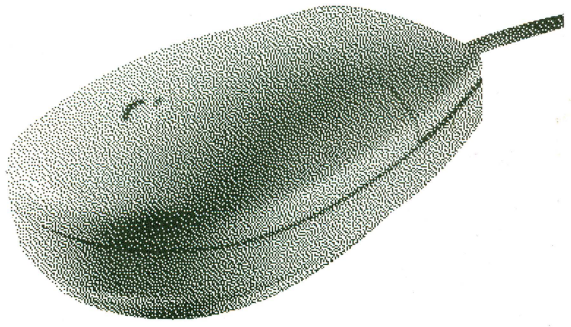
II ALIVE

CELEBRATING THE APPLE II



Hacking the Hackable Disk II Part 2

by Stephen Buggie

Last issue we added flexible 3-way control of Disk II's Write-Protect function. This time we'll move speed adjustment from the drives dark interior to a handy front-panel location and "tune" Disk II for optimal performance.

Adding Speed Knob

One drive-test software vendor states that Disk II is good for about 500 hours of normal use between speed adjustments— not exactly a strong argument for placing the control on the front panel! On the other hand many of today's Disk II owners are interested in applications which go beyond "normal use".

Some utilities (e.g. DiversiCopy II) report rotational speed during ongoing applications; so, relocating the speed adjuster to the front panel is especially helpful. Similarly, users who want to back up their old, copy-protected wares know that ready access to speed control is essential.

Finally, there is no question that, whatever your applications, periodic speed trimming will be required. When it is, you'll be very glad _your_ Disk II has a front panel Speed Knob!

To install Speed Knob you will need some wires, a knob and a ten-turn 5k Ohm potentiometer (e.g. Digi-Key 73JB series 5k pot). Most of the work, really, consists of opening the drive and drilling a hole. There is no need to disconnect the drive from the controller card.

1. Remove the 4 bottom bolts and slip off the case. Unscrew the 4 bottom bolts holding the drive to the case bottom, and unplug the main ribbon cable. The drive can now be moved to your work area.
2. Drill a hole properly sized and centered for mounting your 5k Ohm pot in the upper right front panel.
3. Place the drive on its face and unscrew the 2 bolts which hold the small daughter board to the drive. (Be ready to catch loose spacers, washers, etc..)
4. Turn the small board over to the bottom side. As per the Speed Knob pic cut the traces going to the mini-pot speed adjuster.
5. Cut three wires, White, Gray, Black, long enough to reach from the board to the front panel. Connect these to your 5k Ohm pot and small circuit board as shown in the pic.
6. Re-mount the daughter board. Mount the 5k Ohm pot.

continued...

Install knob.

7. Bring the drive back to the computer. Slide it onto the case bottom plate, reconnect main ribbon cable, replace bottom bolts, slide on and re-fasten case top.

You can use Copy II Plus, XPS, APEX, or one of several other utilities to set speed (see below). A good starting adjustment will be near the center of Speed Knob's range.

I've done the mod; and ended up replacing the single turn pot. A multi-turn pot makes a big difference in stability and ease of adjustment while preserving the full adjustment range. Many of our experimenter readers will have multi-turn pots in their parts bins. For others, it's worth the extra cost (about $11 vs. $3) to have good performance after investing so much time and effort in the project.

Tuning the Disk II

The typical Disk II will run for months with no need for maintenance save an occasional dusting or session with a head-cleaner disk. When adjustment is required, it will usually be to fine-tune Speed or, less often, to set track centering.

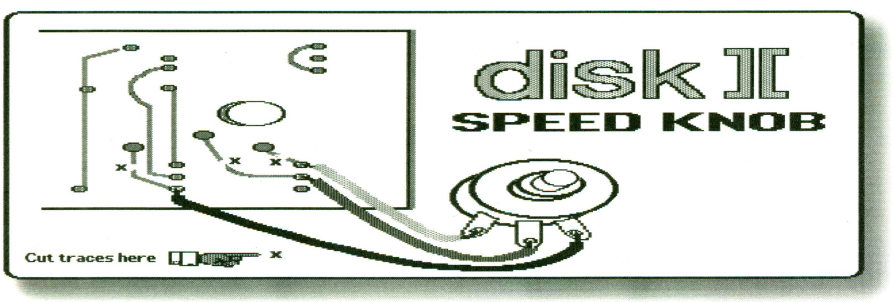
If a Disk II has difficulty reading diskettes, including those it created, and head-cleaning does not help, then, the odds are it's time to adjust speed. If your drive does not have an external 'Speed Knob', you can remove the cover to access the speed-adjust mini-pot. It is located on the lower right side.

The most popular speed adjustment utility is, probably, dear old Copy II Plus. From the menu, just select "Verify", then "Drive Speed". Put a diskette into the drive you want to adjust and, turning the Speed Knob (or min-pot shaft) use Copy II's numeric speed display to zero-in on the 'magic' 200ms. number. (Standard Disk II rotation speed is 300 rpm, which comes out to be 0.2 seconds per revolution.)

Other speed adjustment utilities show an rpm number or a hires pointer. Whatever, all speed check routines need to read AND write; so, you will usually need a "scratch diskette" which you do not mind having over-written.

Track-center realignment is needed when a Disk II writes and reads its own disks fine, but does not 'communicate' with many other Apple II 5.25" drives. It generates disk errors when reading disks written by other drives and other drives have the same problem with its diskettes.

CALL A.P.P.L.E's APTEST, now in the public domain, tests track-center alignment. With this software, the user checks the alignment of the drive with disks regarded as well aligned — such as Apple diskware supplied with the computer or some unprotected, original, commercial software diskette. (In a pinch, a diskette formatted by any drive that has no problem reading most other diskettes should be okay.)



II ALIVE

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continued...

Basically, a track-centering test tries to step your head between two tracks of the 'standard' diskette and read the tracks on either side. If the number of successful reads from each track is about equal, the head is "centered" and your drive is well-aligned with the standard diskette.

The test may indicate serious misalignment. ("Aha! That explains why my IIgs and II+ have problems reading each other's diskettes!") Centering adjustment is done by slightly repositioning the stepper motor (mounted on the underside of the drive). This requires loosening the two bolts holding the stepper-motor, rotating it clockwise or counter-clockwise, and retightening.

The adjustment/test process may require several repetitions. Each time, the program will tell you which way to rotate the stepper-motor until your drive is back 'on track'! For more information on this project, please contact Stephen Buggie.

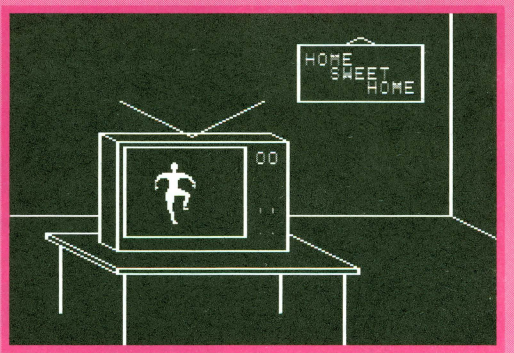
A set of disks is available with utilities to handle speed adjust, track-center alignment, and other maintenance tasks. Send $3.00 to cover disks and postage to: Stephen Buggie, Univ. of New Mexico-Gallup, 200 College Rd., Gallup NM 87301 (email: buggie@unm.edu). ■

ANCIENT animation

By Nathan Mates

Did you know that there is a way to double the normal resolution of the Apple II hires screen? It's an ancient trick dating back to very old programs such as the Applevision dancing man demo bundled with the Apple][+; and, yes, it really works! There are some limitations, naturally, but, the trick is good for every Apple II except the earliest 4-color models.

How's it done? Simple. There are 2 colors, 3 and 7, that all charts show as "white"; but, they display differently on the screen. Essentially, color 7 displays as slightly to the right of color 3. This 'half-pixel' offset amounts to 560-dot resolution. So, for example, when you want to use a white diagonal line in a figure, you can make it look far smoother than 280-dot hires should allow!



To see this effect, type in and run the following program from Applesoft BASIC:

```
10 S= 20: HGR
20 FOR I= 1 TO 30: FOR J= 1 TO 2
30 HCOLOR= 4*J-1: HPLOT I,I+I+J TO I+1,I+I+J
40 HCOLOR= 3: HPLOT I+S,I+I+J TO I+S+1,I+I+J
50 HCOLOR= 7: HPLOT I+2*S,I+I+J TO I+2*S+1,I+I+J
60 NEXT J: NEXT I
70 VTAB 23
```

Since the color white is generated by two adjacent pixels, each part of each line is generated by drawing two pixels as such. Yet, the left line definitely looks smoother than the others because HCOLOR= 4*J-1 in Line 30 sets the color to 3 or 7 depending on whether it will be drawn at an even or odd position, respectively. Using just White 3 or White 7 to draw a line does not take advantage of the 'half-pixel' offset and the result is much blockier.

So there's gotta be a catch? Unfortunately, yes; but, nothing worse than hires artists have had to live with since the beginning. Mainly, if you want to include the colors green, violet, red, and blue in your display, then you will have to deal with arcane hires restrictions on dot placement. Just placing black & white shapes close together takes some care to avoid distortion.

If you'll notice, in my demo program, I sneakily avoided any such problems by spacing the lines nearly 20 pixels apart (S= 20 in Line 10). They could be closer and still look fine; but, try plugging in a very small separation (e.g. S= 5) and see what happens!

Despite such concerns, there's no denying the benefits of extra resolution. As the dancer in Bob Bishop's Applevision demonstrates, hires figures can have surprisingly good detail. You just need to use a trick or two from the masters of ancient animation!

The Great CD Recording Project

Apple II Software... Forever?!

By Matt Portune

In a recent net discussion, a number of users hashed out the question of whether high-density disks used in Apple II double-density drives can be trusted with precious data. The consensus was "No!"— disappointing, since I've been saving stuff on HD diskettes for some time.

Even worse was talk of a disk-eating fungus and a general agreement that, in any case, _no_ diskette was to trusted for very long. Since my own personal aim with the Apple II is to see how far down the road it will still be cranking, I decided to look for a solution elsewhere. What I came up with is CDR!

Compact disk recording opens up many possibilities. Obviously, archiving software is one of them. Another is being able to record audio. In my studio, I've placed a lot of important material on analog tape; and, unlike the diskette situation, there is no doubt of the imminent danger of degradation. Burning the audio to CD would maintain the original quality, with the added bonus of random access.

CDR also opens up business opportunities. Archiving data for businesses and spinning off audio masters and mixes for bands and clubs are just two good prospects. All of which more than justified the cost of a CD Recorder.

First priority, of course, was preserving my precious][goodies! I began the whole process on a Wednesday afternoon, and worked non-stop through Sunday.

Step One was to archive programs and their support files into compressed SHK files. Not only does this help keep everything organized, but it also prevents loss of resource fork data when files are moved to the PC for processing

I archived the data from every floppy I have plus files from each hard drive partition. A few items were archived twice; but, this way, I can choose from a 'raw' original or 'set up' version. (Besides, separating out duplicates would have taken an extra day!) Anyway, the entire backup only reached about 105 megs. There would be plenty of breathing room on a 650 meg CD.

Since all 10 of my hard disk partitions are ProDOS, I settled for transferring data to the PC in 32MB chunks. This was done using a home brew null-modem cable to connect the serial ports of both machines.

It's surprising that so many computer users go to the trouble of using diskettes for machine-to-machine trans-

continued...

fers. Null-modem is so easy! I attached my cable, launched Spectrum v2.0 on the GS and Hyperterminal on the PC, and, then, told Spectrum to Zmodem-upload everything on the transfer stuff partition to the PC.

The machines held a steady transfer rate of about 4500 CPS. Since I had a few 32-meg partitions to upload it was a good excuse for leaving the computers to their work and indulging in Babylon 5 re-runs!

Finally, on Sunday afternoon, the uploading was complete. On the PC, everything wound up in a folder called "GS Backup". Inside this folder, I created other folders (Games, Graphics, etc.). All in all, 100+ floppies and a 340 meg hard drive had been turned into a nice, organized 105 meg archive.

After double checking the archive, I slapped a blank CD into the recorder, started EZ-CD Pro, and selected "New" from the file menu. I scanned the displayed listing of burn formats for "HFS" because it is recognized by both GS System 6 and Mac. Unfortunately, HFS was not in EZ-CD Pro's list; so, I selected ISO-9660, which System 6 can handle via the HS.FST.

Actually, the whole process went very smoothly. I chose the "GS Backup" folder as the data to burn to the disc, and, after about 7 minutes, the CD recorder spit out a shiny new GS archive!

"It's surprising that so many computer users go to the trouble of using diskettes for machine-to-machine transfers. Null-modem is so easy!"

Or, so I thought... I put the CD in the GS drive. It mounted fine, but upon opening the CD, I found that EVERY file was placed in the root directory, instead of in it's proper folder. Also, every filename had a ";1" after it?!

It turns out that the ";1" is an end-of-filename character (the ";") followed by a an ISO-9660 version number. Versions of ISO-9660 which do not support the Apple Extensions require such a suffix for non-directory files. The cure is to find a CD burner program which supports either High Sierra Group format or a more up-to-date version of ISO-9660.

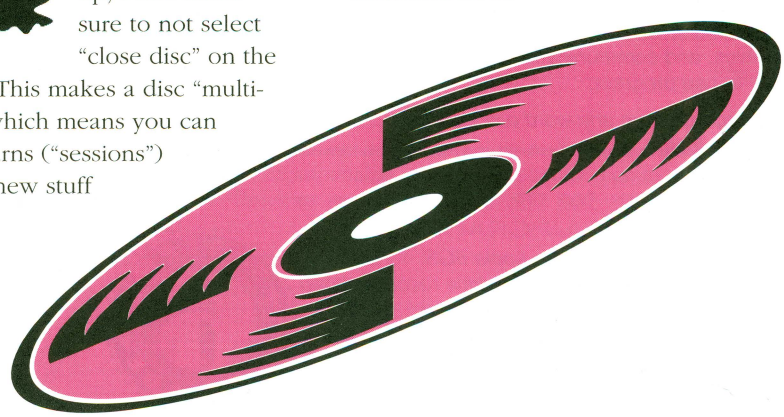
The directory problem was _my_ fault. I was still learning the software's "parenting" feature, and had mistakenly told EZ-CD to make the disc with every file in the root directory!

Anticipating some such screw-up, I had made sure to not select "close disc" on the first burn. This makes a disc "multi-session", which means you can do later burns ("sessions") and write new stuff until the disc is full, or until you "close" it. (You cannot, however, erase anything.) So, I told the software to make the first session inactive, and burn a second session which would have the files in their directories.

After another 7 minutes, out popped attempt #2. Sure enough, in the PC's CD-ROM drive the first session showed as ignored, and the new, Version 2, session was active! Alas, on the GS, the situation was reversed. Version 2 was ignored. I found out later (by asking someone) that HS.FST does not, currently, support multisession discs! As Poor Richard once observed in his Almanac: "Experience keeps a dear school ... ."

Despite a few tribulations, I'm pleased to report that my first CD was not a waste. If you have the Balloon NDA installed and double-click a file, it is recognized as an SHK archive and is opened accordingly. Opening the files from GSHK worked fine, as well. It 'ain't pretty'; but, the archives are all intact, and perfectly readable on the GS.

Since I have more things to add to a future CD (like GNO v2.0.6), I'll soon be ready to pull all the data off "disc 0" and burn a fresh one, doing it right this time. At least, for now, I have everything backed up on a safe, long-lasting medium, thus taming my dying-floppy paranoia. Now, if I could somehow archive the II hardware ...! ■



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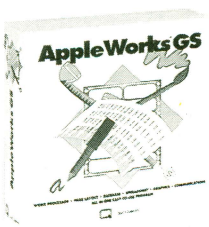

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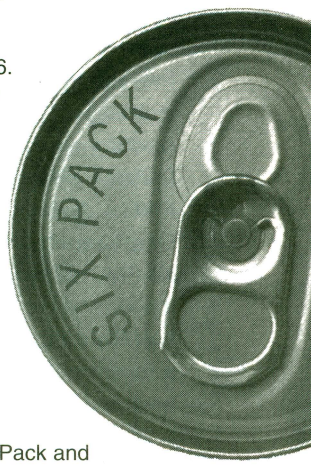

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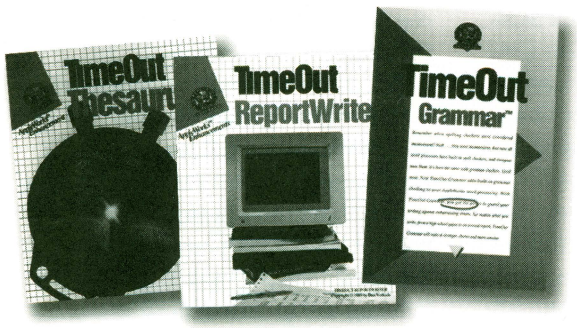

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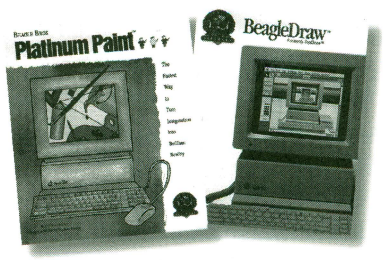

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★★★ Very Good
★★ Good
★ Fair
x Poor

Zip Drive 100s

★ ★ ★ ★

$200; for 128K Apple IIe or IIgs from Iomega
Requires SCSI interface

by Eric Dietrich

If you have a hard disk on your Apple II, then, most likely. it's stuffed to the gills. You have to delete or compress files in order to install new programs; and, if you spend much time online, then you know what its like to start downloading a hot new file, only to discover there's nowhere to put it!

For a while, my solution was to connect my IIgs to a PowerBook and use the 'Book's hard drive. Its a bother, though, to have to lug around programs which are useless to me on the road. Besides, while LocalTalk is great for file transfers, it's too slow for launching programs.

I had considered a few options: a bigger hard disk, Syquest drives, Apple SuperDrive, Flopticals, ... but, with cost and portability factored in, none seemed 'just right'. Then, Iomega came out with their Zip drive. I checked it out and was pleasantly surprised!

The Zip is a 100MB removable media system. Cobalt blue in color, the drive is compact and light— about the same size as the newer external modems. There are two models. The 100p "Parallel Zip" connects to PC's through the parallel printer port. The 100s "SCSI Zip" is the one I got. It connects to any computer with a SCSI port.

Zip drive disks are just a bit larger and thicker than the familiar 3.5" floppy diskette. They have a smaller shutter and no physical write-protect mechanism. The 100MB disk has become the standard. (There's also a 25MB disk; but, you will seldom see these advertised.) On average, the 100MB disks go for $20 each. Some companies sell them as low as $15 in quantity.

Zip's disks are amazingly rugged. Recently, my boss was toting a disk home from work on the New York City subway. He was hurrying to catch a train that was on the verge of entering the station, and in his haste, fumbled while moving the disk to a different pocket. (As everyone knows, Zip users are supposed to carry disks in their pockets— it's a status thing.)

Much to his horror, the disk ended up going over the edge of the platform and ending up between the tracks, directly in the path of the oncoming train! Ten cars and twenty large 600 volt motors later, he jumped down onto the tracks and retrieved his disk (which, mind you, is rather unwise in the subway system). The disk later mounted in the Finder with no help and even checked out fine with The Norton Utilities.

Zip also scores high on "compatibility". Thanks to portability, low cost of the drive and media, and reliability, Zip is a good seller with an expanding base of home and business users. Power Computing, a maker of Macintosh compatible computers, is building-in Zip drives, making them standard equipment. Many corporations keep a Zip next to their PC's to accommodate visiting executives.

All of my Mac using friends, and a growing number of the PC-ers have 'gone Zip', too. They've discovered that there is nothing like being able to swap 100mb chunks of data at a time.

In order to use a Zip drive on an Apple II, you will need a SCSI interface, which means there has to be a Slot to plug in one of the popular interface cards. If you're using an Apple IIe, it will need to be the "enhanced" version — enhanced IIe's display "Apple //e" at the top of the screen when they start.

If you need a SCSI interface, there

continued...

are three 'popular' options: The Apple Revision C.

The Apple High Speed, and the RamFAST. The Revision C is older, and a bit slower because it does not utilize direct memory access (DMA), a feature that the High Speed and RamFAST have. The Apple cards are no longer made or supported; but, you may be able to buy one at a swap meet.

The Sequential Systems RamFAST has DMA plus an on-board cache of either 256kB or 1MB, making it the fastest interface available. RamFAST has a full set of utilities in ROM, so, it's easy to set up, too. The only drawback is that Sequential's card is slightly less likely than the Apple cards to be compatible with some older hard disks. Both Sequential and Alltech sell RamFAST and can answer user questions.

The main Zip installation 'step' is plugging it in. The drive uses DB-25 connectors and, so, most likely, the cable will plug directly into your interface card with no need for an adapter. (One complaint: Zip's cable is rather stiff. It actually lifts my drive a bit off of whatever surface I put it on.)

If you already have other SCSI devices, the one currently plugged into the interface can plug into the Zip. Multi-device SCSI users who want to be able to quickly disconnect their Zip and pop it into a suitcase should check with Tony Diaz at Alltech for an adapter cable. This will let you plug the Zip Drive into a hard disk or other SCSI device.

Every hard disk, CD-ROM drive, etc. on your SCSI chain needs its own ID number (0-7). While most devices are flexible and will allow you to choose any available ID, Zip gives you a choice of two: 5 or 6. If you are using an Apple High Speed card and you already have a hard disk, you'll have to set the Zip to 5 in order to continue to boot off of your hard disk (which needs to be 6). The RamFAST is somewhat more flexible in that it doesn't take ID 7 for itself and will allow you to boot from any SCSI device.

Another consideration is termination. If all you have connected to your SCSI card is the Zip drive, then you should set the switch on the back to turn ON the termination. If you have other devices that come after the Zip, then you should leave it off. For instance: I have three devices on my SCSI chain; a Q-Drive, a Floptical, and the Zip. The Zip comes first, and is not terminated. The Floptical comes after that, and is also not terminated. The hard disk, which is last, IS terminated.

Hardware-wise, that's it. In all likelihood, your setup will work fine. If not, you can get help from experts at Sequential or Alltech, post a question on comp.sys.apple2, or, even, read the documentation that came with your SCSI card (when all else fails ...).

Once your drive is connected, its time to start your machine and prepare a Zip disk for use. The Advanced Disk Utility (on a IIgs) or the utility that came with your SCSI card can do the necessary formatting and set up partitions (i.e. named "Volumes"). Each 100MB disk can hold three max-size (32MB) ProDOS partitions.

As you'll discover, Zip disks look and work like large floppies. They will mount and unmount properly in the GS Finder, can be booted, etc.. Mainly, you'll find loads of easy-to-access space for your Appleworks data, Sound files, adventures, and whatever you want to download.

Zip is fast, too. Iomega claims 29ms average access time, which is a bit slower than most hard disks but, still, very speedy. For some II users, Zip_is_ their 'hard disk'.

Naturally, Zip is ideal for backing up your critical hard disk boot volume—you know, the one you have old .SHK file pieces of ... somewhere. It's also the perfect cure for piles of diskettes which often seem to hide as much stuff as they "archive". A couple 100MB Zip disks can free-up lots of shelf space and make it much easier to find that favorite game, utility, or data file when you need it.

Once the Iomega Zip drive is installed on your Apple II, you'll wonder how you got along without one. Whether it's files from the net, files you want to carry, or files that just need to be saved 'somewhere', the question is the same: "What do I do with my stuff?"

The answer is Zip!

For your Information:

You can mount Zip disks formatted on Macintosh computers on your IIgs. However, Macs put a driver on the disk as well as a partition map. Both look like partitions to the IIgs. Since the IIgs can't read them, it will ask you to format or eject. When you insert a Mac-formatted Zip, just click "eject" until the disk mounts. The IIgs will then ignore the extra Mac stuff, and mount just the legitimate volume(s).

ProTERM 3.1

★ ★ ★ ★

$80.00; for 128K Apple IIe/c/gs from Intrec Software at least 256k RAM and 3.5" disk drive recommended

by Dan Brown

Telecommunications has long been regarded as somewhat of a black art, even among otherwise experienced and knowledgeable computer users. There are so many setup options, both for hardware and software, that just getting your computer, modem, and

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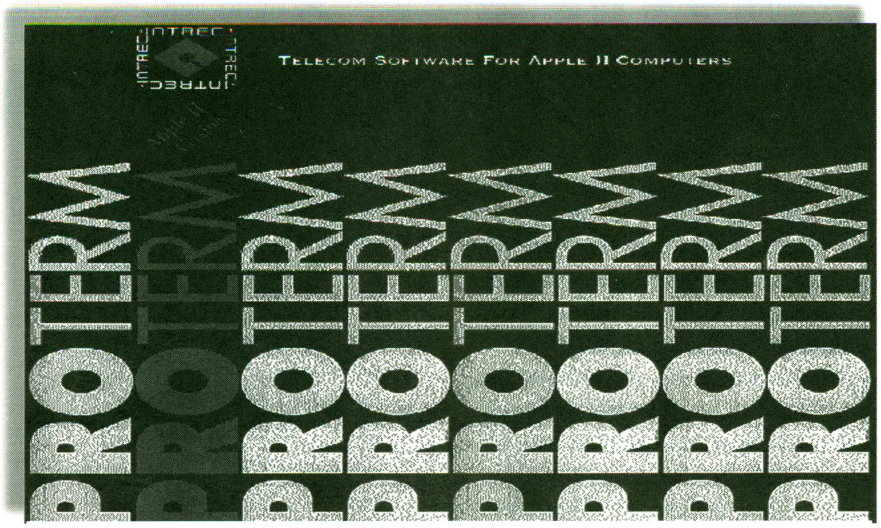


software talking can be difficult. And, then, you need to worry about connecting to somebody else.

A number of products have tried to smooth-out the bumps along the telecomm highway. One of the few to succeed is InTrec's ProTERM. Always a powerful, flexible piece of software, with version 3.1 Proterm sets new standards for ease of use as well.

User-friendliness starts with installation: you simply copy all the files on the disk to a hard drive folder. If you don't have a hard disk, you make a backup copy of whichever disk you prefer to use— ProTERM includes both 3.5" and a 5.25" diskettes— and start your computer from that copy.

You'll soon be greeted with a setup window, which prompts you for the kind of modem you have, the interface you're using for it, and other system information. If you're a true "newbie"; don't worry. The menus guide your responses and everything is very clearly explained in the manual.

Once the software is configured, there are two ways to connect to another computer via the phone lines. The simplest is "Quick Dial": you type-in the phone number, and your computer dials it. The other option is to create an entry in your own "phone book". This takes only a little more effort, and is much more convenient for systems you'll be calling regularly.

With ProTERM, you get such a quick, easy route to getting on-line—and that's just the beginning!

The manual contains a thorough, step-by-step guide.

Such a quick, easy route to getting on-line is very nice; but, it's just the beginning. ProTERM supports 'smart commands' called "macros" which can handle all sorts of chores. For example, when logging into a favorite BBS, you can tell ProTERM to "learn" what to do so that, in the future, a single keypress will take care of the whole process automatically. The same scheme can let you automate a complete GEnie session (collecting messages, posting replies, etc.) and, thus, save quite a nice chunk of net time.

ProTERM includes a powerful text editor. In fact, for many II users, it's their only word processor! However, it's still limited to 45kB files; so, you'll still need Appleworks to read or edit very large text blocks.

While there are many features which may deserve a mention, ProTerm's scrollback buffer is sure to be of special interest. Once and for all, it saves you from the annoyance of seeing some important or interesting message slide up the screen, with no easy way to retrieve it. ProTERM always saves your online history to the limits of your Apple II's memory. If you want to 'see it again', just scroll back!

Of course, you will find support for all popular protocols (including Z-modem and kermit), a mini-BBS "unattended" mode, a mouse/no-mouse option, emulation of VT-100, ANSI-BBS, etc. terminals, and support for direct computer-to-computer NULL modem transfers. ProTerm can use popular memory expansions (such as RamFactor and Q-Card) and works with virtually all modems. Basically, with baud rate selection spanning 110-38400, Proterm 3.1 lets you connect with anyone at the best speed your II's I/O interface can handle.

Despite an impressive array of software features, many telecom veterans will insist that the real 'clincher' is ProTerm's 430-page manual. Illustrated and thoroughly indexed, it is packed with well-written passages covering every facet of Apple II "modemming".

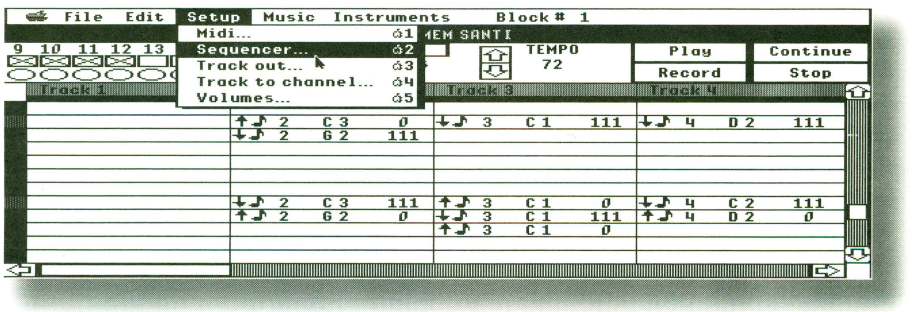
Suffice it to say that Intrec's ProTERM 3.1 is the premiere Apple II communications program. Many IIgs users prefer its speedy, crisp text displays and unmatched flexibility. For //e and //c users, it is the clear power + versatility choice.

If you would like to order PROTERM, contact InTrec Software at 602-992-5515. ■

Check Points>>>>

Music Composer Update

Even the developer, Clayburn Juniel, calls it a "vapor alert"; but, he has placed a demo for his Music Composer 4.0.0 with Sheet Music interface on popular ftp sites and says final debugging is in progress. Based upon a try-out of version 3.2.1, the new Essential Software Solutions release will be a solid contender for top honors in GS music composition.



Music Composer is a IIgs program which lets you create, edit, and play music sequence files (i.e. songs). Note entry is via a user-friendly spreadsheet entry format. You may also enter notes using a piano-style keyboard display and/or import standard MIDI files, as well as songs from Music Studio, SynthLAB, or Sound Smith. A sheet music interface will be the 'finishing touch' for an already powerful, versatile, well-documented music creation utility.

Music Composer is shareware ($15). To download the MC package and obtain information on other ESS releases, check your favorite Apple II ftp source or Clay's own site (ftp.primenet.com/users/c/clay1). You can contact Clay at clay1@primenet.com or, via phone, at 602-274-6905.

More 6.0.1 Bugs Spritzed

Comp.sys.apple2's relentless bug hunter has done it again! Nathan Mates's Grand Unified Patch Program (GUPP) includes the earlier Font Manager fix plus zaps for bugs in GS/OS Device Dispatcher and Window Manager. GNO/ME and NiftyList are among popular wares which, if installed, get some de-bugging, as well.

GUPP is freeware. You can find GUPP details and the latest version on the world wide web at http://www.ugcs.caltech.edu/~nathan/

SuperQuest //c

For years, would-be //c players of this SoftSide maze adventure have complained about the way game displays get shifted around and, generally, messed up. The problem stems from the extra Text Page "screen holes" //c series machines like to use for system parms. Some of these get over-written during SQ's intro.

Try this: Load the SQ Introduction program. In the line which executes the RUN for the main program— probably, it will be Line 105— insert the instruction POKE 1275,255 just before the RUN instruction and save the changed program. This will get rid of the shifting and, once you exit the Bazaar or a Hospice, inverse text will cease flashing.

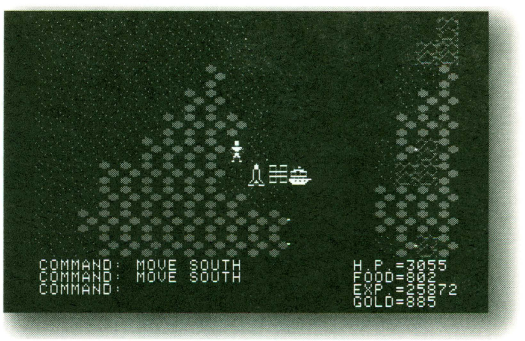
Ultima Weirdness

Maybe you've 'gotten into' one of the early versions of Ultima (I) on your enhanced IIe or some other post-II+ Apple. Mark Percival did and discovered that, when it was time to qualify as a Space Ace, the game's pesky aliens seemed un-hittable. In fact, they are!

Mark zeroed-in on Ultima's 'space combat' routine as the likely culprit and posted it to comp.sys.apple2, where the bug was quickly nailed in the hit-detect code:

```
74CA-  AD 02 74   LDA  $7402
74CD-  C9 39      CMP  #$39
74CF-  90 0C      BCC  $74DD
74D1-  47         ???
74D2-  43         ???
74D3-  B0 08      BCS  $74DD
74D5-  A9 FF      LDA  #$FF
74D7-  8D 05 74   STA  $7405
```

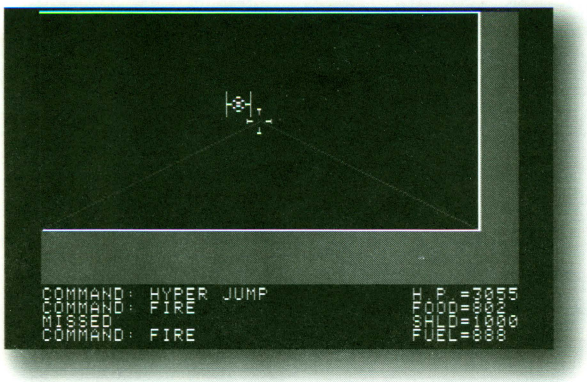
The code at $74D1-$74D2 turns out to be an instance of the 6502's infamous "undocumented opcodes" which Bob Ryan described in a 1985 inCider article. On a II+ or older, un-enhanced, IIe, the 6502 will execute an LSR $43 followed by EOR $43. This clears Carry, execution continues at $74D5, and you get credit for a Hit. No problem at all!



But, the enhanced IIe and later Apple II's employ a 65C02 (or 65C816) which will treat the weird instruction as two NOPs. Carry will always be set, the branch at $74D3 is taken, and you will never score a Hit!

The best fix was posted by programming guru David Empson. Noting that

continued...



the routine seems to be trying to define a 'hit rectangle' (i.e. a screen region where you score a hit), he reasoned that $47 43 should be $C9 43, compare Accum value to #$43.

Mark tried the fix and, viola! the Aliens are no longer invincible. (The new code works on a II+, too; though scoring hits will be a bit tougher because an open side of the hit rectangle is now closed.)

So, if your Ultima version allows BLOADing the FGT3 file, Mark suggests going to the monitor, entering 74D1: C9, exiting to BASIC and doing a BSAVE FGT3,$A7400,L$120. Becoming an Ace will be a challenge; but, no longer, an impossible dream.

FREE! Contacts GS Update

Joe Kohn of Shareware Solutions II has announced the discovery of a buglette in Contacts GS: "The problem only surfaces if/when you cut/paste or copy/paste information from the AppleWorks GS Database directly into the Contacts GS NDA."

Bill Heineman quickly produced a v1.03 update which fixes the bug. (No other changes are implemented.) SS-II is offering the update file via email free to registered owners who request it by sending an email to joko@crl.com.

Black Alert at Gonzo Station

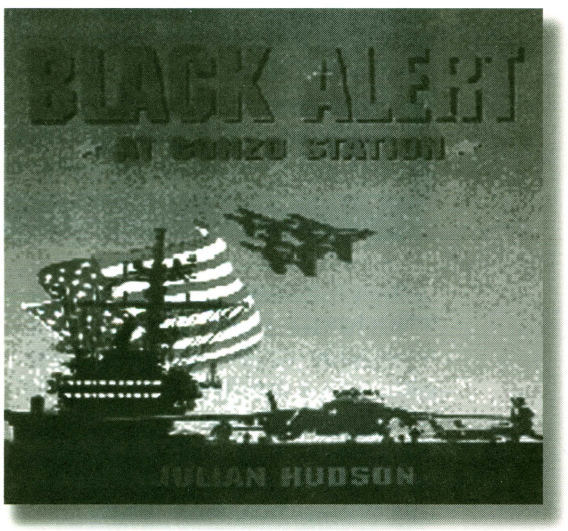
Set in the post-Desert Storm Persian Gulf, Julian Hudson's yarn of high-tech weaponry, high-risk missions, and intrigue is sure to provoke computer user nightmares. One moment the U.S. "Group Six" fleet is alert and on patrol, the next ... CLICK!, it's a disorganized collection of "holes in the water". Suddenly, nothing works. No one is harmed; but, a frantic check reveals that every computer circuit board has been zapped, even replacement ones.

The explanation is EMP, a high level electro-magnetic pulse usually associated with an atomic explosion. That EMP can knock out semi-conductor circuits is well established.

Black Alert's special treat is to eliminate any need for the messy A-bombs which make EMP seem only a distant threat. Hudson suggests that, just maybe, someone is developing no-boom refrigerator-size EMP generators which can wipe every computer within miles of a discharge.

Imagine, one day a non-descript van rolls into your town. You've just installed the latest speed upgrade. Your system is purring like a champ, then ... CLICK, zapsville! For an entertaining, authentic read and a new computer-stuff nightmare, check out Black Alert at Gonzo Station.

To purchase, call 541-858-9542, or try your local book store (Common wealth Publications, $6.99) ■



What! You wanted to BUY one of the nifty items mentioned in Summer's Test Drives? Here's the info you need:

Apple II Power Supply
Stephen Buggie
200 College Rd.
Gallup, NM 87301
505-863-2390
buggie@unm.edu

Orca Languages
ByteWorks
8000 Wagon Mound Dr. NW
Albuquerque, NM 87120
505-898-8183
mikew50@aol.com

ProSel-16 Disk Utility
Charlie's ApplSeeds
9081 Hadley Place
San Diego, CA 92126
619-566-1297
chucknewby@aol.com

Graphic Writer III v2.0
Seven Hills Software
1254 Ocala Road
Tallahassee, FL32304
904-575-0566
sevenhills@genie.com

The Oracle of Man
Queensland Network Services:
GPO Box 2259
Brisbane QLD 4001
Australia
phone: 07-405-5011

Golden Orchard
Jim Maricondo
P.O. Box 11005
Stanford, CA 94309-1005
digisoft@hypermall.com

Go for the Gold!

Improve ZipGS and TransWarp Reliability

by William Shuff

The ZipGS and TransWarpGS accelerator cards greatly improve IIgs performance; but, they have a common weak link. Both employ large ribbon cables for connecting to the motherboard's 40-pin CPU socket.

The cables generally work fine, especially if they are not stressed and the board is not moved around once installed. Unfortunately, there are quite a few exceptions; and, when an accelerator cable fails, the results can be very disruptive:

Intermittent crashing or failure to boot

Odd Characters on the Screen

Other weird problems that sometimes go away for a while when the card, ribbon, or CPU plug is moved or pressed upon (or when the computer just warms up or cools down!)

Tracing such symptoms to the source can be difficult because, really, no one expects a cable to fail! Users suspect bad RAM chips, buggy software, over-heating, etc.. They do not suspect corrosion of the pins plugged into the CPU socket or breakage of cable wires at the point where they are pinched by the metal forks in the solderless connectors.

The cure is a new cable. A duplicate cable can be made fairly inexpensively; but, it is far better to make a replacement with highest quality GOLD-finished connectors! For my cable, I chose connectors which also have longer, wider, sturdier pins. These features and the gold finish on metal components guarantee a very long-lasting, reliable, connection both within the cable itself and at the CPU and card connections.

5 feet is the minimum length of ribbon cable sold; but, the same length of 10-conductor cable costing far less could be substituted. Four pieces of that cable placed side by side will work quite well in place of a single length of 40-wire cable.

The main trick in making a cable is to apply even force when pressing the ribbon into the solderless fork connectors. For this, you will need some sort of vise and a small block of wood. The block needs to just fit between the two rows of pins and be deep enough to keep the pins from being bent as the vise is tightened. Even better is a block which has been drilled or slotted to match the pins.

The first construction step is to cut a piece of ribbon cable to the desired length. Normally, this will be just a little longer than your original or about 2 1/4". You can go for a bit more length in order to have more Slot placement options— add about 3/4" per Slot away from Slot 3. (Note: I have no idea how runs much above 3" might affect performance, especially for higher speed accelerators.)

Place one end of the ribbon into the CPU connector with a bit hanging out of the opposite end of the connector. Don't worry about the numbering of pins and holes. The connectors are symmetric, and flipping them end for end has no effect on the final wiring.

Be sure the cable is centered in the width of the connector. Each lead in the ribbon should be centered above a fork connector gap. Lock the cable in place by pressing the connector halves with finger pressure until it latches and captures the cable. Use the wood block and vise to finish pressing the connector onto the cable. (If you are making a Zip cable, skip the next paragraph.)

TransWarp cables require that one pair of leads going to the small connector be reversed. Use your original cable as a guide to select the wires. Slit the cable and twist the pair. In the next step you will need to be careful that these leads are centered over their connector forks.

Now, place the smaller connector over the cable with the holes facing away from the direction the pins on the CPU connector are pointing. (Use your old cable as a guide for how this should look.) As before, there should be a bit of overhang. Be sure that this connector is centered on the cable and parallel to the CPU connector.

Press the small connector into place just as you did the other. Trim the excess cable close to the connector edges with a razor blade or sharp knife and you're done!

If you have an Ohm meter, you can confirm that every pin on the CPU connector connects to one on the smaller connector and no pin is shorted to another. However, except for the need to flip a pair of leads on a TransWarp cable, the process is, with a little care, fairly foolproof.

If your cable 'looks good', it should work fine. More to the point, if your computing has been plagued by bad-cable gremlins, the new accelerator cable will have your GS running 'good as Gold'!

Contact: The author invites questions, comments at bill2060@cris.com. ■

Part numbers and prices are from Digi-Key (800-344-4539):

40 Pin Gold DIP Connector	Part #CDP40G	$3.82
40 Pin Gold Socket Connector	Part #CSC40G	$3.08
40 Conductor 3M Color Ribbon Cable	Part #MC40M-5	$12.22 for 5 feet

INTERNET Grab Bag

By Jeff Hurlburt

Okay; it's not alphabetized or categorized. Some of the places may no longer exist; and, the others ...? There's a brief description for each; and, who knows, some may even be accurate!

Dead end or gold mine, trash or treasure; but, for sure, no guarantees. That's why this list of mainly Apple II stuff net sites is called a "grab bag"!

Apple2 support

http://www.support.apple.com

Apple3 info

gopher://gopher.ed.gov/11/software/APPLE

Edu wares

http://www.interealm.com/megamall

Apple2 history

http://www.hypermall.com/History/

http://www.laughton.com/Apple/Apple.html

System software

ftp://ftp.support.apple.com

Shareware, freeware

ftp://ftp.hypermall.com/pub/apple2

ftp://ftp.ncu.edu.tw/pub2/os/apple2/

Apple technotes

ftp://ftp.apple.com/dts/aii/tn

Apple support, Hypercard

ftp://ftptoo.support.apple.com

Satellite pics

http://thunder.atms.purdue.edu/gopher-data/satellite/

Basic Software

http://spacelink.msfc.nasa.gov/Instructional.
Materials/Software/

Ultima info

http://spoiler.et.ee/RPG/Origin/ultima.5.1.txt

Used computers

http://www.usedcomputer.com

GS, Mac software

http://www.crl.com/~mpearce/GSAUG/Apple.html

Games

http://www.pacificone.com/sean/

http://www.cc.utah.edu/~krw8466/

http://jones.netplace.de/apple/

ftp://ftp.armory.com/pub/user/ace/

http://www.ksk.sala.se/~sp93rob/dungeon/

ftp://ftp.gmd.de

Shareware

http://www.shareware.com/

A2 emulation wares

ftp://ftp.asimov.net/pub/apple_II/

A2 emulators

ftp://ftp.uni-kl.de/pub/apple2/emulators/

http://members.aol.com/chrissalo/emu1.htm

Forth language

http://www.forth.org/fig_home.html

A2 general

http://www.globaldialog.com/~pliethen/apple2

Search engines

http://www.lycos.com

Weather

http://thunder.atms.purdue.edu/gopher-data/surface/

Auction

http://www.ebay.com/aw

Apple2 measurement interfaces

http://www.teleport.com/~vernier/cats.html

Mapper & Nulib

ftp://ftp.uni-kl.de

Happy Birthday Apple IIGS!

Believe it or not, on September 15, 1996, the Apple IIGS has turned 10 years old.

KANSASFEST

PILGRIMAGE

By Stephen Buggie

For some, a religious pilgrimage is said to become an obsession. Often, a notable expense and much inconvenience is involved; yet, there is the promise that one's life will be changed thereafter. So it is for Apple II loyalists who squirrel away funds, rearrange vacation schedules, and make the trek to KansasFest.

It all began seven summers ago. AppleFest had become a large commercially-oriented exhibition dominated by Mac vendors and Mac topics. With the Apple II being elbowed to the sidelines, Tom Weishaar of "DOS Talk" fame organized "a real Apple Festival" in Kansas City, within easy driving range of his home in Overland Park. As a grassroots gathering of Apple II programmers, hardware hackers, and other enthusiasts, KansasFest proved an instant success.

The 'Fest has been the central annual event of Apple II computing for some time. I'd long planned to attend; but, each year, something seemed to interfere—- got to buy more hardware, got to work, don't have enough time, dates are wrong, etc.. This summer was not especially convenient, either; but with Joe Kohn's prodding, I decided to take the plunge; no further delays!

KansasFest is like an intensive, extended users' group meeting. Spread around the comfortable Avila College campus, it manages to occupy nearly every hour from Wednesday through Saturday. I soon discovered that, with 90 'Festers occupying two floors of a dorm, each day's scheduled events were sure to be followed by all-night conversation and computing sessions. In fact, chronic sleepiness seems to be a tradition—- you're out of form if you are fully rested!

The eight-page program stated that the conference is oriented toward Apple II, Mac, and Newton. However, the emphasis was overwhelmingly on the Apple II. Formal sessions, most lasting 90 minutes, spanned the full range of computing interests. Since presenters and many of the attendees are knowledgeable about computers, the sessions were a valuable opportunity to get 'up to speed'.

Nearly half the presentations were on hardware-related topics —- mainly on customizing and repairs. Just a sampling includes Repairing the IIgs keyboard, Customizing the Zip-GS accelerator, Hacking the Disk II drive(!), and Robotics.

A Monitor Repair session was most impressive. Five or six dead IIgs monitors were brought to the hardware-hacking room, and expert solder-slingers Doug Pendleton and Dave Ciotti restored each to life! Users were cautioned about monitor hacking

continued...

because dangerous high voltages lurk near the picture tube and other circuits; however, the monitor wizards let everyone watch as repairs were done.

Thanks to Alltech's Tony Diaz, "Mark Twain" showed up, too. Everyone was interested in checking out the never-released prototype for a new GS.

Many 'Festers are programmers; so, several sessions highlighted software. Presentations looked at Diagnostics, the IIgs Toolbox, Appleworks Ultramacros, Applesoft BASIC, Spectrum, Wolfenstein 3-D, Hypercard, and lots more.

Possibly the most interesting software presentation was given by Cindy Adams and David Kerwood. They served as beta-testers for Gus, a software IIgs emulator for the Mac Power-PC. Incredibly, once loaded, Gus does seem to come close to turning the Mac into a IIgs! The demos, as well as the distributed docs, were really impressive.

"Emotionally, it was uplifting to meet so many fellow Apple II enthusiasists."

All of this provoked a good deal of discussion. Some felt that Gus may provide a viable pathway to IIgs portability— you just pop Gus into your Power-PC laptop. Others expressed serious concern that Gus could lure IIgs users to a different platform.

Large swap meet style sessions were held on Friday and Saturday mornings to demonstrate the latest Mac products and to give participants the chance to buy and sell Apple II software, hardware, and literature. Most vendors were the authors, inventors, or builders of the products they sold.

Informal sessions, of course, went on throughout the day and night— at meals, in hallways, and especially in the dorm rooms. About half the attendees, mostly those who arrived by car, brought computers and related accessories. (And, yes, I brought along five of my "Buggie Power Supplies".)

KansasFest etiquette allows one to wander the hallways and peer into rooms. (So, as II Alive's intrepid reporter, I did.) No one seemed to mind having a fellow user barge in to see and discuss the setups being used. On the other hand, such visiting is a good way to develop an inferiority complex. Some IIgs systems were so absolutely loaded with prestige equipment and wares that, during boots, the init icons totally filled the screen!

As the Apple II world's premier event, KansasFest is an opportunity to meet many II computing leaders and celebrities. Besides those already mentioned, you could compare notes with Ego System's Steve Disbrow, ORCA author Mike Westerfield, Max Jones (publisher of Juiced.GS), and games programmer Bill Heineman. Hyperstudio developer Roger Wagner missed the event, but made amends by arranging for free pizzas for KansasFest night owls as he'd done in earlier years.

Following the banquet dinner on Friday night, Joe Kohn, publisher of Shareware Solutions II, was publicly "roasted" by his friends, each of whom spoke a few minutes about Joe's shortcomings and eccentricities. It was a fun, good-natured way to honor Joe for his many contributions to II computing.

Complaints? Well, not many.

Cafeteria meals were okay, but not outstanding. (Kansas City's renowned steaks were sorely missed.) Also, perhaps, there was a bit too much attention given Mac and not enough for 8-bit Apple II's. Still, there's no question: Avila College was a fine host and organizers Cindy Adams, Steve Gozdziewski, and Tim Kellers did an outstanding job of putting together a great 'Fest 1996!

My KansasFest pilgrimage was a very satisfying, enlightening experience. I learned much in face to face exchanges with Apple II gurus, experimenters, and other users. Emotionally, it was uplifting to meet so many fellow Apple II enthusiasts; and, it will be fun, from now on, to be able to match faces and voices to all those internet signatures.

Possibly, the "pilgrimage" metaphor is faulty. Supposedly, one feels no compulsion to repeat such a journey; yet, KansasFest is surely different. Having attended once has recharged my interest in II computing and stirred a resolve to return in 1997 and again and again thereafter! ■

Contacts:

To register for KansasFest '97, contact Tim Kellers, 908-775-0371 or kellers@genie.com. The author's email address is buggie@unm.edu.

Too Much Fun

by Jeff Hurlburt

Unscramble each six-letter Apple II computing word. Use the letters in the boxes to form the answer.

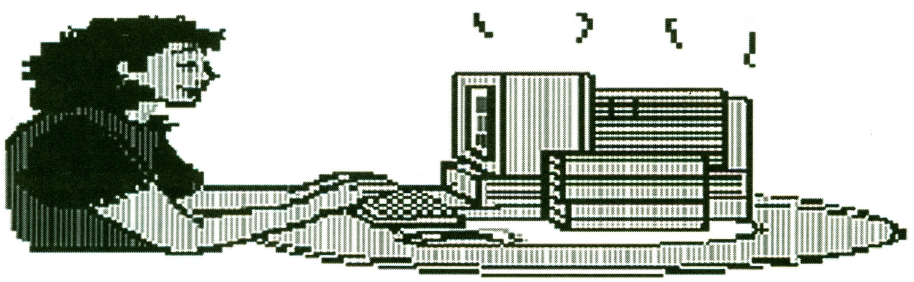
YOMMER _ □ _ _ □ _

FIEEND _ □ □ _ _ □

DOORPS _ _ _ □ _ □

SCAPAL _ □ _ _ □ □

SWUUMP □ _ □ _ □ _



How the net newbie always managed to dish out sizzling retorts ...

**She _ _ _

Letters

Responses by SQC staff

Dear II Alive,

It's now October and I seem to get my II Alive summer issue somewhat late and am wondering if you will ever learn what season it is?

Thomas Harding
New Canaan, CT

We plead circumstances beyond our control. Not only did AppleWorks 5 take longer to bring to market than we expected, but we also sent out the issue during the busiest mailing season of the year. One consolation: if you're upset about getting the issues late, imagine how our advertisers feel. We are sorry for the delay and hope to be on track for the Winter issue.

Dear II Alive,

My AppleWorks 4 uses little tiny subscript and superscript numbers which are hard to read. How can I get them to be the same size as the regular text, like AppleWorks 3.0?

`AppleWorks 3.0superscripts`^{2}

`AppleWorks 4.0 superscripts`^{2}

Michelle Coyle
Lincoln, NE

Michelle: *You've got your AppleWorks 3.0 set up to use an ImageWriter, while your AppleWorks 4 is set up to use an ImageWriter II. The Image Writer II has the ability to print the small numerals, whereas the original ImageWriter does not. The original ImageWriter driver will work with an ImageWriter II printer, but it won't use any ImageWriter II special features. So, to print big superscripts, simply tell AppleWorks 4 you have an ImageWriter, not an ImageWriter II*

The ImageWriter II way is the "correct" way of printing subscripts and superscripts. The numbers are supposed to be smaller. Your point about them being harder to read is a good one, though. Luckily, you have a choice!

You should also consider upgrading to a newer, more powerful version—AppleWorks 5.0.

Dear II Alive,

I've used Apple II computers for well over ten years. I currently own an Apple IIGS with a hard drive, 4 MB of RAM, and an Apple Dot Matrix Printer, which has worked like a horse since I got it.

The Apple DMP works perfectly with most software which is compatible with the ImageWriter, including AppleWorks 5.0 and Managing Your Money, both of which I use almost daily. Recently, I have run into two exceptions: AppleWorks GS and HyperCard GS. What's the deal? Are there any drivers I can get to remedy the situation?

Joseph Conklin
Emerald Hills, FL

Joseph: *The Apple IIGS System Software does not support the Apple Dot Matrix Printer. With GS/OS, the System Software, not the individual application program is responsible for talking to your printer. Unfortunately, the ImageWriter and the DMP are not really all that compatible, except at a very superficial level. that is, they use the same codes for some functions, but completely different codes for other functions. For this reason, the IIGS ImageWriter driver doesn't work with the DMP. And I don't know of any DMP driver for the IIGS—Apple didn't provide one, there probably aren't a lot of people using DMPs on the IIGS's.*

You might at this point, consider a new printer. A dot-matrix printer really doesn't do justice to the IIGS; you might investigate the Hewlett-Packard Deskjet 500 or better. With Vitesse's Harmonie Driver package, this printer will provide near-laser quality printouts from your IIGS applications. And the best news is, you can often find it for under $300. Keep DMP—it'll still be useful for printing on labels and other pin-feed forms. (You can connect the Deskjet to the printer port, leave your current parallel card in slot 1, and use the IIGS Control Panel to switch between the two.)

Dear II Alive,

I purchased an Apple IIGS at a garage sale a few years ago and love it. I recently was told I could upgrade the existing System software from 6.0 to 6.0.1, and I am totally lost. When I created the new System Disk, I also installed Pointless and a driver for my printer on the disk. Now when I use AppleWorks, I am unable to type special characters, like umlauts (option-U) any more. What went wrong?

Sharon Weiss
Paris, TX

Sharon: *The general Control Panel in System 6.0.1 contains an option called "Translation." This option allows you to disable the keyboard translations that let you type special characters such as the umlaut. (Why would you want to do this? Some programs use the option key for their own purposes and can get mighty confused if the computer starts switching around what character codes are produced by which keys.*

Dear II Alive,

For example, macro programs are often triggered using the option key plus a letter.) The choices on this menu are "none" and "standard." Setting Translation to setting it to standard will allow the keyboard to work the way it used to.

Unfortunately, when installing System 6.0.1 for the first time, the default Translation is none. To set translation back to standard, first pull down the Apple menu and select Control Panels. Then find the general control panel and double click it. The translation option will be at the very bottom; set it to standard. This will save your setting in the IIGS's Battery RAM, so the translation will stay set to Standard even after you turn the power off and on again.

Dear II Alive,

I have been a loyal subscriber since day one—I think I still have the very first issue of II Alive. I was concerned, when inCider/A+ went down and was left wondering whether there was anything out there that would fill the gap.

I am writing just to add my voice to those who already have and want to say how great your magazine is. II Alive seems to be a dying breed of people that have been pushed out of the way for the Macintosh consumer. I am glad to see an Apple II publication is still hanging around.

Long live the Apple II!

Roy Sheparski
Tustin, CA

Dear II Alive,

My IIGS has been crashing alot. I suspect I might be running up against the limits of the stock of the power supply, since I've added a fan and it didn't seem to help. Can you tell me my diagnosis might be right before I buy a heavy duty power supply? I have an Apple IIGS, a 4 MB RAM expansion card, a Ramfast/SCSI card, a Syquest 40 MV hard drive, an AE 3.5" drive, an Apple 5.25" drive, a Super Serial Card, a Zip GS accelerator and a Quickie scanner.

William Potten
Deerfield, IL

William: *With that list of equipment, power supply strain is a definite possibility. The problem may be compounded by the Zip accelerator—faster microprocessor chips tend to be more susceptible to heat and power supply problems than the normal 2.8 MHz chip. Even if the problem goes away when you take out the Zip, though, that doesn't mean the Zip is the problem. I believe your diagnosis is right-on.*

Dear II Alive

I own an Apple IIGS and am experiencing a recurring and extremely frustrating problem—the computer just stops. In a variety of programs (PrintShop, AppleWorks, Writers' Choice Elite and various games) the computer will, for no apparent rhyme or reason, freeze up. The only solution is rebooting, and sometimes this is necessary two, three, or more times. After that, the programs will run just fine—for a while. I've been on tech support phone lines forever and a local computer fix-it store, and no one can help. Is it time to purchase a Macintosh?

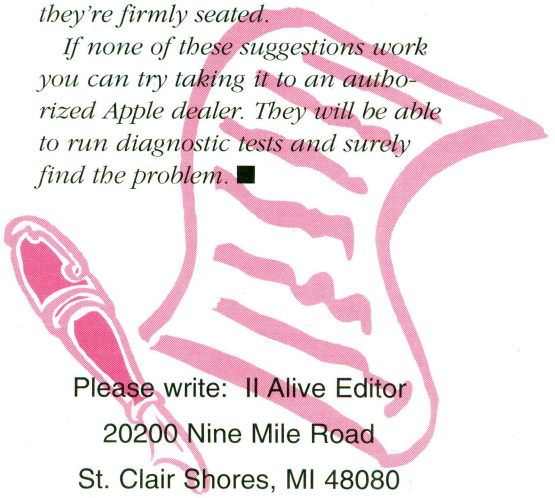
Holly Lancaster
Eugene, OR

Holly: *You don't mention which if any, cards you have in your computer. It's possible that the problem you are experiencing is related to overheating or an overstressed power supply, due to too many cards inside the computer. Apple recommends a fan when you have more than two cards in the computer and I'd suggest a heavy-duty power supply when you exceed four cards.*

So, if you have several cards inside the computer, I'd suggest removing some of them for a while and see if the problem decreases or goes away entirely—this will pinpoint a power supply deficiency. Try removing the top from the computer for a while as well—with all the cards in—to help determine whether the problem is overheating.

Other things you could try: Check all cables to make sure that none of the pins are bent and that all connectors are firmly in place. Check all socketed chips in the computer to make sure that they're will seated and visually ensure that all the pins on each chip actually go into the socket and are not bent under the chip. Remove each card and inspect the gold fingers for corrosion or dirt, then reinstall the cards making sure they're firmly seated.

If none of these suggestions work you can try taking it to an authorized Apple dealer. They will be able to run diagnostic tests and surely find the problem. ■



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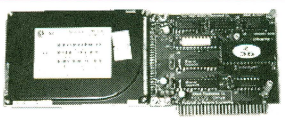

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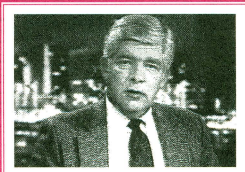

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