

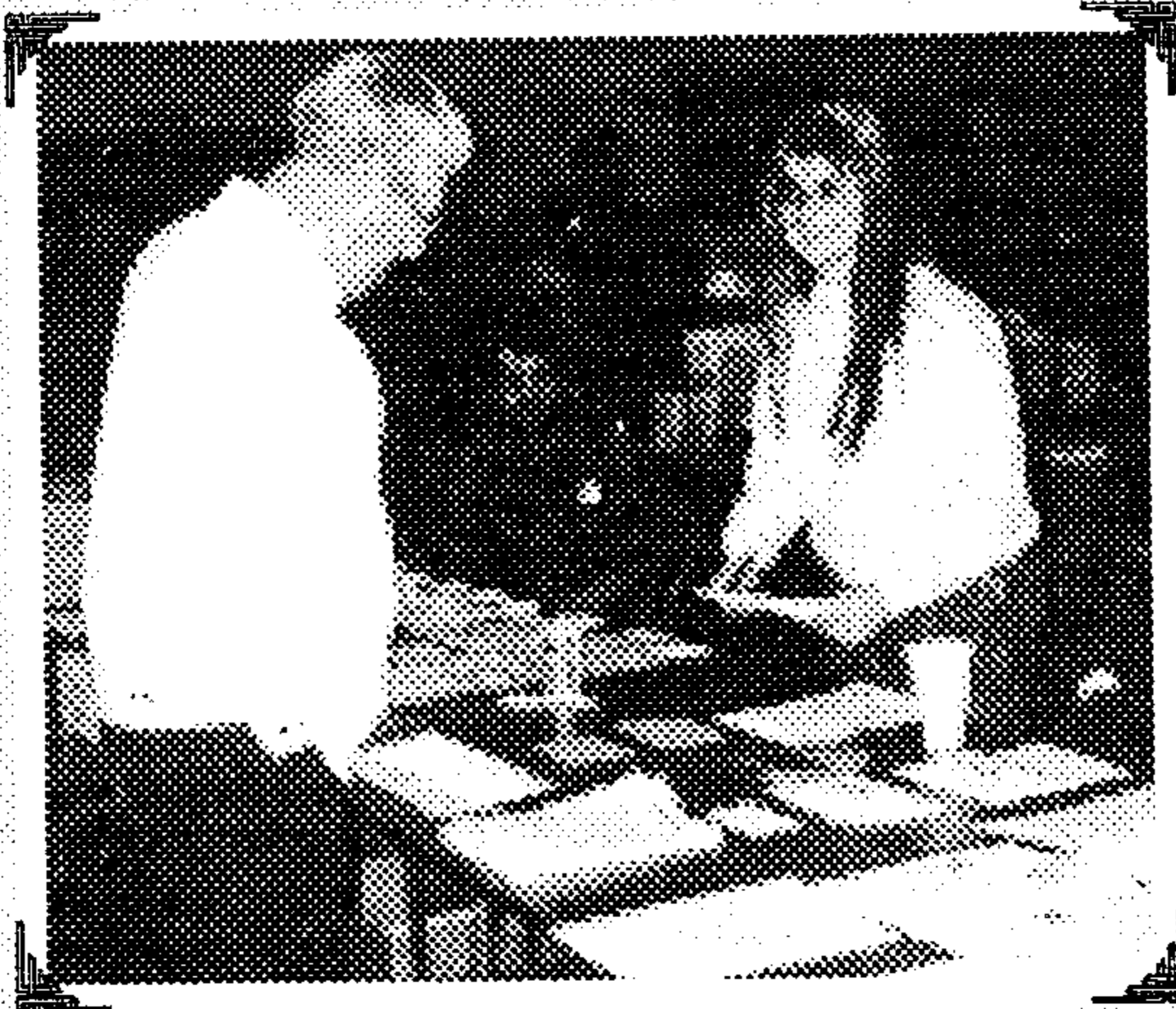
MICROpendium

Volume 13 Number 4

July/August 1996

\$6

Mickey Cendrowski works the West Penn 99ers table.



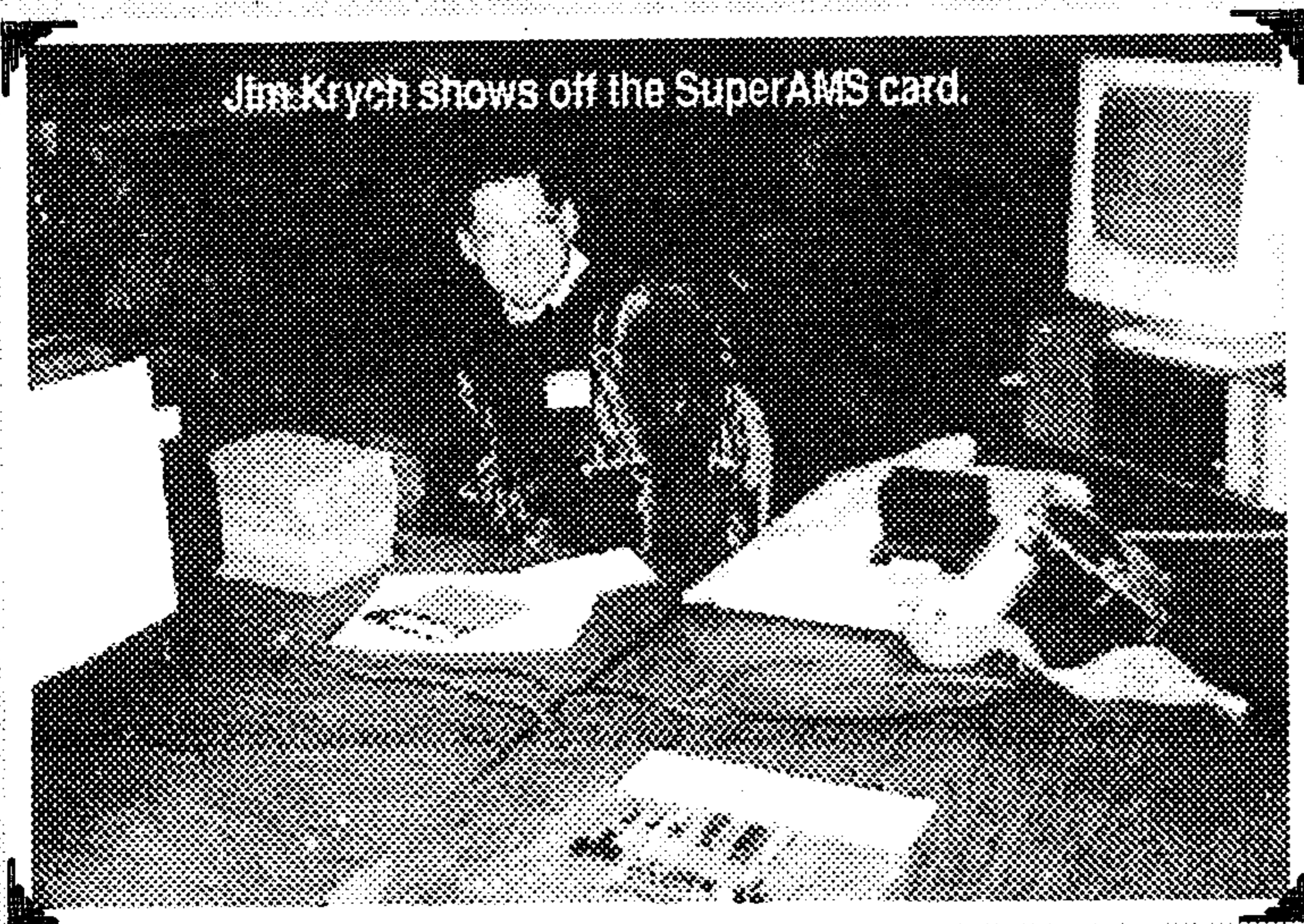
Gene Hiltz of Program Innovators displayed his software



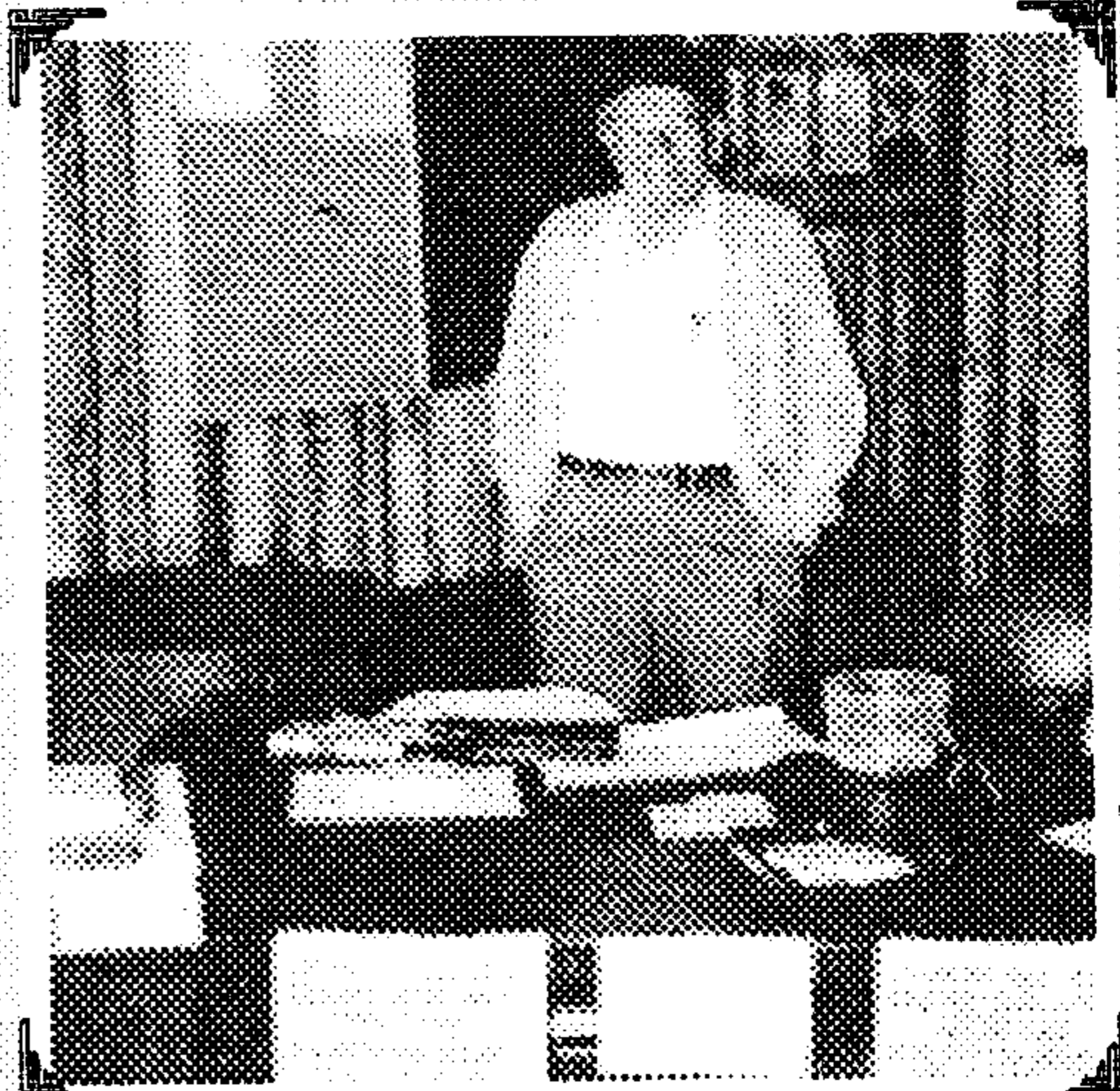
MUG conference is big success

SEE PAGE 8

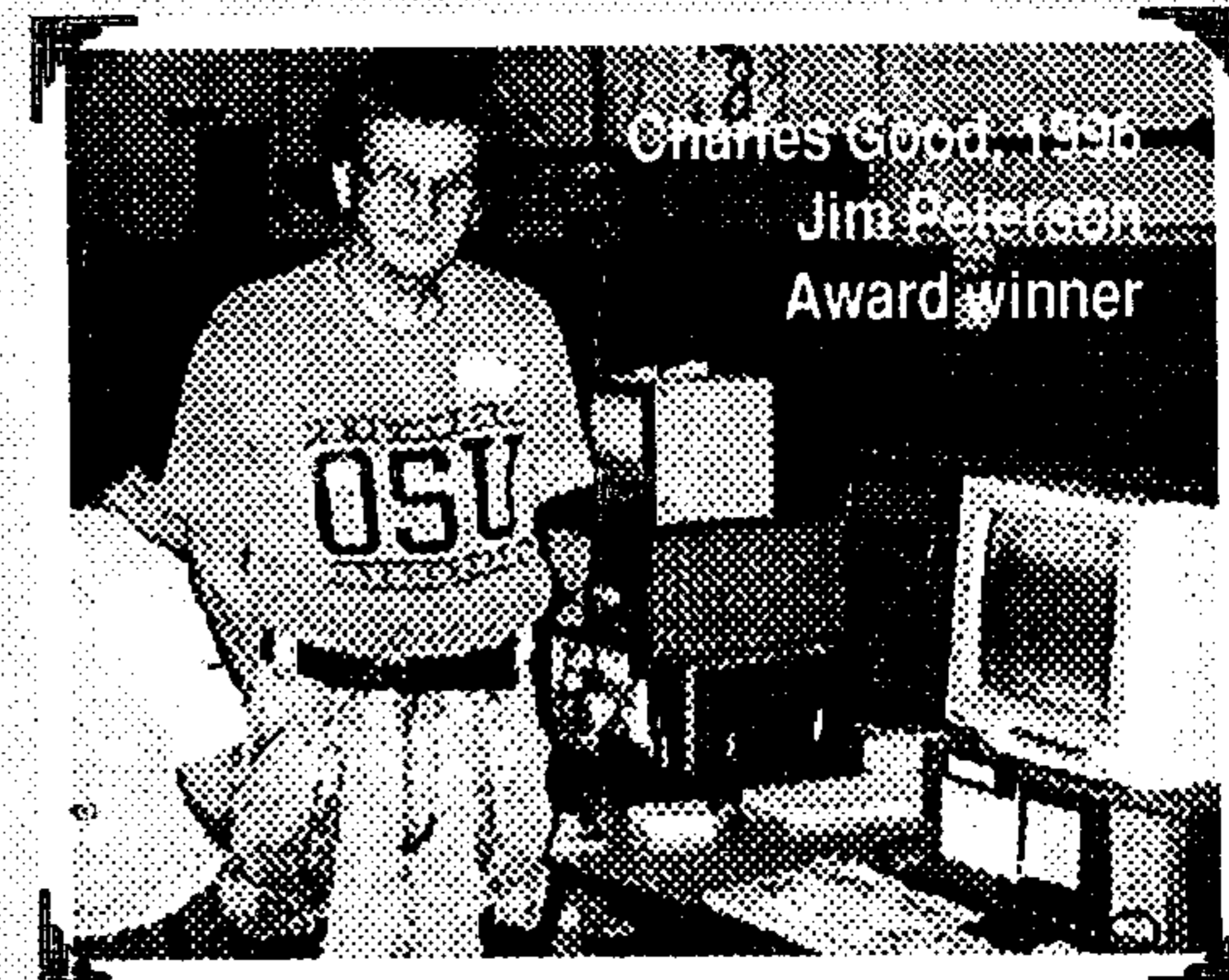
Jim Krych shows off the SuperAMS card.



Virgil Thomason welcomed guests to MUG event



Charles Good, 1995 Jim Peterson Award winner



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MICROpendium

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*READ THIS

Here are some tips to help you when entering programs from MICROpendium:

1. Most BASIC and Extended BASIC programs are run through Checksum, which places the numbers that follow exclamation points at the end of each program line. Do not enter these numbers or exclamation points. Checksum is available on disk from MICROpendium for \$4.

2. Long Extended BASIC lines are entered by inputting until the screen stops accepting characters, pressing Enter, pressing FCTN REDO, cursoring to the end of the line and continuing input.

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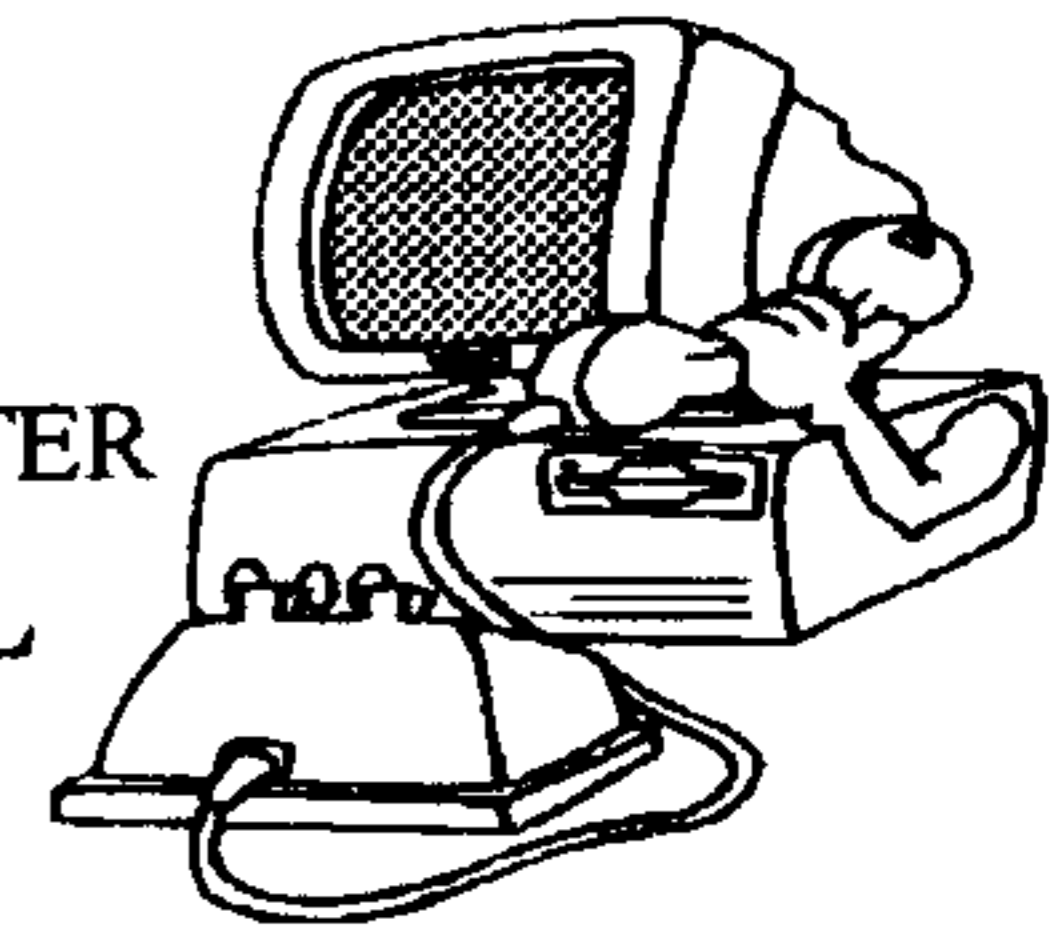
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 M = MODULE BACKUP
 MM = MINI MEMORY
 E/A = EDITOR ASSEMBLER
 ADV = ADVENTURE REQ.
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COMMENTS

Mailing label snafu

We got some issues back last time from the New Jersey-Connecticut-New York area, with messages such as "no such address." When we looked them up, we found that, for instance, the street for the magazine we sent to Lindenwood was actually in Cherry Hill.

Our printer's labeling machine cut some of the labels in half. Workers attempted to put the labels back together, but some got mismatched. We've been told this is unlikely to occur again.

We sent out new issues for all those we received notification about. If you were entitled to get one and didn't, let us know and we'll send you a late copy.

WHAT ABOUT 2000?

Now that the threat of communism seems to be behind us, here's something else we can worry about — 2000. The year 2000, to be precise. We've heard about the problems the millennium will create for DOS users, especially those

in business who rely on older software. But Geneve users face the same problem. When 2000 comes along, our date stamps will roll back to 1900. Perhaps it will be better the second time around. I don't expect to lose any sleep over this for another year or two, but the day will come when my data files will seem to have gotten very old, very fast.

EMAIL ADDRESS FOR PUNN CORRECTED

The email address of the Portland Users of Ninety-Nines published in the May-June issue of MICROpendium was wrong. The correct address for PUNN is punn@agora.rdop.com.

LAST MINUTE READER TO READER

Mary Phillips of the Ozark 99ers User Group is looking for disk software called Sketch Mate that will save Super Sketch pictures to disk. If you can help her, drop her a note at email at mphilip@mail.orion.org

—JK

READER TO READER

Bill Gaskill, 2310 Cypress Court, Grand Junction CO 81506, would like to know the following:

The Indoor Soccer cartridge uses the name "Indoor Soccer" on the cartridge label, but uses only the name "Soccer" on the instruction manual. Does anyone know of an instruction manual for this cartridge that reads "Indoor Soccer"?

Jimmy Dowell of Henderson, Kentucky, shared his response to Stanley Ulanoff, who had a question in the May-June Reader to Reader regarding hooking up a TV to a TI/Geneve:

The TI modulator contains a signal switch which can become dirty, causing a poor picture. Remove the top cover of the modulator. Find the two switches that are side by side with the plastic slide over them. Remove the slide. The signal switch is the larger of the two. Spray electrical contact cleaner into both ends and any other openings in the switch. Now slide the switch back and forth several times. Reassemble the unit and try it.

Electrical contact cleaner or TV tuner cleaner can be found at most electronic parts stores. Be sure to use a type that is safe for plastics.

Other things to check are:

1. Are all cables in good shape and all connections tight?
2. If the TV has 75 ohm input (round cable connection) you must have a 300 ohm to 75 ohm matching coil connected to the output of the modulator.
3. Is the channel switch on the modulator set to the proper

channel?

I have a 25-inch TV I sometimes use with my 99/4A and I get a clear picture on it with the standard TI modulator. Most televisions need a composite input. If your Geneve produces only RGB output it probably will not work. Also, an 80-column display may be hard to read.

Jerry Keisler of Paris, Texas, responded to Martin Zed-dies' inquiry regarding printing 132-character lines with TI-Writer:

Load TI-Writer. Enter the command to put your printer in condensed mode in the first line. This is an ASCII 15 for most dot matrix printers or press CTRL-U, then Shift-O (the letter "O"), then CTRL-U.

On the second line, enter
LM 0;RM 135;FI

Save your document and print it through the formatter.

The FI is required to allow TI-Writer to adjust the text to fit the margins. To use elite, or 96 characters per inch, enter the elite code for your printer and set the left margin to 0 and the right margin to 95.

Of course, the margins can be set anywhere between the left and right settings shown.

Reader to Reader is a column to put TI and Geneve users in touch with other users. Address questions to Reader to Reader, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680. We encourage those who answer the questions to forward us a copy of the reply to share with readers.

FEEDBACK

Books may be wrong on color codes

At the MUG (Multi User Group Conference) in Cleveland, somebody asked me for the control codes used for colors on the 24-pin and Bubble Jet color printers. I think that person (may be Bob Hunter) never got the information, so here's the rundown on the escape codes for colors (applies to Epson, Star Micronics, Panasonic and Canon Bubble Jet color printers when in Epson emulaton).

All color directions begin with an escape followed by lowercase r. The number following the "r" determines which of seven colors will be printed until another ESC "r" is received. I've put these in Extended BASIC notation:

| Code | Color |
|------------------------|---------|
| CHR\$(27);"r";CHR\$(0) | BLACK |
| CHR\$(27);"r";CHR\$(1) | MAGENTA |
| CHR\$(27);"r";CHR\$(2) | CYAN |
| CHR\$(27);"r";CHR\$(3) | BLUE |
| CHR\$(27);"r";CHR\$(4) | YELLOW |
| CHR\$(27);"r";CHR\$(5) | RED |
| CHR\$(27);"r";CHR\$(6) | GREEN |

In some cases, the color names shown here won't agree with what the books say, but the books are *wrong*. For example, magenta may be listed as red and red as orange, blue may be listed as violet and cyan as blue. Depending on the quality of the inks, the red may appear orange, but it's still made using both magenta and yellow inks, and so should be red.

We've run tests with the help of Lew King and Gary Cox, which show that the 24-pin and Canon Bubble Jet color printers work the same, but the rendition of colors is better on the Canon Bubble Jet than on the 24-pin ribbon types. Hope this makes it all clear!

Bruce Harrison
Hyattsville, Maryland

Reader provides some criticisms

April 23 I received your card informing me that MICROpendium is going to be bi-monthly in future. The card told of a poll held among the readers of MICROpendi-

um. Today (April 24) I got the February issue of MICROpendium, where I could read that such a poll (readers, write us what you want!) is organized. I am used to the fact that MICROpendium reaches Vienna with a delay of several months and I won't complain any more about this fact. I am much more glad that there is an international medium that keeps together the remaining TI-and/or Geneve community. But there are some thing I want to depose in the hope that many users know them. This is pure criticism, and everybody who is concerned will know!

You write: SUPPORT OUR ADVERTISERS!

I tried to get in contact with some of them several times. (I won't name anybody here, because several companies are concerned.) They wrote in ads: SEND US \$2 FOR A DETAILED CATALOG. I sent them US \$5 to cover overseas mailing. I sent it registered as I always do when I send money in a letter. What was the response? NUTHIN' AT ALL! Not even a note: "Sorry we can't deliver overseas!" Or anything else. Absolutely nothing.

I am well aware that no company can live from the small Austrian or European business alone. And here all users are well aware that items are more expensive just for shipping and handling, and we are willing to pay a good part of these costs. We would agree if anybody said: "We can supply you, but we have to charge so-and-so US\$ more, because of — what else? — fees." We know, not even death is gratis, because it costs life. And what we would prefer is delivery within a reasonable period of time. We know that (a German proverb) good things require time. But waiting for a delivery more than two years is more than one can bear. Such experiences (not only one) made my friend Josef Schwalm "throw in the towel" (another German proverb) and change to a PC.

We understand all. But what we cannot understand is that some companies simply don't have an envelope and a stamp left to drop a note, just saying: "Sorry, delivery delayed!" or anything. What is the matter with the American people and their well-known sense of business?

The same goes for all the authors who

ask some dollars from users using their programs. As I don't find it fair (see the word FAIRware) not to pay the author the FAIRware donation (Even if one is really a poor guy and cannot afford the bucks the author asks he should send him less or even nothing but a letter saying: "Sorry, I'm bust at the moment, but I will pay more next time!" and telling him his program is fine. That will encourage the author more to continue his programming than receiving no reaction at all.), I am a bit disappointed to hear (read, see) nothing at all from the authors, although I sent them a donation. Most of the authors ask U.S. \$10, but in my opinion, what is U.S. \$10 for a good program? Look at the PC world! Even 30 or 50 bucks are not too much for a good program. In my office I have to struggle with a PC and the programs provided (e.g., Windows and its derivatives) cost hundreds of U.S. dollars, and they just make my blood pressure rise.

I have sent the FAIRware donation to numerous authors, but with rare exceptions I got *no responses*! One of the exceptions was John Birdwell (DSKU 4.12, later 4.2), with whom I used to exchange letters, till he had to go at a much too young age. But in general the feedback from the authors is not as good as I would like to see it.

I feel FAIRware should not only work like "Program to you — money to me"; it is much more desirable to have exchange of information between the author and the user, the user making suggestions on the program and the author realizing these suggestions in a creative way for a new and improved program.

Alfred Slovak
Vienna, Austria

Send your letters and comments to
MICROpendium Feedback, P.O. Box
1343, Round Rock, TX 78680.

A hard drive odyssey, or oddity

Teamwork pays off to get GenMod working with SCSI

By DAN H. EICHER & JEFFREY H. WHITE

Recently I put a one-gigabyte SCSI drive on my PC. (A personal note: if you are going to use SCSI on a PC, buy an Adaptec brand controller.) This left me with two Seagate ST277R hard drives that had performed five years of great service.

About this time, Jeff and I were assembling a system to work on the GenMod Geneve/Western Horizon Technologies SCSI compatibility problem. Of course I needed two external cases to hold these drives. The best place I found for getting external cases with power supplies is Mendelson's Electronics: 1-800-344-4465. Their supply is hit and miss, but they usually have something usable at a reasonable price.

I got my cases in and built the cables. While you can still buy RLL controller cables — which are usable with the Myarc Hard and Floppy Disk Controller (HFDC) — usually the length is wrong so you will need to build your own. You can buy the parts you need to build the cables from JDR Micro Devices:

IDE34 - 1 to hook to the HFDC plus an additional connector for each HD.

IDE20 - \ These are the data cable. One each for every hard drive.

IDS20 -/

IDS16 - This is the TI side of a printer cable.

IDCEN36 - This is the Printer side of a printer cable.

To crimp these cables you will need a vise (if you go this route, you need to be very careful) or buy a cable crimper. JDR's part number is HT-214 and is well worth the money.

We got the hardware assembled and now it was time to reformat the hard drives to work on the TI. We dug out our specifications on the drive (I still have my original owner's manual) and put the values into MDMV. We had to guess at the interlace value for the HFDC/Seagate 277R drives and GenMod Geneve combination. After the formatting was finished, the drives could be read, but not written to. We tried over and over with different MDMV settings. None of them seemed to work. In a moment of desperation I tried using CForm; I had the same luck as with MDMV.

To save myself some time, I decided to try only formatting the first 10 cylinders in my quest for a working (not optimal, but working) interleave.

Well after trying this little stunt, CForm came back and told us that track 0 or media on this device was *bad!* Yegads! After this error message we could not coax another complete format out of either MDMV or CForm.

Our last resort, and it was a last resort, was to put together a PC system with an RLL controller. Fortunately, Jeff owns an original Seagate brand RLL controller. Immediately, the Seagate controller recognized the drive and type. It made quick work of the formatting of these drives.

We moved the drives back over to the GenMod Geneve system and this time the reformatting went without a hitch. I could read and write data with no problems. In fact, the drives seemed to work much quicker than similar drives we have in-house.

Later we went up to Chicago and asked Mike Maksimik what he thought may have gone wrong. He told us that probably the gap value between sectors was too small for the drive — that is, a bug in CForm.

He knew how to fix the problem, but apparently there is a disagreement between Mike and Don Walden regarding royalty payments, so no fix will be forthcoming from Mike.

We asked Mike why CForm could not just go in and redo the gap values, like the Seagate controller did. Mike says that this a bug in the 9234 controller chip used in the HFDC. In simplistic terms, the chip must read this value before changing it. If the value is wrong an error is returned. The chip should then disregard the error, and reformat with the correct value. The 9234 has a fatal bug, that if an error occurs during this process the chip locks up. There unfortunately is no way to work around this problem in software.

This is the reason why occasionally a hard drive will become so messed up on a TI; the only recourse is to take it to a PC and do a low-level format with an RLL or MFM controller card.

A few notes: We have found that RLL drives seems to work fine with the Myarc HFDC. You should always attempt to use the buffered head step (0) in the MDMV menu. You should avoid using CForm, and only use MDMV on the Geneve to format drives. Of course to load MDMV and use the format routine on a Geneve you must page in the ROM.

Using RomPage means that the Geneve's Master DSR is paged out, so the only devices you have access to are drives connected to the HFDC and/or those connected to a Myarc floppy controller. It is much easier just to hook up a TI and format the hard drives and then use them on the Geneve.

If you want to load MDMV on a Geneve to format with and you need the ROM paged in, the easiest way is to go into TI BASIC, issue a CALL INIT, CALL LOAD(-32766,186), NEW, and then do a CALL MDM.

Also, when purchasing connectors to build your cables, always buy high-quality, gold-plated, double-leafed connectors.

While moving MDOS source code around and testing the GenMod Geneve and Western Horizon Technology SCSI card we have found the Syquest EZ135 to be very reliable. It works as fast as all but the fastest SCSI hard drives on the Geneve, offers removable media of 135 Megs and can be set at any SCSI ID. The Syquest drive is the perfect companion for a WHT SCSI card. We have also played a bit with the Iomega SCSI Zip drive. It is a MUCH less reliable unit, it is locked into SCSI ID's 5 and 6 which are incompatible with MDOS. MDOS wants to see all hard drives at IDs 0, 1 and 2.

Global Computer Products has a sale on SyQuest EZ135 for \$179, part number GDC92225E; the phone number is 1-800-845-6225.

MUG 1996

Ohio TI conference big success

By **GLENN BERNASEK**
TI-Chips, Cleveland, Ohio

I've written several reviews on the multiuser group conferences held at Lima, Ohio in the past. However, I feel I am standing "too close to the trees" to give a very objective report on the 1996 TI99/4A and Geneve 9640 Multiuser Group Conference held in Brook Park, Ohio, this May 25. All I can say is *thanks to everybody who planned and helped prepare for this conference as well as everyone who attended*. The success of MUG '96 is directly attributed to the teamwork of everybody involved. This endeavor could not have come to pass without all of them doing their part.

The attendance at MUG '96 was beyond all expectations! We had 92 registered visitors and participants. (This included several husband and wife registrations.) I personally know that there were more than 20 unregistered guests and participants. Therefore I am confident in reporting that more than 100 people attended MUG '96!

As at Lima, the conference was a truly international event. We had the honor of hosting several guests from our northern neighbor, Canada. And talk about distance in traveling to get to MUG '96, Bill Sullivan flew in from Seattle, Washington, and Bryant Krause came in from Mira Loma, California, just to attend the conference!

The user groups and vendors represented, in order of registration at MUG '96, were: Livonia TI User Group, CADD Electronics, Northcoast 99ers, Harrison Software, C.O.N.N.I., West Penn Tiers, Akron User Group, TI-Chips, Chicago TI User Group, Western New York TI-99ers, Will County TI User Group, Philadelphia User Group, Lima User Group, MUNCH (Massachusetts Users of the Ninety-Nine Computer and Hobbyists), Nutmeg User Group, Great Lakes User Group, Athens Computer Club, Computer Users of Erie, Pittsburg User Group, Cecure Electronics, Myarc, Rave, Milwaukee User Group, West Penn 99ers, Notung Software, 9T9

Toronto User Group, Southern California User Group, OSHTI User Group, Hoosier User Group, Cin-Day User Group, L.M. User Group, Bud Mills Services, Horizon Computer, Ramcharged Computers, S&T Software and the SouthWest 99ers. (I hope I haven't neglected to list anybody. If I have, please accept my apology.)

Classroom presentations and demonstrations were given by: Mickey Cendrowski of Notung Software (Load Master version 2.1), Tim Tesch of S&T Software (Port for the Geneve 9640), Chris Bodenmiller of Bodenmiller Software (TI Artist+), Ron Markus of Ramcharged Computers (the Prostick joystick), Mike Wright and Mark Van Coppenolle of CaDD Electronics (PC99 Stage 3A and a surprise debut of a converted, never-released ET game on the TI99/4A), Bruce Harrison of Harrison Software (Printing color with the TI99/4A and Designing fonts on the TI99/4A), Harold Timmons of C.O.N.N.I. (Experiences and music on the Midi Master) and finally, Charles Good of Lima User Group (MY-MENU2+ for the Geneve 9640). (Don Walden of Cecure Electronics and Bud Mills of Bud Mills Services gave conference floor demonstrations).

A multiuser group conference was also held with officers from several user groups attending. Two primary subjects were discussed at the conference. First was the possibility of taking turns in putting on a "Ohio TI99/4A and Geneve Multiuser Group Conference." (It was noted that the conference has been unofficially dubbed the "Ohio Conference" on the Internet.) The decision of who will be hosting the 1997 conference is due on or before Sept. 15. This will give Lima, Cleveland and any other area user groups enough time to start planning for the 1997 show. Help and assistance was offered by both Lima and Cleveland Area user groups.

The second item discussed was the inability of some user groups to continue publication of a newsletter. It was brought up that Freenets have been going on line

throughout the United States and the time is right to take advantage of this FREE service to publish or distribute TI articles at a very affordable price (FREE!). All it takes is a user group member who is willing to get on-line and either download (copy) or upload (post/publish) articles for their members.

All demonstrations and conferences were videotaped. Copies of these tapes can be ordered as follows:

1. Send three VHS videotapes and \$3 (check or money order).

or

2. Send \$15 (check or money order) to cover tapes and shipping to: Glenn Bernasek, 13246 Harper Rd., Strongsville, OH 44136.

Finally, the class of '96 Jim Peterson Achievement Awards were presented. (The honorees were selected through an international call for votes via the Internet and MICROpendium magazine.) Jim Krych, co-president of the TI-Chips made the presentations. The awards were as follows:

TI99/4A Software: Tony and Will McGovern

TI99/4A Hardware: Bud Mills

TI99/4A and Geneve Community Service: Charles Good

Geneve 9640 (tie vote, therefore two awards were presented): Tim Tesch and Beery Miller

Congratulations to these deserving members of the TI99/4A and Geneve 9640 community. Nominations are now open for the class of '97. Send your nominations for the Jim Peterson Achievement Awards (Class of '97) to: Jim Krych, 3969 Clague Rd., North Olmsted, OH 44070 (Internet: ab453@cleveland.freenet.edu), or Glenn Bernasek, 13246 Harper Rd., Strongsville, OH 44136 (Internet: dd314@cleveland.freenet.edu).

MUG '96 was the result of teamwork and participation. It wouldn't have been possible any other way!

See you all in '97!

THE ART OF ASSEMBLY — PART 59

Six and a quarter cents

By BRUCE HARRISON

The subtitle of this issue's column answers the question "If a quarter is two bits, what's half a bit?" That's just our silly way of telling you that this column is on a new and different topic, the so-called half-bit-map mode. We've actually had letters from readers asking about this topic, and until March of 1995 we've never been able to answer those questions. Back in January of '94 we got some tentative information about this strange mode from Harry Wilhelm, but it wasn't until Mr. Oscar A. Ros, of Sylmar, California, asked in the Reader to Reader column (February '95 MICROpendium) that we decided to try an experiment with it.

To start with, the term "half-bit-map" is misleading. Yes, there are computer scientist types who have some concept of a half of a bit, but that has nothing at all to do with this special VDP RAM operating mode on the TI. Harry Wilhelm suggests that this mode should be called "enhanced graphics mode," and we think that's a much better name for what it allows us to do. From here on in this column, we'll use Harry's term.

In the normal graphics mode one can define a total of 256 characters with eight byte patterns in the pattern table of VDP RAM. Color definitions, however, use only one byte per set of eight characters, so we don't have the freedom to "color" a specific character a particular foreground and background choice without changing seven other characters' colors. In enhanced graphic mode, we can change the color scheme for just a single character, and can even use more than one color scheme within a character. That's so because in enhanced graphics mode each defined character has eight bytes available for its color scheme, as well as the eight bytes to define the character.

THE SIDEBAR PROGRAM

Today's sidebar has a complete program that illustrates the use of enhanced graphics mode. Parts of this are modified from the source code for our Drawing program, which operates in full bit-map mode. By making some small changes in the SETHB subroutine from that source, we were able to explore the capabilities of enhanced graphics mode. The results are interesting, to say the least. We can do some things that could not be done in the normal graphics mode. For example, we can even change the color scheme of an individual character into a rainbow pattern where each row of the character is in a different combination of colors.

The sidebar is set up so that the section that sets up the enhanced graphics mode is a subroutine. That should make it easier for you to excerpt that part for use in your own programs. Like the full-blown bit-map mode, the enhanced graphics mode needs to have the color table, the pattern table and the screen image table relocated from their normal places in the VDP memory. We've put the pattern table at 0000, the color table at >2000, and the screen image table at >1800.

Those are the same locations we used in the full bit-map mode, but the lengths of the pattern and color tables is shorter by >1000 bytes each. The pattern table contains 256 8-byte character patterns, and the color table contains 256 8-byte color definitions, one

for each character. Thus, in our present case the pattern table runs from >0000 through >07FF, the screen image table runs from >1800 through >1AFF, and the color table runs from >2000 through >27FF. This leaves some significant blocks of VDP RAM available for other purposes. You might, for example, use the space from >0800 through >17FF for PABs and buffers to handle file operations, and might make other use of the spaces from >1B00 through >1FFF and >2800 through >37FF.

The way enhanced graphics is set up is different from the full bit-map case in only two places in the subroutine SETHB. The value written to VDP Register 4 is >00 instead of >03, and the value written to VDP Register 3 is >9F instead of >FF. We made one other change in this subroutine, adding a VWTR to Register 1 with value >A0. That causes the screen to blank, so that we won't see all kinds of garbage on the screen until everything has been set. Unblinking is done in the main program, after the colors and patterns have been put in place and the screen image table has been filled with spaces. We "unblank" the screen by writing >E0 to VDP Register 1.

You'll recall that in the full bit-map mode, we filled the screen image table with three sets of the characters from 0 through 255. Here we don't do that, but simply write 768 spaces into the screen image table to provide a cleared screen. We use the pattern table in the "normal" fashion, placing eight bytes of definition for each character. The color table gets eight bytes for the color corresponding to each character definition. We then write on the screen in "conventional" mode, simply placing one byte at the row and column position where we want the characters to appear. (We do have to add the >1800 offset, of course, to write to the screen.) This differs sharply from the full bit-map case, where we wrote individual bits into the pattern table to place pixels on the screen.

For our demo purposes, we just used the character definitions that are provided when the program starts up, so we have definitions for the characters from 33 through 126. We replicate these into patterns for characters 161 through 254, so that we can show two sets of characters in the initial screen display.

WALKING THROUGH IT

The initial part of the program just does the same steps that we did in the opening of some other bit-map programs. We stash away the original color table and character definitions, plus the six bytes from the address pointed to by >8370. In this particular program, those things get put back in place just before we exit. In a normal start from Editor/Assembler Option 3, the character definitions are available only up through character 126. Here, we take those characters twice into our storage at CHRTBL, so that characters from 161 through 254 can be used in our enhanced graphics experiment. That takes us down to the line that says BL @SETHB.

The subroutine SETHB starts by writing >A0 to VDP Register 1. This makes the screen blank out. That's followed by a whole series of VWTR operations to set up the other VDP registers. In

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this program we won't be using sprites, so we've set both the sprite attribute table and the sprite definition table to >3800, just to get them out of our way. Writing >02 to VDP register 0 puts us into the enhanced graphics mode. To be safe, we clear the byte at >837A and place a "delete" value in the first byte of the sprite attribute list so that no sprites will appear.

On return from SETHB, our screen is still blank while we put some things into place in VDP RAM. First we place the 256 character definitions into the pattern descriptor table. Next, we point at the screen image table (SCRORG), put the space character in R1's left byte, and write 768 spaces to clear the screen.

The color table gets set up in two halves. The first half is filled with blue on white, and the second half with white on blue. We did that in this case just to make it easy to see on the screen which were the characters from 33 through 126 and which were the "second set," from 161 through 254. After both halves of the color table are filled, we unblank the screen, which at this point is cleared to all white. Now we write the two sets of characters onto the screen, twice each. At this point the screen shows the cycle from ! through ~ repeated four times in alternating color schemes.

Now to prove we can do what we said, the program changes the color schemes for certain characters. The ! and 0 of the first set get changed to white on green. The 9 of the first set gets changed to a "rainbow" color scheme that goes from white on dark red to white on dark blue from top to bottom of the character. Then, just to show we can do this to the second character set, we change the z (lowercase) of the second set to magenta on white.

Now we do something a bit more tricky. We put the legend "HALF-BIT MAP MODE" at the bottom of the screen in rainbow colors. We do this by "borrowing" the space in the character table and color table that serves for characters 0 through 18. Since our display doesn't need those characters, we copy the patterns for the 19 characters in the legend at HBSTR into the pattern table starting at 0000, and put the "RBOW" color scheme into the color table space corresponding. Once the patterns and colors are in those places, we set R0 for Row 23, Col 7 in the line LI R0,22*32+6+SCRORG, clear R1 so we start with character 0, then write characters 0 through 18 to the screen. Thus, we have a legend at the bottom of the screen in "rainbow" color scheme.

After that's all done, the program enters a key loop so you'll be able to see what it's done to the screen. Pressing a key will cause the program to reset everything back to the normal graphics mode, clear the graphics screen, and then exit to E/A's PRESS ENTER TO CONTINUE prompt.

This program, like many of our sidebar programs, doesn't do anything useful. It should, however, serve as a starting point for your own work. You could change the SETHB subroutine so that it includes the screen clearing process, which we put in the main

This program, like many of our sidebar programs, doesn't do anything useful. It should, however, serve as a starting point for your own work.

part of our program. You could define your own graphics characters instead of just "borrowing" TI's character definitions as we did. Harry Wilhelm is of the opinion that with some care one could even get automatic sprite motion to work in this mode, provided you give up the characters from 240 onwards, so that the motion table can be placed in the space from >0780 through >07FF. Harry's probably right as usual, but we haven't tried that yet. (Maybe for the next column?) In any case our deep thanks go to Harry once again for providing us those little tidbits of information that made this issue's column possible. Our thanks also go out to Mr. Ros for sparking our interest in the "half-bit-map mode."

The next topic is as yet undecided, but we're leaning toward more experimenting with enhanced graphics mode, unless some other vital topic presents itself.

SIDEBAR59

```

0001 * SIDEBAR 59
0002 * A COMPLETE PROGRAM
0003 * TO DEMO THE ENHANCED GRAPHICS MODE
0004 * (AKA HALF-BIT-MAP MODE)
0005 *
0006 * 27 MAR 1995
0007 * CODE BY BRUCE HARRISON
0008 * PUBLIC DOMAIN
0009     DEF  START      DEFINE ENTRY
0010     REF  VMBW,VWTR,VSBW,VMBR,KSCAN REF UTILS
0011 STATUS EQU  >837C      GPL STATUS BYTE
0012 SCRORG EQU  >1800      SCREEN TABLE
0013 START  LWPI WS        LOAD OUR WS
0014     LI   R0,>380        POINT AT COLOR TABLE
0015     LI   R1,SAVCLR      AND AT STORAGE SPACE
0016     LI   R2,32          32 BYTES TO GET
0017     BLWP @VMBR         READ COLOR TABLE
0018     MOV  @>8370,R0      GET VDP ADDR FROM >8370
0019     LI   R1,ANYKEY+1    POINT AT STORAGE BUFFER
0020     LI   R2,6           SIX BYTES TO READ
0021     BLWP @VMBR         READ THOSE
0022 *
0023 * THE FOLLOWING TAKES THE CHAR DEFS FOR CHARS
0024 * 0 THROUGH 127 FROM EXISTING DEF TABLE, THEN
0025 * PUTS THEM TWICE INTO OUR STORAGE AT CHRTBL
0026 * THIS MAKES CHARS 128 THRU 255 THE SAME AS
0027 * CHARS 0 THROUGH 127
0028 *
0029     LI   R0,>800        POINT AT CHARACTER TABLE
0030     LI   R1,CHRTBL      AND AT BUFFER STORAGE
0031     LI   R2,128*8       128 CHARACTER DEFINITIONS
0032     BLWP @VMBR         STASH CHARACTER DEFS
0033     A    R2,R1          MOVE TO SECOND HALF CHRTBL
0034     BLWP @VMBR         DUPLICATE CHARS IN SECOND HALF
0035 *
0036 * SETHB SETS THE VDP FOR ENHANCED GRAPHICS MODE

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```

0037 *
0038     BL @SETHB     SET TO HALF-BITMAP
0039 *
0040 * THE FOLLOWING PUTS THE CHARACTER DEFINITIONS
0041 * INTO THE VDP RAM FROM 0 THRU >800 AS TWO DUPLICATES
0042 * OF THE CHARS 0 THRU 127
0043 *
0044     CLR R0         START OF CHAR DEF TABLE
0045     LI R1,CHRTBL   THE SAVED CHARACTERS
0046     LI R2,256*8    ALL 256 DEFINITIONS
0047     BLWP @VMBW    WRITE THOSE
0048 *
0049 * NEXT CLEARS THE EGM SCREEN IMAGE TABLE
0050 *
0051     LI R0,SCRORG   POINT AT SCREEN ORIGIN
0052     LI R1,>2000    SPACE IN LB R1
0053     LI R2,768     768 CHARS IN SCREEN
0054 CLRLP BLWP @VSBW  WRITE A SPACE
0055     INC R0         NEXT SPOT
0056     DEC R2         DEC COUNT
0057     JNE CLRLP     REPEAT IF NOT ZERO
0058 *
0059 * THIS SECTION SETS THE COLORS FOR CHARS 0 THRU 127
0060 * TO BLUE ON WHITE, AND THOSE FOR CHARS 128 THRU 255
0061 * TO THE OPPOSITE COLORS
0062 *
0063     LI R0,>2000    COLOR TABLE
0064     LI R1,>4F00    BLUE ON WHITE
0065     LI R2,>400     HALF OF COLOR TABLE
0066 COLSET BLWP @VSBW  WRITE A BYTE
0067     INC R0         NEXT POSITION
0068     DEC R2         DEC COUNT
0069     JNE COLSET    REPEAT IF NOT ZERO
0070     LI R0,>2400    2ND HALF OF COLOR TABLE
0071     LI R1,>F400    WHITE ON BLUE
0072     LI R2,>400     HALF OF TABLE
0073 COLSE2 BLWP @VSBW  WRITE
0074     INC R0         NEXT BYTE
0075     DEC R2         DEC COUNT
0076     JNE COLSE2   LOOP IF NOT ZERO
0077 *
0078 * AFTER ALL THAT'S DONE, WE UNBLANK THE SCREEN
0079 * AT THIS POINT THE SCREEN IS WHITE WITH GREEN BORDER
0080 *
0081     LI R0,>1E0    UNBLANK SCREEN
0082     BLWP @VWTR    BY VWTR
0083 *
0084 * THE NEXT PART PUTS TWO REPEATS OF THE TWO SETS OF
0085 * CHARACTERS (33 - 126 AND 161 - 254) ON SCREEN
0086 * THE LOWER SET IS IN BLUE ON WHITE, THE UPPER IS
0087 * IN WHITE ON BLUE
0088 *
0089     LI R0,SCRORG   POINT AT >1800
0090     LI R4,2        TWO CYCLES
0091 WRTOM LI R1,>2100  START WITH CHAR 33 (!)
0092     LI R2,127-33   ALL DEFINED CHARS THRU 126 (~)
0093 WRTCH BLWP @VSBW  WRITE ONE
0094     AI R1,>100     NEXT CHAR
0095     INC R0         NEXT SCREEN LOCATION
0096     DEC R2         DEC COUNT
0097     JNE WRTCH     RPT TIL ZERO
0098     LI R1,>A100    SET FOR SECOND SET'S (!)
0099     LI R2,127-33  SAME COUNT
0100     INCT R0       MOVE TO START OF ROW
0101     AI R0,64      SKIP TWO ROWS
0102 WRTCH2 BLWP @VSBW  WRITE ONE
0103     AI R1,>100     NEXT CHAR
0104     INC R0         NEXT SCREEN LOCATION
0105     DEC R2         DEC COUNT
0106     JNE WRTCH2   RPT TIL ZERO
0107     AI R0,66      ADD 66 TO R0
0108     DEC R4         DEC R4 COUNT
0109     JNE WRTOM    ANOTHER IF NOT ZERO
0110 *
0111 * FOLLOWING SELECTIVELY CHANGES COLORS FOR SOME OF THE
0112 * CHARACTERS TO ILLUSTRATE COLORING SINGLE CHARACTERS
0113 *
0114     LI R0,33*8+>2000 COLOR FOR FIRST !
0115     LI R1,NEWCOL   NEW COLOR SCHEME (WHITE ON GREEN)
0116     LI R2,8        EIGHT BYTES
0117     BLWP @VMBW    RE-COLOR THE !
0118     LI R0,48*8+>2000 POINT AT ZERO CHARACTER'S COLOR
0119     BLWP @VMBW    RE-COLOR THE 0
0120     LI R0,57*8+>2000 POINT AT NINE CHAR'S COLOR
0121     LI R1,RBOW    RAINBOW
0122     BLWP @VMBW    RE-COLOR THE 9
0123     LI R0,122+128*8+>2000 SECOND SET'S L.C. Z COLOR
0124     LI R1,MAG     MAGENTA
0125     BLWP @VMBW    COLOR THAT
0126 *
0127 * FOLLOWING SECTION PUTS THE LEGEND 'HALF-BIT MAP MODE'
0128 * ON THE SCREEN IN RAINBOW COLOR SCHEME
0129 *
0130     LI R3,HBSTR    TITLE STRING
0131     LI R4,19       19 CHARACTERS
0132     LI R2,8        8 BYTES PER DEF
0133     CLR R13       START AT 0
0134 LEGLP MOV *R3+,R1  GET A CHARACTER FROM STRING
0135     SRL R1,8       RT. JUSTIFY
0136     SLA R1,3       MULT. BY 8
0137     AI R1,CHRTBL  ADD TABLE OFFSET
0138     MOV R13,R0    GET R13 INTO R0
0139     BLWP @VMBW    WRITE CHAR DEF
0140     LI R1,RBOW    RAINBOW COLOR
0141     AI R0,>2000    COLOR TBL OFFSET
0142     BLWP @VMBW    WRITE COLORS
0143     A R2,R13      ADD 8 TO R13
0144     DEC R4         DEC CHAR COUNT
0145     JNE LEGLP     RPT IF NOT 0
0146     LI R0,22*32+6+SCRORG ROW 23, COL 7
0147     CLR R1        ZERO IN R1
0148     LI R2,19      19 CHARACTERS
0149 LEGWRT BLWP @VSBW  WRITE A CHAR
0150     AI R1,>100     INC LB R1
0151     INC R0         NEXT SPOT
0152     DEC R2         DEC CNT
0153     JNE LEGWRT   BACK IF NOT 0
0154 *
0155 * LAST WAITS FOR A KEYPRESS, THEN RE-SETS TO GRAPHICS
0156 * MODE AND EXITS TO GPL INTERPRETER
0157 *
0158 KEY  BLWP @KSCAN   SCAN KEYBOARD
0159     LIM 2          ALLOW INTS
0160     LIM 0          STOP INTS
0161     CB @ANYKEY,@STATUS KEY PRESSED?
0162     JNE KEY       IF NOT, RE-SCAN
0163     BL @SETGM     RESET TO GRAPHICS MODE
0164     LI R0,>1E0    UNBLANK SCREEN
0165     BLWP @VWTR    BY VWTR
0166     LWPI >83E0   GPL WORKSPACE

```

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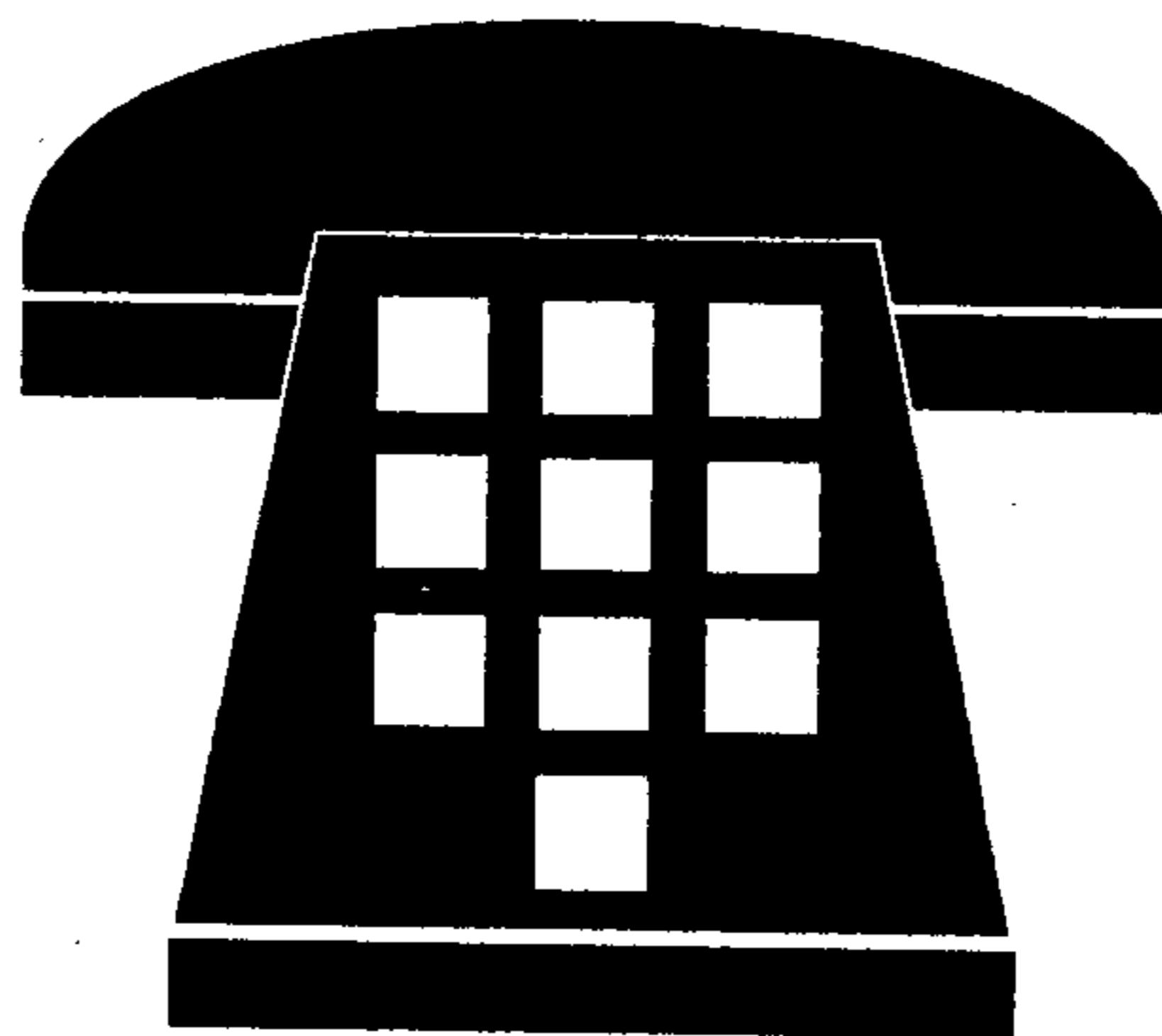
```

0167      B    @>6A      TO GPL INTERPRETER
0168 *
0169 * SUBROUTINES
0170 *
0171 * FOLLOWING SETS FOR HALF BIT MAP MODE
0172 SETHB LI  R0,>01A0    BLANK SCREEN
0173      BLWP @VWTR      BY VWTR
0174      LI  R0,>206      SET TO WRITE VDP REGISTER 2
0175      BLWP @VWTR      SIT TO >1800 (SCREEN IMAGE TABLE)
0176      LI  R0,>400      SET TO WRITE TO VDP REG. 4
0177      BLWP @VWTR      PATTERN TABLE - SPECIAL VALUE
0178      LI  R0,>39F      SET TO WRITE TO VDP REG 3
0179      BLWP @VWTR      COLOR TABLE -SPECIAL VALUE
0180      LI  R0,>607      SET TO WRITE VDP REG 6
0181      BLWP @VWTR      Sprite descriptor table to >3800
0182      LI  R0,>570      SET TO WRITE VDP REG 7
0183      BLWP @VWTR      Sprite attribute list to >3800
0184      LI  R0,2        SET R0 TO WRITE 2 TO VDP REGISTER
ZERO
0185      BLWP @VWTR      SET TO M3 MODE (BIT MAP)
0186      CLR  R1          CLEAR R1
0187      MOVB R1,@>837A   NO SPRITES IN MOTION
0188      LI  R1,>D000     SPRITE DELETE
0189      LI  R0,>3800     AT DESCRIPTOR TABLE
0190      BLWP @VSBW      WRITE THAT
0191      RT              RETURN
0192 *
0193 * FOLLOWING SETS COMPUTER BACK TO GRAPHICS MODE
0194 *
0195 SETGM LI  R0,>1A0     SET TO WRITE VDP REG 1 (BLANK
SCREEN)
0196      BLWP @VWTR      WRITE
0197      LI  R0,>200      SET TO WRITE VDP REG 2
0198      BLWP @VWTR      WRITE
0199      LI  R0,>401      SET TO WRITE VDP REG 4
0200      BLWP @VWTR      WRITE
0201      LI  R0,>30E      VDP REG 3
0202      BLWP @VWTR      WRITE
0203      LI  R0,>600      VDP REG 6
0204      BLWP @VWTR      WRITE
0205      LI  R0,>506      VDP REG 5
0206      BLWP @VWTR      WRITE
0207      LI  R0,>380      POINT AT COLOR TABLE
0208      LI  R1,SAVCLR    AND AT SAVED COLOR DATA
0209      LI  R2,32        32 BYTES
0210      BLWP @VMBW      WRITE THE COLOR TABLE BACK
0211      LI  R0,>800      POINT AT GRAPHICS CHAR TABLE
0212      LI  R1,CHRTBL    AND AT STORED CHARACTER DATA
0213      LI  R2,256*8     256 CHARACTERS
0214      BLWP @VMBW      WRITE CHARACTER DEFS BACK
0215      LI  R1,>2000     SPACE IN LB R1
0216      LI  R2,768      768 CHARS
0217      CLR  R0          SCREEN ORIGIN
0218 CLRGM BLWP @VSBW     WRITE ONE
0219      INC  R0          NEXT SPOT
0220      DEC  R2          DEC COUNT
0221      JNE  CLRGM      NOT 0, RPT
0222      MOV  @>8370,R0   ADDRESS FOR FILE STUFF
0223      LI  R1,ANYKEY+1  SAVED DATA
0224      LI  R2,6         SIX BYTES
0225      BLWP @VMBW      WRITE
0226      CLR  R0          PREP TO WRITE VDP REG 0
0227      BLWP @VWTR      WRITE THAT TO REMOVE BIT MAP
0228      RT              RETURN
0229 *
0230 * DATA SECTION
0231 *
0232 CHRTBL BSS  8*256     CHAR DEF STORAGE
0233 SAVCLR BSS  32        COLOR TBL STORAGE
0234 WS      BSS  32        OUR WORKSPACE
0235 NEWCOL DATA >FCFC,>FCFC,>FCFC,>FCFC
0236 MAG     DATA >DFDF,>DFDF,>DFDF,>DFDF
0237 RBOW    DATA >F6F8,>F9F3,>F2FC,>F5F4
0238 HBSTR   TEXT ' HALF-BIT MAP MODE '
0239 ANYKEY  BYTE 32
0240      BSS  6
0241      END

```

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between the hours of 9
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Saturdays. If you call at
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return calls as soon as
possible, usually that
day.

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512-255-1512**

Backup techniques

Sector copiers and file copiers both worth using

By JIM SWEDLOW

This article originally appeared in the California ROM, the newsletter of the User Group of Orange County.—Ed.

Backups are essential. The first thing you do when you get a new program or disk is to back it up. Do not run it, do not modify it, do not catalog it, do not list it. Back it up.

Why? Simply put, disks go bad and disk drives eat disks. If your only copy goes bad, it could take days or weeks to get a replacement, depending on the source.

So, make your backup first. If you buy a program, keep the master (with the maker's label) with your backups and make a working copy for everyday use.

Keep your backups and masters in a separate disk box away from your computer. That way you will not use them by mistake.

If a disk goes bad, make sure that your hardware is working properly by using another disk *before* using your master or backup. Otherwise, you could inadvertently destroy both your backup and master disks.

Updating backups is vital. If you wrote the program, you will probably revise it more than once. If you get a single program, you will normally add it to an existing disk. If you do not update your backup, you may lose your new program if something goes wrong with your working disk.

A *flippy* is a single-sided disk that has been modified to act like two single-sided disks. By adding three holes, you can put

your disk in your drive upside down and record on the back.

Some folks recommend against flippies. They argue that a disk is designed to turn one way and bad things happen when you flip it over and make it turn in the opposite direction.

Others use flippies and claim that they have had no problems. One approach is to use the front as a working copy of one disk and the back as the backup of another disk.

I compromise by using flippies only for backup copies, thus reducing the number of backup disks I need. However, I do not use them for working disks.

DISK COPIES

On a related topic, there are two basic types of disk copier techniques: file-by-file and sector-by-sector. You need disk copier or manager programs that do both.

File-by-file copiers read your disk one file at a time and then write that file to the new disk. Disk Manager II, the module that came with the TI disk controller card, is a file copier that takes about three weeks to back-up a disk. OK, I'm exaggerating. Three days.

A much better file copier is Disk Manager 1000. This freeware includes a sector copier and other features.

Sector-by-sector copiers copy your disk without regard to the file content. Instead, they read the master disk sector by sector and then write that information to the new disk, sector by sector.

Some sector copiers allow you to use or

ignore the *bit-map*. This is a table in sector zero that tells the disk controller which sectors are used and which are free. Using the bit-map shortens copy time.

There are many good sector copiers, including DM 1000, MSCOPY, Nibbler, Turbo Copy and others. Turbo Copy is the fastest copier I have used.

Why do you need both file and sector copiers? While sector copiers are faster, file copiers are more versatile and can repair some disk problems.

If the bit-map is bad, copying the disk with a file copier will result in a good bit-map on the new disk.

Another problem is a result of the way the disk controller saves files on a disk. Say that you are writing a letter and save it to disk three times — after a third of the letter is written, after two-thirds, and when the letter is finished. Each time the file grows larger.

The resulting file is called a "fractured file." It takes longer to read a fractured file because the disk drive head must jump around more. This increases the possibility of a read failure and of harm to your disk.

Advanced Diagnostics will tell you if you have fractured files. If you have done a lot of saving and modifying of files and programs on a disk, the odds are good that your disk is filled with fractured files.

The only way to unfracture a file is to copy the disk to a new disk using a file copier.

Harrison releases Font Designer

Bruce Harrison has released a new public domain disk called Font Designer. He says the disk is for users of either 24-pin or bubble-jet-type printers. He says it allows the user to create his own download fonts using all the 24x36 "dots" in a character cell by blackening the appropriate dots on a 24x36 grid on the screen.

According to Harrison, the disk includes the ability to download and test print using the user's fonts. The DS/SD disk contains four ready-made sample fonts and also instructions for use.

The disk is available through the Lima Users Group public domain library or by sending \$1 to Harrison at 5705 40th Place, Hyattsville, MD 20781. Harrison says a special edition without

the source code is available to users with only SS/SD disk capability.

A Test With Downloaded Characters
 1234567890
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz
 !.,?;:|'&^%\$#@'*/\ |1111'~

A Test With Download
 Double High, Double

SCSI controller and EZ drives

Yes, you can use these removable media with your TI/Geneve

By MIKE MAKSIMIK

The following appeared on the Chicago TI User Group BBS. We found it in the newsletter of the Hoosier Users Group of Indianapolis.—Ed.

I tested the Syquest EZ drive on my Geneve the other day.

- It is a SCSI drive. It is available in internal and external models.
- It is a cartridge drive. The cartridges are removable and they store a maximum of 127 megabytes (135 mb unformatted).
- You can set any SCSI address on the drive. For compatibility with the Geneve, you can set them to SCS1, SCS2, SCS3 (addresses 0, 1, or 2, respectively).
- You can use MYS to format the drive automatically. The format takes approximately 5-7 minutes. The drive is quite fast as a media storage device. It is faster than many SCSI drives on the market.
- It is a true random access device, and it is also a true removable device. Hence it is a cheap way to store and back up your sys-

Since the EZ works like any other hard drive, I assign a letter to the drive and use MKDIR (MD) to make a directory on the drive.

tem files. It is just as good to use as a main hard disk. In fact, there is no reason why the EZ drive should not be the only SCSI hard disk you own, if you wanted unlimited storage at low cost.

The EZ drive costs about \$200. Cartridges are about \$20 each. There are plans to implement larger capacity drives in the future.

The EZ drive is available in IDE or SCSI versions. Get the SCSI since it is fully interchangeable with PC, Macintosh, and Geneve (TI as well), and you can keep separate cartridges on hand for respective operating


systems. The drives operates with an external 5-volt AC adapter using a special DIN connector. The drives connects to the SCSI using alternative two connectors. These are the 50-pin Telco (or Centronics-style) connectors found on many external tape drives and CD-ROM drives. It is not the same as the ZIP drive, which uses a DB-25 Apple connector. You will be able to connect to the drive using a ribbon-cable crimp-style connector that connects to the back of your SCSI card. If you are not going to attach any other devices, you need either a pass-through terminator or an end terminator on the drive. I used a pass-through which works fine.

USING THE DRIVE

Since the EZ works like any other hard drive, I assign a letter to the drive and use MKDIR (MD) to make a directory on the drive. I used the XCOPY utility to back up entire directories from my other hard drives. In fact, it is much wiser to use this than tape backup, since tapes are just as expensive and the drives are more costly as well. And, you don't need special software, just MDOS and a SCSI card.

Like any hard drive, you can load and run programs from it. Here are some rules to follow:

- Don't remove media from the drive in the middle of a session. If you change media, reboot with a hard reset. This will guarantee that there are no problems with MDOS getting confused.
- After formatting with MYS, be sure to reboot the system so MDOS is aware of the 8:1 sector per AU ratio. If you don't, you will have only a 32-megabyte drive. Do this even if you use CFORM with MFM drives. MDOS with work fine only after rebooting.
- Don't expect to clone one EZ cartridge to another. You can't use a disk copy command with this drive. If you want to clone a cartridge, do it little by little using floppies or another hard drive and XCOPY. Or get a second EZ drive. You can have more than one in a system.
- There are other drives on the market. ZIP drives (100 megabytes) are fine but they support only SCSI addresses 5 or 6. The JAZ drive, a one-gigabyte rigid, removable media drive, will allow any SCSI address and should be appropriate for use with the Geneve.

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Fest West '97 - c/o South Bay TI Users Group
3297 Woody Lane
San Jose, CA 95132
(408)-934-0352



Transferring text files between a TI and a PC

By **BOB GROSSART**

This article was published in the newsletter of the Rocky Mountain Ninety-Niners.—Ed.

After reviewing several articles on the transfer of data between any PC-compatible and the TI99/4A the methods and hardware connections that work for me are described.

My setup is a TI99/4A with expansion box running TI-Writer/Funnelweb and a 486 DX2 PC-compatible laptop running Microsoft Windows 3.11. A test with the Rocky Mountain 99ers CorComp 9900 Micro-Expansion System resulted in one software setup change, which is noted in the text. A Radio Shack RS-232 Troubleshooter (part number 276-1401) used on the CorComp showed that the handshake signal Clear to Send (CTS) was never active. This may be due to a malfunction. This required a selection of no handshake during PC-to-TI transfer.

A test with the Funnelweb 5.1 all character (8-bit) mode also required a software change (noted in the text) for both systems. The methods used with Microsoft Works 3.0 will be described in some detail for those of who are new to the Windows environment on the PC. Use of the Windows menu bar commands are described but experienced Windows users may find use of the toolbar icons easier. The method described assumes a complete text file will be transferred, with a brief discussion on partial file transfers at the conclusion.

HARDWARE CONNECTIONS

The "null" modem cable used connects between the 25-pin RS232 card in the TI expansion box and the 9-pin serial port connector on my laptop. Actually, in this case, the connections are straight through, no crossed signals as described in some articles about transferring files between PCs and the TI. The TI RS232 card is not DTE (Data Terminal Equipment), as is conventional for computers. Rather, it is setup as DCE (Data Communications Equipment), like a modem. The TI RS232 card schematic I have shows pin-2 of the 25-pin connector as Data In and pin-3 as Data Out. This is the reverse of a normal DTE 25-pin connector convention. So, no signal switch is required to connect to another PC-compatible. However, this is not so if connecting two TIs.

The TI RS232 three handshaking signals DSR (Data Set Ready), DTR (Data Terminal Ready) and CTS (Clear to Send) are also reversed from normal DTE convention as to Input/Output for a computer. Interestingly, pin-6 is connected to +12VDC, specified in the RS232 Standard as DSR, an output from DCE and an input to DTE. This positive voltage (or SPACE) indicates DSR is always "on," or ready for transfer. The result of all this is why a straight through connection works, at least for my setup.

The pinouts for the connecting cable used are listed by RS232 Signal Definitions (DTE perspective) for a standard 25-pin to 9-pin interface. The corresponding TI RS232 schematic 25-pin sig-

nal identification is also shown. The TI RS232 card has a second set of RS232 signals identified with a "1" suffix, which are not listed.

| RS232 Standard Signal Name | DTE In/Out | DTE 25-Pin | DTE 9-Pin | RS232 Signal I.D. |
|----------------------------------|---------------|---------------|--------------|----------------------|
| Protective Gnd | | 1 | N/C | Signal Gnd. |
| Transmit Data (TD or TXD) | (Out) | 2 | 3 | Data in 0 |
| Receive Data (Rn or RXD) | (In) | 3 | 2 | Data Out 0 |
| Request to Send (RTS or RQS) | (Out) | 4 | 7 | N/C |
| Clear to Send (CTS) | (In) | 5 | 8 | CTS 0 (Out) |
| Data Set Ready (DSR) | (In) | 6 | 6 | +12VDC (Out) |
| Signal Ground | | 7 | 5 | Signal Gnd. |
| Data Carr. Detect (DCD or DC) | (In) | 8 | 1 | Carrier Det. (Out) |
| Data Term. Ready (DTR) | (Out) | 20 | 4 | DTR 0 (In) |
| Ring Indicator(RI) | (In) | 22 | 9 | N/C |

NOTE: By not using any handshake signals (in the PC software setup, a selection of "None" for the "Handshake" is selected), a three-wire cable can be used. For the DTE 25-pin connector, pins 2 (TD), 3 (RD) and 7 (Signal Ground) only were used successfully.

TRANSMIT TEXT FROM TI TO PC

Software setup for TI99/4A

1. Load TI-Writer or Funnelweb and load text file into the text editor.
2. Set up Save File as RS232.BA = 9600.
3. Don't execute. Wait for PC setup.

SOFTWARE SETUP FOR PC

1. Open Windows, select/click on icon Microsoft Works For Windows and then Microsoft Works.
2. In the startup menu for new and recent documents, select Communications.
3. The Easy Connect menu appears. Select cancel button. Do not select "OK" button.
4. On menu bar, select Settings. From Settings menu, select Communication. In the Communication page dialog box make the following selections:

| Type of Setting | Initial Setting |
|-----------------|------------------------|
| Port | COM 2 (or as required) |
| Parity | Odd |
| Data Bits | 7* |
| Stop Bits | 1* |
| Baud Rate | 9600 |

(See Page 16)

FILE TRANSFERS —

(Continued from Page 15)

| | |
|---------------|----------|
| Handshake | Hardware |
| Ignore Parity | Off* |

* For the FW5.1 8-bit all-character mode, select 8-1-ON.

Select the Terminal Page and make the following settings:

| Type of Setting | Initial Setting |
|-----------------|-----------------|
| Terminal | TTY |
| End of lines | Normal |
| ISO translation | None |
| Local echo | Off |
| Wrap around | ON |

Select the Transfer Page and make the following selections:

| Type of Setting | Initial Setting |
|-------------------|-----------------|
| Transfer protocol | XMODEM/CRC |
| Text transfers | Line Delay = 0 |
| Receive directory | Leave default |

C:\MSWORKS or as desired

After the above three settings page selections have been made, choose the OK button to install settings and to leave the settings options.

5. On the menu bar select Phone. In the phone menu choose Easy Connect. Ensure the phone number and name of service boxes are empty. Then choose the OK button.

6. On menu bar select Tools. From the tools menu choose Capture Text. In the Filename box, enter a filename and filename extension. I use a .txt extension. Choose the OK button and data from the TI should start immediately as soon as you execute Save File on the TI99/4A. To end transfer choose End Capture Text in the tools menu. The data is now resident in the file you previously defined.

7. On the menu bar select Phone and then hang up. In dialog box choose OK to disconnect from the TI.

8. Save the communication file you have set up for future use. In the menu bar File and choose Save As. I used TI99XMIT for the filename. Choose OK, then close the file.

9. On the MS-Works startup menu, select Open An Existing Document. The open menu should now display the recently acquired file transmitted from the TI in its list of files. In the List Files of Type box, choose Text (*.txt). Highlight the file you transferred and select the OK button. A Open File As dialog box should appear. Choose File Type as Text for Windows and then select the word processor button. Your TI file should now appear for further Select the Terminal Page and make the following processing in Microsoft Word.

Note: All lines end in a paragraph mark that may need to be removed to perform formatting.

10. The next time you want to transfer a file, open the communications file TI99XMIT and you are ready to go, needing only a new filename:

- Setup the TI as before to send text.
- Open TI99XMIT file. On the dialog box choose OK to "Connect to other computer."
- Repeat steps 6, 7 and 9 above.

TRANSFER TEXT FROM PC TO TI

Software setup for TI

1. Load TI-Writer/Funnelweb text editor.
2. Set up Load File as RS232.BA = 600.
3. Execute now. TI waits for transfer.

Software setup for PC

1. Repeat steps 1 through 7 above as for TI-to-PC transfer with the following changes:

Baud Rate = 600

Handshake = Hardware*

* "None" required for CorComp 9900 Micro-Expansion System.

Text Transfer Line Delay = 1 (increase from 0 until transfer works)

Note: Funnelweb 5.1 in 8-bit mode will accept data with the PC set to 7-1-Odd.

2. From the menu bar, select Tools. From the tools menu choose Send Text. In the File Name box enter a filename. Remember the filename must be in .txt extension format. Choose the OK button and data transfer to the TI should start immediately. To interrupt the transfer press Esc on the PC. The PC screen will scroll data until the end. The file is now resident in the TI word processor file.

3. From the menu bar, select Phone and then hang up. On dialog box choose OK to disconnect from TI.

4. Save the communication file you have set up for future use. In the menu bar select File and choose Save As. I used TI99RECV for the filename. Choose OK then close the file.

5. On the TI press Fctn-4 and then press enter to display the text.

6. Next time you want to transfer a text file to the TI, open the communications file TI99RECV and you are ready except for a new filename:

- Set up the TI as before to receive text.
- Open the TI99RECV file. On the dialog box choose OK to "Connect to other computer."
- Repeat step 2, 3 and 5 above.

PARTIAL TEXT FILE TRANSFERS

PC to TI-99/4A

On the TI, with Funnelweb or TI-Writer loaded, select a point in an existing text file by preceding Load File command with the desired line number, e.g. 20 RS232.BA = 600 (assuming the file has at least 20 lines already defined). File transfer will then be appended to the existing file at the line specified, otherwise the transfer will begin at line one. Execute Load File from the TI. Open your communication file, then the file containing text. Highlight desired text and Copy. Return to communications file and in edit menu select Paste Text. The transfer automatically starts. After the first transfer is complete, on the press Fctn-4 on the TI and then press enter to display the text (e.g. lines 20 to 100). Repeating the above instructions will allow additional portions of the PC file(s) to be appended to one TI file (e.g. 101 RS232.BA=600).

TI-99/4A to PC

Select the range of the text file line numbers you want to transfer.
(See Page 17)

FILE TRANSFERS —

(Continued from Page 16)

fer and enter before the Save File command, e.g. 20 100 RS232.BA=9600. Proceed as previously described for text transfers from the TI to the PC. To send additional portions select Fctn-

9 and set up a new Save File command with new line numbers. The PC will continue to append text as transmitted from the TI until the communication link is terminated. After transfer is complete, on the PC choose End Capture Text as before.

NEWSBYTES

New Fest West date

Fest West '97, sponsored by the South Bay TI Users Group, has been rescheduled for Saturday, April 5, 1997, at the San Jose Civic Auditorium in San Jose, California.

Admission for adults is \$5, with children under 16 free when accompanied by a paid adult. Numerous hotels in the area are available, according to Don O'Neil, one of the organizers.

O'Neil says the Fest location is next door to the Tech Museum of Innovation and two blocks from the Childrens Discovery Museum.

For information and a Fest package, call (408)-934-0352 or write: Fest West '97 c/o Don O'Neil, 3297 Woody Lane, San Jose, CA 95132.

Chicago Faire set

The 14th Chicago TI International World Faire will take place from 9 a.m. to 4 p.m. Nov. 9 at the Evanston Public Library in Evanston, Illinois.

According to the Chicago Users Group newsletter, low-cost accommodations for attendees and exhibitors are being arranged. For further information, contact Hal Shanafield, Faire chairman, at (847)


864-8644, or write the Chicago TI Users Group, P.O. Box 7009, Evanston, IL 60204-7009.

Address changes

The Central Iowa 99/4A Users Group has a new mailing address, 940 County Line, Des Moines, IA 50320. Phone number is (515) 247-5994.

John Hamilton, secretary of the group, notes that "A half dozen of us continue to meet the second Sunday of each month from 2 to 5 p.m."

The group is in its fourteenth year.

| <h4>The WHT SCSI Controller Card</h4> | <h4>The WHT AT Keyboard Interface</h4> | <h4>Interface Standards & Design Guide</h4> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|---|-----------------------------|-----------------------------|----------|----------------------------|------------------------------------|-----|----------------------------------|--|-----|--|--------------------------------------|-----|--|--------------------------------|-----|--------------------------------|-----------------------------------|-----|--|------------------------------------|-----|------------------------------------|--|-----|------------------------------------|----------------------------|-----|------------------------|---|----|--------------|-----------------|-----------------|--|---|
| <p>Want more online storage for your 99/4a or Myarc Geneve? How does 2 GIGABYTES sound?</p> <p>The WHT SCSI card provides your computer with nearly instant access to hundreds of megabytes of storage on any standard SCSI hard drive. With lightening fast RAM Disk access speeds and nearly 2 gigabytes of capacity for programs graphics and other files! Seven hard drives are supported with each volume up to 250 megabytes!</p> <p>Each SCSI controller kit comes complete with all manuals, software and cabling you need to install an internal hard drive in your PE-Box. Optional cases, cables and hard drives are available.</p> | <p>The WHT AT Keyboard Interface & ROM Upgrade provides your TI 99/4a with a true AT keyboard interface to connect your favorite 101+ keyboard to the console. This unique solution installs inside your computer allowing you to use BOTH the AT and console keyboards simultaneously!</p> <p><i>Head to Head with the Rave XT</i></p> <table border="1"> <thead> <tr> <th>Feature</th> <th>AT</th> <th>XT</th> </tr> </thead> <tbody> <tr> <td>Industry Standard Interface</td> <td>YES</td> <td>Obsolete</td> </tr> <tr> <td>Easy to find inexpensive keyboards</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>Supports 84, 101 and newer 104 keyboards</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>Simultaneous use of console keyboard</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>16 character type ahead buffer</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>Supports auto switching keyboards</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>Extends system CRU range from >600</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>User installable 64K 0-wait optional RAM</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>64K of upgraded system ROM</td> <td>YES</td> <td>NO</td> </tr> </tbody> </table> | Feature | AT | XT | Industry Standard Interface | YES | Obsolete | Easy to find inexpensive keyboards | YES | NO | Supports 84, 101 and newer 104 keyboards | YES | NO | Simultaneous use of console keyboard | YES | NO | 16 character type ahead buffer | YES | NO | Supports auto switching keyboards | YES | NO | Extends system CRU range from >600 | YES | NO | User installable 64K 0-wait optional RAM | YES | NO | 64K of upgraded system ROM | YES | NO | <p>This unique book by P.E. Tony Lewis is the hardware hackers Bible. Packed with information on the inner workings of the TI 99/4a, Peripherals and the P.E. Box, it is the essential resource for the programmer and hardware enthusiast. Spiral bound or in a binder for easy reading.</p> <p>Does not include original source disks. \$24.95</p> | | | | | | |
| Feature | AT | XT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Industry Standard Interface | YES | Obsolete | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Easy to find inexpensive keyboards | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supports 84, 101 and newer 104 keyboards | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Simultaneous use of console keyboard | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 character type ahead buffer | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 64K of upgraded system ROM | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p><i>Head to Head with the HFDC</i></p> <table border="1"> <thead> <tr> <th>Feature</th> <th>SCSI</th> <th>HFDC</th> </tr> </thead> <tbody> <tr> <td>Industry Standard Interface</td> <td>YES</td> <td>Obsolete</td> </tr> <tr> <td>Supports Seven Hard Drives</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>1.75 Gigabytes of Online Storage</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>10 MB/Second Drive to Host Transfer Rate</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>500 KB/Second Drive to RAM Transfer Rate</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>Faster than a Horizon Ram Disk</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>Easy to Find Off the Shelf Hard Drives</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>Interfaces to CD-ROM, Tape and CDR</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>Multiple Masters Sharing One Drive</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>0 Wait State Operation</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>PRICE</td> <td>\$169.95</td> <td>\$199.95</td> </tr> </tbody> </table> | Feature | SCSI | HFDC | Industry Standard Interface | YES | Obsolete | Supports Seven Hard Drives | YES | NO | 1.75 Gigabytes of Online Storage | YES | NO | 10 MB/Second Drive to Host Transfer Rate | YES | NO | 500 KB/Second Drive to RAM Transfer Rate | YES | NO | Faster than a Horizon Ram Disk | YES | NO | Easy to Find Off the Shelf Hard Drives | YES | NO | Interfaces to CD-ROM, Tape and CDR | YES | NO | Multiple Masters Sharing One Drive | YES | NO | 0 Wait State Operation | YES | NO | PRICE | \$169.95 | \$199.95 | <p>SUMMER KEYBOARD SPECIALS Installation not included. Install yourself or add \$30 for installation fee.</p> <p>Mitsumi Win '95 104 - \$14.95 Keytronics Win '95 104 - \$25.95 Microsoft Natural 104 - \$63.95</p> <p>\$59.95</p> | <p>Geneve Turbo Video</p> <p>This unique "one chip wonder" replaces your original Geneve PAL with a new faster version! This chip reduces the time necessary for the CPU to access the video chip enhancing access times by up to 20%! Easy to install in socketed Geneves. (Not compatible with some older Geneves)</p> <p>Installation not included. call for installation pricing. \$24.95</p> |
| Feature | SCSI | HFDC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Industry Standard Interface | YES | Obsolete | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supports Seven Hard Drives | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.75 Gigabytes of Online Storage | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 MB/Second Drive to Host Transfer Rate | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 KB/Second Drive to RAM Transfer Rate | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Faster than a Horizon Ram Disk | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Easy to Find Off the Shelf Hard Drives | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Interfaces to CD-ROM, Tape and CDR | YES | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>Western Horizon Technologies 3297 Woody Lane San Jose, CA 95132 (408)-934-0352 email: don@sonyx.com</p> | <p>Call our BBS or visit our web site to download the latest DSR's & Manuals!</p> <p>(408)-934-9682 FAX/BBS http://www.sonyx.com/wht/</p> | <p>Place your order with Competition Computer!! 1-800-471-1600</p> <p>350 Marcella Way Millbrae, CA 94030</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

STRING MAZE

You won't solve this maze unless you've got a plan before you start

By LUCIE DORAIS

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The following article originally appeared in the newsletter of the Ottawa TI99/4A User Group.—Ed.

How about a game to keep you busy during the summer months? A maze game, but with a twist: instead of guiding the mouse with the arrow keys, deciding at each step which will be the next, you enter the complete escape plan all at once, in a string. When you press Enter, Tex will analyze its content and move the mouse accordingly. The full instructions are in lines 710-820. When they are displayed on the screen, a sample maze will also be shown, together with its command string. Be careful when you type these lines: see near the end of the text.

The first DATA line, 160, is for our mouse in four positions (pointing towards down, up, right or left), then the long list of the misfortunes she can encounter. Some DATAs are between quotation marks, because they contain spaces or commas.

Before drawing the maze, we make color set 14 invisible, while the wall set (13) will not be. The maze starts life on screen as a big blue rectangle, while the Start and Exit points are first chosen by Tex. C1 determines if Start will be at 1) top, 2) bottom, 3) left, or 4) right, and C2 does the same for the Exit point. Then the mouse, character 64, is set to the corresponding direction, taking as pattern the corresponding C\$ definition (the DATA in line 160).

Now Tex wants to know where on top, bottom, left, or right border it must put the Start and Exit! If departure choice C1 is top or bottom, i.e. $C1 < 3$, the SUB CH (where C1 becomes C) uses line 880, where the A, alias RD, is set to 8 or 22 (top or bottom border), and the CD column is chosen randomly. But if Tex has decided that you start at left or right, the starting column CD is set to 2 or 30, and it is the starting row that is randomly chosen in line 890. RA and CA are the exit row and

column, chosen the same way in SUB CH. This time Tex makes sure that, if both Start and Exit are on the same row or column, they are not too close together. Otherwise the maze is very boring.

With Start and Exit, Tex can now determine the distance between them. The XB guru gave us a CALL DISTANCE statement, but it works only with sprites, so we put sprites over our Start and Exit points. The sprites are called on screen once in line 120, but you never see them, since they use the space character. In line 330, they are located on the pixelrow and pixelcolumn of RD/CD and RA/CA, and their distance is put into variable A (a variable that is used over and over in the program for temporary values). The result must be squared before we can use it (see XB manual) and, since it is in pixels, we also divide it by 8, then by 2 (therefore $A/16$) to get the maximum number of dynamite charges that you will be allowed to use — this will be variable TB, total blasts.

Finally, in line 350, the maze is drawn on the screen, randomly choosing a space character (137) or an inside wall (136). When all is done, color set 14 is colored to blue, the starting mouse (char. 64) is put in the Start point, and Exit character 138 (a space) is also put on screen.

Before you enter your escape plan, the maximum number of dynamite blasts is given to you. Why dynamite? To blast your way through the inside walls, of course! But you cannot use more than you've got. You then enter your escape plan, an INPUT statement rather than ACCEPT, so you can keep your eyes on the screen while entering it. You can use only five characters: U (up), D (down), L (left) and R (right). The blasts are entered as an asterisk, but the move before the blast should always be entered. To move through a wall at your right, enter R*. The \$\$ string in the INPUT puts an empty line before your entry, so that the input can start in screen column one. Since the INPUT line can be of variable length, after you press Enter the maze is moved to the

top screen line, so that the rest of the program will always find the maze at the same place! This is done in line 390, which looks for a wall character. If it's not there, a regular space is, so print one more line.

If you use digits in your command string (see instructions in the program), your string will need to be decoded by Tex. It reads each character until it finds a digit. When he finds one, he replaces it with the repetition of the previous character, kept in OB\$. If the number is 10 or above, it reads the next character to get the total value into A.

For example, Tex will decode "R4D5" as "RRRRDDDDDD." But there is a vicious twist here — if your decoded line is longer than 56 characters, i.e. two screen lines, the program will end, so plan your moves carefully! This checking is done in line 480, after Tex has added a final character "\^" to your string. In line 470, we initialize the winning variable W and the blast counter BL to zero. The starting points PT are set to five times your allowed blasts TB, plus twice the value of A, which this time is carrying the difference in length of your string PL\$ and the decoded string A\$ (see line 450) as a little bonus.

Your mouse finally gets moving in line 490. The decoded string is read character by character in a FOR-NEXT loop. If Tex finds an end character before the maze is completed, or a blast that shouldn't be there, A takes the value of the position of these character (or zero for an unrecognized one) and goes to line 620 to end the current game. If all is well, A is decremented by two to be used in the ON GOTO — where to go next.

Since we must replace our advancing mouse by some trailing characters, we keep its current position into temporary variables TR and TC. TK keeps the value of the character that was there before the mouse advanced — an inside wall or a space, since there are two kinds of trailing characters. A small dot is used for a space,

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STRINGMAZE —

(Continued from Page 18)

a big dot to replace an inside wall character (all that to give you a chance to analyze your plan if you make a mistake somewhere). Line 520 replaces four lines to move the mouse (if the character is "U," then $R=R-1$, or if "R" then $C=C+1$, etc.) Here, if position A is 1 or 2 (U or D), we change row R accordingly. On the other hand, if A is the position of L or R, we change the C column.

After the next move is thus interpreted, Tex looks at the character that the mouse is now facing, by a CALL GCHAR. If it is a trail or an outside wall (characters 133-135), GOTO 540, where the ubiquitous variable A now takes a value of six (trail error) or seven (wall error), before going to line 620 to end the game. If the next character is a wall, $K=136$, it needs to be blasted! Tex looks in your string for the character following your current move. If it is a "*", no problem, it will blast the wall. If not, down you go to line 620. If you have used all your dynamite, you face the same fate.

If there is no problem with the blast, line 560 will get you through the wall with an appropriate sound. The loop counter X is incremented, so that the next character read will not be a blast (since we have already dealt with it).

The points are decremented by four, because the next line will take another one, for a total of five. The blast counter BL is also incremented. Line 570 is passed through by all the correct characters, the UDLRs and the blasts. It simply puts on screen the trailing character TK at the previous row and column of our mouse, and places the mouse at the new location. The points are decremented by one for each move. Line 580 displays on screen your points and the number of blasts already used.

If the K character replaced by the mouse was 138, this is the Exit — you get more bonus points, five for each dynamite charge that you have not used (TB-BL). The winning variable W is set to one if you have points, to zero if none — it takes the absolute value of the relational expression ($PT>0$), i.e. one if PT is positive, zero if it is negative or zero.

But how could you get zero points if

you win? You could have used all your starting points in blasts or too many moves. Temporary variable A then takes a value of three or four, to get you the appropriate message in line 620. If you have not reached the end of the maze, Tex goes back to read the NEXT X character.

Lines 620-690, where an appropriate message is put on screen, deals with the end of each game. If you have earned no points, or if they are negative, or if an error in your command string has aborted the game, your PT points are zero. If your command string had an error, it will be pointed out to you by line 630, which displays an arrow above or below your string. Here A, no longer needed as a message carrier, takes the value of the relational expression ($X>28$), i.e. if the incriminating character is in the first or second screen line. This is why your string has to be no more than 56 characters long.

Your final game points are displayed. If you have won, GOTO 650 for an appropriate fanfare! If not, the music in line 670 is more subdued. The running point TOTAL is displayed, and Tex asks you if you want to try another maze.

The rest of the program are the instructions.

STRINGMAZE

```

100 REM ** STRINGMAZE ** L.D
    orais - Ottawa UG - May 1990
    !194
110 REM!154
120 CALL SPRITE(#1,32,1,1,1,
#2,32,1,1,1)!035
130 CALL CLEAR :: DISPLAY AT
(1,10):"STRINGMAZE" :: DIM M
$(9),C$(4):: GOTO 210 !199
140 A,A$,B$,BL,C,C1,C2,CA,CD
,K,OB$,PL$,PT,R,RA,RD,S,S$,T
B,TC,TK,TR,TOT,W,X !090
150 CALL KEY :: CALL SOUND :
: CALL COLOR :: CALL CHAR ::
CALL HCHAR :: CALL VCHAR ::
CALL GCHAR :: CALL LOCATE :
: CALL DISTANCE !028
160 DATA 10101038383810,0010
38383810101,0000001CFE1C,000
000387F38 !193
170 !@P- !064
180 DATA UNRECOGNIZED CHARAC
TER...,STRING TOO SHORT TO E

```

```

SCAPE!,NO NEED TO BLAST HERE
... !175
190 DATA "GOT IT, but NO poi
nts...", " CONGRATULATIONS!!
!",Decoded string too long..
. !034
200 DATA You walked on your
trail...,You met an outside
wall...,No more dynamite...,
You forgot to blast here...
!201
210 RANDOMIZE :: FOR X=1 TO
4 :: READ C$(X):: NEXT X ::
FOR X=0 TO 9 :: READ M$(X)::
NEXT X !165
220 CALL CHAR(133,"00003C3C3
C3C",134,"0000001818",34,"00
00101010543810",35,"10385410
1010")!073
230 A$="FFFFFFFFFFFFFFFF" ::
CALL CHAR(37,"",61,A$,135,A
$,136,A$,137,"",138,""):: S$
=RPT$(" ",28)!212
240 DISPLAY AT(20,6):"INSTRU
CTIONS? (Y/N)" :: GOSUB 840
:: IF K=89 THEN 700 !069
250 ! == new maze == !238
260 CALL CLEAR :: CALL COLOR
(13,5,1,14,1,1)!113
270 FOR R=8 TO 22 :: CALL HC
HAR(R,2,135,30):: NEXT R !15
6
280 C1=INT(RND*4)+1 :: C2=IN
T(RND*4+1):: CALL CHAR(64,C$
(C1))!168
290 IF C1<3 THEN CALL CH(RD,
CD,C1)ELSE CALL CH(CD,RD,C1)
!144
300 IF C2>2 THEN 320 !110
310 CALL CH(RA,CA,C2):: IF R
A=RD AND ABS(CA-CD)<10 THEN
310 ELSE 330 !045
320 CALL CH(CA,RA,C2):: IF C
A=CD AND ABS(RA-RD)<6 THEN 3
20 !118
330 CALL LOCATE(#1,RD*8-7,CD
340 CALL DISTANCE(#1,#2,A)::
A=SQR(A):: TB=INT(A/16)!005
350 FOR R=9 TO 21 :: FOR C=3
TO 30 :: CALL HCHAR(R,C,136
+INT(RND*2)):: NEXT C :: NEX
T R !219
360 CALL COLOR(14,5,1):: CAL
L HCHAR(RD,CD,64):: CALL HCH
(See Page 20)

```

STRINGMAZE —

(Continued from Page 19)

```

AR(RA,CA,138)!252
370 ! == input escape plan a
nd decode it == !055
380 PRINT "DYN(m"&STR$(TB)&"
) ESCAPE PLAN(UDLR*):" :: IN
PUT S$:PL$ !067
390 CALL GCHAR(1,2,K):: IF K
=32 THEN PRINT :: GOTO 390 !
196
400 DISPLAY AT(23,10):"DECOD
ING..." :: A$="" !198
410 FOR X=1 TO LEN(PL$):: B$
=SEG$(PL$,X,1)!178
420 IF B$<"1" OR B$>"9" THEN
A$=A$&B$ :: GOTO 450 !109
430 IF B$="1" THEN X=X+1 ::
B$=B$&SEG$(PL$,X,1)!251
440 A=VAL(B$):: A$=A$&RPT$(O
B$,A-1)!033
450 OB$=B$ :: NEXT X :: A=LE
N(A$)-LEN(PL$):: PL$=A$&"\ "
:: DISPLAY AT(19,1):PL$ !077
460 ! == try escape plan ==
!146
470 W,BL=0 :: PT=5*TB+2*A ::
R=RD-7 :: C=CD :: K=137 !04
7
480 IF LEN(PL$)>56 THEN A=5
:: GOTO 620 !103
490 DISPLAY AT(23,7):"LET'S
TRY IT..." :: FOR X=1 TO LEN
(PL$)!002
500 A=POS("\*DURL",SEG$(PL$,
X,1),1):: IF A<3 THEN 620 EL
SE A=A-2 !083
510 TR=R :: TC=C :: TK=K-3 :
: CALL CHAR(64,C$(A))!042
520 IF A<3 THEN R=R+1+2*(A=2
)ELSE C=C+1+2*(A=4)!155
530 CALL GCHAR(R,C,K):: ON K
-132 GOTO 540,540,540,550,57
0,570 !194
540 A=6-(K=135):: GOTO 620 !
outside wall or trail !134
550 A$=SEG$(PL$,X+1,1):: IF
A$<>"*" THEN A=9 :: GOTO 620
ELSE IF BL=TB THEN A=8 :: G
OTO 620 ! blast needed !123
560 CALL SOUND(150,-5,0):: X
=X+1 :: PT=PT-4 :: BL=BL+1 !
blast ok !156
570 CALL HCHAR(TR,TC,TK):: C
ALL HCHAR(R,C,64):: PT=PT-1
! mouse move !084
580 DISPLAY AT(17,9):USING "
## POINTS ###":BL,PT !037
590 IF K=138 THEN PT=PT+5*(T
B-BL):: W=ABS(PT>0):: A=W+3
:: GOTO 620 ! got it !105
600 NEXT X !238
610 ! == mouse broken or vic
torious == !025
620 DISPLAY AT(22,1):M$(A):"
" :: IF W=0 THEN PT=0 !073
630 IF A<3 OR A>5 THEN A=(X>
28):: R=18-3*A :: C=X+2+28*A
:: K=34-A :: CALL HCHAR(R,C
,K)! show error in string !2
16
640 DISPLAY AT(17,15):"POINT
S";PT :: IF W=0 THEN 670 !24
8
650 CALL SOUND(100,392,0)::
CALL SOUND(100,494,0):: CALL
SOUND(100,523,0):: CALL SOU
ND(200,622,0)!146
660 CALL SOUND(100,494,0)::
CALL SOUND(200,622,0):: GOTO
680 !005
670 CALL SOUND(600,110,0)::
CALL SOUND(300,110,0):: CALL
SOUND(300,110,0):: CALL SOU
ND(300,110,0)!113
680 TOT=TOT+PT :: DISPLAY AT
(24,1):"TOT:";TOT;" PLAY AG
AIN? (Y/N)" !213
690 CALL KEY(0,K,S):: IF S=0
OR K<>89 AND K<>78 THEN 690
ELSE IF K=89 THEN 260 ELSE
END !072
700 CALL COLOR(4,5,1)! instr
uctions !137
710 DISPLAY AT(1,1):"To help
a mechanical mouse out of
a random maze, you must pr
ogram it with a":"command st
ring, using only" !043
720 DISPLAY AT(5,1):"these c
haracters:" : " U - up L
- left %%%=S= D - down R
- right %%%=":TAB(25);"===
=" !068
730 DISPLAY AT(10,1):"To bla
st a wall, use %%%=%%*" afte
r the command: %%%=%%%":TAB(
24);"==%==" !033
740 DISPLAY AT(13,4):"DD*DDD
R*DDDDDDD %%%= =": "%% LLU
LLDDDRRRR*D %%%= =":TAB(
23);"=====" !234
750 DISPLAY AT(16,1):"The EX
IT space must %%%= =be inc
l. in string. %=====":TAB(
22);"= % ==" !027
760 DISPLAY AT(19,1):"Get bo
nus points by %= =%%=using
digits: %%%=% ======":TAB(
22);"= % ==":"DD*D3R*D7LLUL
LD3R4*D ====E=" !086
770 GOSUB 840 :: CALL COLOR(
4,2,1)!203
780 DISPLAY AT(1,1):"But bew
are: if your decoded string
is longer than two screen
lines, your mouse is" !080
790 DISPLAY AT(4,1):"broken.
In fact, any error in the
program will kill the mouse,
and you will lose all your po
ints." !031
800 DISPLAY AT(9,1):"Each mo
ve costs you one":"point, ea
ch blast five." : "You have
a maximum number of dynami
te charges," !255
810 DISPLAY AT(14,1):"derive
d from the distance betwee
n Start and Exit;":"distance
also determines your sta
rting points." !170
820 DISPLAY AT(19,1):"On the
other hand, you get five b
onus points for each unused
dynamite charge." !220
830 GOSUB 840 :: GOTO 260 !1
13
840 DISPLAY AT(24,9)BEEP:"PR
ESS A KEY" !080
850 CALL KEY(0,K,S):: IF S=0
THEN 850 ELSE CALL CLEAR ::
RETURN !245
860 !@P+ !062
870 SUB CH(A,B,C):: IF C>2 T
HEN 890 !137
880 A=8-14*(C=2):: B=INT(RND
m: random column !209
890 A=2-29*(C=4):: B=INT(RND
: random row !128

```

The problem with printers

Trying to match up codes from one brand to another a seemingly impossible task

By JIM PETERSON

When a program is written on one TI99/4A console, it's a pretty sure bet that it will run on any other TI99/4A console, unless the programmer has used some of the special features of the CorComp Disk Controller, Super Extended BASIC, or whatever. But when a programmer writes a program to output to his own printer, it is by no means certain that it will work with your printer. As far as printer compatibility is concerned, it's a jungle out there. Anarchy, chaos and total confusion!

To begin, if the printer has a parallel port it must be opened with "PIO," otherwise with "RS232" followed by the baud rate — or something else again for Axiom. And you may have to add .LF to suppress linefeeds or .CR to suppress carriage returns. Next, its output and its response to control codes is partly controlled by those diotic, microscopic, inaccessible, fragile-looking inventions of the devil called DIP switches. And finally, the output is mostly controlled by the printer control codes in the program itself.

Somewhere among the thousands of computer publications, someone must have written a comprehensive guide to writing and modifying software for printer compatibility.

I have read literally thousands of user group newsletters over the years, and have seen many mentions of "fixes" to various problems, but never a detailed article.

I have called printer manufacturers, and they have been most helpful in suggesting that I buy one of their expensive manuals for each of their models.

I have talked to programmers with much more experience in writing printer programs than I have, and they tell me it is very difficult, even with the manual at hand, to modify a program for a particular printer without having access to that printer for testing.

I have no experience in programming for any printer other than my trusty old Gemini-10X, and my few attempts to modify programs for other printers have

mostly ended in failure. However, I have borrowed several manuals and attempted to chart the differences. I had hoped to compile and publish a complete conversion chart, until I realized the complexity of the problem. (Published along with this article is Mickey Cendrowski's printer command reference chart.—Ed.) Anyway, perhaps I can pass on a few tips to programmers, to help them make their programs as widely compatible as possible, and possibly I can give users a little bit of guidance to help in modifying programs to suit their printers.

In the following, in order to be brief, I have mentioned control code sequences by their ASCII numbers, such as 27 66 1. This would be programmed as CHR\$(27);CHR\$(66);CHR\$(1) or, since ASCII 66 is within the printable range, it might be CHR\$(27)"B"CHR\$(1). 11. 27 77 n means that for "n" you substitute an ASCII, within an allowable range, according to what you want to accomplish.

There seem to have been four systems of printer control codes used with the printers commonly found in the TI world — Epson, Micronics, Axiom, and Okidata. The Micronics people tell me that they "used the Micronics emulation until the introduction of the current NX series when we switched to the IBM emulation." The IBM emulation appears to be the same as the Epson mode, except that it has a different set of special character symbols — in fact, many current Epson-compatibles have an optional IBM mode.

The Micronics mode and the Epson mode are quite similar, although with aggravating differences. Okidata and Axiom are way out in left field. Since Micronics, Epson and Panasonic (which is basically Epson-compatible) seem to be by far the most popular in the TI community, and most software is written for them, it might be wise to avoid the Okidata. I have also seen mention of problems with Diablo and Centronics, but I have no information on those.

Any of the ASCII characters from 0 to 127 can be used as a printer control code. If the ASCII is above 31, it must be preceded by ASCII 27, known as the escape code, which is universally used to alert the printer that the ASCII codes that follow it are to be interpreted as controls rather than printed as characters. If the printer recognizes an ASCII code below 31, or one or more ASCII immediately following ASCII 27, as a valid control code, it acts upon them but does not print them. This is why, if you insert "control U" codes in a line of text, the text will be shifted left. However, if the codes are not recognized as valid, the ASCII below 32 or above 126 are printed as a blank space, the others are printed as the characters they represent. This is why that puzzling E, G, S, or whatever, shows up on the first line of a printout, if a program is, not compatible with your printer.

Some printer commands require a sequence of three or more ASCII codes, of which the first is 27, the second could be anything above 31 and the remainder could be anything at all. If your printer does not recognize the second ASCII as valid, but then comes to an ASCII below 31 which it does recognize, it acts on that ASCII as if it was a single command — which is why your printer sometimes "goes crazy." The ASCII below 27 are standardized, and many of them have names, such as BEL for 7 (activates buzzer) which are also commonly used in telecommunications. ASCII 10 (linefeed), 12 (advance to next top of form) and 13 (carriage return) seem to be universally recognized. For some reason, Panasonic owners seem to have trouble with linefeeds when running programs written for other printers.

ASCII codes below 27 are not preceded by the escape code 27. Some printers will optionally recognize 14 (double width for one line) and 15 (cancel 14) preceded by 27, but programmers should avoid this since other printers will treat the 27 as a

(See Page 23)

Printer reference list makes escape codes easier to find

By MICKEY CENDROWSKI

For those who may be wondering why I did not include all of the printer escape codes for all of the printers that I listed in the reference sheet, let me clarify.

First, and foremost, I do not own all of these printers, nor do I have manuals for all of them. However, in my personal quest to find the printer escape codes to a Seikosha SP-1000AP printer, many people have sent me "other" printer codes in hopes that they might help me in my dilemma.

To make a long story short, my dilemma still exists, but though it might prove beneficial to many of us in the TI community if this list of printer escape codes was published.

If anyone can add to this list with additional escape codes for printers, write to me at the following address: Mickey Cendrowski, 100 Pine St., Russellton, PA 15076.

We've added one printer that wasn't included in Mickey's list, the Epson EX-800 and EX-1000.

Mickey's printer command reference sheet

| | Alphacom81 | Axiom GP-100 | Canon BJ-100 | Canon BJ-200 | Canon BJ-200e | Canon BJ-200ex | Canon BJ-230 |
|-------------------|------------|--------------|--------------|--------------|---------------|----------------|--------------|
| Reset printer | | | 27 64 | 27 64 | 27 64 | 27 64 | 27 64 |
| Condensed on | | | 15 | 15 | 15 | 15 | 15 |
| Condensed off | | | 18 | 18 | 18 | 18 | 18 |
| Double-high on | | 27 65 | 27 119 1 | 27 119 1 | 27 119 1 | 27 119 1 | 27 119 1 |
| Double-high off | | | 27 119 0 | 27 119 0 | 27 119 0 | 27 119 0 | 27 119 0 |
| Double-strike on | | | 27 71 | 27 71 | 27 71 | 27 71 | 27 71 |
| Double-strike off | | | 27 72 | 27 72 | 27 72 | 27 72 | 27 72 |
| Double-wide on | 27 14 | | 14 27 87 1 | 27 87 1 | 27 87 1 | 27 87 1 | 27 87 1 |
| Double-wide off | 27 15 | | 15 27 87 0 | 27 87 0 | 27 87 0 | 27 87 0 | 27 87 0 |
| Elite on | | | 27 77 | 27 77 | 27 77 | 27 77 | 27 77 |
| Elite off | | | 27 80 | 27 80 | 27 80 | 27 80 | 27 80 |
| Emphasized on | | | 27 69 | 27 69 | 27 69 | 27 69 | 27 69 |
| Emphasized off | | | 27 70 | 27 70 | 27 70 | 27 70 | 27 70 |
| High-quality on | | | 27 120 1 | 27 120 1 | 27 120 1 | 27 120 1 | 27 120 1 |
| High-quality off | | | 27 120 0 | 27 120 0 | 27 120 0 | 27 120 0 | 27 120 0 |
| Italics on | | | 27 52 | 27 52 | 27 52 | 27 52 | 27 52 |
| Italics off | | | 27 53 | 27 53 | 27 53 | 27 53 | 27 53 |
| Proportional on | | | 27 112 1 | 27 112 1 | 27 112 1 | 27 112 1 | 27 112 1 |
| Proportional off | | | 27 112 0 | 27 112 0 | 27 112 0 | 27 112 0 | 27 112 0 |
| Subscript on | | | 27 83 1 | 27 83 1 | 27 83 1 | 27 83 1 | 27 83 1 |
| Subscript off | | | 27 84 | 27 84 | 27 84 | 27 84 | 27 84 |
| Superscript on | | | 27 83 0 | 27 83 0 | 27 83 0 | 27 83 0 | 27 83 0 |
| Superscript off | | | 27 84 | 27 84 | 27 84 | 27 84 | 27 84 |
| Underline on | 27 69 | | 27 45 n | 27 45 n | 27 45 n | 27 45 n | 27 45 n |
| Underline off | 27 82 | | 27 45 n | 27 45 n | 27 45 n | 27 45 n | 27 45 n |
| 1/6 spacing | | | 27 50 | 27 50 | 27 50 | 27 50 | 27 50 |
| 1/8 spacing | | | 27 48 | 27 48 | 27 48 | 27 48 | 27 48 |
| n/60 spacing | | | 27 65 n | 27 65 n | 27 65 n | 27 65 n | 27 65 n |
| 7/72 spacing | | | | | | | |
| n/72 spacing | | | | | | | |
| n/144 spacing | | | | | | | |
| n/180 spacing | | | 27 51 n | 27 51 n | 27 51 n | 27 51 n | 27 51 n |
| n/216 spacing | | | | | | | |
| n/360 spacing | | | 27 43 n | 27 43 n | 27 43 n | 27 43 n | 27 43 n |

PROBLEM WITH PRINTERS —

(Continued from Page 21)

blank space. The NX-10 recognizes 27 10 as a command to reverse the paper one line and 27 12 to reverse to top of page.

The escape code 27 can be input from the TI99/4A keyboard by depressing the CTRL key and the period key together — the actual ASCII code is 155 but printers, other than the Axiom, will accept it as 27. This is handy when opening the printer in immediate mode or writing a routine for your own use, but should be avoided in programs being distributed to others be-

cause the character prints out as a blank space, which will probably confuse anyone trying to modify the program.

I have studied the manuals, and attempted to chart some of the codes, for the Gemini 10X, SG-10 and Star NX-10; Epson FX-80, FX-85/185 and its IBM mode; Panasonic KX-P1080; MX Graftrax Plus; Brother M-1009; Seikosha 550A or 550TI by Axiom; and Okidata (model unknown). Due to differences in terminology, it is not easy to relate them to each other.

The IBM mode of the Epson FX-85

seems to be entirely compatible with its Epson mode, except that it lacks some features. The FX-80 seems to be entirely compatible with the FX-85, lacking only NLQ (Near Letter Quality) and a few specialized codes. I did not get into comparing graphics capabilities of any of these printers.

The Brother M-1009 is also apparently highly compatible. The MX Graftrax Plus, another Epson model, is entirely compatible but lacks some features (no graphics

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Mickey's printer command reference sheet

| | Epson EX-800 | Epson FX-80 | Epson MX-80 | Epson LX-80 | Epson Stylus 850 | Gemini10X | GeminiSG-10 |
|-------------------|--------------|-------------|-------------|-------------|------------------|-----------|-------------|
| Reset printer | 27 64 | 27 64 | | | | 27 64 | 27 64 |
| Condensed on | 27 15 | 27 15 | 27 15 | | | 27 15 | 27 15 |
| Condensed off | 27 18 | | | | | | |
| Double-high on | | | | | | | |
| Double-high off | | | | | | | |
| Double-strike on | 27 71 | 27 71 | 27 71 | | | 27 71 | 27 71 |
| Double-strike off | 27 72 | | | | | | |
| Double-wide on | 27 87 1 | 27 87 1 | 27 14 | | | 27 87 1 | 27 87 1 |
| Double-wide off | 27 87 0 | | | | | | |
| Elite on | 27 77 | 27 77 | | | | 27 66 2 | 27 66 2 |
| Elite off | | | | | | | |
| Emphasized on | 27 69 | 27 69 | | | | 27 69 | 27 69 |
| Emphasized off | 27 70 | | | | | | |
| High-quality on | 27 120 1 | 27 120 1 | | | | | 26 66 4 |
| High-quality off | | | | | | | |
| Italics on | 27 52 | 27 52 | | | | 27 52 | 27 52 |
| Italics off | 27 53 | | | | | | |
| Proportional on | 27 112 1 | 27 112 | | | | | 27 112 |
| Proportional off | 27 112 0 | | | | | | |
| Subscript on | 27 83 1 | 27 83 1 | | | | 27 83 1 | 27 83 1 |
| Subscript off | 27 84 | | | | | | |
| Superscript on | 27 83 0 | 27 83 0 | | | | 27 83 0 | 27 83 0 |
| Superscript off | 27 84 | | | | | | |
| Underline on | | 27 45 1 | | | | 27 45 1 | 27 45 1 |
| Underline off | | | | | | | |
| 1/6spacing | 27 50 | 27 50 | 27 50 | | | 27 50 | 27 50 |
| 1/8spacing | 27 48 | 27 48 | 27 48 | | | 27 48 | 27 48 |
| n/60spacing | | | | | | | |
| 7/72spacing | 27 49 | 27 49 | 27 49 | | | 27 49 | 27 49 |
| n/72spacing | 27 65 n | 27 65 n | 27 65 n | | | 27 65 n | 27 65 n |
| n/144spacing | | | | | | 27 51 n | 27 51 n |
| n/180spacing | | | | | | | |
| n/216spacing | 27 51 n | 27 51 n | | | | | |
| n/360spacing | | | | | | | |

DOWNLOADING FONTS —

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SG-10/15 was a transitional hybrid, switchable by DIP switch 2-2 between the Micronics mode and the IBM mode. The Micronics mode is completely compatible with the Gemini 10X, except for download characters, and with some additional features — NLQ and proportional printing, and a slashed zero option. The IBM mode seems to be compatible with the Epson standard. This printer was superseded by the Star NX-10, which is again Epson-compatible.

A major incompatibility between programs written for the Gemini 10X or SG-10, and Epson-compatible printers is that Micronics recognizes 27 66 1 to select pica, 27 66 2 to select elite and 27 66 3 for compressed, and on the SG-10 also 27 66 4 to select NLQ and 27 66 5 to cancel it. On Epson/IBM printers, 27 66 is the beginning of a series of codes used to set vertical tabs. Actually, since pica is the default, there is no need to program for it except to cancel condensed print, for which purpose 18 is recognized by both Micron-

ics and Epson. (Avoid using 27 80 to return to pica because Micronics does not understand it and might misinterpret it to change default tabs.)

Similarly, 15 will select condensed print on both the Micronics and Epson. Unfortunately, there is no compatible code for elite; Epsoms use 27 77 to select elite, but 27 77 n is used by the 10X, SG-10 to set the left margin “n” spaces, so that misinterpreting these codes can be catastrophic! The Epsoms use 27 108 n to set the

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Mickey's printer command reference sheet

| | Panasonic KX-P112 | Seikosha GP-550A | Seikosha SP-1000A | Seikosha SP-2000A | Seikosha SP-1000A | Seikosha SP-1200A | Star NX-10 |
|-------------------|-------------------|------------------|-------------------|-------------------|-------------------|-------------------|------------|
| Reset printer | 27 64 | | | 27 99 | 27 64 | 27 64 | 27 64 |
| Condensed on | 15 | 27 67 | | 27 113 | 15 | 15 | 15 |
| Condensed off | 18 | | | | 18 | 18 | 18 |
| Double-high on | 27 119 1 | | | | | | 27 104 1 |
| Double-high off | 27 119 0 | | | | | | 27 104 0 |
| Double-strike on | 27 71 | | | | 27 71 | 27 71 | 27 71 |
| Double-strike off | 27 72 | | | | 27 72 | 27 72 | 27 72 |
| Double-wide on | 27 87 1 | 27 14 | | 14 | 27 87 1 | 27 87 1 | 27 87 1 |
| Double-wide off | 27 87 0 | 27 15 | | 15 | 27 87 0 | 27 87 0 | 27 87 0 |
| Elite on | 27 77 | 27 69 | | 27 69 | 27 77 | 27 77 | 27 77 |
| Elite off | | | | | 27 80 | 27 80 | 27 80 |
| Emphasized on | 27 69 | 27 35 | | | 27 69 | 27 69 | 27 69 |
| Emphasized off | 27 70 | 27 36 | | | 27 70 | 27 70 | 27 70 |
| High-quality on | | | | 27 72 | 27 120 1 | 27 120 1 | 27 120 1 |
| High-quality off | | | | | 27 120 0 | 27 120 0 | 27 120 0 |
| Italics on | 27 52 | 27 66 | | 27 105 49 | 27 52 | 27 52 | 27 52 |
| Italics off | 27 53 | | | 27 105 48 | 27 53 | 27 53 | 27 53 |
| Proportional on | 27 112 1 | 27 80 | | 27 112 | 27 112 1 | 27 112 1 | 27 112 1 |
| Proportional off | 27 112 0 | | | | 27 112 0 | 27 112 0 | 27 112 0 |
| Subscript on | 27 83 1 | 27 68 | | 27 98 50 | 27 83 1 | 27 83 1 | 27 83 1 |
| Subscript off | 27 84 | | | 27 98 48 | 27 84 | 27 84 | 27 84 |
| Superscript on | 27 83 0 | 27 85 | | 27 98 49 | 27 83 0 | 27 83 0 | 27 83 0 |
| Superscript off | 27 84 | | | 27 98 48 | 27 84 | 27 84 | 27 84 |
| Underline on | 27 45 1 | 27 88 | | 27 88 | 27 45 1 | 27 45 1 | 27 45 1 |
| Underline off | 27 45 0 | 27 89 | | 27 89 | 27 45 0 | 27 45 0 | 27 45 0 |
| 1/6 spacing | 27 50 | 27 54 | | 27 65 | 27 50 | 27 50 | 27 50 |
| 1/8 spacing | 27 48 | 27 56 | | 27 66 | 27 48 | 27 48 | 27 48 |
| n/60 spacing | 27 65 n | | | | | | |
| 7/72 spacing | | | | | 27 49 | 27 49 | 27 49 |
| n/72 spacing | | | | | 27 65 n | 27 65 n | 27 65 n |
| n/144 spacing | | | | 27 84 n | | | |
| n/180 spacing | 27 51 n | | | | | | |
| n/216 spacing | | | | | 27 51 n | 27 51 n | 27 51 n |
| n/360 spacing | 27 43 n | | | | | | |

PROBLEM WITH PRINTERS —

(Continued from Page 25)

left margin, but this is not recognized by Micronics.

The other major difference is 27 51 n, which sets the linefeed to n/144-inch on the IOX and on the SG-10 in Star mode, but to n/216-inch on Epson compatibles and on the SG-10 in IBM mode. The "fix" here is to multiply the value of "n" by 1.5 when running a Micronics program on an Epson printer. The same applies to 27 74 n, which sets a one-time linefeed of n/144-inch or n/216-inch.

Micronics uses 27 82 n to set the margin at the top of the page, but Epson recognizes this as a command to switch to one of the international character sets, which can produce some interesting results. The Epsoms use 27 114 n to set the top margin, but Micronics doesn't know this one. Micronics uses 27 55 n to select an international character set, but the Epson will read 27 55 as a command to cancel 27 54 which selected a special character set. I'm not sure what that means, but the results will surely be undesirable.

There may also be a conflict between the Micronics 27 98 n, which performs a one-time tab of "n" columns, and the Epson 27 998 n n 0, which "sets vertical tabs in channel," whatever that means. Several codes common to both Epson and Micronics use 1 as the third ASCII code to turn on a feature and 0 to cancel it. For instance, 27 87 1 turns on double width (expanded) print and 27 87 0 cancels it. Also, subscript is selected by 27 83 1 and superscript by 27 83 0. Some of the Epson/IBM compatibles will accept either an

ASCII or numeric 0 or 1 — i.e., "1" or CHR\$(1) — for that third code, for which reason you will often see program coding such as CHR\$(27);"W1". These should be avoided when programming for general distribution, because the older Micronics recognize only the ASCII. If I understand my notes from the manual correctly, the Panasonic KX-PI080 also accept ASCII 129 or 177 in lieu of ASCII 49 or "1" and ASCII 128 or 176 in lieu of 48 for "0"!

According to the manuals, ASCII 141 can be substituted for ASCII 13 on the Brother M-1009, and ASCII codes 128 to 255 can be substituted for 0 to 127, respectively, on the Epson. But there seems to be no good reason to confuse the other printers by using those.

Different printers also have different sets of symbols in ASCII 160-254. The Gemini IOX and SG-10 in Star mode has one set, the SG-10 in IBM mode has an entirely different set which, I presume, is also on the Epson in IBM mode. And I

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Mickey's printer command reference sheet

| | Star NX-15 | Star NX-1000 | Star NX-1001 | Star NX-2420 | T199/4A PHP 2500 |
|-------------------|------------|--------------|--------------|--------------|------------------|
| Reset printer | | 27 64 | 27 64 | 27 64 | 64 |
| Condensed on | | 15 | 15 | 15 | 15 |
| Condensed off | | 18 | 18 | 18 | 18 |
| Double-high on | | 27 119 1 | 27 104 1 | 27 119 1 | |
| Double-high off | | 27 119 0 | 27 104 0 | 27 119 0 | |
| Double-strike on | | 27 71 | 27 71 | 27 71 | 27 71 |
| Double-strike off | | 27 72 | 27 72 | 27 72 | 27 72 |
| Double-wide on | | 27 87 1 | 27 87 1 | 27 69 1 | 14 |
| Double-wide off | | 27 87 0 | 27 87 0 | | 20 |
| Elite on | | 27 77 | 27 77 | 27 77 | |
| Elite off | | | 27 80 | | |
| Emphasized on | | 27 69 | 27 69 | 27 69 | 27 69 |
| Emphasized off | | 27 70 | 27 70 | 27 70 | 27 70 |
| High-quality on | | 27 120 1 | 27 120 1 | | |
| High-quality off | | 27 120 0 | 27 120 0 | | |
| Italics on | | 27 52 | 27 52 | 27 52 | |
| Italics off | | 27 53 | 27 53 | 27 53 | |
| Proportional on | | 27 112 1 | 27 112 1 | 27 112 1 | |
| Proportional off | | 27 112 0 | 27 112 0 | | |
| Subscript on | | 27 83 1 | 27 83 1 | 27 83 1 | |
| Subscript off | | 27 84 | 27 84 | 27 84 | |
| Superscript on | | 27 83 0 | 27 83 0 | 27 83 0 | |
| Superscript off | | 27 84 | 27 84 | 27 84 | |
| Underline on | | 27 45 1 | 27 45 1 | 27 45 1 | |
| Underline off | | 27 45 0 | 27 45 0 | 27 45 0 | |
| 1/6 spacing | | 27 50 | 27 50 | 27 50 | 27 50 |
| 1/8 spacing | | 27 48 | 27 48 | 27 48 | 27 48 |
| n/60 spacing | | | | | |
| 7/72 spacing | | 27 49 | 27 49 | | |
| n/72 spacing | | 27 65 n | 27 65 n | | 27 65 n |
| n/144 spacing | | | | | |
| n/180 spacing | | | | | |
| n/216 spacing | | 27 51 n | 27 51 n | | |
| n/360 spacing | | | | 27 43 n | |

PROBLEM WITH PRINTERS —

(Continued from Page 26)

think that the Epson has still a different set. This causes problems when running some banner or graphing programs which access these characters. Different printers also vary in the number of international character sets available and the sequence of their access codes.

I have never gotten involved in graphics printing, and I failed to chart all the graphics codes when I had borrowed manuals, so I cannot comment on compatibility here. I have not heard of any problems except that some Axiom models are apparently incapable of graphics, and there is also sometimes a problem with thin white horizontal lines through the picture possibly because of the n/144-inch and n/216-inch difference in line spacing between

Micronics and Epson.

With downloadable characters, we find another jungle which I'm not too anxious to explore. The Gemini-10X has a simple and efficient method, and I once published in MICROpendium (July 1985) a DOWN-CHAR program to design these characters on screen, dump them to the printer for editing, and save them to disk. I have also written a routine which will convert a sequence of any length of standard or reidentified screen characters into a D/V80 file of download character printer codes.

But, here the SG-10 Star mode departs from compatibility with the 10X. Its system offers much greater capabilities but is also complex and entirely different. I tried, and failed, to convert my routine for use on the Epson FX-85; its system is some-

what similar to that of the SG-10 but, again, different. I am told that the Epson RX-80 does not support downloadable characters, the LX-80 only allows six and some Panasonics allow only 40 of them. I have seen an article describing a method of creating downloadable NLQ characters but, unfortunately, the name of the printer being used was not mentioned.

This article is obviously incomplete and probably inaccurate. Perhaps it will inspire someone to write something better. In the meantime, programmers could help out a great deal by putting REMs in their programs giving the name of the printer they are writing for, and REMs after every printer control command indicating its purpose. I regret that I have not been in the habit of doing that.

Program scans text files for recurring words

By W. LEONARD TAFFS

Taffs is a member of the Southwest 99ers. This article first appeared in the group's newsletter.—Ed.

It is desirable to omit unnecessary repetitions of words, such as "that," when writing. Using M'sieur. Poirot's words, this "started up the gray cells." Wouldn't it be nice to have a word-finder to scan texts for repeated words?

Although such programs have been written already, here is another one. It finds and counts all records that have at least one occurrence of a word, part of a word, or phrase entered by the user. It does not sum any further recurrences within an individual record.

After preliminary input file prompts, the user enters a word, phrase, or part of a word. The next option is a chance to enter an alternate spelling, such as "you" or "You." If you don't need to enter an alternate spelling, press Enter to bypass this prompt. However, you may wish to use the alternate to find a second item, unrelated to the first. The program will search for both.

The next prompt "consider space" asks you to enter a zero for no or a 1 for yes. A "1" for yes appends spaces in front and af-

ter your word to ensure the record search will not include what I call "derivatives." Without these spaces, the program would find not only "you," but its derivatives, such as "your," "yours," "yourself," etc. The appended spaces facilitate finding single-letter words as "I" or "a", etc.

PRINTER OPTION AND CALL KEY

Entering "1" at the beginning prompt "Use printer?" will send results to your printer. Records have the record number and page number appended. The page numbers are based on 58 records per page, which corresponds to TI-Writer/formatter paging. A CALL KEY is included to allow halting the display during reading of the file. When halted, you can press "R" to go back and search again, or press "Q" to quit.

The Find String function of TI-Writer and its clones will find all occurrences (including recurrences within a single record), but you have to jot down each occurrence. Also, it will not give you a total of occurrences. With long files, this means some eye-strain. In the program below the record number, as well as page number, are displayed to tell you where you can find occurrences in your document. If you are viewing documents longer than 12

pages, you will need to add more lines to the PAGE GOSUB at line 300. The increments, as you can see in the listing, are by 58s. Pages 13 and higher need to preface line 310.

This program was used to scan this article for the use of "that." Seven occurrences were found in a document that is less than three pages long. Most were either not needed, or other words were better choices in their places. One could use this program to check correspondence or resumes to find how many times "I," "me," or "my" were used. What about comparing the number of times "you" is used with the number of times "your" is used? Correspondence that is laden with "I" and "my" tell the reader something about the writer that may be unintended. Some teachers respond very well to papers that are not full of first person pronouns, "you know," "like" and other overused words.

SRCHRECUR

```
1 REM [SRCHRECUR] 1-8-96
  By W.Leonard Taffs, SW99ers
  TUCSON, ARIZONA 1092
10 CALL CLEAR :: DISPLAY AT(
  (See Page 28)
```

RECURRING WORDS —

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```

5,4):"WORD RECURRENCE SEARCH
": : : "By W. Leonard Taffs,
SW99ers": "TUCSON, AZ." !088
20 DISPLAY AT(16,1): "Enter "
"1" at SPACE CONSIDER Promp
t to Isolate Word or Lette
r from "Derivatives"." !06
9
30 CALL KEY(0,K,S):: IF S<1
THEN 30 !100
40 PRINT :: INPUT "USE PRINT
ER? (0/1) ":PR :: IF PR THEN
OPEN #3:"PIO",VARIABLE 96 !
168
50 CALL CLEAR :: INPUT "ENTE
R FILE NAME: ":FN$ :: PRINT
:: INPUT "DSK #? ":DSC$ :: P
RINT :: FN$="DSK"&DSC$&". "&F
N$ :: PRINT :FN$, "OK? ": !1
88
60 INPUT "(Y/N) ":K$ :: IF K
$<>"Y" AND K$<>"Y" THEN 50 !
116
70 PRINT :: INPUT "ENTER WOR
D TO FIND: ":FND$ :: PRINT !
146
80 INPUT "ALTERNATE? ":FND2$
:: IF FND2$="" THEN CUT=1 !
083
90 PRINT :: INPUT "CONSIDER
SPACE? (0/1) ":SP :: IF SP T
HEN FND$=CHR$(32)&FND$&CHR$(
32):: FND2$=CHR$(32)&FND2$&C
HR$(32)!123
100 ON ERROR 10 :: OPEN #1:F
N$,INPUT :: CALL CLEAR !048
110 CT=CT+1 :: LINPUT #1:A$
:: GOSUB 300 !227
120 DISPLAY AT(2,1):"File: "
;FN$ :: DISPLAY AT(3,1):"Sea
rching: ";FND$;" ";FND2$ ::
DISPLAY AT(2,24):CT :: DISPL
AY AT(4,2):"Pg.";PG !194
130 IF EOF(1)THEN B$=A$ :: G
OTO 230 !165
140 IF POS(A$,FND$,1)THEN FC
T=FCT+1 :: P=P+1 !009
150 IF CUT THEN 160 ELSE IF
POS(A$,FND2$,1)THEN FCT=FCT+
1 :: P2=P2+1 !169
160 IF (P>=1)+(P2=1)THEN DIS
PLAY AT(12,8):RPT$(" ",84)::
DISPLAY AT(10,8):"Found: ";
FCT: : :A$;" ";CT;"Pg.";STR$
(PG):: IF PR THEN 170 ELSE P
,P2=0 !056
170 IF PR THEN IF (P>=1)+(P2
>=1)THEN PRINT #2:FCT;" ";A$
;" ";CT;"P.";PG :: P,P2=0 !0
45
180 CALL KEY(0,K,S):: IF S<1
THEN 220 !034
190 IF (K=82)+(K=114)THEN CL
OSE #1 :: CT,CUT,FCT,P,P2,PG
,PR,SP=0 :: GOTO 10 !020200
IF (K=81)+(K=113)THEN CLOSE
#1 :: PRINT "USER TERMINATE
D PROGRAM": : : : STOP !048
210 CALL KEY(0,K,S):: IF S<1
THEN 210 !024
220 GOTO 110 !189
230 REM ** EOF ** !124
240 IF POS(A$,FND$,1)THEN FC
T=FCT+1 !110
250 IF CUT THEN 260 !238
260 PRINT :""";FND$;" ";FND
2$;" "" occurs ";FCT;" times
in";PG;" pages." : : "in File:
";SEG$(FN$,6,10)!163
270 IF PR THEN PRINT #3: : :
: PRINT #3:""";FND$;" ";FND
2$;" "" occurs ";FCT;" times
in";PG;" pages." : : "in File:
";SEG$(FN$,6,10)!243
280 CLOSE #1 !151
290 END !139
300 ! ** PAGE ** !168
310 IF CT>638 THEN PG=12 ::
GOTO 430 !249
320 IF CT>580 THEN PG=11 ::
GOTO 430 !244
330 IF CT>522 THEN PG=10 ::
GOTO 430 !239
340 IF CT>464 THEN PG=9 :: G
OTO 430 !203
350 IF CT>406 THEN PG=8 :: G
OTO 430 !198
360 IF CT>348 THEN PG=7 :: G
OTO 430 !202
370 IF CT>290 THEN PG=6 :: G
OTO 430 !197
380 IF CT>232 THEN PG=5 :: G
OTO 430 !192
390 IF CT>174 THEN PG=4 :: G
OTO 430 !196
400 IF CT>116 THEN PG=3 :: G
OTO 430 !191
410 IF CT>58 THEN PG=2 :: GO
TO 430 !146
420 IF CT<59 THEN PG=1 !017
430 RETURN !136

```

QuikAccess

Managing data with TI-Writer

By BILL GASKILL

Author's note: credit for the idea behind this program, called QuikAccess, goes to Jim Peterson. In one of his many articles about the wonders of using the TI, he coined the term "The TI-Writer Filing Cabinet," while explaining how a word processor can be used for much more than just writing letters.

Have you ever wished for an easy way

to keep track of all the hardware and software you've purchased for your computer over the years? Don't despair. You can create such a system in TI-Writer or any of its clones without much work. Then, using the Extended BASIC program that follows this article, you'll be able to access the data in your inventory without ever loading it. Here's how:

Set up a table in the TI-Writer editor

like the one shown in Fig. 1, paying close attention to the column positioning of the ITEM, NUMBER, DATE, RETAIL, PAID, and VENDOR fields. The numbers in the first row of the first table shown below are included only for this illustration as a column guide during setup. You should not include them in the file that you eventually save to disk.

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QUIKACCESS —

(Continued from Page 28)

The underline characters after ADVENTURE HINT BOOK must be part of the file because QuikAccess uses them as an end-of-file marker. All entries you make in the file must also be in between the dashes at the top of the file and the underline characters at the end of the file just as the five records are in the illustration. In other words, the underlines must always occupy the last record in the file.

When you are done setting the file up in your TI-Writer editor, set the tabs so you'll be able to move quickly from field-to-field during data entry. Each tab would of course be set to the left-most character in the field. For example, the tab for NUMBER would be set at column 36, the tab for DATE would be set at column 45 and so on.

When you are done with the file setup it should look like the one shown in Fig. 2.

If it does, then save the file to a disk in DSK1 using INVENTORY as the filename. Make sure to use the SF function so the tab stops are saved with the file. That way you'll still have them for the next time you enter data.

When you begin data entry, make sure to put zeros in the RETAIL and PAID fields where you don't have a RETAIL price or an amount that you PAID for the item. If you leave any entry blank in RETAIL or PAID the program will error out and fail to produce the desired results.

Sorting data in your INVENTORY file will have to be done with TI-Sort or Peter Hoddie's Sort Experiment, or your favorite sort utility. Modifying and deleting records is, of course,

done quickly and easily right in the TI-Writer editor.

QuikAccess,

will let you total and display the RETAIL costs and purchase (PAID) costs in the entire file. You can also selectively search for and print records from the file using Product Name (ITEM data, in other words), purchase DATE or VENDOR name fields. Likewise, you may print the entire contents of the file by selecting Product Name search and then pressing Enter at the "Enter data to find" prompt without entering any data to look for.

All three search options (menu choices 3, 4 and 5) include a "Purchase total" at the end of the printout. If you don't have a printer you can erase the printer name in the Set up Printer option and QuikAccess will print everything to the screen.

Lastly, the default Esc and Page Eject codes under Set up Printer are the codes for Epson and Epson-compatible printers. If they don't work for you, then substitute the ones that work for your brand of printer.

QUIKACCESS

```

1 !QuikAccess !111
100 IMAGE #####.## !150
110 CALL SCREEN(5):: FOR C=0
  TO 14 :: CALL COLOR(C,16,5)
  :: NEXT C !137
120 A=2 :: LN=1 :: EC=27 ::
  PE=12 :: PR$="PIO" :: CALL C
  HAR(126,"FFFF")!243
130 ON WARNING NEXT :: ON BR
  EAK NEXT :: ON ERROR 480 !13
  2
140 DISPLAY AT(1,10)ERASE AL
  
```

```

L:"QuikAccess": :RPT$("~",28
)!009
150 DISPLAY AT(4,1):"1 - Ret
  ail price total": : "2 - Purc
  hase price total" !075
160 DISPLAY AT(8,1):"3 - Pro
  duct name search": : "4 - Pur
  chase date search" !145
170 DISPLAY AT(12,1):"5 - Ve
  ndor name search": : "Fctn 7
  - Set up printer": :RPT$("~"
  ,28): :RPT$("~",28)!136
180 CALL KEY(0,K,S):: IF K=1
  THEN 270 ELSE IF K=15 THEN
  END ELSE IF K<49 OR K>53 THE
  N 180 !047
190 OPEN #1:"DSK1.INVENTORY"
  ,INPUT ,DISPLAY ,VARIABLE !1
  11
200 IF PR$="" THEN 210 ELSE
  OPEN #A:PR$,OUTPUT !157
210 ON K-48 GOTO 220,230,240
  ,250,260,270 !089
220 X=52 :: Y=6 :: GOSUB 300
  :: DISPLAY AT(17,1):"Total
  retail $" :: DISPLAY AT(1
  7,18):USING 100:D :: CLOSE #
  1 :: GOTO 470 !054
230 X=59 :: Y=6 :: GOSUB 300
  :: DISPLAY AT(17,1):"Total
  purchases $" :: DISPLAY AT(1
  7,18):USING 100:D :: CLOSE #
  1 :: GOTO 470 !042
240 C$="" :: X=6 :: Y=30 ::
  GOSUB 360 :: CLOSE #1 :: GOT
  O 470 !069
250 C$="" :: X=46 :: Y=5 ::
  
```

(See Page 30)

Fig. 2

| ITEM | NUMBER | DATE | RETAIL | PAID | VENDOR |
|------|--------|------|--------|------|--------|
|------|--------|------|--------|------|--------|

Fig. 1

| ITEM | NUMBER | DATE | RETAIL | PAID | VENDOR |
|----------------------------|----------|-------|--------|------|-----------|
| A-MAZE-ING | PHM 3030 | 06/92 | 39.95 | 4.95 | TEXCOMP |
| ABC'S OF ASSEMBLY LANGUAGE | | 07/84 | 10.95 | 0.00 | TEXCOMP |
| AC CIRCUIT ANALYSIS | PHT 6044 | 03/92 | 3.95 | 3.95 | TM DIRECT |
| AC CIRCUIT ANALYSIS | PHT 6044 | 03/92 | 3.95 | 3.95 | TM DIRECT |
| ADVENTURE HINT BOOK | | 02/92 | .95 | .95 | TEXCOMP |

QUIKACCESS —

(Continued from Page 29)

```

GOSUB 360 :: CLOSE #1 :: GOT
O 470 !075
260 C$="" :: X=66 :: Y=11 ::
GOSUB 360 :: CLOSE #1 :: GO
TO 470 !123
270 DISPLAY AT(20,1):"Esc Co
de:";EC;"Page Eject:";PE: :P
R$ :: ACCEPT AT(20,11)SIZE(-
2)VALIDATE(NUMERIC):EC !125
280 ACCEPT AT(20,26)SIZE(-2)
VALIDATE(NUMERIC):PE :: ACCE
PT AT(22,1)SIZE(-28):PR$ !23
5
290 IF PR$="" THEN A=0 :: GO
TO 140 ELSE GOTO 140 !048
300 C,D,R=0 !246
310 LINPUT #1:A$ :: B$=SEG$(
A$,X,Y):: IF SEG$(B$,1,1)="P
" OR SEG$(B$,1,1)="-" OR SEG
$(B$,1,1)="_" THEN 330 !221
320 C=VAL(B$):: D=D+C :: R=R
+1 :: DISPLAY AT(22,1):"Reco
rd:";R !151
330 CALL KEY(0,K,S):: IF K=1

```

```

5 THEN 350 !210
340 IF SEG$(B$,1,1)="_" THEN
350 ELSE 310 !199
350 RETURN !136
360 DISPLAY AT(22,1):"Enter
data to find:" :: ACCEPT AT(
24,1):C$ :: DISPLAY AT(17,5)
:"Press Fctn-9 to abort" !23
3
370 DISPLAY AT(22,1):"Correc
t? (Y/N)" :: CALL KEY(0,K,S)
:: IF K=89 THEN 380 ELSE IF
K=78 THEN 360 ELSE IF K=15 T
HEN 480 ELSE 370 !183
380 GOSUB 490 !059
390 LINPUT #1:A$ :: B$=SEG$(
A$,X,Y):: IF SEG$(A$,6,1)="_
" THEN 440 !072
400 IF SEG$(A$,59,1)="P" OR
SEG$(A$,59,1)="-" OR SEG$(A$
,59,1)="_" THEN 430 !084410
IF C$=SEG$(B$,1,LEN(C$)) THEN
PRINT #A:A$ :: D$=SEG$(A$,5
9,6):: C=VAL(D$):: D=D+C ::
LN=LN+1 !029

```

```

420 IF LN>58 THEN PRINT #A:C
HR$(EC)CHR$(PE):: LN=1 :: GO
SUB 490 !136
430 CALL KEY(0,K,S):: IF K=1
5 THEN 450 !054
440 IF SEG$(A$,6,1)="_" THEN
450 ELSE 390 !127
450 PRINT #A:" Purchase
total is $";D :: IF A>0 THEN
CLOSE #A !083
460 RETURN !136
470 DISPLAY AT(24,1):" PRESS
<ENTER> TO CONTINUE." :: CA
LL KEY(0,K,S):: IF K<>13 THE
N 470 :: GOTO 140 !150
480 RUN !169
490 PRINT #A:" ITEM
NUMBER
DATE RETAIL PAID VENDO
R" !128
500 PRINT #A:" -----
-----
-----" :: RETURN !062

```

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Drawing flowers in Myarc BASIC

The following program requires Myarc Extended BASIC or Advanced BASIC. It was written by Stephen Shaw.

The program, which we're calling MXBFLOWERS, draws flowers with varying numbers of petals, or it draws spirals. This selection is made randomly by the program. The program pauses at every 180 degrees, allowing the user to press space to continue or any other key to halt. After the drawing terminates, a star appears at the bottom left of the screen.

This program was originally written using the cartridge version of Myarc Extended BASIC but works fine on Advanced BASIC. It was entered and run using ABASIC 3.0.

MXBFLOWERS

```

100 XS=16 :: YS=21 :: Z>3.15
110 XOF=90 :: YOF=126
120 RANDOMIZE :: CALL GRAPHI
CS(3)
130 CALL POINT(0,XOF,YOF)

```

```

140 FLAG=0
150 ON ERROR 160 :: GOTO 170
160 ON ERROR 160 :: RETURN N
EXT
170 MULT=INT(RND*32)+1
180 IF RND<0.3 THEN MULT=RND
190 IF MULT<15 THEN YS=YS/2
:: XS=XS/2 :: IF MULT<8 THEN
YX=YS/3 :: XS=XS/3
200 IF MULT<4 THEN YS=YS/1.5
:: XS=XS/1.5
210 IF RND<0.3 THEN FLAG=1 :
: MULT=0
220 TEMP=RND*0.12+0.01
230 FOR T=0 TO 6*PI+.05 STEP
0.025
240 IF T=Z OR T=2*Z OR T=3*Z
OR T=4*Z OR T=5*Z THEN CALL
PAUSE(P) :: IF P=20 THEN T=
20
250 IF FLAG=0 THEN R=R+RR ::
RR=SIN(T*MULT) ELSE R=TEMP+
R

```

(See Page 31)

MXBFLOWERS —

(Continued from Page 30)

```

260 REM
270 IF RND<0.8 AND FLAG=1 TH
EN RR=SIN(MULT*T) ELSE IF FL
AG=1 THEN RR=RR+TEMP
280 REM
290 CALL DRAWTO(1,SIN(T)*R*X
S+XOF,COS(T)*R*YS+YOF)
300 NEXT T
310 REM
320 CALL WRITE(1,24,28,"*")
330 CALL KEY(0,A,B) :: IF B<
1 THEN 330
340 IF A=32 THEN RUN ELSE CA
LL LINK("DUMP",0,16)
350 OPEN #1:"PIO"
360 PRINT #1:" ":"MULT=";MUL
T:"FLAG=";FLAG:"TEMP=";TEMP:
"": ""
370 CLOSE #1 :: RUN
380 STOP
390 SUB PAUSE(P)
400 CALL WRITE(1,24,4,"*")
410 CALL KEY(5,A,B)
420 CALL WRITE(1,24,4," ")
430 IF B<1 THEN 400
440 IF A=32 THEN P=0 ELSE P=
20
450 SUBEND
460 END

```

Sector sharing

It's like a 2-for-1 deal for your floppy disks

By MARK SCHAFER

Readers are cautioned to not use this technique with original distribution disks.
—Ed.

They say necessity is the mother of invention. And in this case, I'm the father. I think I've discovered something you'll find intriguing. Take a look at the following disk catalog:

If you don't notice anything strange, add up the sizes of the files and compare the total to the number of sectors used.

| FILENAME | SIZE | TYPE | P |
|----------|------|---------|---|
| AS | 33 | PROGRAM | |
| AT | 22 | PROGRAM | |
| CF | 31 | PROGRAM | |
| CB | 25 | PROGRAM | |
| CHARA1 | 5 | PROGRAM | |
| D1 | 33 | PROGRAM | |
| D2 | 33 | PROGRAM | |
| D3 | 29 | PROGRAM | |
| DU | 33 | PROGRAM | |
| DV | 33 | PROGRAM | |
| DW | 29 | PROGRAM | |
| EA | 9 | PROGRAM | |
| ED | 33 | PROGRAM | |
| EE | 19 | PROGRAM | |
| LH | 12 | PROGRAM | |
| LOAD | 31 | PROGRAM | |
| RD | 12 | PROGRAM | |
| SL | 10 | PROGRAM | |
| SYSCON | 6 | PROGRAM | |
| UL | 4 | PROGRAM | |

How did I do that? Why did I do that? That's what I'm here to tell you.

The catalog is from my Funnelweb disk. What I've done is to make it so that

some files take up the same space as other files, which is the concept I called "sector sharing."

First, let's get into why I did it. I have Disk Utilities by John Birdwell. One of its features is the ability to change to default system setup. The trouble is sometimes I want the defaults to be one way, and sometimes I want them another. Now, I could change the setup in the program when I need to, but this is some trouble. The ideal solution would be to have two or more copies of the program on the disk and boot the one with the defaults I want at the time. But I have only one SSSD disk drive, so I clearly don't have the room for this. Just as limited memory can lead to tight coding, limited disk space can lead to creative disk utilization.

All I wanted to do was to change the first sector. So I got the idea to create a file that would have a different first sector, but share the rest of the sectors with the original file!

The steps to do this, I believe, can be done in any order. Basically, it goes like this:

- Create the new header sectors.
- Create the modified sector.
- Update the disk catalog.
- Mark the used sectors.
- Rename the new files.

The beauty is that Disk Utilities itself can handle all of the above in one session, but I suppose any sector editor and disk manager will do.

Let's create the new header sectors first. Each file on a disk has to have a sector

that identifies the type of file it is and where it is on the disk. The first step here is to find out which sectors are free. One way to do this is to look at sector 0 starting at byte >38. Look for non-F characters, and figure out which sectors correspond to the blank bits.

Or you could use Disk Utilities to print the disk report and figure out which sectors are not being used by a file. In my case, sectors >13 to >16 were available. You could put them anywhere, but the normal thing is to put header sectors in the >02 to >21 range.

Next, I need to know where on the disk the files I'm going to copy are located, as well as where their header sectors are located. The disk report contains this information.

Now you edit the header sector of these files. Go to the first one. You need to change two things on it. Change the name to something that would fall at the end of the disk catalog. This way we don't have to insert when we change sector one. I called my new files ZX, ZY and ZZ.

For the file that has the modified sector, you need to change the segments starting at byte >1C. Insert three bytes at this point. This may be a little more difficult with some sector editors. Put in the following three bytes at 1C: yz 0x 00, where xyz is the sector we're going to create in step 2. In my case, it was >16, so I inserted 16 00 00. Then add one to the next byte so, if its >57, make it >58. This process makes it so this files is in the same place as the original

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SECTOR SHARING —

(Continued from Page 31)

file except its first sector is different. If you're changing a sector in the middle, this is a bit more difficult. When you save it back, put it at the first available sector you find. For the remaining header sectors, I just simply changed their names and saved them to the next available sectors, since they are to share exactly the same sectors.

Once you've got that done, the rest of it is a cinch. To create the modified sector, simply edit the sector you wish to change, make the appropriate changes, and save it to the free sector you indicated at step 1 (>16 in my case). Normally the sectors contained in a file are higher than >21, but I didn't have any free in that area.

Next, it's time to change the disk catalog at sector one. Simply put the header sectors you created in step 1 at the first available 0000 in sector one. I appended 0013 0014 0015 to add my three new files.

The next step is to tell the disk what sectors we've used. With Disk Utilities, you just use the Mark Sector feature. With others, you may have to figure out what bits they correspond to in sector 0 and make the changes yourself.

But there are some consequences. There's the problem of copying. If you try to copy a sector sharing disk by file, the duplicate will unshare them. Also, you may get an out-of-space error. So to copy such a disk, you should use a sector copier

The last step is to rename the new files what you really want to call them. I called mine D1, D2, and D3. The last bytes have to be consecutive so that they load as one continuous program. After this, I had to configure Funnelweb to be able to load my new program. So now, when I run Disk

Utilities, I have the choice of the options in DU or the options in D1. They both load just fine.

CONSEQUENCES

But there are some consequences. There's the problem of copying. If you try to copy a sector sharing disk by file, the duplicate will unshare them. Also, you may get an out-of-space error. So, to copy such a disk, you should use a sector copier.

Then there's the problem of what happens if you want to copy the sector sharing files, but not the whole disk. If you can't do a direct copy sector x to sector x, I would recommend that you find a way to sector-copy the whole disk and delete the files you don't want. Or you could copy only one of them and start the operation over again on a new disk.

To make a copy of this 95-sector program, it took only four additional sectors: three for each new header sector, and one for the modified sector. Shorter files would need even fewer additional sectors. I could go on and make another version of this program, but I'm happy with just two.

I wonder if I have any other files I can do this to?

MICRO-REVIEWS

Cecure Geneve 9640 computer, MyMenu2+, Rave Speech Synthesizer adapter card

By CHARLES GOOD

GENEVE 9640 COMPUTER

by the Myarc division
of Cecure Electronics

Have I got a deal for you 99/4A users! How would you like to move up to 80 columns and have the pleasure of running 80-column Funnelweb? How about running modifiable disk versions of most 99/4A plug-in cartridges? Would you like

to get a GRAM Kracker and an 80-column adapter and a fancy keyboard adapter, all wrapped up into one neat hardware product. That product is the "computer on a P-box card" Geneve Computer. Geneves were out of production for several years, but now you can once again get a brand new Geneve card from the manufacturer with warranty and software (80-column word processor, Advanced BASIC, 80-column Multiplan upgrade, cartridge converter and OS for only \$200. Cecure has purchased all the rights and remaining

hardware of Myarc Inc., and is now selling new Geneve cards with a Cecure warranty. This may be the most important and cost-effective upgrade any 99/4A owner can make.

For many years the Geneve has been criticized in newsletter articles because early versions of its MDOS operating system software were buggy and because of poor design that caused this 99/4A-compatible computer on a card to overheat. These criticisms are no longer justified.

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MICROREVIEWS —

(Continued from Page 32)

I have been using my Geneve with a SCSI hard drive for more than a year and am *very* pleased with its operation. I have figured out how to do on my Geneve everything I used to do on my 99/4A and now use the Geneve for most of my routine computing work. I prefer the Geneve over my very expanded 99/4A system for several reasons.

1-My Geneve is now very stable, much less likely to crash than my 99/4A system. There is no firehose cable or cartridge to wiggle loose and cause the computer to crash. Because Extended BASIC is loaded into my Geneve's RAM every time I need it, I never have an Extended BASIC crash. Because I have a SCSI hard drive and have my Geneve's MDOS on a PFM+ flashdisk I don't have to use floppy disks or a battery-backed RAMdisk for file or DOS storage. On my 99/4A system, failure of the battery-backed RAMdisk operating system is a frequent cause of system crashes.

2-Software performs better on a Geneve. Almost all 99/4A software will run faster on a Geneve because it has a faster CPU, and there is useful Geneve software that will not run on a 99/4A. For new Geneve users there is a learning curve. It took me a while to figure out how to get Funnelweb and all my favorite 99/4A applications to run on my Geneve, but now they all work from a series of menus that appear at powerup. I even figured out how to get Spell-It working nicely on the Geneve, something I could not do from RAMdisk on my 99/4A.

3-A Geneve has standard technical features that are only available as expensive add-ons to a 99/4A. This makes the Geneve very cost-effective compared to adding the same features to a 99/4A system. The Geneve lets you a full-sized full-featured XT keyboard, provides an 80-column display with up to 256 colors and gives you the ability to load and run stock or specially modified command module software from disk or hard drive. My 99/4A system can do all these things too. My 99/4A has an 80-column card (only available from Germany these days and very expensive), a P-Gram+ GRAM device for loading cartridges from disk or

RAMdisk (no new fully built GRAM devices are currently being sold), and a full keyboard interface that takes up a lot of space because I still have to use the 99/4A console in addition to the big keyboard. A Geneve costs less, takes up less space, and runs more software than my comparably equipped but somewhat less capable fully expanded 99/4A system.

The old Geneve problems with MDOS and overheating are no more, at least on my system. The latest non SCSI (v2.21) and SCSI-compatible (v4.00S) versions of MDOS are stable and all the documented DOS commands work properly. The only problem I have with MDOS is if I try to load a existent file or save to a existent path. This causes the computer to lock up. I have solved my early overheating problem by having Cecure install extra heat sinks. All Geneve cards now sold by Cecure include these extra heat sinks as standard equipment. I increased the cooling of my Geneve by taking the Geneve card out of its plastic clamshell and mounting it on the back half of a metal TI clamshell. This exposes all the heat-generating parts directly to cooling air. I think the Geneve's plastic clamshell keeps too much heat inside.

On the down side, there are a few software packages will run on my 80-column 99/4A but won't run on my Geneve. These include disk versions of some third-party cartridge games and some 80-column software created specifically for the Mechatronics GRAM Karte. I don't use any of this software, so this is no big deal to me.

On the slightly down side, there are some useful applications that for some reason don't work when loaded into the Geneve's RAM directly from my SCSI hard drive but do work just fine from floppy or from the Geneve's internal RAMdisk. TIPS has trouble loading in graphic files directly from SCSI. The TI-Writer formatter doesn't like reading in text files directly off of my SCSI hard drive. Sometimes TI-Artist graphics act funny. I can view any kind of file directly on my SCSI drive but I can't do a file string search. In each of the above cases, the solution is to use a batch file to download the needed file from my SCSI hard drive to the Geneve's internal RAMdisk,

and then run my software application. This takes little extra time and works reliably.

You can start using a stock Geneve right away with your existing P-Box and TV or monitor by pulling the 32K and firehose cards out of the P-Box and inserting the Geneve card. This immediately gives you the equivalent of a 99/4A that is equipped with an 80-column adapter, a Pgram+ and an AT keyboard interface. Cecure doesn't include the required XT or XT/AT switchable keyboard in its basic price. The company will sell you a keyboard for \$25. You cannot use many of the common store-bought "AT only" keyboards.

For best results I don't recommend a TV or TI color monitor with a Geneve, although these can be used with your 99/4A's RF modulator or monitor cable if you are only running 40-column software designed for the 99/4A. If you want to run 80-column software you need better video. I have an 80-column "Amiga-compatible" color monitor; the Magnavox 8CM515. Amiga/Geneve-compatible color monitors are no longer in production and used ones are hard to find these days, but you can get superb 80-column resolution using a cheap monochrome monitor with your video showing up in shades of amber or green monochrome. You need the type of monochrome monitor that has a one-pin "video-in" jack similar to the video-in jacks on VCRs. Such monochrome monitors are commonly available at used computer stores for \$20 or less and work well with most Geneve and 99/4A software, particularly high-resolution 80-column software. You need a special monitor cable with 80-column monitors. Cecure sells Geneve monochrome video cables for \$5.

If you want to upgrade further I recommend extra video RAM so you can access all the features of 80-column Funnelweb and extra heat sinks if you don't already have them, so that the Geneve card stays cool. Cecure can install both these items. Without the extra video RAM you can still run 80-column Funnelweb, but your text buffer size will be 64K instead of 128K. I also recommend battery-backed RAM-

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MICROREVIEWS —

(Continued from Page 33)

disk(s) or a hard drive system for seamless no-disk day-to-day computer operation. A hard drive is better. I am delighted with the slick operation of my SCSI interface card and "inside the P-Box" low power hard drive system I obtained from Bud Mills Services.

In addition to the above, my very expanded Geneve is equipped with a DSDD floppy disk controller, additional CPU RAM (available in different formats from Cecure and from Bud Mills Services), a PFM+ flashdisk so that I can automatically boot my SCSI MDOS without a floppy or battery backed RAMdisk, and a Rave speech card.

To summarize, this is what an instant 80-column 99/4A-compatible Geneve upgrade will cost: \$200 for a new Geneve card with software, \$25 for an XT/AT keyboard, \$5 for a monochrome monitor cable and \$20 or less for a monochrome monitor.

MYMENU2+ by Jim Uzzell of DDI Software

Here is something you can use with the enhanced Extended BASIC that comes standard with your Geneve. MYMENU2+ is the most extensive and useful application software written in Myarc Advanced BASIC (AKA Geneve Extended BASIC) that I have ever seen. It contains a whole bunch of useful applications, some with features not found in other Geneve or 99/4A-compatible software. And because most of these applications are written in Advanced BASIC they are easily user-modifiable. I like MYMENU2+ so much that I have my Geneve set up to automatically boot the program every time I select Advanced BASIC from my custom Geneve startup menu. From the MYMENU2+ display I can from a menu run all the other Advanced BASIC programs on my hard drive. MYMENU2+ is the only Geneve software that can do this.

Here is what you get with MYMENU2+, all in memory and either simultaneously displayed on screen or available from a command menu: a calendar display of the current month; a display of reminders for

the current day, a time-of-day display, a file manager somewhat similar to Funnelweb's "disk review," a text processor with many many printout options, a four-function calculator, a spreadsheet, a label printer that can use TIPS graphics, a disassembler, a sophisticated floppy disk formatter and an easy-to-use system for backing up an HFDC hard drive.

The startup 80-column screen of MYMENU2+ is just packed with information. The volume or current subdirectory name is shown (you can alter the Advanced BASIC code to get the program to start at any desired drive or directory) along with the drive designation (DSK1, WDS1, SCS1, etc.), the total number of sectors and the number of sectors free and used on that drive. You see how much memory is identified by FREESPACE 0 through 4 and how much total memory system is allocated to Advanced BASIC.

The software reads the Geneve's clock and gives you a continuously updated current time display and a picture of the current month's calendar with the current day of the month highlighted. You see four 20-character text lines of reminder notes for the current day. These notes are read in from a DV80 text file that includes notes for the entire month and which can be updated using any word processor. The MYMENU2+ calendar and reminders notes do the same thing that John Johnson's public domain software REMIND ME does. Some users will choose to set up their Geneve so that the MYMENU2+ startup menu with its calendar information appears on screen automatically each time the Geneve is booted.

You also get at MYMENU2+ startup a file listing of the floppy drive or hard drive directory you configure into the program. For each file you are told its name, size in sectors, type and whether it is protected or not. If subdirectories are present beyond this level you are so informed. Each file or subdirectory has a letter of the alphabet next to it. Select the letter next to a file and if the file is a Program or IV254 runnable from Advanced BASIC the file will run. MYMENU2+ is the only software I know that will create a menu and let you automatically run Advanced BASIC

programs from that menu. On my Geneve's hard drive I put all my Advanced BASIC runnable software in the subdirectory first read by MYMENU2+ when I go to Advanced BASIC from my custom startup menu. If you type a letter next to a Display or Internal file of any size the file can be viewed on screen or dumped to a printer. If you type the letter next to a subdirectory name you go to that subdirectory and can run Advanced BASIC programs from there. You can print a current directory listing in either normal-sized print or in superscript with tiny line feeds designed to fit onto 3.5-inch labels. The label includes the volume name and current date.

All of the following applications can be run from the MYMENU2+ startup menu:

"Load ASM" which allows you to load and run object code files that can be executed from the Advanced BASIC environment. You have to know the path name of the file you want to run. You can't just put the cursor next to an object code file name and run it. Also, you need to know if the file runs directly from a CALL LOAD or whether it needs to be CALL LOADED and then CALL LINKed to.

"Calc" which is the four-function calculator written in BASIC that was published in MICROpendium several years ago. A little window appears within the MYMENU2+ startup menu with the calculator in the window. When you exit the calculator the window disappears and the startup menu is restored.

"MYFORMAT" which is a floppy disk formatter with lots of options. You can set the skew and interlace of the formatted disk. The only other Geneve application that lets you configure these parameters is the quick disk copy program Hypercopy. MYFORMAT also has an optional timed disk test cycle which you can experiment with to determine which skew and interlace settings give the fastest read/write results. You can also use the test cycle to identify your fastest and slowest floppy drives with respect to read/write speed.

"BKUP" can be used to back up the entire contents of your HFDC-controlled hard drive. It doesn't work with SCSI drives. BKUP will create a series of batch files that can be used to back up your entire

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hard drive and squeeze the maximum number of unarchived hard drive files onto the fewest number of disks. BKUP makes batch files for backing up and later restoring the entire hard disk directory structure. It also tells you how many floppy disks to format before backing up your hard drive. Once these batch files are produced by BKUP you exit to MDOS and run the first batch file. You will be told to insert disk 1, then disk 2, etc., of the disks you were told to have preformatted until your whole hard drive is backed up. Later if you have to reinitialize your hard drive, you run another batch file and insert your backup disks 1,2,3, etc., when told on screen by the restore batch file. Your entire hard drive with all its directories and subdirectories will be restored.

"QLABEL" prints text and graphics on 3.5-inch labels. This is an excellent user-friendly utility! You can have up to seven lines of text in your choice of printer fonts (condensed, emphasized, etc.) with a TIPS graphic on the left side. The graphic is optional. You need a set of TIPS graphic files if you want a graphic, but you don't need to know the names of the TIPS files or the graphics within the files. Just tell QLABEL where the TIPS files are located (e.g., DSK1. or SCS1.TIPS.). QLABEL will tell you the names of the graphics you may choose within the TIPS file. Your label design, with selected graphic image will appear on screen for your approval before printing. You then tell the computer how many of these labels to print. This little utility is a great way to make practical use of your collection of TIPS graphic files.

DDI DISM" lets you disassemble any page of the Geneve's memory or EA5 programs loaded into memory. You can also disassemble the DSR of any card in your PE-Box by specifying Geneve memory page BA and the appropriate CRU address. The disassembly can be viewed on screen or sent to a printer or disk file. Disassemblies sent to a printer can eat up lots of paper printing only on the left side of the page, so one of the printer options lets you print the disassembly to a disk file that you can later, using software provided with MYMENU@+, print out in multiple columns. This saves lots of paper. The

main menu gives you these choices: disassemble op code, display hex data, read ASCII text, read with offset >60, BL and BLWP branches, REF/DEF table and restart.

"DDI WORD" is a basic word processor (written in BASIC and with only basic editing capabilities) with full-featured printout options. It is an 80-column line-oriented word processor without word wrap. Type in a line of text and press <enter> to put that line in the text buffer, then type and <enter> the next line, etc. Any additions deletions or corrections to one line do not automatically affect any of the other lines of your document. There are no tab settings. If you want lines consistently shorter than 80 columns this has to be taken care of manually as you enter each line. Margins can be created at the time of printout. The fact that I am writing the MYMENU2+ part of this Micro-Review using DDI WORD means it is a usable word processor, but it doesn't approach the Funnelweb editor for ease of use. The following options are available from the DDI WORD menu: add text, delete line, insert line, change line, move line, change word (like TI-Writer's "replace string"), print file, save file, load file (appends the file to the contents of the edit buffer), display buffer (after you have loaded a file), kill file (delete any disk file), restart (clears edit buffer) and exit. As you edit or display the contents of the edit buffer line numbers are displayed. Working on existing text is done based on these text line numbers.

The really cool thing about DDI WORD is the variety of printout options. When you select print file you are presented with these choices: emphasized, double width, near letter quality, proportional, double strike, italics, condensed, superscript and end. You can select as many as you want (for example emphasized + double width + double strike for really big dark text) with "end" as your last choice. These same printer choices are also available in Qlabel. Printer codes for these features can be altered in DDI WORD's Advanced BASIC code if needed. I found that only NLQ had to be changed from the defaults to make it work with my ancient Star SG10 printer.

After selecting a printer font you are given these additional selections:

Length of File Lines. This is the maximum length of any text line in your document.

Printer Line Length 80/132 or 136. If you select 132 then you will automatically use "condensed" print even if you did not select condensed from the previous menu.

Line Spacing x/216. This determines line feed spacing. If you accept the default of 36 then normal pica-sized text will print out double-spaced. Using tiny line spacing and condensed or superscript font you can print tons of text on a single sheet of paper.

Page Length. How many lines of text per page.

Left and Right Margins. You need to plan the line length of your text as you create text in order to utilize these margins properly.

Number of Columns. That's right! DDI WORD will print your text in parallel columns. This feature works great! The only thing you have to remember is the length of your file lines times the number of columns cannot exceed the printer line length. A file line length of 40 (as you create the text) and a printer line length of 132 will give you lots of room for three parallel columns of text. (40x3=120 which is less than 132). There are other columnizers, notably one created by Jim Peterson. But I like DDI WORD best for printing columns because the function is built right into the word processor.

DDI WORD's combination of user-selected printer fonts and line feed spacing plus the ability to generate multiple columns of text give the user tremendous control of the printed product. The only thing you can't get in your printout with this word processor is right justification.

"MYPLAN" is a spreadsheet. It can be up to 18 columns and 18 rows, a total of 324 cells. Each cell can have a maximum of 28 characters of text or numerals, but only 13 of these will show in a printout. You get an on-screen display of either two or four columns at a time, your choice. The two-column display with 13 characters visible per cell is easier to read. In the four column mode you only see seven characters and numbers beyond the range

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of +/- 1,000 are displayed in scientific notation. Formulas can include column sum and row sum as well as plus minus multiply divide and exponents and are entered using a syntax defined in the documentation. There is excellent error trapping to tell you if your formula syntax is incorrect.

There are a number of print options. The most useful is printing the entire spreadsheet's columns and rows. This can be done nine columns at a time using any dot matrix printer that supports compressed print and 132 characters per line (almost all do). It takes two sheets of paper to print out all 18 columns, but you can selectively print only the nine columns beginning at the cursor position. Such a printout can also be directed to a disk as a DV80 file with no control characters.

Functions are available from the keyboard with the F1 to F9 keys, or with the CTRL key and a number key. You need the included keyboard overlay strip to tell you which keys to press, since there is no on-line help. Available functions include: Load spreadsheet file, Save spreadsheet to a disk file, Dump sheet (a long vertical list of each cell and its contents), Print sheet nine columns at a time, Two- or four-column view toggle, Home to cell A1, Page display left, Page display right, Clear a single column, Clear the entire spreadsheet, Edit the entire 28 characters in a cell, Copy one cell to another cell location, Text entry, Numeric/formula entry, Exit the spreadsheet and return to the MYMENU2+ main menu and, of course, Compute spreadsheet. Computation time is seconds to minutes depending on the complexity of the spreadsheet. Because the Geneve is fast, computation time is faster than it is for any non-Multiplan spreadsheet ever written for the 99/4A. In fact, computation time may be faster than Multiplan on a 99/4A.

MYPLAN is not as good as Multiplan. Calculation speed is slower than with Multiplan, and unlike Multiplan you are limited to a relatively small number of rows and columns and you don't get an 80-column screen display. In its favor, MYPLAN is easy to use, in part because it is always conveniently available from the

MYMENU2+ main menu.

MYMENU2+ is commercial and only available from DDI Software. The software and on-disk documentation come on a DSSD disk and costs \$30. After finishing this review I sent in my money to purchase my review copy. I consider this money well spent.

RAVE SPEECH SYNTHESIZER ADAPTER CARD by the Rave division of Cecure Electronics

This device is the only way to add speech to a Geneve system. You just unscrew your 99/4A speech synthesizer box, remove the circuit board and plug it onto the Rave card. Then you plug the Rave speech card into your P-Box. That's all there is to it! There are no CRU switches to set, no special software to load, nothing complicated at all. This setup makes your Geneve 100 percent compatible with all 99/4A software that uses speech. This software includes command module games, Terminal Emulator II speech, Extended BASIC speech, and TI's "Text to Speech" software. The Rave speech card also works on 99/4A systems, allowing a 99/4A user to move the speech circuit board into the P-Box.

As of this writing Cecure has purchased the entire inventory of the Rave company, and has the speech card on sale for \$30 plus shipping. The original price was \$50. I hope this price is still valid by the time you read this. Every Geneve owner should have speech.

Here is one potential Geneve and 99/4A speech application. I have written a small TI Extended BASIC program that utilizes TI's "Text to Speech" software to allow both Geneve and 99/4A computers to speak any DV80 text file. Just start my program, input the path of the desired text file when asked and listen to the computer speak the file to you. The trick is to convert the text file to all upper case, since TEII speech and Extended BASIC "Text to Speech" only speak words spelled in upper case. My program does not work in Advanced

BASIC because Text to Speech doesn't work in the Advanced BASIC environment. Send me \$1 and I will send you my program on a SSSD disk together with the necessary Text to Speech files.

ACCESS:

Cecure Electronics (Rave Speech Adapter, new and used Geneve computers, Geneve-compatible keyboards and monochrome monitor cables), P.O. Box 2, Muskego, WI 53150. Credit card order only phone 800-959-9460 (note those last four digits). Information and technical help phone (414) 679-9918.

DDI Software (AKA Jim Uzzell, source of MYMENU2+), HQ Airsouth., PSC 813 Box 105, FPO, AE 09620.

Charles Good (text file speaker software), P.O. Box 647, Venedocia, OH 45894. Phone (419) 667-3131. E-mail good.6@osu.edu (now my preferred address). Visit the Venedocia Ohio Home Page at <http://www.bright.net/~cgood>

BUGS AND BYTES

An article, "America Onhold," by Pablo Galarza, in the June 17 issue of *Financial World*, refers to Delphi as a "recently defunct on-line service." To TI users who regularly dial up Delphi, it would seem that the news of its demise has been greatly exaggerated.

German TI conference moved to November

The date of the 11th International TI Meeting in Wolfsburg, Germany, has changed to November 1-3, according to Martin Zeddies, one of the organizers.

Zeddies says that the original September date conflicted with examinations for many German students.

He requests that those planning to attend let him know by the end of September because of the different rooms available at the meeting place, the Freizeithaus Vorsfelde, Am Sportplatz 5, D-38448 Wolfsburg Vorsfelde.

Contact Martin Zeddies, Haupstr. 26, D-38446 Wolfsburg-Reislingen. Phone or Fax is +49-5363-71125.

USER NOTES

One-liners for display and catalogs

This comes from John Bull via Delphi. He writes:

John Murphy of DORTIG, the Dorset TI User Group, sent along these. He says that he does not know where either came from.

DISPLAY TERMINATOR

```
A$="Anything" :: DISPLAY
AT(1,1):A$;
```

This works exactly like DISPLAY AT(1,1)SIZE(8):A\$. The semicolon is the key. It saves some keystrokes while still protecting the spaces to the right of the string on the screen.

ONE LINE CATALOGER

Murphy named this OLC.

```
1 IF F$<>" " THEN INPUT #1:A$
,A,J,K :: IF J THEN PRINT A$
;TAB(12);J;TAB(18);SEG$(B$,A
BS(A*2)+1,2);K;TAB(27);A<0 :
: GOTO 1 ELSE RUN ELSE B$="A
FDVIFIVPG" :: INPUT "DSK":
F$ :: OPEN #1:"DSK"&F$&".",I
TERNAL,RELATIVE,INPUT :: GO
```

TO 1

It works fine. This is a slight modification of the original to allow entry of disks A-Z, as well as 1-9.

Correction to DM-AID

This item appeared in The Computer Voice, the newsletter of the Southern California Computer Group. It was written by Woody Wilson.

If you attempted to run the program entitled DM-AID that is shown on page 31 of the March 1996 issue of MICROpendium, you probably found that it did not work. The errors were in lines 190, 200, and 240. Note that the checksums are different from those on page 31.

Remember, this program does not show TI-Artist pictures. It creates a command file for Display Master so it can display the pictures. If you do not have Display Master — a commercial program from Inscobot Inc. — do not bother trying to run this program.

Here are the corrected program lines:

```
190 IF N$(I)=SEG$(F$,6,10)TH
EN DISPLAY AT(5,1):"DUPLICAT
E FILENAME,":"TRY AGAIN" ::
CLOSE #1 :: GOTO 130 !042
200 IF N$(I)<>" " THEN I=I+1
:: IF I<128 THEN 180 !078
240 IF POS(N$(J),"_P",2)<>0
THEN PRINT #2:".LOADPIC "&CH
R$(34)&SEG$(F$,1,5)&SEG$(N$(
J),1,LEN(N$(J))-2)&CHR$(34)&
";":" .DELAY 5;" !143
```

TI and Geneve joystick adapter

The following item was written by Glenn Pearson. We found it in the newsletter of the Hoosier Users Group of Indianapolis.—Ed.

As virtually all TI users know, standard joysticks may not be used with the TI (or Geneve) without an adapter. The adapter is required to accommodate three things:

- The pinout of the DB-9 connector on the TI does not match the standard joystick pinout.

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1996 TI FAIRS

MARCH

1996 TI Workshop, TI99/4A User Group U.K., March 16, Wheatsheaf Public House, Sandbach, Cheshire, England. Contact Trevor Stevens, chairman, 249 Southwell Rd. East, Rainworth, Notts, NG21 0BN, UK, or call the MOBB BBS at 01623 491282.

Dutch TI Users Group Annual Meeting, March 23, Buusthuis Kremerstraat 241 Utrecht, The Netherlands. Contact Berry Harmsen, chairman, 1E Oosterparkstraat 141E, 1091 GZ Amsterdam, The Netherlands, (phone) (31) 20-6941047.

MAY

Multi Users Group Conference, May 25, Ohio National Guard Armory, Brookpark. Contact Glenn Bernasek, 13246 Harper Rd., Strongsville, OH 44136, or call (after 9 p.m. Eastern time) at (216) 846-0865 or Internet dd314@cleveland.freenet.edu.

NOVEMBER

11th International TI99/4A and Geneve Computer-Tref-

fen, Nov. 1-3, Freizeithem Vorsfelde, Am Sportplatz 5, D-38448 Wolfsburg, Germany. Contact Martin Zeddies, Hauptstr. 28, D-38448 Wolfsburg-Reislingen, Germany. Phone/fax number +Germany-5363-71125.

14th Chicago TI International World Faire, Nov. 9, Evanston Public Library in Evanston, Illinois. Contact Hal Shanafield, Faire chairman, at (847) 864-8644, or Chicago TI Users Group, P.O. Box 7009, Evanston, IL 60204-7009.

APRIL

Fest West '97, April 5, San Jose Civic Auditorium, San Jose, California. Contact Fest West '97 c/o Don O'Neil, 3297 Woody Lane, San Jose, CA 95132, or call (408) 934-0352.

This TI event listing is a permanent feature of MICROpendium. User groups and others planning events for TI/Geneve users may send information for inclusion in this standing column. Send information to MICROpendium Fairs, P.O. Box 1343, Round Rock, TX 78680.

USER NOTES

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- Two joystick connectors will not both fit into one chassis connector.

- Series diodes are required to isolate the joysticks from each other. Otherwise, one joystick will try to do the work of two.

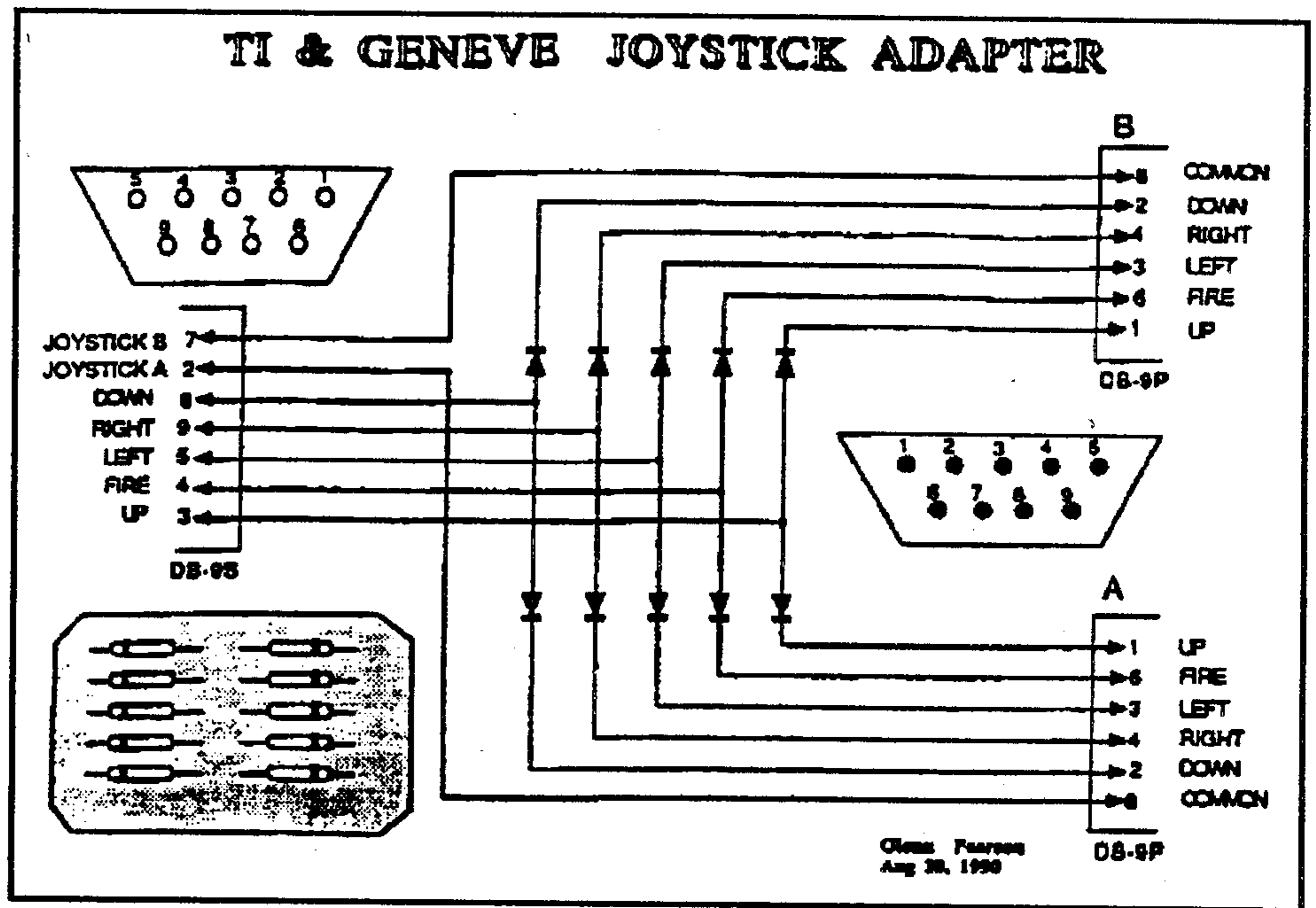
I had a commercial adapter, which was made as a potted cable assembly. When the fire button stopped functioning on one of my joysticks, I traced the problem to an open diode in the cable assembly.

The first step in determining the cause of the problem was to swap joysticks. Moving the joystick from one cable connector to another showed that the problem stayed at the cable location. By using an ohmmeter, and with the help of a schematic for the TI, I was able to quickly determine that a diode in the cable assembly had opened. An attempt to non-destructively open the cable assembly failed, and I was left with no choice but to replace the adapter if I was to continue to use the joy-

sticks in pairs.

While joystick adapters are still avail-

able commercially, I decided to build my own. (See Page 39)



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USER NOTES

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own, which would be serviceable. All of the parts are readily available at Radio Shack and other stores. I happened to have everything but the connectors in my junk box of treasures accumulated during my more active Ham radio days. The diodes are low current, signal-type — 1N914, or equivalent. I built this assembly on a perforated breadboard. I mounted the diodes to "fleaclips," and used the wire from the original adapter. A small aluminum box was used to hold the perf-board assembly.

The three cables to the three connectors were brought out through the existing holes in the box — two out one end and one out the other end.

The unit worked immediately upon assembly and is still in use.

Another way of accomplishing the same end is to modify the joysticks themselves. This requires the disassembly of the joysticks to mount the diodes internally, and then the user must cut the original

connectors off of the joysticks and run both joystick cables into one DB-9S connector. Proceed with caution if you elect to use this approach, and follow the wiring for the DB-9S connection shown in Fig. 1.

I have used both methods successfully. I put the diodes in the joysticks with some inexpensive units but preferred an adapter for use with more expensive joysticks.

Running Timer

Skip Park. wrote the following. It originally appeared in his user group newsletter, the West Penn 99ers News.—Ed.

I have developed the desire to streamline or reduce the running time of my programs. I try different algorithms for accomplishing the same thing. Then I run each one to see which is faster, but with some it's hard to tell. I have tried a stopwatch, but it's hard to operate the watch and the computer at the same time. So I wrote this quick CALL program to time my algorithms.

```
1000 SUB TS(V)
1010 CALL COLOR(13,2,12):: CALL CHAR(128,"808080",129,"0055",130,"0055404",131,"0055101",132,"00550404",133,"00550101")
1020 DISPLAY AT(1,1):"Velocity";V:RPT$(CHR$(129)&CHR$(130)&CHR$(131)&CHR$(132)&CHR$(133),5)&CHR$(129)&CHR$(130)&CHR$(131)
1030 CALL SPRITE(#1,128,2,13,18,0,V)
1040 SUBEND
```

```
1050 SUB TE
1060 CALL MOTION(#1,0,0):: CALL POSITION(#1,X,Y):: DISPLAY AT(1,20):Y-17 :: CALL KEY(0,K,S):: IF S=0 THEN 1060
```

```
1070 DISPLAY AT(1,1):" " :
: CALL DELSPRITE(#1)
1080 SUBEND
```

It's actually two programs — CALL TS(V) and CALL TE (timer start and timer end). To use them, you insert TS at the beginning of the algorithm you wish to time and TE at the end. TS prints a scale at the top of the screen and starts a sprite moving below it at column-velocity + V.

TE stops the sprite and prints the number of the dot-column at which the sprite stopped. In between TS and TE the algorithm runs entirely separate from the timer. Although not any standard measurement of time, the number returned is the running time of the algorithm. I've run many tests on this timer and have found it to vary only plus or minus two or three units. The scale is a little less accurate, but it's function is mostly cosmetic.

There are some drawbacks. If your algorithm involves printing, or any commands that change the screen, the scale may be scrolled off screen or overprinted. The screen color can hide the display. Also, the maximum time you can measure is about one minute at the slowest velocity. However, the sprite wraps around the screen and it's possible to count the number of times it passes by. For very short measurements, you can increase the velocity up to 127. I have been able to get a consistent reading on as few as 10 loops in a FOR-NEXT statement.

MICROpendium pays \$10 for items submitted by readers that are used in the User Notes column. Send them to MICROpendium User Notes, P.O. Box 1343, Round Rock, TX 78680.

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