals and technical notes. Though it sometimes seems to take a while for these documents to make it to the

public, developers should be able to obtain the information if they can demonstrate a need in relation to a commercial product.

Hewlett Packard has created an ImageWriter-compatible high-resolution inkjet printer named the **DeskWriter** that advertises Mac, but not IIgs, compatibility. We hope Apple is making an effort to convince such companies to support the IIgs; users should also try to sway them by letting the companies know there is a market for their products.

Evangelism beyond Apple

I give up! I've been converted by your evangelism! I'm leaving Apple and moving over to IBM.

I'll never upgrade from my IIc to the IIgs. Why should I? Apple doesn't believe in me as a customer, is cynical, and doesn't believe in its own product. Ah, well, you know all that.

John Logan
 San Diego, Calif.

I recently helped start a user group in this area with the help of a local Apple dealer. He was shocked to hear that 80% of the group owned Apple II's. He immediately started thinking of ways to get them to "trade up" to a Macintosh. I was very disappointed to say the least. It is apparent to me that it is time for the Apple II community to get serious about the future. We need to become evangelists for our computer of choice if we intend to survive. We need to organize our efforts to bring about a change in the attitude of the potential users. Since profit is the driving factor behind the future development of any product, we must somehow be there before the sale to show the value of the Apple II family. Only when the potential customer is properly informed will more Apple II's be sold and future development be strengthened.

A full time evangelist outside of Apple would be of some value toward this goal. Someone to help keep current and potential developers, dealers, schools, and user groups informed of what is going on. Barney Stone's *II at Work* is a good example of one man's effort. Obviously this task is too great for one person who is already busy with development work. The new association mentioned in the September issue may be one way to administer an evangelist for the Apple II. An employee of a cooperative group to help keep the lines of communication open.

In addition, the current Apple II community has to grow up. We can not continue to rip off the software companies for our own benefit. We must support them by paying for their products. I am appalled at the number of members of our user group who refuse to consider buying a legitimate copy of AppleWorks. It would help if software companies would offer discounts to user groups for their products. This would reduce the number of pirates and increase the number of people involved in user groups. The more people involved, the better the future will be.

Bill Calhoun
 Claysville, Pa.

Sigh...once every few months a letter arrives from someone who has decided to abandon the Apple II due to our "pessimism". Maybe we should clarify our view of the situation.

The whole purpose for **A2-Central's** existence is evangelism for the Apple II through support of the Apple II user. Any of our com-

plaints about the state of the Apple II do not arise from a belief the computer is failing the company, but because we believe a disproportionate pro-Macintosh bias in the company is failing the computer and therefore its customers. This bias is almost wholly contained in the marketing strategy and marketing support of the Apple II line; in many other ways, the Apple II line and Apple's commitment to it has never been better. It is fair to say that the Apple II's of today are the best that have ever been built.

This isn't to say that the marketing problem can be overlooked. In fact, the Apple II Developer's Association is being formed exactly because Apple II developers believe that the problems with Apple's marketing commitment to the Apple II are so ingrained into the company that the only solution is to initiate an organized evangelism effort for the II outside of Apple. It is pointless to invest in such an effort without our belief that the engineers of the current Apple II models have demonstrated the commitment and talent to keep the machine competitive.

In light of "pessimistic" comments, it should not be forgotten that the five millionth Apple II rolled out of Apple this spring; this is not a machine that is "languishing" except in the eyes of Apple's pro-Mac marketing bias. The Apple II has paid for development of the Apple III, Lisa, and Macintosh. With such excellent engineering achievements as IIgs System Software 5.0; the problem with Apple developing wider product support for the Apple II series is obviously not due to any lack of talent for Apple II projects, but rather a purposeful impetus within the company to take revenue from its Apple II customers and give priority to investment in the Macintosh. It's not surprising that the Macintosh is now successful in light of the scope of this disinvestment of Apple II revenue; what is amazing is that Apple can so thoroughly ignore the 5 million customers that paid for what Apple blithely refers to as "Macintosh" technology.

If you look at the features that Apple itself has not elected to support on the Apple II and find it lacking, it seems more sensible to invest in a non-Apple machine rather than to switch to a Macintosh and simply start what may be the same cycle again. Apple's commitment to the Apple II customer is the barometer by which the company must be measured; that's not "pessimism" but a strict fact of consumerism.

Most complaints we hear are in terms of the lack of certain types of hardware or software support. For Apple products such as the AppleFAX modem, SCSI tape backup, FDHD drive, Apple Scanner, etc., the finger has to be pointed squarely at Apple. Apple should also not be let off the hook for providing software features equivalent to those that are provided for the Macintosh where possible; for example, the Mac System Software includes a hard disk backup utility that is much better than the Backup II program Apple provides for ProDOS 8 (Apple currently has no backup program compatible with IIgs System Software 5.0). If you see shortcomings then make it a point to write Apple and complain; Apple cannot fix shortcomings that it doesn't know about. And if features don't seem to be arriving in a timely manner, don't scream at the technical people;

our experience is that they are working as hard as they can. Instead pointedly ask Apple's upper-level management (such as John Sculley and Jean-Louis Gasse) why the company is not directing more resources into the Apple II line.

For third-party products the process is more complicated, and we'll use the example of printer support from the previous 'Printer Wishes' letters. If Apple is bombarded with as many of these types of complaints as we are, someone from Apple should undoubtedly be beating on Hewlett-Packard's (as an example) door asking them to develop a IIgs driver. Assuming Apple is trying to convince these companies to develop Apple II products and failing, it may be because the Apple II user base has not convinced the third-party company that there is interest in such a product. Although we like to know what readers are interested in and usually echo such requests when talking to the companies, we are only one voice in the wilderness; we also can't serve as a clearing house for all such 'wish lists' if we're going to get a newsletter out each month. For a company to be interested in developing a product, they must know that there is a market for it, and the only way they will realize this is if a large number of people write and request it. Also send a copy to Apple to let them know that you want Apple to aid the company in bringing the product to market. This is how the Macintosh population finally started getting products equivalent to (or even better than) those for the MS-DOS world.

The same general rule applies to software products; companies tend to allocate resources based on what markets they believe will generate the most revenue. Unless you can convince a company that an Apple II program will generate more revenue than one for the Amiga, all other things being equal, the company will probably work to bring the Amiga product to market first. When the Apple II's time comes up, if the company believes the market is 'soft', then an Apple II version may remain 'on hold' indefinitely.

The differences in hardware for the Apple II and II-Plus, Apple IIe/IIc, and the Apple IIgs may make the implementations of the software different, or may prevent certain types of software from being developed for all computers. For example, full-featured compilers for some computer languages have appeared for the IIgs but not other Apple II systems. However, applications such as AppleWorks 3.0, **Publish-It!**, and **DB Master Professional** do exist for the IIe/IIc, and in some cases IIgs users actually prefer to work with the same products, so quality applications are feasible across the product line. In some cases, applications for the Apple II are leaner, meaner, and more productive than their bloated MS-DOS, Macintosh, etc. cousins. The IIgs has the advantage of being able to run either these 'lean and mean' programs or the more powerful (and possibly perceptibly more lethargic) Desktop-based applications. If you see something for another computer that you want, write the company and ask for an Apple II (or IIgs) version, and ask Apple to talk to the company about co-marketing support ('Co-marketing' refers to two companies exchanging promotion for each other's products in their advertising campaigns). A particularly good target for IIgs products should be Macintosh companies since Apple does have ample information (and even tools) for transporting such products. Ask the company if Apple has suggested a IIgs version.

Finally, no company is going to continue making products if it doesn't make money, and software theft through piracy definitely can convince a company to look for greener markets. There are more MS-DOS machines than either Macs or Apple IIs, and if we assume the percentage of theft in each market to be equal then the nod will probably go to getting the MS-DOS product to market first. If theft is rampant enough, machines with a relatively small share of the market may never see a version. The profit on the number of legitimate copies that are sold will not be perceived as justifying the development expense. This is one factor quoted in the current dearth of certain Apple IIgs products.

Apple has finally made the discouragement of copy protection official by refusing to support it in their products; this is a decision that puts a great deal of faith in the honesty of the user community. The greatest weapons against theft are a refusal to accept any justification or rationalization for it, and a concerted effort to educate other users as to its ultimate implications. One thing we'd like to see is a clear summary of the implications prominently placed in all Apple user manuals. Some new users assume that because a disk is copyable that it is free to distribute. The reasons for copyright and the legal ramifications of its violation should be made apparent to every computer owner before he first starts using the system.

And maybe we'd better end on a decidedly

optimistic note!...-DJD

Speed no problem

Will Apple Computer ever make a faster (8-10 MHz) GS?!

Ron Bassett
Pompano Beach, Fla.

All together now: 'Apple does not comment on unannounced products'. But, the Apple II marketing people and evangelists we met at the **A2-Central** Developer's Conference noted the interest in a faster machine, and did not dismiss it. We choose to interpret their release of the revised IIgs as an indication that they will continue to improve the line. What form any future improvements will take is in Apple's hands, and they don't discuss such things in advance.

A plentiful supply of fast 65816 microprocessor chips will be needed for the jump to faster IIgs hardware. Apple has to think in terms of hundreds of thousands of these chips in order to be prepared for possible demand. Applied Engineering has even had trouble getting its hands on enough 7 MHz chips to satiate its **TransWarp GS** customers, and had to substitute slightly slower 6.25 MHz versions. Bill Mensch, designer of the 65816 and president and founder of Western Design Center, which licenses the technology to manufacture the chips, may be able to provide some insight into solutions for this problem. He'll be on-line in GENIE's A2PRO real time conference on October 9th at 9:30 EST. We'll report on any pertinent discussions.

Trying to compare benchmarks for different architectures of processors is an art. Bill Heineman, who re-wrote **Crystal Quest (A2-Central, September 1989)** for the IIgs, had this to say on GENIE about his experience:

'Answering an earlier message, I thank you for the compliment on **Crystal Quest GS**. I had a hard time convincing the people at Casady & Greene that the GS has the horsepower to do the game. They said that **Crystal Quest** slowed to a crawl on the Mac II at 16 Mhz so how could a IIgs with a 2.8 mhz speed even come close to the speed of a Mac.

'The basic problem is that the 65816 is NOT a 68000! To get a rough speed comparison you can use the following. Assume the 65816 has a clock of 1 Mhz. This is the same speed as a 4Mhz 68000 or 68020, 4Mhz Z-80, (or) 4Mhz 8086 and only the 6809 would be 1 Mhz.

'So your Mac-Plus at 7.1 Mhz is actually running effectively at 1.8 Mhz. Mac II's at 16 Mhz are running at 4 Mhz.

'So all I had to do was improve the code just a little to make a 4Mhz Mac II program run fast on a 2.8 Mhz GS.

'Moral: the clock speed you see only tells you the base speed of the processor in question but has no bearing on speeds between different processors. Otherwise how in the world can **Crystal Quest GS** even hope to keep up with the Mac II version if I had a machine which ran 7 times slower?

'Food for thought.'

Indeed.-DJD

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