

MICROpendium

Volume 7 Number 1

February 1990

\$2.50

P R I N T E R S

Tips on selecting dot-matrix printers
and a few recommendations

WAR GAMES

An Extended BASIC
import from Germany
that lets you save
North America
from attack.

TELECOMMUTING

More on exchanging
data between the
TI or Geneve
and (ugh) PCs
and their clones.

INSIDE INSIDE INSIDE INSIDE INSIDE

- ★ Regena on BASIC
- ★ More on TI's unreleased legends
- ★ A 40-column screen editor
- ★ High-res graphics in Forth
- ★ New spell-checker on the way
- ★ 1989 MICROpendium Index

REVIEWS REVIEWS REVIEWS

XHi Hardware Reprint Manual TIW Supplement & Companion TI Print Shop
TI Short Sheet III 127 Screen Fonts Genial TRAVeLER Contract Bridge

Software



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*READ THIS

- Here are some tips to help you when entering programs from MICROpendium:
1. All BASIC and Extended BASIC programs are run through Checksum, the numbers that follow exclamation at the end of each program line. Do not enter these numbers or exclamation points. Checksum was published in the October 1987 edition.
 2. Long XBASIC 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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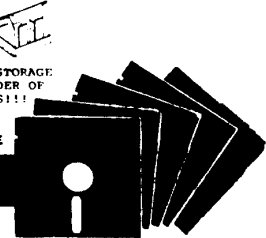


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Comments

A new spelling checker on the way

Here's a mystery: What has 16 bits and is used to play arcade software that come on cartridges?

Give up? If you guessed the TI99/4A, you wouldn't even be close. Actually it's the Genesis and Turbo Grafx game playing systems, the newest and hottest items on the consumer electronic market. But, hey, tell me what's so great about a 16-bit game player? TI had one that also doubled as a very fine computer and sold for as much as a \$100 less than these "new" offerings. Cartridges also weren't as expensive. Looking at what NES has done with the 8-bit Nintendo game system, one can only wonder what TI could have done with the 4A. Now, everyone wants to pay nearly \$200 for a 16-bit game player with less computing power than most hand-held calculators. It's unbelievable when you think about it.

BUY ANY USED TI PRODUCTS

This advice comes from Jerry Price of Tex-Comp. We've been running a series about expanding your TI system. In the series I've cautioned about buying used equipment, but Price says that any old piece of TI equipment could be a good deal, whatever shape it is in. If you're looking for an RS232 card, for example, buy whatever you can find at the lowest price possible. If it doesn't work, you can send it to TI and it will be repaired or replaced. (Price says TI usually replaces the products rather than repairs them.) Of course, you'll be charged for this, but the cost is generally reasonable and what you get back is a bona fide working product. This is definitely a try.

TEXAMENTS DEMO DISK

Here's something I like to see: a demo disk of a program that lets you see the capabilities of a program before buying it. Brings back memories of walking into a record store and actually listening to a copy of an album before deciding you really want it. Of course, the demo disk costs \$3, but what the hey.

Texaments is offering a demo disk of its new program, called The Missing Link. The program retails for \$24.95 and is described as a "powerful display enhancement upgrade" for TI X BASIC. I've got the demo and it is an extremely well done piece of work. A lot of time went into designing the demo program, and it is effective. It certainly gives you a good idea of the capabilities of the program. And if you don't think it's what you want, you can

cut your losses at \$3, which includes shipping. Give Steve Lamberti, owner of Texaments, credit for this demo offer.

SPELLING CHECKER ON THE WAY

Chris Bobbitt, of Asgard Software, says he's about ready to release an assembly language spelling checker that comes with a built-in dictionary of 60,000 words. (A hard disk version, he says, will have more than 300,000 words in the main dictionary.) Bobbitt says the program will process a document in a matter of seconds.

Bobbitt says that those who ordered PRESS (it still isn't available) frequently commented about its spell-checking capabilities and that the spelling checker that will be released grew from there.

FEST WEST EXPECTS BIG CROWD

Although MICROpendium had gone to press prior to the TI Fest West '90 in Tucson, Arizona, Feb. 17-18, Tom Wills, one of the organizers, predicted that the turnout might exceed the 500 persons who attended the 1989 Chicago TI Faire in November. I hope it did.

Along those lines, TICOFF (TI Computer Owners' Fun Fair — The IBM & Clone Owners' Fun Faire), which is planned for March 17 in Roselle Park, New Jersey, expects about 300 TI users to be among the 1,000 persons who are expected to attend the event. That's according to one of the event organizers, Bob Guellnitz.

LEFT OUT BUT COMING UP

Charles Kirkwood's c99 column *Trials of a c99 Beginner* wasn't included this month but will return next month. We had also planned to publish a list of TI bulletin boards, but we ran out of space for that, too. We hope to have it in next month.

NEW DISK SERIES STARTS MARCH 1990

A new year of MICROpendium disk subscriptions starts with the April 1990 edition. Disk subscriptions consist of programs that appear in each issue of MICROpendium. These are mailed monthly to subscribers. The cost is \$40 per year. The current disk subscription year ends in March.

The 1989 MICROpendium Index appears in this issue of MICROpendium. The MICROpendium Index disk now includes 1984-1989. It is available for \$5 from MICROpendium.

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• **32K No Wait State High Speed RAM:**

— Programs like MultiPlan, which are painfully slow on the 99/4A, run many times faster, thanks in part to the High Speed RAM.

• **V9938 Video Processor with 7 Graphics Modes:**

— Compatible with the 99/4A so you can use the GENEVE with a TV or monitor, you are currently using. Same resolution as the Mac but with color. Faster than the Amiga, as fast as the Atari and does it with a 4:3 aspect ratio. Faster than the Amiga and IBM AT can not do a 4:3 ratio renders higher resolution, better color, and appearance through the use of 32 scan lines. In the high resolution mode, 32 colors may be displayed on the screen at one time by the GENEVE, eight times as many as the Amiga can display in its high resolution mode.

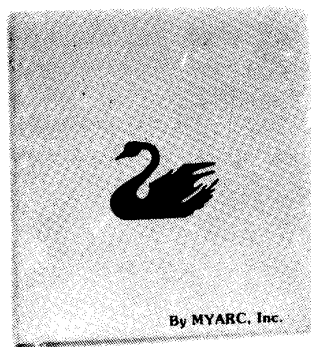
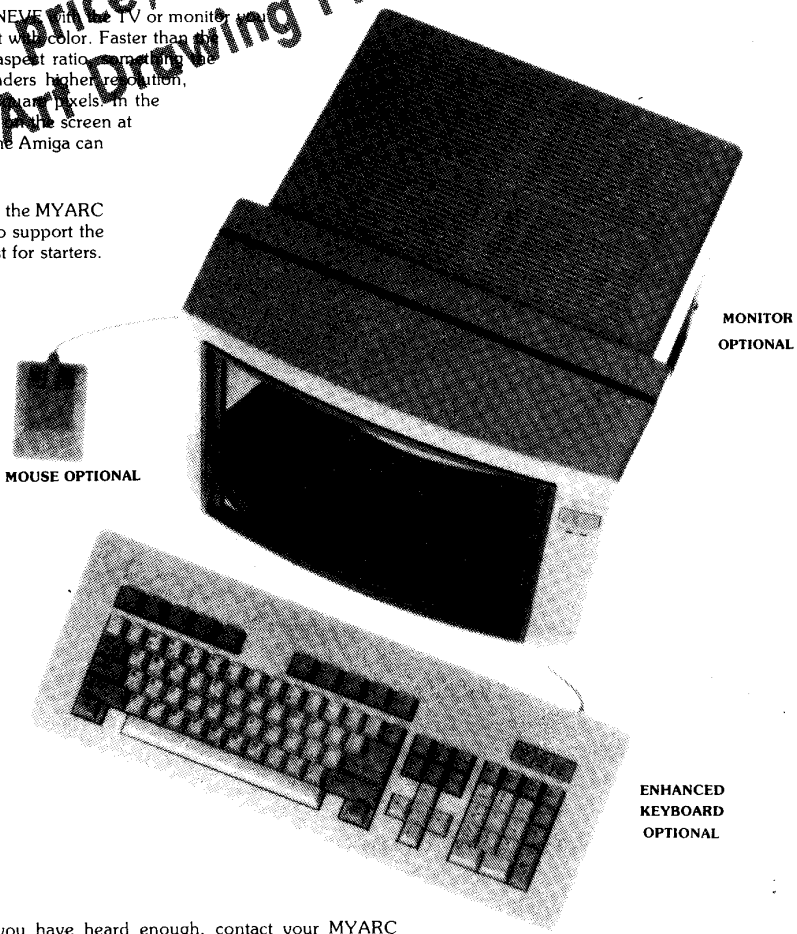
• **Mouse Interface:**

The mouse interface is built in and ready to use with the MYARC mouse. But, we didn't stop there, it is also ready to support the newest hardware, like video digitizers, and that's just for starters.

• **6 Complete Pieces Of Software Are Included With The GENEVE. But, three you will not be able to see how you ever did without are:**

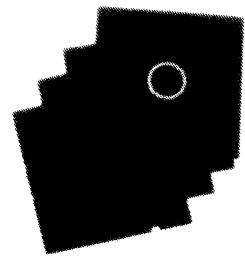
- My-Word Processor; 80 columns, help screens for all modes of operation including control-U, initialize a disk without leaving the program, print formatted text to the screen for viewing before sending it to the printer and that's still not all My-Word will do.
- Advanced Basic; the best and most powerful basic on the market today.
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New at a low price, includes Myarc software and MY-ART Drawing Program



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 (205) 854-5843



Feedback

Appreciates Page Pro

I am writing to publically thank Mr. Ed Johnson for the time, effort and programming expertise that he has put into the Page Pro 99 program. Although I have never had much interest in graphics type applications, Page Pro 99 threatens to make me a convert. Next thing you know I'll be buying TI-Artist Plus! too!

I just received the Page Pro VI.5 upgrade from Asgard and discovered some of the neatest features, added to an already excellent piece of software. How so much power can be tweaked out of a 99/4A is beyond me, but I am most appreciative that someone is still willing to try.

Thanks, Ed Johnson, for giving me such a professional tool to use for my computing needs, and for your support of the TI community. I hope that we continue to return the favor.

Bill Gaskill
Grand Junction, Colorado

Going Forth slowly

I have been recently teaching myself Forth, as I've already learned assembly language in several computers. My first experience with Forth was IBM and Osborn. So when I started using Forth on the good ol' TI99, I could not understand why it was so slow in comparison to the other computers.

This brought me to purchase the source code for Forth versions 1.0, 2.0 and finally version 4.3 so I could see where the speed was going to. To my total dismay, I found that TI and Leon Tietz, Leslie O'Hangan and Edward E. Ferguson, who wrote it, had based the entire concept on using the Randix and floating point routines in the ROM of the TI99/4A.

Here is a situation of a language based on Scaler Arithmetic using floating point, then reconverted back to Scaler Arithmetic. The whole point of the Forth language was to avoid using floating point for purposes of speed, as, to quote Leo Brodie, "If your application must repeat the same calculations millions of times, scaled-integer arithmetic will give you the speed you need. Is the extra speed noticeable? Yes, it is. A floating-point multiplication or di-

vision can take many times as long as its equivalent scaled-integer counterpart. And to perform addition or subtraction, the re-alignment of the values prior to the operation is at least as time-consuming as the addition itself. Most mini-computers and micro-computers don't 'think' in floating point; you pay a heavy penalty for making them act as though they do"

He made my point for why you don't need floating-point; using it, even in assembly language, can slow a routine to a crawl. So why the devil did they use it in the TI99/4A! I'm not sure, but they did, and that is why it is much slower than its competition. Binary and Scaled-Integer math or Fixed-Point math go hand and hand. It's only accurate to six decimal places, but there is no need, as you're usually working within two decimal places to plot or draw. And if you really need it, *then* you use Randix or floating point.

I was looking for the reason Forth was so slow it should eat "C" for breakfast; when floating-point routines are needed for Forth they should be written in assembly and linked. The TI approach is way off base, and, as Leo Brodie said, "you pay a heavy penalty."

Richard Lynn Gilbertson
Portland, Oregon

Comments on Myarc find agreement

I agree wholeheartedly with your December and January editorials on the Myarc software/hardware policies. Having owned my Geneve for almost three years, and still not possessing a final operating system, I find my patience being somewhat strained. Even more perplexing is the fact that my Myarc HFDC caard will work double density with my 99/4A but *not* with their own 9640 yet (I hope this will be fixed when the final MDOS is released "real soon now").

This is hard to understand considering the excellence of their hardware products. The Geneve is the finest machine I've ever used. I own a PC and have used Macs and neither can touch it for everyday computer use. The only time I use the PC is to run programs that are not available for the TI such as CAD and true desktop publishing

with laser printer drivers. This is especially true when the Geneve is coupled with a 1 meg Horizon RAM disk and John Johnson's excellent menu program. I can boot MDOS and load TI-Writer from the HRD (19 seconds total), type and print a small letter while Wordperfect 5.0 is still spinning disks.

Also, with the utilities available to hack memory and disks on the TI systems, you can do things at the low level that are extremely difficult on a PC and absolutely impossible on a Mac. I have a database of more than 11,000 records using as many sectors (255 bytes in each record) which currently holds the record claimed last month by Bill Gaskill. Both TI Base and Firstbase each have advantages (ease of editing vs. a fine query language) and by simply changing 4 bytes in the file header, with a sector editor, I can instantly change from one format to the other (D/F 128 and I/F 255). Of course, each form must have its own separate index file. I recommend that Bill use the directory backup feature with his database in a directory by itself. This allows any size file to be copied even on older versions of MDM5. This is a good practice even when full hard disk backup becomes available which will not consolidate fragmented files (a real problem with large database files).

In short, if and when Myarc gets the final software out and all their systems integrated, I would not hesitate to —indeed would heartily — recommend that all serious TI users obtain the Geneve.

Curt Purdy
Jasper, Texas

More on XB lockups

I have noticed discussion about lockup when using the Extended BASIC module. I also had this problem with two different modules on two separate computers. I am in the television repair business and suspected a heat related problem since we come across it often in TV repair, and I noticed the case of the module to be quite warm. My solution was to disassemble the case of the module (one screw and the label on the back) and drill a grid of holes in the top of the case. I drilled 4 x 15 for a total

(See Page 9)

Feedback

(Continued from Page 8)

60 holes. As far as I know I have never had another lockup in Extended BASIC. I hope this will be of help.

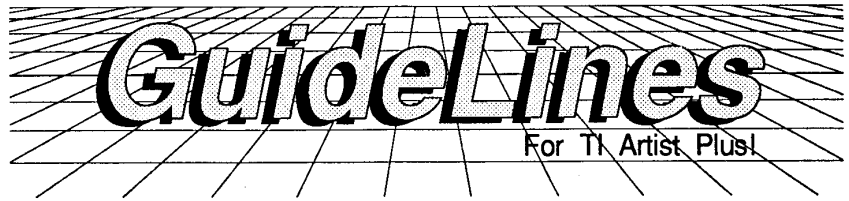
I have a question regarding the Myarc Hard & Floppy Disk Controller. I have the Pike Creek business programs set. This is a complete accounting system consisting of seven disks as well as data disks, the only drawback being the constant swapping of disks. The program searches for program and data disks by disk name. Can the hard disk be partitioned into different logical drives and be addressed by different disk names the same as the Myarc RAMdisk can have a volume name applied to it. If so, the entire program could be made to run off hard disk. If not, is there any other way to make it work on hard disk?

I have noticed advertised disk backup for modules. These are only for persons who already own the modules. Can a person not buy the disk versions on their own merit? I prefer disk programs to the modules as I usually leave the same three modules in my console and would rather not swap them back and forth.

George A. Robinson Jr.
Jasper, Alabama

First question: Several years back we modified the TI-Count mail and accounts receivable packages to run out of a hard disk. We did two things: One, we used directory names that were identical to those used by the TI-Count programs and, two, modified individual program lines where necessary, i.e. changing drive designations from DSK1.FILENAME to WDS1.PATHNAME.FILENAME. You may be able to do the same thing. However, it took quite a bit of trial and error because the TI-Count packages use a large number of program modules that have to be loaded individually into memory when called.

The reason the disk files of the modules are sold only to module owners is to get around copyright restrictions. Sale to others may be actionable as a copyright violation. Even so, these files can't be run without a GRAM device (such as GRAM Kracker, the P-GRAM card or the Geneve's GPL interpreter) to load them. — Ed.



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TI Artist PLUS! is also the most compatible program available. It works with almost any printer, including a few color printers. Its backwards compatibie with all of the existing artwork available for the original TI Artist. And its compatible with the Geneve 9640 (in GPL mode), most RAMdisks, and the Myarc HFDC. (Please contact us regarding specific product compatibility).

TEXAMENTS

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BASIC

Geography of Africa

By REGENA

This month I have another geography quiz for you. In the past, I have done program on various regions of the United States, the United States of and their capitals, the counties of Utah, San Diego, Tucson and South America. I decided to try a slightly different approach this time and have chosen the continent of Africa.

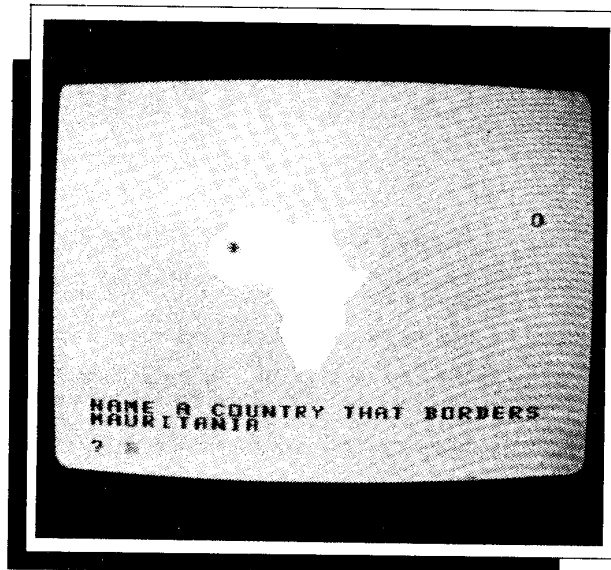
Instead of finding the location of a country or naming a country based on its location, this program asks you what borders the given country. One of the 47 countries in Africa is chosen randomly. It is marked on the map with an asterisk and the country name is printed. You need to type in one of its bordering countries — any country that touches the border of the given country. Three of the countries are completely surrounded by only one other country, but the rest of the countries have several possible correct answers.

I realize the names of countries in Africa do change periodically, so you may need to update this program with such changes. For example, Burkina Faso used to be called Upper Volta, and you may have learned South West Africa instead of the present Namibia. I used a 1989 atlas for the names of the countries and their current spellings in this program.

To draw the map, I copied a map of Africa onto graph paper, then redefined characters from number 96 to 129. Lines 780-810 read the character definitions from DATA statements in Lines 820-870 for these graphics. The map is printed in Lines 940-1050. Notice that you will need to release the Alpha Lock key to type in the PRINT statements to use lowercase letters. The symbols in the quotes require the FCTN key.

To keep track of the information about each country, I used arrays and read in information from DATA statements. Each country uses a different DATA statements in Lines 310-770. For each of the 47 countries, first the name is read in as AS(A). The next two numbers are X(A) and Y(A), which are a row coordinate and a column coordinate used in placing an asterisk to show the general location on the map in Line 1090.

The third number after the country name is stored in BB(A) and is a number indicating the number of countries which border this country. Then, the following numbers are country numbers for those bordering countries. For example, Line 370 is the data statement for the sixth country, the country of Chad, which has coordinates of row 16 and column 15. There are six countries bor-



dering Chad, and they are countries numbered 4 (Libya), 8 (Niger), 23 (Nigeria), 24 (Cameroun), 28 (Central African Republic) and 6 (Sudan).

By using country numbers, a lot of typing is saved — and possible errors in spelling. Also, if a country name changes, you simply need to change the one DATA statement and not everywhere that country name would appear as a bordering country.

Line 260 reads in BB(A) as the number of bordering countries, the Lines 270-290 read in the correct number of bordering countries.

The quiz is performed in a FOR-NEXT loop of T in Lines 920-1270. T represents the 47 countries. Line 1170 decreases the value of T if the answer is incorrect, so the quiz must be performed until all bordering countries are named correctly. At the top right of the screen, the number of countries correctly answered is printed (Line 950). The variable SCORE is incremented each time a country is named, so at the end, in Line 1330, the total number of attempts is printed.

Line 1230 changes the value in BB(R) to zero (it was the number of bordering countries) when a country is answered correctly: then that country will not be chosen again. Lines 1060-1080 randomly choose a country that has not been previously been answered correctly.

Just a typing reminder — use NUM to type in the program. The computer will automatically write the program line number. You type in the line (without the ! number, which is used with a Checksum program) and press Enter. The computer will enter the line, automatically increment the line number by 10, and print the next line number ready for the next line to be entered. This helps to avoid the error of typing one line and forgetting to press Enter before starting the next line, which happens if the line length is just right and the cursor goes to the next line. Several lines in this program happen to be a multiple of 28 characters, so this problem could occur. (See Page 11 for program.)

If you would like to save typing effort and want a copy of this program, you may request one by sending \$4 to REGENA, 918 Cedar Knolls West, Cedar City, UT 84720. Be sure to specify that you need the TI version of "Africa" and whether you want cassette or diskette.

REGENA ON BASIC —

```

100 REM AFRICA !128
110 REM BY REGENA !071
120 CALL CLEAR !209
130 DIM A$(47),B(47,9),BB(47
),X(47),Y(47)!017
140 PRINT TAB(10);"AFRICA":
: !118
150 FOR A=9 TO 13 !108
160 CALL COLOR(A,16,1)!040
170 NEXT A !215
180 PRINT "YOU WILL BE GIVEN
THE NAME" !084
190 PRINT "OF A COUNTRY IN A
FRICA." !111
200 SCORE=0 !051
210 PRINT "NAME ONE OF ITS
BORDERING" !213
220 PRINT "COUNTRIES. SPELL
THE NAME" !105
230 PRINT "CORRECTLY, THEN P
RESS THE" !092
240 PRINT "<ENTER> KEY." !15
8
250 FOR A=1 TO 47 !107
260 READ A$(A),X(A),Y(A),BB(
A)!002
270 FOR N=1 TO BB(A)!117
280 READ B(A,N)!136
290 NEXT N !228
300 NEXT A !215
310 DATA MOROCCO,13,11,2,2,1
!1111
320 DATA ALGERIA,14,12,7,1,1
1,10,9,8,4,3 !254
330 DATA TUNISIA,13,13,2,2,4
!077
340 DATA LIBYA,14,14,6,3,2,8
,7,6,5 !110
350 DATA EGYPT,14,16,2,4,6 !
191
360 DATA SUDAN,16,16,7,5,4,7
,28,30,31,29 !250
370 DATA CHAD,16,15,6,4,8,23
,24,28,6 !170
380 DATA NIGER,16,13,7,2,4,9
,7,23,22,19 !189
390 DATA MALI,15,12,7,10,2,8
,19,18,15,12 !200
400 DATA MAURITANIA,15,11,4,
11,2,9,12 !228
410 DATA WESTERN SAHARA,15,1
0,3,1,2,10 !010
420 DATA SENEGAL,16,10,5,10,
9,15,13,14 !013
430 DATA GAMBIA,16,10,1,12 !
081
440 DATA GUINEA BISSAU,17,10
,2,12,15 !060
450 DATA GUINEA,17,10,6,14,1
2,9,18,17,16 !181
460 DATA SIERRA LEONE,17,10,
2,15,17 !249
470 DATA LIBERIA,17,11,3,16,
15,18 !122
480 DATA IVORY COAST,17,11,5
,17,15,9,19,20 !081
490 DATA BURKINA FASO,16,12,
6,18,9,8,22,21,20 !033
500 DATA GHANA,17,12,3,18,19
,21 !224
510 DATA TOGO,17,12,3,20,19,
22 !179
520 DATA BENIN,17,12,4,21,19
,8,23 !158
530 DATA NIGERIA,17,13,4,22,
8,7,24 !002
540 DATA CAMEROON,17,14,6,23
,7,28,27,26,25 !091
550 DATA EQUATORIAL GUINEA,1
8,13,2,24,26 !121
560 DATA GABON,18,13,3,25,24
,27 !234
570 DATA CONGO,18,14,4,26,24
,28,30 !221
580 DATA CENTRAL AFRICAN REP
UBLIC,17,15,5,24,7,6,30,27 !
141
590 DATA ETHIOPIA,17,17,4,6,
47,33,32 !143
600 DATA ZAIRE,18,15,9,27,28
,6,31,34,35,36,38,37 !055
610 DATA UGANDA,18,16,4,34,3
0,6,32 !227
620 DATA KENYA,18,17,4,31,29
,33,36 !229
630 DATA SOMALIA,17,19,3,47,
29,32 !149
640 DATA RWANDA,18,16,4,30,3
1,36,35 !036
650 DATA BURUNDI,19,16,3,30,
34,36 !159
660 DATA TANZANIA,19,17,8,30
,35,34,31,32,38,39,40 !087
670 DATA ANGOLA,20,14,3,30,3
8,43 !047
680 DATA ZAMBIA,20,16,8,37,3
0,36,39,40,41,42,43 !172
690 DATA MALAWI,20,17,3,38,3
6,40 !062
700 DATA MOZAMBIQUE,21,17,5,
38,39,36,41,44 !083
710 DATA ZIMBABWE,21,16,5,38
,40,44,42,43 !158
720 DATA BOTSWANA,21,15,4,43
,38,41,44 !200
730 DATA NAMIBIA,21,14,5,37,
38,41,42,44 !063
740 DATA SOUTH AFRICA,23,15,
6,43,42,41,40,45,46 !142
750 DATA SWAZILAND,22,17,1,4
4 !105
760 DATA LESOTHO,22,16,1,44
!215
770 DATA DJIBOUTI,16,18,2,29
,33 !000
780 FOR A=96 TO 129 !220
790 READ C$ !254
800 CALL CHAR(A,C$)!079
810 NEXT A !215
820 DATA 0000000F1F1F3F3F,00
1F7FFFFFFFFF,FEFEFEFEFEFF
FFF,000000000000000F,00000000
00007C7F !169
830 DATA 0000000103070F1F,7F
7FFFFFFFFF,FFFFFFFFFFFF
FFF,C0C0C0408080C0C,3F3F7F7F
7F7F7F7F !147
840 DATA E0E0F0F0F8F8F8FC,7F
7F7F7F7F7F7F7F,FCFEFFFFFFFF
FFF,0000000080C0E0F1,0000000
0000000F,3F1F0F0707 !153
850 DATA FFFFFFFFFFFFF3E,FF
FFFFFFFFF8,FFFFFFFFFFFF7F3
F,F0F0E0C0C08,03030307070703
03,FEFCF8F0E0C08 !051
860 DATA FFFF7F3F3F3F1F1F,FE
FEFEFEFEFEFFFF,1F1F1F3F3F7F7
F7F,FFFFFFFFFFFFFEFC,8080808
080808 !174
870 DATA 7F3F3F1F1F1F0F0F,F8
F0E0E0E0E0F0F,0F070707030101
,FFFFFFFFFFFFEFE,E0C0808,FF
FF7F7F78,FCF8F8F !216
880 PRINT : : "PRESS ANY KE
Y TO START." !214
890 CALL KEY(0,K,S)!187
900 IF S<1 THEN 890 !134
910 CALL SCREEN(8)!153
920 FOR T=1 TO 47 !126
930 CALL CLEAR !209
940 TB=8 !085
950 PRINT TAB(TB);" `abcd";T
AB(26);T-1 !057
960 PRINT TAB(TB);"efggggh"
(See Page 12)

```

EXTENDED BASIC

The return of telecommuting

By JERRY STERN

©1990 J.L. Stern

Last month, we discussed the hardware, software, and methods needed to send text files from a TI99/4A or a Geneve to an IBM-compatible personal computer. This month, we'll bring the text back.

Here's a review of last month. After wiring the TI and the PC together with a standard RS-232 cable, the program TEXT-PC was used to convert carriage returns to the symbols `||`, and to send the text directly through the RS232 interface. The settings used were 9600 baud, eight data bits, no parity, and one stop bit. "RS232.BA=9600.DA=8.PA=N" was used as a device name.

The file was received on a terminal program and saved in a log file, and subsequently loaded into a word processing program. Finally, the search and replace functions of the word processor were used to remove all the carriage returns, and to search for each occurrence of `||` and replace it with a carriage return and a tab.

If you are going to do these file conversions more than just occasionally, that search process should be done by a *macro*.

This is nothing more than a set of memorized keystrokes, stored in a file by a program. A macro can be used to save typing out phrases that are repeated often, like an address. Or, a macro can replace all of the instructions for a series of commands, like the search and replace sequence we need to use for re-formatting these files. Check the manual, or the help key of your PC word processor, for instructions on how to write, save, and use macros. For example, on WordPerfect 5.0, control F10 defines macros, and alternate F10 retrieves and uses them.

A macro will also be helpful for the return of text to the TI. In order to prevent carriage returns from sneaking into the text file at the end of every line, and to keep the returns from escaping the end of each paragraph, the file being sent will need some special treatment. It is the same process as TEXT-PC performed before originally sending the text to the PC. Substitute `||` and a carriage return for each carriage return in the file. Careful ... again, add `||` in front of each carriage return, but LEAVE THOSE RETURNS IN PLACE. They will be removed in the sending pro-

cess by the terminal programs, but for now they keep your text from bunching up into one big blob of text.

That conversion could be done manually, too. Again, a macro does nothing that couldn't be done more slowly under keyboard control; it just automates a lot of keystrokes on processes that are done regularly. Let's step through this conversion more carefully, because the choice of PC word processor will change the exact way that this is done.

First, go to the beginning of the file. On WordPerfect (WP), that would be HOME, HOME, UP arrow. Next, replace all the carriage returns with `||` and a carriage return. On WP, that's Alternate F2 for replace, NO confirmation, press RETURN, F2, enter `||`, TAB, F2, and wait a moment while it works. Next, if the file is larger than five double spaced pages, break it down into smaller chunks. This will prevent Telco from trying to stop transmission of the file in the middle. Finally, save the file, or set of files, in DOS format, not in the usual way. (Shift F5, 1, 1, and enter a file name.)

(See Page 13)

REGENA ON BASIC—

(Continued from Page 11)

```

!084
970 PRINT TAB(TB);"iggggggJ"
!091
980 PRINT TAB(TB);"kgggggglm
n"!060
990 PRINT TAB(TB);"opqrggggg
s"!088
1000 PRINT TAB(TB);" tggggg
u"!004
1010 PRINT TAB(TB);" vggw
"!089
1020 PRINT TAB(TB);" xggg
z"!216
1030 PRINT TAB(TB);" {gg;
"!099
1040 PRINT TAB(TB);" }g~"
;CHR$(127)!091
1050 PRINT TAB(TB+5);CHR$(12
8);CHR$(129)!021

```

```

1060 RANDOMIZE !149
1070 R=INT(47*RND+1)!214
1080 IF BB(R)=0 THEN 1070 !0
41
1090 CALL HCHAR(X(R),Y(R),42
):002
1100 SCORE=SCORE+1 !113
1110 PRINT : "NAME A COUNTR
Y THAT BORDERS":A$(R): !131
1120 INPUT C$ !249
1130 FOR N=1 TO BB(R)!134
1140 IF C$=A$(B(R,N))THEN 12
20 !190
1150 NEXT N !228
1160 PRINT : "NO, THE CORRECT
RESPONSE IS:" : !031
1170 T=T-1 !034
1180 FOR N=1 TO BB(R)!134
1190 PRINT TAB(4);A$(B(R,N))
!138

```

```

1200 NEXT N !228
1210 GOTO 1240 !043
1220 PRINT : "CORRECT." !096
1230 BB(R)=0 !250
1240 PRINT : "PRESS ANY KEY
TO CONTINUE." !251
1250 CALL KEY(0,K,S)!187
1260 IF S<1 THEN 1250 !239
1270 NEXT T !234
1280 CALL CLEAR !209
1290 PRINT "THERE ARE 47 COU
NTRIES" !080
1300 PRINT "IN AFRICA." !248
1310 PRINT : "YOU NAMED BORDE
RING" !105
1320 PRINT "COUNTRIES FOR TH
EM" !134
1330 PRINT "IN";SCORE;"ATTEM
PTS." : : : !036
1340 END !139

```

EXTENDED BASIC—

(Continued from Page 12)

By saving files in a DOS file, you have told the word processor to save just the text, without the control codes it uses to record margins, tabs, fonts, footers, and all those formatting options that we use with formatter commands in TI-Writer.

For the next step, load the PC terminal program. Set the communications settings again. Use 9600 baud, eight data bits, no parity, and one stop bit. Those are the same options used during the incoming file process. Now, choose ASCII UPLoad, and enter the name of the converted file, but **DO NOT PRESS RETURN YET.**

At the TI end, load Telco, choose T for terminal from the main menu, then press BACK, choose L for a log file, and enter a drive and file name for the incoming file. When you press ENTER and T, Telco will go back to Terminal mode. Now press RETURN at the PC. The file should now appear on the TI screen. When Telco finishes receiving each file, choose BACK again, then L for log. Now Telco will display, "Logging, Please Wait."

The first time you try this, load the log file immediately into TI-Writer and take a look at it. Check the file for missing characters. Don't worry about all the line feeds and carriage returns; PC-TEXT will take them out later. If there are no characters missing, congratulations! Go ahead and run PC-TEXT to convert the log file into a file with proper paragraphs.

If there are characters missing from the file, the PC terminal program is not waiting long enough between characters for Telco to capture each letter in the file. To fix this, find the option marked "Character Pacing" in the setup area of the terminal program on the PC, and set the delay to 15 milliseconds. The program may ask for milliseconds as thousandths of a second. Right, that's the same thing. With the delay set, try the UPLoad process again. It should work this time.

Next step! Shut down the PC; you're done with it. At the TI, load and run PC-TEXT. That's named for a PC file becoming a formatted TI TEXT file. At the prompts, enter the name of the log file saved by Telco, and the new file name for the formatted file. As the file is converted, it will scroll up the screen. You may process

another file after this one, or not, if you choose.

Finally, go back to TI-Writer, and load the converted file. You should find that there is an indentation of five characters at the beginning of each paragraph. There will be a single carriage return at the end of each paragraph, and there will be no extra line feeds or carriage returns.

The program PC-TEXT is slightly more complex than the other program. It scans the imported text file, one line at a time, looking for || , carriage returns, and line feeds. The || symbols are replaced by a single carriage return. The carriage returns and line feeds are simply removed by the subprogram STRIP.

STRIP is in a subprogram for several reasons. First, the insertion of a loop to check for different characters and remove them would make the code of the program complex and difficult to debug. Placing those code lines in a subprogram makes them easy to test. More importantly, The function of stripping characters out of a string may be useful in another project. Writing that function as a subprogram makes it easier to reuse the code.

If you prefer a different size paragraph indent, change the number of blanks in the quotes in line 210. In line 120, you may change the default drive number.

Those are the basics of transferring a formatted file from the TI to the PC and back. Now let's get fancy. Let's suppose that the title of your file should be printed in emphasized print. In the TI-Writer file, the special codes for ASCII #27 and #69 were inserted to turn on emphasized print. After the title, #27 and #70 were used to turn off emphasized print. This is an example of a paired formatting code. First, one code turns on an option, and then a second code turns the option off. We can represent those codes in text like this:

```
<BOLD>Title<bold>
```

Some codes don't need to be turned off,

Quick Reference: from PC to TI

1. Prepare a text file: No embedded commands.
2. At PC: Search and replace all carriage returns with %. Split large files into smaller files of about five double-spaced pages each.
3. At TI: Load Telco. Set parameters: 9600 baud, 8 data bits, 1 stop bit, No parity. Open a log file.
4. At PC: Load terminal program. Set parameters: 9600 baud, 8 data bits, 1 stop bit, No parity, and 15 ms. character pacing.
5. Perform ASCII UPLoad. Send text file over cable to TI. Shut down PC.
6. At TI: Close log file.
7. Load and run PC-TEXT, converting % into carriage returns and blank space indentations.
8. Check and save the file.

so they are unpaired codes, or simply one-time codes.

<HPage >

That is a hard page return, an ASCII code 12 form feed, or in TI-Writer codes, .BP for Begin Page.

Is this pretty obvious? It is similar to the way that WordPerfect displays printer and format instructions in the "Reveal Codes" option. More importantly, it is approximately the method recommended by the *Chicago Guide to Preparing Electronic Manuscripts for Authors and Publishers*, published by the University of Chicago Press. However, these codes are not yet standardized. Once there is some semblance of agreement on these codes among publishers, it will become easier to send a formatted document to a publisher, ready for electronic transfer to the typesetting computer. For now, if you need to send a manuscript to a publisher by modem, or on disk, check first to see what codes, if any, they would like used to indicate italics,

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EXTENDED BASIC—

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underlining, and paragraph endings.

If <ITALICS> means turn on italics, or ASCII 27, 52 on most printers, and <italics> means turn off italics, or ASCII 27, 53, then a line could be added to either TEXT-PC or PC-TEXT to convert these codes. For TEXT-PC, last month's program that sends the text to the PC, several similar lines could be added between lines 190 and 200.

```
191 CALL SWAP(A$,CHR$(27)&CHR$(52),<ITALIC>")
```

That is just a generic line calling a subprogram to exchange the new and old strings.

The old and new strings could be any of the formatting changes mentioned above, or could be something else.

```
192 CALL SWAP(A$,"DNA";"deoxyribonucleic acid")
```

This is a text macro. A macro does not need to be used only for instructions for a computer program. It can also be used just as a keystroke saver.

The same subprogram could be used in PC-TEXT, although the exchanges would be reversed, and the CALL SWAP lines should be between 211 and 229.

```
221 CALL SWAP(A$,"<BOLD>";CHR$(27)&CHR$(69))
```

```
222 CALL SWAP(A$,"<bold>";CHR$(27)&CHR$(70))
```

As many line of this type could be added as your formatting needs require. The subprogram SWAP should be typed into the TI separately from either TEXT-PC or PC-TEXT, and saved as a merge file. Merge it into either program as needed; the line numbers of the subprograms have already been checked and do not overlap each other.

That should complete the process. TEXT-PC sends text from the TI to the PC, and optionally can change printer codes to generic formatting codes during the process. Macros are the easiest way to then conform the generic file into a formatted PC text file. On the way back, macros may again be used to convert formatting codes, including carriage returns, to generic codes that will survive the RS232 interface. The DOS text file is received by TELCO as a log file, and converted back into useful form by PC-TEXT.

These programs have saved me a lot of work. I have occasionally used this method as a means of redirecting output to the par-

allel printer connected to the PC when my TI serial printer was loaded with gummed address labels that I did not want to unload and reload. The programs save having to re-type and re-format a piece of writing that has been completed on one computer, but is needed on the other. More importantly, they prevent extra carriage returns from sneaking into the text at odd places, or perhaps escaping altogether, leaving an unformatted blob of text. That blob could have consumed everything. We'll just have to use TEXT-PC and PC-TEXT to freeze that text blob right in its slime trail.

PC—TEXT

```
100 ! PC_TEXT JLS 2/90 V 1.
0 CONVERTS TEXT FILES FROM N
O CR/LF TO TI/WRITER STYLE !
098
110 CALL CLEAR :: CALL BLUE
:: CALL TITLE !082
120 DISPLAY AT(17,1):"Name o
f log file?":"DSK1." :: ACCE
PT AT(18,4)SIZE(-25):S$ !225
130 S$="DSK"&S$ :: IF S$="DS
K" THEN STOP ELSE IF LEN(S$)
<6 THEN 120 !172
140 DISPLAY AT(20,1):"File t
o save?":"(It will be in Dis
play /Variable 80 Forma
t.)":"DSK1." :: ACCEPT AT(23
,4)SIZE(-25):D$ :: D$="DSK"&
D$ !173
150 IF D$="DSK" THEN STOP EL
SE IF LEN(D$)<6 THEN 140 !01
6
160 OPEN #1:S$,DISPLAY ,VARI
ABLE 80,INPUT !052
170 OPEN #9:D$,VARIABLE 80,D
ISPLAY ,OUTPUT !146
180 IF EOF(1)THEN 270 !061
190 LINPUT #1:A$ !187
200 CALL STRIP(A$,CHR$(10)&C
HR$(13))!024
210 X=POS(A$,"!!",1):: IF X>
0 THEN A$=SEG$(A$,1,X-1)&CHR
$(13):: B$=" " ELSE B$="
" !145
220 ! INSERT SWAP CALLS HERE
!166
230 PRINT A$:B$;!208
240 PRINT #9:A$:B$;!132
250 GOTO 180 !003
```

```
260 PRINT #9: :A$ !106
270 CLOSE #1 :: CLOSE #9 !18
4
```

```
29125 SUB STRIP(X$,S$)!019
29130 ! REMOVES ALL OCCURANC
ES OF EACH CHARACTER OF S$ F
ROM X$ !146
```

```
29135 FOR L=1 TO LEN(S$)!250
29140 P=POS(X$,SEG$(S$,L,1),
1):: IF P=0 THEN 29155 !114
29145 IF P=LEN(X$)THEN X$=SE
G$(X$,1,P-1):: GOTO 29155 !1
40
```

```
29150 X$=SEG$(X$,1,P-1)&SEG$
(X$,P+1,LEN(X$)-P):: GOTO 29
140 !055
```

```
29155 NEXT L :: SUBEND !012
29505 SUB BLUE !149
29510 ! SWITCHES DISPLAY TO
WHITE ON BLUE; JLS 7/88 !230
29515 CALL SCREEN(5):: FOR L
=0 TO 14 :: CALL COLOR(L,16,
1):: NEXT L :: SUBEND !202
```

```
32590 SUB TITLE !240
32600 DISPLAY AT(2,10):"PC-T
EXT" :: CALL CHAR(96,"00FF")
:: CALL HCHAR(3,12,96,7)!179
32605 DISPLAY AT(5,1):" C
onverts text files t
o TI-Writer format" !0883261
0 DISPLAY AT(8,1):"Insert ""
!!"" in front of each ca
rriage return before sending
the file from the PC. End
the file with ""
!!~!!"" !114
```

```
32635 SUBEND !168
```

SUB SWAP

```
29095 SUB SWAP(X$,OLD$,NEW$)
!008
```

```
29100 !SEARCHES X$ AND REPLA
CES OLD$ WITH NEW$; JLS 3/90
!171
```

```
29105 C=POS(X$,OLD$,1):: IF
C=0 THEN SUBEXIT !125
```

```
29110 IF C=1 THEN X$=NEW$&S
E G$(X$,C+LEN(OLD$),LEN(X$)-L
EN(OLD$)):: GOTO 29105 !087
```

```
29115 X$=SEG$(X$,1,C-1)&NEW$
&SEG$(X$,C+LEN(OLD$),LEN(X$)
-LEN(OLD$)-C+1):: GOTO 29105
!192
```

```
29120 SUBEND !168
```

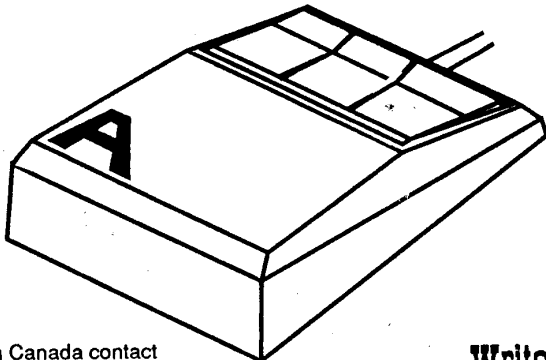
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EXPANDING YOUR SYSTEM

Printers, serial ports and parallel ports

By JOHN KOLOEN

This month's topic concerns output devices, such as modems and printers, and what you need to use them. I'll also outline steps to take when selecting a modem or printer and, more importantly, common mistakes to avoid.

In most cases, in order to use a printer or modem you need an RS232 card. The RS232 cards used in the TI Peripheral Expansion Box includes a *serial port* (RS232) and a *parallel port*. Briefly, a serial port is used to process instructions or data sequentially, one at a time; a parallel port is used to process instructions or data in blocks.

On the TI and Geneve, the serial port is generally used to connect a modem to the computer in order to access electronic bulletin board services or communicate with other computer users. The parallel port is generally used to connect the computer to a printer. The serial port may also be used to connect the computer to a printer that has a serial interface, but such printers are usually more expensive than printers designed for use with parallel ports and difficult to find. Nowadays, in fact, virtually all dot-matrix printers use only a parallel interface.

In most cases, serial interfaces have to be ordered from the manufacturer as an add-on at additional cost.

DO YOU NEED AN RS232 CARD?

If you have no intention of using a modem but want to use a printer, you will still need an RS232 card, if you have a PEB. RS232 cards were also produced as side-car devices that plug into the side-port of the TI console. And there are devices that allow you to access a parallel printer by directly plugging a cable into the sideport of the TI console. These may cost upwards of \$60. The limitation to this is that it may not work with all printers and it really is a jury-rigged solution to a problem.

Chances are that if you can afford a printer, you should be able to afford a PEB. The RS232 card itself, brand new, isn't likely to be much over \$100. Used they may go for \$20 or less. In any case, my approach is that the PEB is more important

than a printer, just as a disk drive and memory expansion are more important than a printer. However, a printer is more important than a modem. A Mini-Expansion System has the RS232 serial and parallel ports built-in, so there's no problem there.

Assuming you've got a PEB, the TI RS232 card is the standard for the TI. Other manufacturers have produced RS232 cards — including Myarc and CorComp — but none offers any more features than the TI card. In fact, some older third-party RS232 cards had bugs in them that made them useless under certain circumstances.

The selection of a dot-matrix printer is basically determined by how deep your pockets are. If you can afford \$350, you can get a very fine 24-pin dot-matrix printer that will do everything except print in four colors.

The TI, Myarc and CorComp RS232 cards all support one parallel port and two serial ports. The card fits into any open slot on the PEB, except slots 1 and 8, which are reserved for the system card and disk controller.

Once installed, you simply plug your printer cable into the back of the RS232 card, using the parallel port if it is a parallel printer and a serial port if it is a serial printer. Of course, if you have a modem you'd plug that into a serial port as well.

DOT MATRIX OR DAISY WHEEL?

Since this series of articles is not about how to use equipment, we'll move on to the selection of a printer.

Unless you actually need letter quality output such as you'd get from a standard electric typewriter, I recommend purchasing a dot-matrix printer over a daisy wheel printer. While daisy wheel printers produce solid-looking characters and dot-matrix

printers don't, they can't do graphics and they are slow. They are generally more expensive than dot-matrix printers, noisy and create a lot of vibration when operating. You won't find many programs for the TI that specifically support daisy wheel printers since dot-matrix printers are far more common.

The selection of a dot-matrix printer is basically determined by how deep your pockets are. If you can afford \$350, you can get a very fine 24-pin dot-matrix printer that will do everything except print in four colors. (We won't worry about four-color printers since there aren't many programs that support four-color printing and I don't know enough about them to know how to select them.)

Dot-matrix printers use tiny pins on their print heads (arranged in a vertical matrix) to deposit ink on paper. These print heads are among the world's wonders. They take a terrible pounding and yet can produce tens of millions of characters for years without falling apart. When they finally do give in, they are relatively easy to replace and not very expensive.

As one would expect, the more pins on the print head, the higher the density of printing. Many less expensive dot-matrix printers use 8 or 9 pins and thus produce type that is decidedly inferior to that of a typewriter. (See print samples.) A printer with a 24-pin print head, however, will produce characters that are much more fully formed.

Other considerations are print speed, cost of ribbons, whether it can accept downloadable fonts (not very important as far as I'm concerned), whether it is compatible with generally accepted graphics standards, whether it uses a standard interface and the number of character sets it supports (italic, roman, pica, elite).

There are really only two "generally accepted graphics standards:" IBM and Epson. Most printers produced over the past five years or so are Epson-compatible. Newer printers also support IBM graphics mode. As far as use on the TI or Geneve, the best route is to make sure the printer

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EXPANDING YOUR SYSTEM—

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is Epson-compatible since virtually all software for the TI is compatible with this standard. This doesn't mean you have to buy a printer with the Epson brand name. Plenty of manufacturers produce printers that are Epson-compatible. A few may not. It's your job as a buyer to find out.

One caveat is that printer specifications are frequently changed by the manufacturer and it is impossible to say with certainty that such and such manufacturer doesn't produce Epson-compatible printers. The best thing to do is to verify Epson-compatibility before purchasing the printer. Non-Epson-compatible printers, such as the C. Itoh Prowriter, are fine machines and are completely compatible with the TI/Geneve hardware. And Epson-compatibility isn't necessary for printing text, it just makes it easier when outputting graphics. If you want THE standard, go for Epson compatibility.

All printers are rated for speed of output, in characters per second and lines per second. Unless you intend to print out thousands of pages of copy, speed doesn't mean a whole lot. The actual output speed is determined by the quality of output (draft, NLQ (Near Letter Quality) or something in between) as well as whether the output is straight text or incorporates graphics. Graphics output will always be slower than text output on any printer.

DON'T OVERLOOK RIBBON COSTS

One of the most overlooked considerations when buying a printer is the cost of ribbons. I recently purchased a nine-pin printer for about \$225. This is the low-end of the printer market. Although the printer is relatively inexpensive, the ribbons cost \$12.95 each. These are the "manufacturer-produced" ribbons. There are third-party companies that also produce ribbons for a variety of printers, usually at a substantial savings from the printer manufacturer. However, my experience with these third-party ribbons has been less than satisfying. The third-party ribbons we used didn't last nearly as long as the manufacturer's ribbons. Another problem is that usually you have to buy the ribbons in quantities of 10 or more to realize a big savings.

Any printer that you buy, unless you buy it from a TI dealer, is going to come with

Print samples

9-pin pica:

This is a sample in draft mode

This is a sample of bold

24-pin pica:

This is a sample in draft mode

This is a sample in double-strike mode

Electric typewriter:

This is an electronic typewriter

a cable designed to connect it to a PC, not a TI. This means you will have to fabricate your own cable, have someone else do it for you, or purchase it from a TI dealer.

As for reliability, I know of no device that has proven as sturdy and able as dot-matrix printers. I've got a six-year-old C. Itoh Prowriter that still plugs along after having printed over a hundred million characters. It's gotten a little noisy over the years, but it still works fine. Other than furniture, I can think of few things that have done as well over the long haul.

WHAT SHOULD YOU BUY?

How much you want to spend is the primary issue when buying a printer. If your price range is under \$200, you'll be looking at something like the Star Micronics NX-1000-2 (reviewed in the March 1989 MICROpendium). It's Epson- and IBM-compatible. Tex-Comp offers it for \$189 and includes a bunch of free software (cables are extra). Another low-priced printer to look at is the Epson LX-800 (reviewed in the March 1988 MICROpendium.)

If you're looking to spend over \$300, by all means go for something with 24 pins. These machines are often laden with features. I've got a Panasonic KX-PI124 that I wouldn't part with for anything. It is well-designed and lets you control most of the printer's functions from a touch-sensitive control panel on the front. It effortlessly lets me output on single-sheet as well as fan-folded paper and can handle envelopes without having to remove fan-folded paper from its sprocket drives. I got it for about \$375 (it's what I replaced my Prowriter with). As a rule, once you are in the \$300+ range, you should evaluate the printers on the basis of features that you think you may

want to use and those you don't think you'll need. Features that I find useful are being able to load paper from the bottom as well as from the back; ease of switching from single-sheet to fan-folded feed; and control of fonts, pitch and line-spacing from the printer's control panel. One other piece of advice: Make sure the printer lets you use a variety of paper types without you having to purchase add-on paper feeders and the like. I had one Epson printer several years ago that required a \$200 single-sheet feeder if you weren't going to use fan-folded paper.

DO YOUR HOMEWORK

Obviously, the best way to buy a printer is to see it in operation. Unfortunately, even in stores with displays, this is not always possible. The best situation is to buy it from someone who has a return policy if it doesn't meet your expectations.

Since this isn't always possible, the next best thing is to do your homework, ask questions and satisfy yourself that the printer is indeed what you want. There isn't much fun in finding out after you've purchased a printer that it doesn't do subscripts, or italics, or won't handle fan-folded post cards, or whatever. And never pay the manufacturer's list price for a printer.

If you go looking for used printers, make sure you see them in operation before buying. Run the built-in print test to make sure all characters print correctly and listen for unusual sounds or rattles. And make sure you get a manual. Printer manuals include information about setting DIP switches (Dual Inline Package) as well as advice on using escape codes.

I was going to get into modems this month, but I've run out of space. I'll save that for next month.

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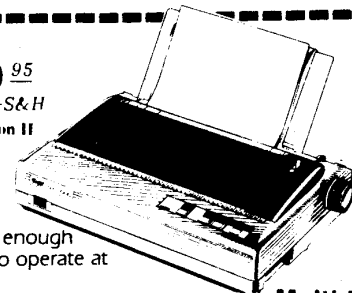
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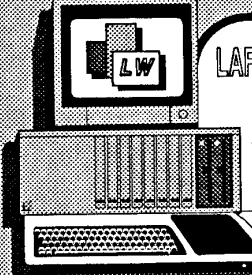
P Code Manual
and Disk

The Boston Computer Society
TI99/4A User Group is proud to an-
nounce the publication of a PCode
Manual for all you users of the
Pcode card on your TI 99/4A. The
manual is a compilation of the
newsletter articles Ron Williams
has written about using the P code
language. It is 32 pages long (8.5 x
11), has a pretty orange cover, and
is printed on 3 hole stock for your
convenient use in a 3 Ring binder.
The manual cost is \$5.

Ron also makes a disk available
that contains many of the pro-
grams in the manual, and many
that are not in the manual. The
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& Handling.

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#1. THE SINGING TI-99/4A SPEECH & MUSIC DISK

This is the disk everyone is talking about. The computer voice actually sings to animated graphics. Includes routines by master programmer Ken Gilliland. Bert & Earnie, Matilda & much more. 2 disk sides, speech & 32 K req. Exbasic autoloader.

#2. WHEEL OF FORTUNE, BLACKJACK & JOKER POKER

Three fantastic freeware programs on one disk. Professional quality and the best "wheel" game around at any price. Wanna would love it!

#3. DUMPIT

This disk helps you transfer many TI modules to disk. Recommended for users with some programming ability. Ed/Assembler and "widget" recommended.

#4. PRINTART

Two disk sides filled with files that print out great quality pictures on most printers. Many famous TV and comic characters on this disk. "Beam me up Scotty."

#5 ORIGINAL TI SALES DEMO DISK WITH TI-TREK GAME

This disk is packed full of assorted files of all types. Graphics, speech etc. Contains complete TI-TREK game for Speech Editor or TE-II module.

#5A. TI MUSIC/GRAPHICS

A great collection of music and matching graphics. Great examples of music & sprite programming.

#6. EXBASIC MUSIC

A two disk side collection of music & graphics that we consider some of the best.

#7. SPACE SHUTTLE MUSIC/GRAPHICS

One of the real outstanding examples of programming. This disk has it all. Great graphics, music, and continuity. A real salute to the space program. It is almost like watching a movie!

#8. LOTTO PICKER

This program randomly generates numbers for use in the various state lotto games and even runs a simulated lotto game. Easy to modify for pick 6 etc. games. A great learning and fun disk.

#9. MONA LISA PRINT OUT

This disk prints out a near photo quality picture of that lady with the classic smile. We understand it was made by digitizing the original with a super powerful computer and converting the output to run on the TI-99/4A. Impresses everyone who sees it! Requires Epson printer compatibility.

#10. GOTHIC PRINT

This disk lets you type out a phrase on the screen and then print it out in gothic (Old English) style. Looks like hand-lettered calligraphy. Use for invitations, announcements and business cards.

#11. ANIMATED CHRISTMAS CARD "WOODSTOCK"

This disk was actually originally sent to TEX-COMP as a greeting from master programmer Ray Kazmer. It was just too good not to share! One of the best examples of computer animation and graphics you will see on any computer!

#12. TI-99 OLOPY

This great piece of programming actually simulates and plays the famous board game. For legal reasons we cannot name the game but "do not pass Go! but go directly to Jail!"

#13. STRIP POKER (PG RATED)

Play Poker against your TI-99/4A. When you win a hand she loses--a piece of her clothes that is. Don't worry about being a lousy poker player. Another file is included where you don't even have to know an ace from a king.

#14. FIGURE STUDY (PG RATED)

A collection of Playboy type centerfolds that can be printed out at your command. Use with any printer.

#15. STAR/EPSON PRINTER DEMO

This 2 sided disk contains a large collection of demo programs to put your Star/Epson compatible printer through its paces. Learn what control codes can do! Lots of text and graphics examples. Second side has a great tutorial on printer graphics with examples!

#16. SIDEWAYS PRINTOUT

This program allows you to print out the material from your printer sideways. Great for spreadsheets, banners and large graphics. Second side contains some new enhancements for Multiplan not available on the TI upgrade.

#17. TI FORTH DEMO

This demo disk was released by TI to show the power of Forth. Fantastic music and graphics. Ed/Assem and 32K required!

#18. TI DIAGNOSTIC

This program loads into the Mini-Memory module and checks out your entire system. Much better than disk based diagnostics that cannot be used if a problem in the disk system is at fault. Complete documentation on second side.

#19. TI WRITER/MULTIPLAN UPGRADE

This disk released by TI adds real lower case to your TI Writer, speed to Multiplan and other enhancements. Easy to use.. just substitute new files for old! Instructions included.

#20. ACCOUNTS RECEIVABLE

This self contained prize winning program loads and runs in Exbasic and has all the features found in a professional accounting system. Complete with documentation and a second disk side with report generating programs.

#21. DATA BASE DEMO DISK

A professional data base program that was originally written to store various magazine articles from computer magazines and then find them by name, subject, key word, or publication. Fast, easy to use and easy to adapt for other applications. Come complete with sample data to make learning data base processing easy. Completely menu driven and unprotected.

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#22. ASTROLOGY

This one is as good as anything you will see in an arcade. Great color graphics and displays of the Zodiac. Enter your birthdate and learn about your sign, your lucky days and famous events in history on your birthday. Even prints out a report. Can be used as a great moneymaker at a charity event. Help guide your spouse's career.

#23. WILL WRITER

Enter your answers to a group of computer asked questions and this program then writes you a last will and testament. Now you can leave your TI-99/4A to your favorite nephew. Works with any printer. Appears legal in all states but better check that out!

#24. ENGINEERING CALCULATIONS

A two sided computer handbook of dozens of the most often used engineering and technical formulas. A real time saver. Does conversions, calculations and even designs electrical circuits. A must for anyone whose profession or hobby involves scientific calculations. Even has medical and communications applications.

#25. MEDICAL ALERT

This disk contains many menu accessible files covering most everyday medical emergencies. A good "what to do until the doctor or paramedic comes" guide. Well written and organized. Could very easily save a life!

#26. R RATED GAME

It was bound to happen. A talented (but demoted) programmer in Germany wrote an invaders type game but with most unusual guns and targets. Definitely not what you would find at your neighborhood arcade. Not only a great party game but some great programming. You must be over 13 to order this one!!

#27. KIDS LEARNING

An educator in Georgia put this two sided disk collection of educational programs together. Contains great material. Math, geography, reading improvement, and even IQ testing. All high quality programs for kids of all ages.

#28. LOADERS AND CATALOGERS

We put together a collection of the best programs that catalog and load a group of programs on a disk. Just try them, pick the one you like and transfer it to another disk with the file name LOAD and you are in business.

#29. LABEL MAKER I

Two great programs for making custom labels for disks, addresses, video tapes or any other application. Even contains a graphic display of the TI-99/4A console. Now you can create custom labels of any number by just typing in the lines as you want them. Uses standard tractor labels.

#30. HOUSEHOLD BUDGET PRINTOUT

With this disk you print out the data you have stored with the TI HBM Module. HBM is a great module that can be used for many home and small business applications but TI forgot to include a printout function. This program comes with full instructions and we are sure that your HBM Module will now start being used. Fantastic programming job.

#31. MORSE CODE TRAINER DISK

This disk has everything you need to learn and practice Morse Code for the various FCC license exams. It also is great for scout groups and school "ham" clubs for group training and merit badge qualification. Professional quality.

#32. EXBASIC XMAS MUSIC

Two disk sides full of high quality xmas music that can be played throughout the holiday season and then used as a learning tool since it contains wonderful arrangements and graphics. Autoloading and menu driven.

#33. CHECKERS & BACKGAMMON

A collection of great checkers and backgammon games for the TI-99/4A. These are professional in quality and will keep you busy for hours.

#34. SOLITAIRE & SCRABBLE

Another collection of classic games for the TI-99/4A. Exbasic & 32K req.

#35. PROGRAMMING AIDS & UTILITIES I

A collection of some unusual programs of interest to programmers. One program shows a group of opening title displays, another is a cross reference program as good as any of the commercial ones, plus a great disk management utility.

#36. STRICTLY BUSINESS

A collection of various programs for evaluating loans, calculating interest, and other financial items such as return on investment and security performance. Two disk sides filled with financial and business related programs.

#37. LAPD COOKBOOK

This unofficial police cookbook was put together by one of our boys in blue who is also a gourmet chef. (Yes, it contains jailhouse chili) Over 50 great recipes from soup to nuts on two disk sides and each separate side can be called up on screen or printer in exbasic from a menu. As good as any of the new PC computer cookbooks we have seen.

#38. GREAT 99/4A GAMES VOL. I

A collection of professional games in assembly and exbasic that all load from a menu in exbasic. Includes a great ski game where you dodge the trees in a fast downhill run. We have included only the best.

#39. GREAT 99/4A GAMES VOL. II

Still more of the great ones from all over the world. The quality, graphics and speed of many of these games will make you wonder why they were never released commercially.

#40. ARTIFICIAL INTELLIGENCE

This disk contains the famous computer program "Eliza" where you type in a question or a problem you are having and "Eliza" helps you find the solution. Also contains one of the better bio-rhythm programs so you can analyze all your emotional problems at one sitting.

#41. VIDEO GRAPHS MODULE BACKUP DISK

This disk is a backup of the discontinued Video Graphs Module from TI. For legal reasons, it can only be purchased for backup use by owners of the original module. Do not order UNLESS you have the original module and intend to use this disk only for backup purposes. Exbasic autoloading.

#42. FUNNELWEB FARM UTILITY

You heard about this one, now direct from Australia is the latest version of this fantastic utility that puts everything at your command. From one program you can access word processing, editor assembler, telecommunications and just about everything else. A freeware program complete with documentation on a second disk side.

#43. BEST OF BRITAIN, VOL I

Now for the first time, a collection of the best 99/4A games Britain has to offer including the famous "Billy Ball" series of arcade games. Great graphics, action and excitement.

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A disk filled with graphics for the Label Maker I disk (#29). Dozens of great graphics for custom labels!

#45. BEST OF BRITAIN, VOL II

This disk contains an outstanding 3-D graphics adventure game for the TI-99/4A. Carfax Abbey lets you actually move through a four story mansion complete with bats and vampires. You actually are placed in each room and go up and down stairs and through secret panels. Legend of Zelda... look out!

#46. SUPER TRIVIA 99

A great trivia game for 1 to 4 players with great questions and capability to add your own and print out the files. This one is a real challenge.

#47. INFOCOM RAPID LOADER

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FREE DELUXE DISK STORAGE CASE WITH EACH ORDER OF FOUR OR MORE DISKS!!!

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This Pacman/Munchman type game starts at a slow pace and slowly speeds up to a break-neck pace. A totally new experience.
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This great assembly game starts where Invaders leaves off. Add features like descending aliens and closing walls. Hours of great arcade action.
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Move through the chambers of a Pyramid in search of hidden treasure. Fantastic graphics and great entertainment.
- #51. BERLIN WALL (from Canada)**
This game requires a mine field to be crossed before escaping from E. Berlin. Good graphics and a real challenge.
- #52. ANIMATION 99 (from Germany)**
THIS IS THE ONE!!! A demo disk filled with computer animation routines like you have never seen before on any computer. See famous cartoon figures move with more realism than on Sat. morning TV. This disk received a standing ovation when previewed at a local users group. We have even included instructions how to do it yourself on the second disk side. This one is a show stopper!!!
- #53. HACKER/CRACKER**
A collection of disk copying programs that copy TI disks by tracks. If one of these can't copy a protected disk nothing will. We included a collection of the very best ones including both TI and CorComp compatible. These programs require 2 disk drives and 32K of memory.
- #54. ASTRONOMY**
This program from Australia plots the heavens and teaches you about the solar system. A great learning and reference tool. Exbasic and 32K required. Don't confuse this one with our Astrology demo. They are not the same...ask Nancy!
- #55. SCREEN DUMP**
This program allows you to dump disk and even module programs to a Star/Epson compatible printer. Comes with easy to follow plans to build a load interrupt switch which is needed to dump module programs. This dump program by Danny Michael is considered the best of the bunch! Complete with documentation.
- #56. SPREAD SHEET**
OK, it's not Multiplan but it works great and handles many spread sheet applications. A great way to learn to use spread sheet software. Comes with full instructions and documentation.
- #57. TELCO**
Considered one of the best data communications programs for the TI-99/4A. Complete with documentation.

- #58. PR BASE**
The alltime most popular and widely used data base program for the TI-99/4A. A freeware program that is widely supported and updated.
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A fast action game from F.R.G. that will keep you going for hours. Many screens and skills required.
- #62. DISK MANAGER II MODULE BACKUP**
The complete TI Disk Manager II on Disk. For legal reasons it is only available to owners of the original module for backup use.
- #63. ASTROBLITZ/MAZOC**
A pair of great games that continue where Parsec and Munchman leave off. Imagine Parsec with enemy space craft coming from in front and in back of your ship!!!
- #64. MAJOR TOM/SPACE STATION PHETA**
A pair of great space games. These two are going to keep you in front of the 99/4A for hours. Great!
- #65. PERFECT PUSH**
An all new space game where you assemble and launch a rocket ship in outer space while avoiding a space monster. This one is professional in every way...graphics, speed and action!!!
- #66. HEBREW TYPEWRITER**
This program converts your TI-99/4A keyboard into a typewriter that displays Hebrew letters on the screen. Can also be printed when used in conjunction with screen dump program (included). Great for religious training or making your copy of the dead sea scrolls or ten commandments!
- #67. GENEALOGY**
Now you can set up your family tree and store or print out the records. Great for keeping track of family relationships and records.
- #68. CHESS**
The original computer chess game Sargon has been reprogrammed for the TI-99/4A. Now play chess with your computer. Documentation included. Exbasic autoload.
- #69. COMPUTER PLAYER PIANO/KEYBOARD CHORD ANALYSIS**
A unique music program which displays a piano on the screen and actually plays your selections.
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The very latest (and best) "runner" game based on TI Runner and Star Runner. Great action, graphics and entertainment.

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Two more disk sides loaded with the best in educational programs. Kids improve their math, spelling and comprehension skills while having fun.
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Fantastic space game from Germany. Pilot your ship through narrow and crooked channels in space without colliding. Great graphics and music.
- #73. CRYPTO (gram)**
One of the best word games we have seen for any computer. Set up like a TV game show with great screen displays.
- #74. LABEL MAKER II**
Make labels for holidays and special events. You compose the text and select the resident graphics for the occasion.
- #75. DISK CATALOGER**
Now you can organize your disk files with this great utility. Files, sorts, and prints your records. Easy to use.
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A collection of very useful material. Includes a program to convert basic to exbasic so your old basic programs will load & run in exbasic, even with graphics. Also includes two on screen diagnostic programs to test your keyboard and processor. A great merge utility is also on this disk.
- #77. MICROdex 99**
A database program by Bill Gaskill which files and retrieves data such as magazine articles. A sample database is included.
- #78. ARTCON+ BY RAY KAZMER ATTENTION GRAPHX AND TI ARTIST USERS!!!**
This program lets you convert Exbasic graphics to TI Artist and Graphx pictures. Also contains a new MAC-RIE (2). for converting from Artist to Graphx.
- #79. DM1000 V3.5**
One of the most popular disk managers for the TI-99/4A. Originally a rip-off of the CorComp manager, it has been improved and refined by talented users all over the world. This version is deemed the most reliable to date and is far advanced over the TI Disk Manager II. Distributed by permission from CorComp.
- #80. BIRDWELL DISK UTILITY**
A must if you are into programming and software development. Besides being a great disk manager, it has provision for copying sectors, comparing files and is menu driven. Complete with documentation.
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A complete family & small business accounting system including a checkbook manager, budget analysis, mailing list and an inventory program. Complete with documentation. Easy to modify for specific needs.
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This program from Australia creates a different puzzle each time you run it. Self contained with definitions and vocabulary taken from a leading crossword dictionary. Great crossword fun.
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A two disk side collection of useful programs for the home. Includes banking, cooking, home bar guide, utility records, and much much more. Something for everyone.

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TI'S UNRELEASED LEGENDS

The little brother to the 4A and 99/8

By RICHARD FLEETWOOD

This is the second installment of a series of articles about products Texas Instruments developed for its home computer but never released. Fleetwood is a former president of the Forest Lane TI User Group of Dallas.

One thing that I do need to mention the TI99/8 was its compatibility with 99/4A software. Anything that is on cartridge will work perfectly, except Extended BASIC, for obvious reasons. Most BASIC and XBASIC programs also will work. The kinds of programs that won't work are machine code programs that are AORGed into a specific memory location. Anything that is relocatable in memory will work. The kinds of XBASIC programs that won't work are the ones that contain hidden machine code in the loaders. To tell the truth, I'm not sure if these loaders don't work with the 99/8 or the Hexbus disk drive controller, which uses a 9995 microprocessor as a controlling chip. I'll find out someday and let you know.

The only reason that the TI99/8 didn't make it to the market was a decision by company CEO J. Fred Bucy. He was the man who decided that TI had to do the

quickest thing it could to heal the wound through which hundreds of millions of dollars was flowing out. As the result of a board meeting he called, the entire home computer division was cancelled. So ended the 99/8.

LITTLE BROTHER OF THE 4/A

Another project that appeared about the time of the 99/8, if not before, was the 99/2. This computer was the *little* brother of the 99/4A and had some very limited features. However, it did have one thing that the 99/4A could have used — it had a very fast system clock that enabled some kinds of programs that had repetitive code to run almost three times as fast as on the 4A.

The 99/2 was the brainchild of a couple of engineers who thought it would help to cut costs, and improve marketing coverage. TI's home computer marketing people at the time decided to use the 99/2 to compete with the very popular Sinclair ZX81 (aka Timex Sinclair 1000). The only problem was that by the time TI had the 99/2 ready to market, the price of the Timex 1000 had dropped way below the production cost of the 99/2. This little jewel never really had a chance, and most

of the blame can be laid on and overzealousness to control the entire home computer market — a market that was too big for any one manufacturer to handle. TI lost several million dollars in time and money working on the 99/2 project, and should have applied it all to the big brother, the 99/8, so that it would have had a better chance. But that's hindsight.

The features of the 99/2 that are worth noting are its small size, its black and white output instead of color, the absence of a front cartridge port — the cartridge port was in the back of the console — and its hexbus port. There was no side Input/Output port, since this computer was designed for small budgets and projects. It was limited to 16 kilobytes of memory, which compared directly to the Timex 1000 with its memory expansion bringing it up to 16K. I have seen several of the 99/2 consoles on the used market in the Dallas area selling for \$50-\$100. The 99/8 consoles also have been sold, with prices ranging from \$600 to \$900, depending on the peripherals.

The next installment will focus on the TI GROM box, the forerunner of the GRAM Kracker—Ed.

1990 TI FAIRS

FEBRUARY

TI-Fest West '90, Feb. 17-18, Day's Inn, 88 E. Broadway, Tucson, Arizona. Sponsored by Southwest 99ers. For information, call (602) 747-5046 or the Cactus Patch BBS, (602) 795-1953, check GENie or write P.O. Box 17831, Tucson, AZ 85730. For room reservations, call (602) 622-4000 by Jan. 16 and mention Fest-West.

MARCH

West Coast Computer Fair, 10 a.m.-6 p.m. March 1-4, Brooks Hall/Civic Center, San Francisco, California. San Francisco 99ers at Booth 1960. Fee \$10 per day, discounts for multiple days. Call Neil Wood, (707) 425-3854.

TICOFF (TI Computer Owners' Fun Faire — The IBM & Clone Owners' Fun Faire, 9:30 a.m.-4 p.m. March 17, Roselle Park, New Jersey. For information, call (201) 241-4550 or the TICOFF BBS (201) 241-8902.

APRIL

Boston Computer Society Fayuh, April 28, Central Middle School, Waltham, Massachusetts. Write Justin Dowling, Co-Director, TI99/4A User Group, The Boston Computer Society, One Center Plaza, Boston MA 02108.

Canadian TI-FEST, April 28, Merivale High School, Nepean, Ontario, Canada. For information, contact Ruth O'Neill, 34 McLeod St., Ottawa,

Ontario, Canada K2P 0Z5 or (613) 234-8050 or CompuServe 72117,3541 or Delphi REON.

MAY

TI Multi User Group Conference, 9 a.m.-6 p.m. May 26, Reed Hall/Student Activities Building, Ohio State University Lima Campus. For information write Lima Ohio User Group, P.O. Box 647, Venedocia, OH 45894, or call Dave Szippel evenings (419) 228-7109.

Annual Meet of TI99/4A Users Group UK, North Gate Arena, Chester, England. Contact Stephen Shaw, 10 Alstone Rd., Stockport, Cheshire, England SK4 5AH.

OCTOBER

Fourth Annual CPUG Computer/Electronics Exposition, 7 a.m.-3:30 p.m. Oct. 14, Cocoa Avenue Plaza, 605 Cocoa Ave. Hershey, Pennsylvania. Preregistration through Aug. 3. Write Central PA 99/4A Users Group, P.O. Box 14126, Harrisburg, PA 17104-0126 or call Dave Ratcliffe (717) 238-5414 or The Data Factory BBS (717) 657-4992 or 4997 (24 hours 8-N-1 300/240).

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.

High resolution graphics in Forth

Basic words to create graphics in the two-high res modes

By LUTZ WINKLER

Part 1 of this series was published in the November 1989 MICROpendium. To make use of these Forth programs, you must have a device that uses TI's 9938 chip (Dijit Systems AVPC, Geneve 9640 or Mechatronics 80-column card.)—Ed.

Before picking up where I left off in November, an apology is in order to those who encountered a problem with G6/G7. First, on line 15 of screen 128 the word should be R->BASE, not R->BSE. My disk shows it correctly, so I assume there was a hiccup when I listed those screens to the printer (and my proof-reading was sub-standard).

Second, the definition for 2SWAP in GFILL (screen 125) was not given. I have a number of those double-stack operators buried in my BSAVE and failed to consider that some of you may not have them readily available. In case you did not find 2SWAP in the manual (Appendix C, page 1, Notes on *Starting Forth*) the high-level definition is:

```
: 2SWAP ROT >R ROT R;
```

or you could use:

HEX

```
CODE 2SWAP C029 , 2, C059 , C669 , 4, CA69 , 6, 2, CA40 ,
6 , CA41 , 4 , 045F ,
```

I promise to be more careful in the future and ensure that all definitions are provided. My last article ended with the word to draw a LINE. As I indicated, it had been modified from the original and now uses CONSTANTS which makes a second line drawing word easier to use. LINE2 (screen 129) uses the end point of the previously drawn line as its starting point. Where LINE needs starting AND destination XY coordinates to do its job, once LINE has been used LINE2 only needs the destination coordinates. As an example, here is the sequence for drawing a triangle:

```
G7 ( switch to G7 mode )
GCLS ( clear the screen )
255 DCOL ( white dot color )
10 10 85 90 LINE ( first side of triangle )
100 50 LINE2 ( second side )
10 10 LINE2 ( third side )
(See Page 30)
```

```
SCR #129
0 ( LINE2                                08SEP89 LW )
1 BASE->R DECIMAL 128 CLOAD LINE R->BASE
2 BASE->R HEX 0 CLOAD LINE2 \ draw line from end of previous
3 : LINE2 ( xd, yd -- ) XD YD 2SWAP \ line to xd/yd
4   ' YD I ' XD I ' YS I ' XS I
5   0 1 VWTR BEGIN 2 STAT? 8 SLA 100 AND UNTIL \ status
6     XS DUP 24 VWTR 8 SRA 25 VWTR \ xs
7   YS 100 + DUP 26 VWTR 8 SRA 27 VWTR \ ys - page
8   XS XD - ABS YS YD - ABS 2DUP 2DUP MAX
9     DUP 28 VWTR 8 SRA 29 VWTR \ Maj
10    MIN DUP 2A VWTR 8 SRA 2B VWTR \ Min
11    ,PC 2C VWTR \ dot color
12  > IF 0 ELSE 1 THEN \ MAJ
13  XD XS > IF 0 ELSE 4 THEN + \ DIX
14  YD YS > IF 0 ELSE 8 THEN + \ DIY
15  2D VWTR 70 2E VWTR 0 VS 40 1 VWTR ; R->BASE
```

```
SCR #110
0 ( AVPC GRAPHICS 1 MODE - 1/2          27AUG88 LW )
1 BASE->R HEX 0 CLOAD G1
2 : G1 0 E VWTR \ VVRAM access base register to 0
3   0 0 VWTR \ select graphics 1 mode
4   80 1 VWTR 80 83D4 C1 \ enable screen display
5   8 8 VWTR \ select 84K VRAM
6   0 9 VWTR \ no interface
7   1 4 VWTR \ Pattern Generator Table @ >800
8   1E 3 VWTR 0 A VWTR \ Color Table @ >780
9   1 2 VWTR \ Pattern Name Table @ >400
10  F4 7 VWTR \ screen (border) color
11  1C 5 VWTR 0 B VWTR \ Sprite Attribute Table @ >700
12  0 6 VWTR \ Sprite Generator Table addr >0
13 -->
14 \ NOTE: The AVPC Graphics 1 mode can utilize all graphics
15 \ primitives provided by TI-Forth
```

```
SCR #111
0 ( AVPC GRAPHICS 1 MODE - 2/2 )
1 0 400 00 VFILL \ initialize SGT
2 400 300 20 VFILL \ initialize PNT
3 400 SCRN_START 1 20 SCRN_WIDTH 1 700 SCRN_END 1
4 700 80 00 VFILL \ initialize SAT
5 780 80 E4 VFILL \ initialize color table
6 800 800 00 VFILL \ initialize PGT
7 1000 DISK_BUF 1 1400 838E 1 1480 PABS 1
8 1 PABS @ VSWB 16 PABS @ 1+ VSWB 1 834C C1
9 PABS @ 8356 1 0A 0E SYSTEM
10 13 BLOCK F0 + 8F0 30F VMBW \ charset to PGT
11 F4 783 VSWB \ white cursor
12 B VOPMDE 1 \ VDP mode 11
13 0 0 GOTOXY ;
14 R->BASE
15
```

```
SCR #140
0 ( AVPC PALETTE TUNER II - 1/3        rev 02OCT88 LW )
1 BASE->R DECIMAL 110 CLOAD G1
2 HEX A 8 VWTR 0 VARIABLE TCOL 0 VARIABLE FLG
3 0 VARIABLE TRED 0 VARIABLE TGRN 0 VARIABLE TBLU
4 : COLSET 10 0 DO I 4 SLA 790 I + VSWB LOOP ; \ colors in PDT
5 : TITLE 4 1 AT ." AVPC COLOR PALETTE TUNING"
6   2 5 AT ." 1 2 3 4 5 6 7 8 9101112131415"
7   2 7 AT ." Select color (1-15) " 2 A AT ." Range: 0-7"
8   SPACE ." R" SPACE ." G" SPACE ." B"
9   3 C AT ." Default: " 4 E AT ." Current:"
10  1 10 AT ." Enter new > ";
11 : 0-7 KEY 30 - DUP DUP 0 < SWAP 7 > OR SWAP 30 + EMIT ;
12 : MORE? 9 13 AT ." 1 - Repeat" 9 14 AT ." 2 - New color"
13   9 15 AT ." 3 - Exit" 9 16 AT ." Select " KEY
14   30 - DUP DUP 1 < SWAP 3 > OR IF DROP MYSELF THEN ;
15 R->BASE -->
```

```
SCR #141
0 ( AVPC PALETTE TUNER II - 2/3 )
1 BASE->R HEX 0 VARIABLE DEFS 30 ALLOT \ RGB defaults
2 DEFS 1" 000161373111237511267711733861664141625655777"
3 : .DEFS DEFS TCOL @ 3 * + DUP 3 - DO 1 C@ LOOP
4 : .CURR TRED @ D E AT . TGRN @ F E AT . TBLU @ 11 E AT . ;
5 : COLPATCH 11 A DO 14 I @ SCRN @ 8 * 80 + >R
6 : SCRN_WIDTH @ * + SCRN_START @ + R) VFILL LOOP ;
7 : PORT2 FLG @ IF .CURR THEN TCOL @ 10 VWTR TRED @ 4 SLA
8   TBLU @ + 8C04 C1 TGRN @ 8C04 C1 COLPATCH ;
9 : RED D 10 AT 0-7 0= IF TRED 1 PORT2 ELSE DROP MYSELF THEN ;
10 : GRN F 10 AT 0-7 0= IF TGRN 1 PORT2 ELSE DROP MYSELF THEN ;
11 : BLU 11 10 AT 0-7 0= IF TBLU 1 PORT2 ELSE DROP MYSELF THEN ;
12 : ?COLOR 16 7 AT ." " 16 7 AT QUERY INTERPRET DUP DUP
13   1 < SWAP F > OR 0= IF DUP TCOL 1 10 VWTR COLPATCH ELSE
14   DROP MYSELF THEN ; R->BASE -->
```

```
SCR #142
0 ( AVPC PALETTE TUNER II - 3/3 )
1 BASE->R HEX
2 : .BL 11 C DO D I AT ." " LOOP ;
3 : PAL-LOOP FF 88 DO I DUP EMIT8 EMIT8 @ + LOOP ;
4 : .PALETTE 1 3 AT PAL-LOOP 1 4 AT PAL-LOOP ;
5 : CURSR EC 8F7 VSWB 8F7 8F1 DO 84 I VSWB LOOP EC 8F0 VSWB
6 \ CURSR is not a muet, but w/o this it looks funny in VOPMDE 2
7 : SET-LEVELS .BL DEFS FLG @ IF .CURR THEN RED GRN BLU ;
8 : NEWCOLOR 0 TRED 1 0 TGRN 1 0 TBLU 1 ?COLOR SET-LEVELS ;
9 : CHOICE MORE? CASE 1 0 1 FLG 1 SET-LEVELS ENDOF
10   2 0 0 FLG 1 .BL NEWCOLOR ENDOF
11   3 0 0 0 0 TRED 1 TGRN 1 TBLU 1 QUIT ENDOF
12   ENDCASE MYSELF ;
13 : SETUP G1 C00 400 FF VFILL COLSET .PALETTE TITLE ;
14 : TUNE SETUP ?COLOR SET-LEVELS CHOICE ; R->BASE
15 CLS CR ." Enter TUNE to run program." CR ; 8
```

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(Continued from Page 29)

Now, with DOT, LINE, LINE2 and GFILL you have the basic words to create graphics in the two high-resolution modes the 9938 chip offers. However, there are times when a lower resolution mode serves a purpose just as well, as shall be seen shortly. For instance, the G6 mode is limited to 16 colors but — and this *but* should probably be capitalized — these do not need to be the default colors. They can be chosen from the 512 colors of the palette of the 9938. In order to facilitate this, I wrote a short program named Palette Tuner and I used Graphics 1 mode for it. This mode is the one you normally find yourself in when you use your TI with BASIC or Extended BASIC and it is more than sufficient to play with the palette. Essentially, what it amounts to is using register 16 (the color palette address pointer) and then output two bytes of data to port 2 (>8C04). The format for the two bytes is as follows:

```
1st byte  0 R2 R1 R0 0 B2 B1 B0
2nd byte  0 0 0 0 0 G2 G1 G0
```

where R stands for the red component, B for the blue and — you guessed it — G for green. Since only three bits are allowed, the maximum level for each color is 7.

You can try your hand at changing palette colors with the following routine:

```
HEX c 10 VWTR
nn 8C04 C!
On 8C04 C!
```

where c is a number from 1 to >1F and n can range from 1 to 7. Unless the color c happens to be displayed on the screen, you won't be able to see any change, however. And that is where Palette Tuner comes in. Before you play with it, do one of the following:

1. Type in screens 110 and 111 (if you use a two-drive system) as shown, or;
2. Enter the screen 110-111 information — leaving out the comments — on screen 52 of your system disk (there is only one screen available for this mode on the TI disk). This will enable you to load the G1 mode with the -GRAPH command of TI-Forth.

The Palette Tuner can be entered on the screens as shown or — if you prefer — it can replace screens 65 through 67 on the system disk because they are no longer needed unless you still utilize TI's GRAPHICS2 or their 64-column editor. If you install it on the system disk, make sure to change 110 CLOAD G1 to 65 CLOAD G1.

Let me interject here that working with a system disk (TI-Forth) in drive 1 and a data disk containing screens 90-179 in drive 2 simplifies working with Forth to a large degree and — because I work with this setup — that is the reason you see those higher screen numbers.

But no matter where you put Palette Tuner, you will find it easy to work with and it works in the lowliest of all display modes. Across the top a color bar with the 15 default colors is displayed. You are prompted to select the number of the color you wish to

(See Page 32)

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James Brooks, P.O.Box 578341

Chicago, Illinois 60657

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WAR GAMES

All you need to save North America is XBASIC and joysticks

War Games appeared in 1986 in the German publication TI99/4A Special. The program was written by Yuan-Tseng Lee. We have translated the text portions as best we could. The program runs in Extended BASIC and requires a joystick. It looks best on a color monitor.

The game is modeled after the popular War Games computer game. The object is to use a targeting mechanism, controlled

by the joystick, to destroy incoming enemy missiles.

The graphics and sound are nicely done, though the color scheme is a bit on the dark side, which makes it difficult to read some of the messages. COINC detection is pretty good, though there were times when the missile obliterated its target even when we thought we'd destroyed it. However, for the most part, it works well. Take note that

it is a difficult game to win, unless you can figure out a good strategy. Missiles home in on a target two at a time from opposite directions and at times reach the target simultaneously. There may be a way to destroy both of them at once, but we haven't been able to figure it out.

The game worked best with TI joysticks. The targeting box was difficult to control with other joysticks we used.

WAR GAMES

```

10 ! *****
!105
11 ! *
!151
12 ! *      WAR GAMES
!238
13 ! *
!151
14 ! *      Copyright by
!203
15 ! *
!151
16 ! *      Yuan-Tseng Lee
!216
17 ! *
!151
18 ! * Equipment required:
!170
19 ! * TI99/4A console
!125
20 ! *      Extended BASIC
!138
21 ! *      Joystick

!231
22 ! *
!151
23 ! *      Program Length:
!075
24 ! * Approx. 7660 bytes
!057
25 ! *
!151
26 ! *****
!105
100 RANDOMIZE :: DIM AL(24),
TON(8);!221
110 E=100 :: F=1000 :: GU,SC
,Z=0 :: HI=1000 :: BO=0 !207
120 TON(1)=247 :: TON(2)=262
:: TON(3)=294 :: TON(4)=330
:: TON(5)=370 :: TON(6)=392
:: TON(7)=440 :: TON(8)=494
!143
130 CALL SCREEN(2):: CALL CL
EAR !230
140 DATA 7E4242425A5A427E,30
10101010103C3C,7C04047C60606
07C,780808780C0C0C7C,4444444
4447C0C0C,7C40407C0C0C0C7C !
178
150 DATA 7E40407E6262627E,7E
06060606060606,3C24247E62626
27E,7E42427E0606067E,0018180
000181800 !089
160 DATA 3E22223E62626262,7C
64647E6262627E,7E46464040424
27E,7C6262626262627C,7E40407
E6060607E,7E60607E20202020 !
118
170 DATA 7E6666606E62627E,44
44447C66666666,0808080818181
818,040404040464647C,4448507
E66666666,202020206060607E !
038
180 DATA 86CEB6868686B6B6,42
62524A46425A5A,7E42424246464
67E,7E42427E60606060,7C44444
4646C647E,7C44447E62626262 !
213
190 DATA 7E42407E0262627E,7E
18181818181818,4646464646464
67E,8686868686442810,DADAC2C
2C2D2EAC6,4242241818246262 !
192
200 DATA 8686864428101010,7E
4244081026467E !150
210 DATA 101088E89880804,204
080E010100C03,00102824242848
5,201010202020408,0002060A0A
0A0908 !039
220 DATA 902020404080808,010
2020201010101,10102020404080
8,0101020202010101,808040404
080808 !153
230 DATA 0101020202020101,02
02020202040404,8080804040404
02,2020201010100808,08040404
02020101 !229
240 DATA 0101020204040808,80
9068080F010101,8080809894545
454,001E11302020408,00000080
700C0301 !102
250 DATA 54522A2A2A2A2915,01
01010202020202,E0100808040404
402,151515140A0A0A0A,0000008
08040402,0202010101,20202020
20C !168
260 DATA FF8181818181FF,E7
(See Page 33)

```

FORTH—

(Continued from Page 30)

modify. Input the RGB levels and you see the result on the screen. After exiting from this program, the modifications remain in effect until and unless the system is powered down or a reset is performed.

Next time we'll deal with the 40-column text mode, the GRAPHICS2 mode and shorten their commands to two-letter words so they will be consistent with the rest of the mode selection words.

WAR GAMES—

(Continued from Page 32)

```

818181818181E7,0000C4FFC4,00
0023FF23,,!178
270 DATA 00000000000000FF,80
80808080808080,0101010101010
101,FF,,,FF8181818181FF !
048
280 FOR I=0 TO 10 :: READ C$
:: CALL CHAR(48+I,C$):: NEX
T I !025
290 FOR I=0 TO 25 :: READ C$
:: CALL CHAR(65+I,C$):: NEX
T I !030
300 FOR I=0 TO 40 :: READ C$
:: CALL CHAR(96+I,C$):: NEX
T I !031
310 CALL CHAR(61,"0000007E00
E7",42,"7EC3A59999A5C37E")!0
68
320 DISPLAY AT(18,5):"COPYRI
GHT BY" :: DISPLAY AT(20,5):
"YUANTSENG LEE" !122
330 DATA 23,1,18,7,1,13,5,19
!046
340 DATA 3,3,1,2,1,1,1,3,1,6
,1,7,4,8,4,6,3,4,1,5,1,6,1,5
,1,6,1,4,4,3,4,1 !198
350 DATA 3,3,1,2,1,1,1,3,1,6
,1,7,4,8,2,6,1,6,1,6,2,7,2,7
,1,6,1,6,2,5,8,6,0,0 !045
360 FOR I=5 TO 8 :: CALL COL
OR(1,5,2):: NEXT I :: CALL C
OLOR(2,13,2,3,5,2,4,14,2)!21
2
370 FOR I=1 TO 200 :: NEXT I
!252
380 FOR A=8 TO 12 STEP 2 ::
READ AL(A):: FOR I=1 TO 26 :
: CALL HCHAR(5,A,I+64):: CAL
L SOUND(10,110,15,-5,0)!030
390 IF I=AL(A)THEN 410 !218
400 NEXT I !223
410 NEXT A !215
420 FOR A=16 TO 24 STEP 2 ::
READ AL(A):: FOR I=1 TO 26
:: CALL HCHAR(5,A,I+64):: CA
LL SOUND(10,110,15,-5,0)!081
430 IF I=AL(A)THEN 450 !002
440 NEXT I !223
450 NEXT A !215
460 CALL HCHAR(6,7,61,19)!18
6
470 DISPLAY AT(10,5):"THE GA
ME BEGINS IN" :: FOR I=5 TO
0 STEP -1 :: CALL SOUND(10,-
1,0):: DISPLAY AT(12,4)SIZE(
7):!;"SEC" :: FOR T=1 TO 185
:: NEXT T :: NEXT I !116
480 CALL HCHAR(1,3,42,28)::
CALL HCHAR(24,3,42,28):: CAL
L VCHAR(2,3,42,22):: CALL VC
HAR(2,30,42,22)!191
490 DISPLAY AT(10,5)SIZE(20)
:"PLEASE PRESS THE" :: DISPL
AY AT(12,5)SIZE(15):"FIRE BU
TTON" !227
500 RESTORE 340 !178
510 READ D,F :: IF D=0 THEN
500 :: CALL KEY(1,K,S):: IF
K=18 THEN 530 :: CALL SOUND(
D*200,TON(F),0,INT(TON(F)/2)
,8)!159
520 GOTO 510 !078
530 CALL CLEAR !209
540 FOR I=2 TO 14 :: CALL CO
LOR(1,2,2):: NEXT I !076
550 B,C=2 :: GE=5 !187
560 DISPLAY AT(2,10):".....
....ab" !033
570 DISPLAY AT(3,10):"c.....
....de" !043
580 DISPLAY AT(4,9):"f.....
....g" !210
590 DISPLAY AT(5,9):"f.....
...h" !165
600 DISPLAY AT(6,10):"i.....
....i" !211
610 DISPLAY AT(7,9):"j.....
...k" !174
620 DISPLAY AT(8,10):"l.....
...k" !171
630 DISPLAY AT(9,10):"m.....
...n" !176
640 DISPLAY AT(10,10):"n....
....o" !219
650 DISPLAY AT(11,11):"p....
...g" !168
660 DISPLAY AT(12,12):"q...r
sh" !215
670 DISPLAY AT(13,12):"t...u.
.vl" !020
680 DISPLAY AT(14,12):"wx k.
.yz" !091
690 FOR I=17 TO 23 :: CALL H
CHAR(1,4,123,5):: NEXT I !13
1
700 DISPLAY AT(18,10)SIZE(17
):"ENERGY:" !033
710 DISPLAY AT(20,10)SIZE(17
):"HIGHSCORE:" !239
720 DISPLAY AT(22,10)SIZE(17
):"SCORE:" !205
730 CALL HCHAR(1,4,129,27)::
CALL HCHAR(15,4,132,27):: C
ALL HCHAR(16,10,129,21):: CA
LL HCHAR(24,10,132,21)!009
740 CALL VCHAR(2,4,130,13)::
CALL VCHAR(2,30,131,13):: C
ALL VCHAR(17,10,130,7):: CAL
L VCHAR(17,30,131,7)!204
750 FOR I=1 TO 20 :: CALL HC
HAR(INT(RND*7)+17,INT(RND*5)
+4,136):: NEXT I !176
760 DISPLAY AT(18,18)SIZE(9)
:E !108
770 DISPLAY AT(20,20)SIZE(5)
:HI !166
780 DISPLAY AT(22,16)SIZE(12
):SC !225
790 FOR I=2 TO 8 :: CALL COL
OR(1,7,1):: NEXT I :: FOR I=
9 TO 12 :: CALL COLOR(1,5,1)
:: NEXT I :: CALL COLOR(13,1
3,1,14,5,16)!002
800 CALL SPRITE(#1,124,7,57,
125)!109
810 Z3=INT(RND*11)+2 :: S3=I
NT(RND*9)+11 :: M=0 :: GE=GE
+1 :: IF GE>12 THEN GE=12 !2
11
820 GOSUB 1020 !079
830 CALL SPRITE(#3,123,16,Z3
*8+1,S3*8+1):: FOR I=1 TO 10
:: GOSUB 1020 :: NEXT I ::
CALL COLOR(#3,1)!178
840 A=INT(RND*2)+1 :: ON A G
OTO 850,860 !104
850 CALL SPRITE(#2,125,14,Z3
*8+1,25,0,GE):: CALL SPRITE(
#4,126,14,Z3*8+1,236,0,-GE+4
):: GOTO 870 !206
860 CALL SPRITE(#2,126,14,Z3
*8+1,236,0,-GE):: CALL SPRIT
E(#4,125,14,Z3*8+1,25,0,GE-4
)!149
870 CALL COINC(#2,#3,8,C2)::
CALL COINC(#3,#4,8,C3):: IF
(C2=-1)+(C3=-1)THEN 880 ELS
E 910 !082
880 CALL DELSPRITE(#2,#3,#4)
:: CALL MOTION(#1,0,0):: CALL
L SOUND(-100,-7,0)!120
890 CALL HCHAR(Z3+1,S3+1,137
):: Z=INT(RND*40)+50 :: BO=1
!235
900 SC=SC-Z :: DISPLAY AT(22
,16)SIZE(12):SC :: IF SC<-20
(See Page 34)

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WAR GAMES—

(Continued from Page 33)

```

0 THEN 1130 ELSE 810 !065
910 CALL KEY(1,K,S):: IF K<>
18 THEN GOSUB 1020 :: GOTO 8
70 !248
920 CALL MOTION(#1,0,0):: CA
LL COINC(#1,#2,8,C1):: CALL
COINC(#1,#4,8,C4)!134
930 IF C1<>0 THEN 960 !172
940 IF C4<>0 THEN 990 !205
950 GOSUB 1020 :: E=E-5 :: D
ISPLAY AT(18,18)SIZE(9):E ::
IF E<5 THEN 1070 ELSE 870 !
045
960 CALL DELSPRITE(#2):: CAL
L SOUND(-100,880,0):: SC=SC+
50 :: DISPLAY AT(22,16)SIZE(
12):SC :: E=E-5 :: DISPLAY A
T(18,18)SIZE(9):E !128
970 IF E<5 THEN 1070 !049
980 HI=MAX(HI,SC):: DISPLAY
AT(20,20)SIZE(7):HI :: M=M+1
:: IF M>1 THEN 1050 ELSE 87
0 !139
990 CALL DELSPRITE(#4):: CAL
L SOUND(-100,880,0):: SC=SC+
50 :: DISPLAY AT(22,16)SIZE(
12):SC :: E=E-5 :: DISPLAY A
T(18,18)SIZE(9):E !130
1000 IF E<5 THEN 1070 !049
1010 HI=MAX(HI,SC):: DISPLAY
AT(20,20)SIZE(7):HI :: M=M+
1 :: IF M>1 THEN 1050 ELSE 8
70 !139
1020 CALL JOYST(1,X,Y):: CAL
L POSITION(#1,Z1,S1):: IF Z1
<17 AND Y=4 OR Z1>97 AND Y=-
4 THEN B=0 !136
1030 IF S1<34 AND X=-4 OR S1
>223 AND X=4 THEN C=0 !096
1040 CALL MOTION(#1,-Y*B,X*C
):: B,C=2 :: RETURN !006
1050 CALL DELSPRITE(#3)!128
1060 GOTO 810 !124
1070 CALL DELSPRITE(ALL):: I
F BO=1 THEN 1110 ELSE SC=SC+
100 :: QU=QU+50 :: DISPLAY A
T(22,16)SIZE(12):SC !252
1080 CALL SOUND(200,523,0)::
CALL SOUND(200,659,0)!142
1090 CALL SOUND(200,784,0)::
CALL SOUND(200,1047,0)!192
1100 DISPLAY AT(18,10)SIZE(1
1):"BONUS:100" :: FOR T=1 TO
500 :: NEXT T !002
1110 BO=0 :: QU=QU+500 :: IF

```



```

SC>QU THEN 1260 !096
1120 DISPLAY AT(18,10)SIZE(1
1):"DISQUAL." !089
1130 FOR I=16 TO 2 STEP -1 :
: CALL SCREEN(1):: FOR T=50
TO 1 STEP -10 :: CALL SOUND(
-10,T+1000,0):: NEXT T :: NE
XT I !119
1140 DATA G,A,M,E,O,V,E,R,,
!047
1150 RESTORE 1140 :: FOR I=7
TO 25 STEP 2 :: READ A$ ::
IF I=25 THEN 1180 !078
1160 CALL SOUND(50,1000,0)::
DISPLAY AT(8,1)SIZE(2):A$ !
102
1170 NEXT I !223
1180 FOR I=1 TO 500 :: NEXT
I :: QU=0 !222
1190 DISPLAY AT(18,10)SIZE(1
8):"ENERGY:";E :: DISPLAY AT
(20,10)SIZE(18):"HIGHSCORE:"
;HI :: DISPLAY AT(22,10)SIZE
(18):"SCORE:";SC !108
1200 FOR I=1 TO 500 :: NEXT
I !255
1210 DISPLAY AT(18,10)SIZE(1
7):"WOULD YOU LIKE" !017
1220 DISPLAY AT(20,10)SIZE(1
7):"TO PLAY AGAIN ?" :: DISP
LAY AT(22,10)SIZE(17):"(Y/N)
" !181
1230 E=100 :: SC=0 :: Z=0 !1
93
1240 CALL KEY(0,K,S):: IF (K
=78)+(K=110)THEN CALL CLEAR
:: END !146
1250 IF (K=89)+(K=121)THEN 5
30 ELSE 1240 !126
1260 CALL DELSPRITE(ALL)!115
1270 DISPLAY AT(18,10)SIZE(1
7):"PRESS FIREBUTTON" :: DIS
PLAY AT(20,10)SIZE(17):"WHEN

```

```

THE [E]" :: DISPLAY AT(22,1
0)SIZE(17):"APPEARS." !151
1280 FOR I=1 TO 500 :: NEXT
I !255
1290 F=1000 !145
1300 CALL HCHAR(INT(RND*7)+1
7,INT(RND*5)+4,136):: CALL H
CHAR(INT(RND*7)+17,INT(RND*5
)+4,123)!068
1310 CALL KEY(1,K,S):: IF K=
18 THEN 1390 !234
1320 CALL SOUND(-100,F,0)::
IF F=2000 THEN F=1000 ELSE F
=F+1000 !021
1330 IF RND<.07 THEN 1340 EL
SE 1300 !151
1340 FOR I=17 TO 23 STEP 3 :
: CALL HCHAR(I,4,136,5):: NE
XT I !053
1350 FOR I=18 TO 19 :: CALL
HCHAR(I,4,136):: CALL HCHAR(
I,5,123,4):: CALL HCHAR(I+3,
4,135,2):: CALL HCHAR(I+3,6,
123,3):: NEXT I !205
1360 FOR I=1 TO 2 :: CALL SO
UND(-10,1000,0)!244
1370 CALL KEY(1,K,S):: IF S<
>0 THEN 1410 !141
1380 NEXT I !223
1390 DISPLAY AT(18,10)SIZE(1
7):"SORRY, YOU HAVE" :: DISP
LAY AT(20,10)SIZE(17):"RUN O
UT OF" :: DISPLAY AT(22,10)S
IZE(17):"ENERGY." !064
1400 GOTO 1130 !189
1410 DISPLAY AT(18,10)SIZE(1
7):"YOU HAVE REPLEN-" :: DIS
PLAY AT(20,10)SIZE(17):"ISHE
D YOUR EN-" :: DISPLAY AT(22
,10)SIZE(17):"ERGY SUPPLY."
!230
1420 E=100 :: FOR I=1 TO 500
:: NEXT I :: GOTO 690 !101

```

XHi

80-column high resolution graphics modes

By CHARLES GOOD

The 9938 video chip controls all video displays produced by the Geneve and by 99/4A systems that use a DIJIT systems AVPC card or the Mechatronics 80 column peripheral. In addition to the familiar 99/4A display modes, the 9938 chip has two additional high resolution color graphic modes called graphic 6 and graphic 7. G6 has a resolution of 512 x 212 pixels and allows the simultaneous use of 16 colors out of a palette of 512. G7 has a 256 x 212 pixel display and allows the simultaneous display of up to 256 out of a possible 256 colors. In both cases the color of each pixel can be individually set. Geneve users can utilize these high resolution graphics modes with the recently released "final" MYBASIC and with MYArt, but these programs will not run on 99/4A systems. Now, with XHi (Extended High Resolution Graphics Support), these high resolution graphics modes are also available from regular TI Extended BASIC.

XHi was originally designed for use on a Geneve, but it works fine on 99/4A systems equipped with an AVPC or a Mechatronics 80-column peripheral. It is an "adds graphic features to regular Extended BASIC" software package that works only on systems that use the 9938 video chip. Several versions of XHi have been circulating among user groups since early in 1989. This review is based on version 3.6, released in November 1989. The XHi code has been attached to its own special LOAD program and boots rapidly when XBASIC is selected. Once loaded XHi resides in low memory expansion, you are returned to XBASIC, all XBASIC commands continue to work normally, and the special graphic features of the 9938 chip are available to the user via CALL LINK statements. Some of these are described below:

— CALL LINKs will display and optionally clear either the G6 or G7 screen

— CALL LINK("NORMAL") switches display back to the normal XBASIC screen.

— CALL LINK("DCOL",color number) sets the color of newly activated screen pixels until the color number is changed.

— CALL LINK("BACK", color number)

Reviews

Report Card

Performance	A
Ease of Use	B
Documentation	C
Value	A
Final Grade	B+

Cost: Fairware, try it and pay what you think it is worth. Available by airmail at cost from the author for an initialized DSSD disk and paid return mailer or by sending 7 Deutsche Marks or \$4 US. Manufacturer: Alexander Hulpke, Sadowastr. 68, 5600 Wuppertal 1, West Germany.

Requirements: SSSD disk system, Extended BASIC (not Myarc XB). Hard-copy works with an unmodified 99/4A. Other parts of XHI require a Geneve, or a 99/4A equipped with either a DIJIT systems AVPC card or a Mechatronics 80 column peripheral.

sets the background color much as CALL SCREEN does to the G2 screen.

— CALL LINK("PLOT",VCOOR,HC OOR) plots a pixel at the stated coordinates.

— CALL LINK("CIRCLE",etc) makes a circle from a specified point with a specified radius.

— CALL LINK("LINE",etc) draws a line between two specified sets of coordinates.

— CALL LINK("VIPORT",etc) creates a rectangular "viewport" on the screen. The effect of this is to create something like a pull-down menu window. The viewport can be as large as the entire screen. Output to the screen only alters the area in the viewport.

— CALL LINK("COPY", etc) can make multiple copies of the viewport on other parts of the screen. If the viewport has a picture or graphic design, this can produce interesting effects.

— CALL LINK("PRINT",TEXT\$, etc) prints a text string starting at specified coordinates.

— CALL LINK("CWIDTH") specifies

the width of the columns, hence the size of the letters placed on the screen, with CALL LINK("PRINT", etc). Minimum letter size will yield 80 column text.

— CALL LINK("COLMIX",COLOR,RED,GREEN,BLUE) redefines the RGB components of one of XBASIC's 16 standard colors.

— CALL LINK("FILL",etc) fills with color an enclosed area surrounding a specified coordinate.

— Complete control of high resolution sprites is possible with CALL LINKS. You can create multicolored sprites and have as many as eight sprites displayed simultaneously on each screen line instead of the four normally possible with an unmodified 99/4A.

The best way to see XHi do its stuff is to run the XBASIC demo programs. LOAD will boot XHi rapidly and then allow you to run most of the demo and utility programs from menus. The HIRESDemo XBASIC program (which can be run from one of LOAD's menus) produces an absolutely spectacular graphics display. The best way to learn how to use the XHi CALL LINK statements is to study the XBASIC listings of the demo programs and utilities.

XHi comes with an extensive documentation file written in both German and English which should be read carefully several times. The English doc contains almost everything you need to know about XHi, but specific information is often hard to find. In particular I find the description of HARDCOPY confusing. However, I understand that the XHi author has agreed to let Lutz Winkler rewrite the English language documentation. Lutz has published in MICROpendium and is the documentation author for some well known 99/4A software. We can therefore look forward in the near future to a version of XHi with excellent English language documentation.

As you know, regular XBASIC supports only 16 colors. So how does XHi allow one to select from within XBASIC any 16 of 512 colors to be displayed on a G6 screen? With XHi you can use CALL LINK("COLMIX",etc) or the XBASIC COLDEF utility program to redefine any or all of

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XHI —

(Continued from Page 35)

XBASIC's 16 colors, selecting the red, green and blue component of each redefined color. In this way you can assign to any XBASIC color number (1-16) to any of the 9938 chip's 512 colors. Only sprites are limited to 16 predefined colors.

With XHI you have simultaneous use of both the normal XBASIC 32-column screen and either a G6 or G7 high resolution screen. Pixel information for both screens is kept in VDP RAM and you can instantly switch the monitor display from one to the other from within an XBASIC program with commands such as CALL LINK("HIRES") and CALL LINK("NORMAL"). All input is normally to the XBASIC screen unless specially programmed for high resolution display. If you are currently viewing a high resolution screen and you type something, you often won't see what you type because you are typing onto the (temporarily invisible) XBASIC screen. CALL LINK("NORMAL") will switch to the XBASIC screen and show you what you just typed.

As all 99/4A users know, every time TI Extended BASIC returns to command mode any color graphics on the screen are destroyed. This is because a return to command mode causes many VDP registers to be reset. One result of this is that if you want to access either of the 9938 chip's high resolution graphic modes with XHI you need to incorporate XHI's CALL LINK statements into an XBASIC program and then run the program. You can't try out the CALL LINKs individually from command mode, and this makes experimenting with XHI somewhat difficult. Any exit to command mode from a running XBASIC program while viewing a high resolution screen, without first returning to the XBASIC screen from within the program with CALL LINK("NORMAL"), will scramble the high resolution screen. You end up looking at high resolution garbage. This includes exits caused by CLEAR (FCTN/4), BREAK, encountering an XBASIC error, or even the logical END of the XBASIC program. You then have to blindly type CALL LINK("NORMAL") to return to the XBASIC command mode screen to see what happened.

Any high resolution screen can be saved

to, or loaded from MYArt format with CALL LINK("SAVE" <or "LOAD">,"DSKx.FILENAME"). You can, for example, load a picture created on the Geneve with MYArt, modify the picture, and then resave it. The following XBASIC program, when run in the XHI environment, will prompt you for a MYArt file name, display the picture, and at the press of any key prompt you for another MYArt file name.

100 CALL CLEAR !clears the normal Xbasic G1 screen

110 DISPLAY AT(7,2):"MYART DRIVE AND FILE NAME?" !prompt for MYART file name with drive

120 ACCEPT AT(7,2):F\$!F\$ is the DSKxFILENAME of the picture. ^Program can be safely ended here with CLEAR (F/4)

130 CALL LINK("CLR256") !switches monitor display to G7 high resolution screen and clears this screen. Change to "HICLR" for G6 display.

140 CALL LINK("LOAD",F\$) !loads MYART picture file into G6 screen for viewing

150 CALL KEY(0,K,S) !waits for any keypress

160 IF S=0 THEN 150 !if no keypress then wait some more

170 CALL LINK("NORMAL") !if a key is pressed returns to regular Xbasic G2 screen.

180 GOTO 100 !restart program with prompt for another picture file.

A utility called ARTLES is included which allows loading of TI Artist pictures (those with both a "-P" and a "-C" file) into a high resolution screen. This utility is called from within XHI with CALL LINK("ARTLES";"DSKx.FILE") without disturbing XHI. After viewing the TI Artist picture, you can modify and/or save it in MYArt format.

HARDCOPY

A useful program that comes with XHI is HARDCOPY, a separate utility to print MYArt graphics on a printer in black and white. HARDCOPY boots directly from EA5 or from XBASIC with its own HLOAD program. You can specify pic-

ture size from postage stamp size to much larger than normal page size by indicating the degree of picture magnification H(izontally) and V(ertically) between 1 and 999 times minimum size. This allows you to artificially deform the shape of the original picture, which sometimes considerably improves the final result. You can also print only part of a picture, entering the lower left pixel coordinates and the size of the rectangular area to be printed. The ability to enlarge and deform MYArt pictures has interesting possibilities. To quote from the XHI v3.5 doc, HARDCOPY allows "the printout of real posters. Print small parts of the picture, as magnified as your printer can handle, and stick them together. You can even create unique wall paper for your room." I printed a 4-foot-tall G7 MYArt picture by printing 30-pixel-wide vertical strips onto fanfold paper and taping the strips together. This required 24 hours of printing time! In its ability to produce gigantic posters from MYArt pictures, HARDCOPY resembles a \$15 commercial program that does the same with TI Artist instances.

To mimic colors, HARDCOPY will cause the dot matrix printer to produce either 16 or 256 different dot densities corresponding to the number of colors in the G6 or G7 picture. Comparison samples I have seen suggest that the picture quality obtained with HARDCOPY is a considerable improvement over MYArt's own screen dump. As far as I know, HARDCOPY is the only utility that will print MYArt graphics without using a Geneve. You can even use HARDCOPY on an unmodified 99/4A system (without a 9938 video chip), although on such a system you can't preview the MYArt picture on screen before printing. Some MYArt pictures do not print well with HARDCOPY, particularly those with both dark backgrounds and foregrounds. Such pictures end up looking like a black cat in a coal bin. If you can identify the exact background colors of the picture, HARDCOPY allows you to lighten the dot density of these (or any) colors, making the foreground easier to see in the printout. Best results are obtained with pictures that have large areas of single colors and a light background.

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Hardware Reprints Manual, TIW Supplement, TIW Supplement Companion

For hardware hackers and TIW usersBy **BILL GASKILL**

The industrious members of the Chicago TI-99er Users Group released two manuals last year: The first was the Hardware Reprints manual released early in 1989. It was compiled and edited by Nick Iacovelli. The second package, which became available last November is the TI-Writer Supplement. Ernie Pergrem gets the credit for making it and the optional companion disk.

Hardware Reprints is a 148-page manual made up of photocopies of articles on hardware projects that were originally printed in other user group newsletters. It costs \$10, which includes first class postage. The TI-Writer Supplement consists of 54 pages of photocopied articles from both Chicago's own newsletter and other users group sources. It covers tips, tricks and other information about the most popular word processor ever written for the 99/4A. TI-Writer Supplement costs \$5 if purchased alone or \$7 with the companion disk. The disk may also be purchased alone for \$5. There is also a \$2 fee for postage for the manual. No additional postage is required if you order just the disk.

HARDWARE REPRINTS

Although I am not much of a hardware hacker I found the the Hardware Reprints to be a readable and informative collection of information. It certainly covers a variety of modifications and creations for the knowledgeable user, or the novice user who needs help in tackling an anticipated hardware modification. The projects list, a portion of which is shown below, is extensive:

- 32K on the 16-Bit Bus
- Atari to TI Joystick Pinouts
- Attaching 10-Function Keys to the 4A
- Color or Black and White Video Output Selector
- Cooling Fan/System Mods
- Cure for Computer Lockup
- Do-it-Yourself Cartridge Expander
- External Keyboards
- Foundation I28K Card Modifications

Review**REPORT CARD****Hardware Reprints ManualA****TIW-Supplement CompanionA****TI-Writer Supplement Companion . . .A****Cost:****Hardware Reprints \$10****TIW Supplement \$7****TIW Supplement Comp . . . \$5****TIW Supp & Comp \$9****Distributor: Chicago TI User Group,
P.O. Box 578341, Chicago, IL 60657.**

- GRAM Kracker Circuit Diagram
- Homebrew Keypad
- Installation of GROM Chips
- Multiple Drive Modifications
- Peripheral Cable Extender
- Power Supply Modifications
- Print Head Cleaning
- SuperCart Construction
- Triple Tech Card Modifications
- Video Clarity Improvements
- Wiring a Printer

Altogether there are more than 40 projects and tutorials. Many of them are illustrated or contain diagrams that help the user understand what is going on. The author list for the articles is as impressive as the material itself. Material from such well known hardware gurus as John Willforth, Joe Spiegel, John Clulow, Ed Hallett, Ron Gries and Travis Watford can be found in the manual.

One of the shortcomings of Hardware Reprints is the sometimes confusing layout of the material. Because each article is a photocopy of an article from another newsletter, Iacovelli was at the mercy of the material on hand when trying to put the book together. In other words, he didn't have the capability to manipulate text files. Neither did he have camera-ready illustrations and diagrams to use when trying to make a readable manual out of a collage of information. The end product is admirable when you realize what he had to work

with. But don't expect the manual to look like it just came out of the print shop, smelling of drying ink. It doesn't. Some text is in multiple columns on the page in one article while the next article is presented in standard text. Some diagrams and illustrations are fuzzier than others. But all are readable in detail. The end product is still viable, useful to the hardware adventurer and a pretty good effort. For \$10 you receive a copy of the the most extensive collection of information on hardware modifications for the 99/4A that exists anywhere.

TI-WRITER SUPPLEMENT

TIW Supplement is also subject to varied layouts, ranging from multiple column presentation of text to pages that were originally printed in compressed mode. Somehow, it comes off better than Hardware Reprints in appearance. I don't mean to offer a comparison between the two, because they share nothing in common material wise. It's just that they are both sitting here on my workstation at the same time and it's hard not to notice the difference.

When you open up the TIW Supplement and read past the Forward, the first thing that you are greeted with is a neat Table of Contents. It tells you that the manual is organized into four chapters:

1. The Editor
2. The Formatter
3. Graphics (produced with your word processor)
4. Programs, Printers and Miscellany

Here are some of the topics covered in TIW Supplement:

- A Handy Quick Reference Trick
- Dis/Var Converter Program
- Graphs Using TI-Writer
- Making Address Labels with TI-Writer
- Printer Commands
- Telecommunications with TI-Writer
- TI-Writer Font Maker
- TI-Writer Graphics
- TI-Writer Text Sorter
- XB Program Editing with TI-Writer

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MICRO-REVIEWS

Products old and new reviewed

By HARRY BRASHEAR

Ratings for the software reviewed in this column are based on a star system as follows:

- ★ Leave it alone, back to the drawing board.
- ★★ Needs improvements, but workable.
- ★★★ A good program, worth trying.
- ★★★★ Send your money and buy it. ☛

★★★

TI-SHORT SHEET III

SS III has apparently been around for quite some time, and has been progressively working its way toward the sophisticated program it has become today. The reason I think this is that it still allows for cassette backup of the files it produces, a nice added touch for the paranoid budget keeper.

The idea behind SS III is to give the homeowner a small, uncomplicated spreadsheet that he can maintain on a monthly basis. Essentially, it does most of the things that you would expect a simple spreadsheet to do, even allow for formulas. The overall size of the full sheet is 26 rows across by 10 columns high. This will handle a pretty fair-sized ledger, but I wish it could have been 12 columns so that I could set it up by months. DARN!

It's a large Extended BASIC program, permeated with error traps of all kinds, so I feel safe in saying that it's fairly crash proof. You may save a file to disk or cassette, or, print to your printer or disk for a DV/80 text file.

The program is complex in its programming, but easy to master for the user. It is slow. Don't think you're going to replace your snail-paced Multi-Plan with it, because it's no gain, it's just easier to use.

The author is asking only \$5 for the program, so I see no reason for you not to try it out. As I have said before, please send a disk and SASE when fairware is only five dollars.

Send to: Glenn Bernasek, 13246 Harper Rd., Strongsville OH 44136.

★★★★

127 SCREEN FONTS

Here is my first nomination for "Utility

of the year — 1990." Actually, it might also go up for "Programmers aid" too. Jim Peterson has put together 127 fonts for program use. They are all set up as object code, and can be called into a program with a simple "CALL LOAD::CALL LINK()".

Jim also recommends that you install them into your program using Tod Kaplan's ALSAVE program, a much more practical idea. Following is a list of what you get:

- 17 fonts with true lower case
- 34 sets, 7 pixels high by 6 pixels wide
- 12 sets 7 by 7 pixels
- 32 sets 8 by 6 pixels
- 15 sets 8 by 7 pixels
- 3 sets 8 by 8 pixels
- 3 sets 8 by 5-7 pixels
- 13 special sets including Russian, Greek, Hebrew, Script, Double-wide, Double-high and Thin-line.

Jim also includes the program he uses to edit and convert these sets to hexcode, so you can also do your own thing. The docs tell you how to assemble the code, and how to use ALSAVE (not included) to install the results into your programs. It's idiot proof: even I can do it and I can't even spell ASSEMBLY. (You thought I was kidding?)

Anyway, as usual, this disk is a super effort from Tigercub. It de-arcs to more than 1,800 sectors, and comes on a DSSD disk, or for a dollar more, two SSSD disks.

By the way, this product is described as daware. Jim says that fairware hasn't been too profitable for him, so he thought he would try to dare the community to pay for the ware.

Come on, folks, give us a break, will ya? I had one guy tell me that he was "giving up his TI because everybody was shifting to commercial means to sell software... and he wasn't going to pay for software for a stupid TI computer!" Nice mouth, huh!

So, send \$5 plus \$1.50 for P&H to: Tigercub Software, 156 Collingwood Ave., Columbus, OH 43213. Ask for the 127 Screen Font Disk, and don't forget to mention your disk format — include one more buck for SSSD.

★★★★

GENIAL TRAVELER

Every year, the TI community receives into its ranks a group of new people. They have bought up used systems, and many are in just as much of an information void as we were years ago. Therefore, it is important that every once in a while we drop back a little and reflect on what may be old news to some of you.

GENIAL TRAVELER is a diskazine that has been with us for a few years now, and it's still going strong. Many of our important programmers support this effort and you can get an idea of where the community is heading by buying it.

For instance, some time back Genial started a library of routines called XXB, (Extended Extended BASIC). Today, they are still adding to the library, and hardly a volume gets by without an update to XXB. Also, programs that use XXB and show you how powerful it is are on the disks. The whole thing is just a mass of utilities, games, articles, music and experiments. Believe me, you have no idea how many programs you have today that came out on Genial first, and then hit the pirate channels piece by piece, months later. Not good!

In spite of it all, Barry Traver, the editor of Genial, remains steadfast and true, and is about to begin a new volume. A volume is supposed to consist of six issues, but I keep seeing these bonus disks from previous years, so all I can do is guarantee *at least* six.

The cost for a subscription is \$36 per volume and I believe it's one of the best remaining values in the TI world. If you are a newcomer to the community, you can't go wrong by buying up the back volumes to find out what your computer can really do.

Send \$36 for a current subscription to: Genial Computerware, 835 Green Valley Dr., Philadelphia, PA 19128.

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MICRO-REVIEWS—

(Continued from Page 38)

★★★★

CONTRACT BRIDGE V3.0

Here is an impressive effort of programming by John H. Bull, obviously a man who enjoys a good game of bridge. Most of the following comment comes directly from the "docs" file on the disk because I don't know the game of bridge that well. What I can report, though, is that the graphics are swell, the program doesn't crash, and if I really wanted too, I could probably learn to play a mean game from this program.

Contract Bridge runs in Extended BASIC with 32K memory expansion and one SSSD disk drive. It has some object code also to help speed things along in dealing. All of the program is on one side of a SSSD disk named "BRIDGE". A short program named "LOAD" is auto-loaded by XB and in turn loads the various parts using the disk name, not the drive number. Fifty Duplicate Boards are on the "flip" side of the same disk and that side is also named "BRIDGE".

The "TUTOR" option will show you how the game is played and how the mechanics of this program work. The bidding and play of all hands are entirely by you but must be within the rules — the program does not allow you to make an illegal bid or play an illegal card.

The "RUBBER" option is as much as possible like an ordinary social game of bridge but instead of four players, there are just you and the computer. You play the South hand and also the Dummy if you win the bidding and are Declarer. If you are the Dummy you just collect the tricks. You are competing against the cards and the computer.

The level of play is intelligent but not expert — few of the conventions of expert bidding and play are used.

With the "DUPLICATE" option you play sets of hands that have been previously dealt and played. You compete, not against the computer and the cards, but against the score made by another player who has played the same cards. There are 50 boards on the flip side of the disk were played by the author for practice. He free-

ly admits that he's not an expert, so it offers a good challenge without getting out of hand. "(S)aving your play" will let you substitute your bidding, play and score for that board. Also, you can play the North hand, your partner's, when it is Declarer, if you choose to.

Additional boards can be dealt and saved to disk with the "Deal Boards" option of Duplicate. Each board is a separate file named "BOARDn", where "n" is the board number. The program will accept 99 boards numbered from 1 to 99. The original disk will hold 49 more boards numbered 51 to 99 and additional sets of up to 99 boards can be put on separate disks. Each disk must be named "BRIDGE".

I think this is an excellent program for the bridge buff and the casual player. The author has been working on it for years with the help of the "K-Town 99er's" and if anything should be bug free, this is it.

The cost is \$20 and the program may be ordered from: John H. Bull, 409 Blue Valley Lane, Knoxville, TN 37922.

If you would like your software considered for review in this column, send it (with an SASE if you want it returned) to Harry T. Brashear, 2753 Main St., Newfane NY, 14108.

XHI —(Continued from Page 36)
CONCLUSIONS

I agree with one of my correspondents who states, "On the Sears scale of things I rate XHi as a BEST." It is a noble effort to harness the power of the 9938 chip in a familiar environment. For Geneve owners, XHi isn't as user friendly as MYArt, but XHi is not really an "artist" program. It would be rather difficult to draw complex pictures from scratch using XHi because it is difficult to experiment with XHi's CALL LINKS one at a time. XHi is an Extended BASIC programmer's aid, but it is much more. You don't have to be an expert programmer to modify existing MYArt graphics slightly with XHi, by adding some text, for example. Even if you just want to view MYArt graphics created by others, XHi is superior to the Barry Boone MYArt viewing program. A

greater variety of MYArt pictures can be displayed with XHi. XHi is the only tool Geneve and 99/4A owners have to incorporate high resolution G6 and G7 graphics into the large body of existing XBASIC software. Although the recently released MYBASIC for the Geneve will support high resolution graphics, MYBASIC is largely incompatible with TI Extended BASIC.

For 99/4A users with an AVPC card or the Mechatronics 80-column peripheral, XHi is the only show in town. It is the only currently available software package that allows 99/4A systems equipped with the 9938 chip to take full advantage of all the high resolution color graphics capabilities of the 9938. I strongly recommend XHi, particularly to those with a DIJIT systems AVPC card or Mechatronics 80-column peripheral.

CHICAGO MANUALS—

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Wordcount

There is more information in the TI-Writer Supplement than the Table of Contents would indicate. Interspersed in various places you find little unlisted goodies, such as how to modify the formatter program to substitute other characters for the "at" and ampersand symbols. There is even a replica of the keyboard overlay for TI-Writer. While there are a number of superb articles in this book, my favorites are Anne Dhein's TI-Writer graphics articles. The manner in which she covers graphics through transliteration is the best that I have seen. Some of the other authors contributing to TIW Supplement are: Tom Kennedy, Glen Davis, Jerry Kiesler, Jim Peterson, Ollie Hebert and James Stringfellow.

Overall, I found TIW Supplement to be great! It is nicely organized, well edited in the consistency of content and flow of material and it looks neat. While it doesn't even come close to providing the volume of information that the Hardware Reprints manual does, it comes off as more of a cosmetic success. But I must admit that appearance is only a small part of what you

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Newsbytes

Asgard releases Rock Runner game

Asgard Software has released **Rock Runner**, a 15-level arcade game written by Eric LaFortune of Belgium.

According to the manufacturer, **Rock Runner** is based on Boulder Dash, an arcade game for Atari systems which later became popular on IBM PCs and other computers.

LaFortune learned assembly language to write his first program, using a TI99/4A with a cassette recorder, 32K internal memory expansion and a Mini-Memory. According to the manufacturer, LaFortune discovered a heretofore unused graphics mode of the TMS9918A video processor (dubbed "half-bitmap") in which he wrote the game.

LaFortune has converted the game to run under the Editor/Assembler module. It is played with either joystick one or two. The object is to move the figure around the playing area (larger than the screen, which windows to show the area the character is in) and collect a specified number of diamonds within a given time. Complicating matters are rocks or boulders that can fall on the player and at higher levels, monsters that are interested in lowering the player's life expectancy. At higher levels the player will have to set traps, blow up walls with bombs and perform acrobatic feats with the joystick to obtain the diamonds.

The game retails for \$12.95 plus \$1 postage (\$1.50 Canada, \$3 air mail orders) from Asgard Software, P.O. Box 10306, Rockville, MD 20849.

Texaments releases The Missing Link

Texaments has released **The Missing Link**, described as a display enhancement upgrade for TI Extended BASIC.

According to the manufacturer, **The Missing Link** is an extension of Extended BASIC that allows programmers to access the high resolution bit-mapped graphics and advanced text modes of the TI99/4A, previously accessible only through assembly language programs or hardware devices.

The manufacturer says the program consists of more than 30 assembly language subroutines that replace the usual methods of accessing the computer display through Extended BASIC. With these high-speed subroutines, according to the manufacturer, many text, cartesian graphic, turtle graphic, sprite graphic, windowing and miscellaneous peripheral operations can be incorporated into any Extended BASIC program. A 32-page manual is included with the software.

Input can be displayed and input to and from the screen using **The Missing Link**, the manufacturer says. Text can be displayed both horizontally and vertically with automatic word wrap in a window of any size. The character text size can be changed permitting up to 32 rows by 60 columns to be displayed on the screen. Different sized text can also be displayed simultaneously on the same screen.

Graphics allow points, lines, circles and boxes to be plotted on the screen, the manufacturer says, and turtle graphics can be used without the ink and color restrictions typically found in Logo. With the advanced sprite routines, up to 32 moving sprites can be defined and controlled simultaneously, according to the manufacturer, and advanced text and graphics capabilities can be combined on the screen without limit.

Miscellaneous peripheral operations are described as allowing full-color TI-Artist and TI Artist PLUS! pictures to be displayed and saved to and from the screen and allowing printing of full bit-mapped graphic and text screen dumps of a current display.

Two program examples have been included, Live Demonstration, which demonstrates every function and operation of **The Missing Link** and PaperSaver, a utility displaying text prepared with TI-Writer in a greeked what-you-see-is-what-you-get format.

The Missing Link is available from Texaments for \$24.95 (plus \$2.50 shipping for U.S. and Canadian delivery, \$8 for foreign air mail delivery). A Live Demonstration disk without screen dump features may be ordered for \$3 (shipping included).

Requirements are a TI99/4A system with 32K memory expansion, disk drive system and an Extended BASIC cartridge. An Ep-

son compatible printer is needed to use the screen dump features. **The Missing Link** has been tested (but is not guaranteed) to be compatible with the Myarc Geneve 9640 in TI mode, all Myarc and CorComp peripheral expansion cards, New Horizon's RAMdisks and MG Super Extended BASIC.

For more information or to order, contact Texaments at 53 Center St., Patchogue, NY 11772, or (516) 475-3480 (voice) or (516) 475-6463 (BBS).

Fayuh set April 28

The Boston Computer Society has scheduled its annual Fayuh for April 28 at the Central Middle School in Waltham, Massachusetts, for TI99/4A and Commodore 64 users.

Vendor fee is \$25 per table and gate admission is \$2 per person. For further information, contact Justin Dowling, Co-Director, Boston Computer Society, One Center Plaza, Boston, MA 02108.

Cooling fans for sale

ALL-CARE+Computing has a number of **Texas Cooler** fans for the Peripheral Expansion Box.

According to Douglas Davis of the company, the fans "more than double the air flow and reduce the roar to just a whisper."

He says the fans are ready to install with complete illustrated instructions. The company offers a money-back guarantee. Shipment is by UPS.

To order, send a check or money order for \$25 plus \$3 shipping and handling to ALL-CARE+Computing, P.O. Box 922601, Sylmar CA 91392-2601.

Review update

Doug Phelps has written to update his review (January 1990 of **The Printer's Apprentice** (Geneve version)). He says the program can now make use of a mouse in addition to using the cursor control keys. (A mouse and cursor control speed variable has also been added.) Also, an added pixel editor allows any portion of the screen to be enlarged, just like the pixel font editor. The program is by McCann Software, P.O. Box 34160, Omaha, NE 68134.

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Newsbytes

(Continued from Page 40)

MYBASE released

DDI Software has released **MYBASE**, a new database for MYBASIC.

Each record of the database consists of 12 fields and 240 characters per record. The manufacturer describes it as having a single stroke command menu and using assembly support for sorting. The 15 commands include INDEX (sort), COMPRESS (delete), FILTER (display or print selected records), SEARCH (find any record) and EDIT.

The manufacturer says the program comes preconfigured as a mail list database so that it can be used immediately. A template is provided in the program to arrange the label format by choosing up to 12 fields and printing them up to four wide. The program allows for information to be typed from keyboard to template to supplement data from the database on the label.

The user can set up custom databases by providing names of the fields and their lengths.

MYBASE is available for \$15 (includes shipping and handling). Also available is **Appointment Scheduler**, an appointment calendar which consists of a full screen dis-

play of each day of the month, for all the months of any year, for \$15 (includes shipping and handling).

For information or to order, contact DDI Software, 2004B LeeAnn, Austin, TX 78758-2504.

Pennsylvania Expo set

The Central Pennsylvania 99/4A Users Group has scheduled its Fourth Annual CPUG Computer/Electronics Exposition for 7 a.m.-3:30 p.m. Oct. 14 at the Cocoa Avenue Plaza, 605 Cocoa Ave., Hershey, Pennsylvania.

Barry Long, secretary of the group, notes that the site is "only minutes away from the Hershey Amusement Park and the Hershey Chocolate Factory, where tours are available free of charge."

The group is accepting preregistration through Aug. 3.

For further information, write CPUG, P.O. Box 14126, Harrisburg, PA 17104-0126, or call The Data Factory BBS, (717) 657-4992 or 657-4997 (24 hours, 8-N-1, 300/1200) or one of the following members:

Dave Ratcliffe, (717) 238-5414; Barry Long, (717) 564-2975; Anthony DeDonatis Sr. (717) 534-2056; Terry Longenecker (717) 838-7483.

CHICAGO USER GROUP MANUALS—

(Continued from Page 39)

pay your dollars for.

TIW SUPPLEMENT COMPANION

Ernie Pergrem has gone to a lot of effort to provide the companion disk for the TIW Supplement manual. It contains all of the programs that are shown as LISTings in the manual plus a few more thrown in for good measure. Many, if not all of the programs, were keyed in by Ernie in order to test them for proper operation. The end result is a disk consuming 311 sectors with 23 files on it. The utilities run the gamut from programs to convert file formats to sorting routines. All in all a neat collection of utilities.

CONCLUSION

The Chicago TI User Group is to be commended for coming up with the idea to produce these manuals and the companion disk in the first place and for actually

making them happen in the second. All three are obviously the result of many hours of searching, reading, editing and program keying on the part of the project authors. Having the ability to go to a single source to find the plethora of information that exists here makes this an invaluable resource. The TIW Supplement will no doubt be the most popular of the two manuals, simply because virtually everyone does word processing. But Hardware Reprints is arguably a more valuable resource since the information in it is much harder to find in one place.

Either project is worth the small investment asked by the Chicago Users Group, and both efforts rate four stars on Harry Brashear's scale of excellence. Order any of the items from: Chicago TI Users Group; P.O. Box 578341; Chicago, IL 60657.

TI booth scheduled for West Coast fair

The San Francisco 99ers will operate Booth 1960 at the West Coast Computer Fair 10 a.m.-6 p.m. March 1-4 in the Brooks Hall/Civic Center, San Francisco, California. Admission to the fair is \$10 per day, with a discount for multiple days.

For information, contact Neil Wood of the San Francisco 99ers, (707) 425-3854.

Swan's Song debuts

Jerry MacDonnell, of Kirkwood, New York, is publishing a newsletter called **Swan's Song** for the Geneve. MacDonnell says the newsletter will come out every other month. The first edition consisted of six sheets of 8½x11 paper with articles and ads on nine of the pages. Printing is by dot-matrix printer. Copies are produced using a photocopier. The cost is \$8 per year. For information, write to MacDonnell at 2464 Hillside Dr., Kirkwood, NY 13795.

Reach thousands of TI and Geneve users with your product, service and event announcements in *Newsbytes*. There is no charge. Items listing in this column are not necessarily endorsed by MICROpendium. Send items to: MICROpendium Newsbytes, P.O. Box 1343, Round Rock, TX 78680.

READER TO READER

Don Snedigar writes:

I would like to know of any user groups in my area, plus any info on how to obtain a TI99/8 (not 4 or 4A) "home" computer. I would also like to know how to get hold of the compiler, assembler, etc. for the p-system.

Write Snedigar at 521 East Center, Girard, IL 62640.

USER GROUP UPDATE

These are additions and updates to our user group listings, begun in our May 1987 issue.

Pennsylvania

Airport Area Computer Club, Coriopolis, disbanded January 1990.

Outside U.S.

Canada

Kawartha 99ers, P.O. Box 373, Peterborough, Ontario, Canada K9J 6Z3. About 25 members.

West Germany

TI Workshop Wiesbaden, c/o Horst Wiese, Eleonorenstr. 6, 6200 Wiesbaden, West Germany.

User Notes

Use REPT with Multiplan

There's more than one way to create dashed lines and other characters to set off different areas of a Multiplan spreadsheet. Of course, you can simply enter a string of hyphens into a cell and copy the contents of the cell to other cells to create a dashed line, but an easier way is to use the REPEAT function. Here's how to use it:

Using the Value command, enter REPT("-",10) and press Enter. This will cause the hyphen character to be repeated 10 times in the cell. Then simply copy this cell to other cells to create a row of dashes. Any character may be used as long as it is enclosed in quotes.

Notepad is handy screen editor

This comes from Bill Gaskill of Grand Junction, Colorado. He writes:

NotePad is a 40-column screen editor that is capable of handling 57 lines of text in a single file. It possesses the usual features for file management such as load, save and print, but it also sports a few options like delete, insert and justify that are not usually found in most full screen text editors.

NotePad uses a command mode and a text mode to provide all processing features. The text mode is active when the cursor is flashing. The command mode is active when the cursor is not visible. Fctn X is used to toggle between the two modes.

Text mode is used to enter text that is to be saved or printed. Command mode is used to access any of the commands that are listed on the command line menu at the base of the screen. Commands are accessed by pressing the first letter of the command. For example, one would press H to read the Help screen.

NotePad provides three text screens that are capable of holding what amounts to one page of text. Scrolling from one screen to another is controlled by the program, based upon the position of the cursor.

Cursor movement is accomplished through the arrow keys and the ENTER

key. Fctn E takes the cursor back one line at a time and ENTER advances the cursor one line at a time. Fctn S and Fctn D move the cursor horizontally within a text line.

Command line options include clearing of the current screen, deleting a line of text, going directly to the end of the file, displaying the active filename, displaying help, right-justification of text, inserting a blank line, loading a file, changing the input/output disk drive, printing a file, quitting the program, saving a file and going to the start of a file from anywhere in a file.

Options available from the command mode that are not listed on the menu include the ability to alter the length of the text input line, toggling of the over-write protect mode and restoring of a purged file. The justify feature allows you to right justify selectively. When J is pressed from the command mode the file is placed at screen 1 and the first line of text to be justified is displayed at the bottom of the screen.

You are prompted to press Fctn X to skip the line if desired. ENTER to allow it to be justified or Fctn 9 to abort and return to the text entry mode. Blank lines, lines that contain only one word, and lines that are already justified are ignored by the routine.

A disk cataloging option is available at the LOAD prompt, by pressing either the Fctn E or Fctn X key. Pressing Fctn 9 at the "Press Any Key..." prompt will abort the catalog routine and return to the LOAD prompt.

Should you wish to completely purge the current file you may press the equals (=) key while in the command mode to clear out the text buffer. A Fctn 8 (REDO) key press will restore it though, if performed immediately after the purge.

NotePad also provides an overwrite protect feature in the SAVE command. It will warn you when an existing file is about to be overwritten. The overwrite protect feature may be disabled or enabled with Fctn 4. It is enabled as the default. When it is disabled an asterisk is displayed to the right of the word "Justify" on the command line, to let you know that you don't have the protection available.

Pathing for data output may be adjusted with the Output command. This allows you to specify DSK2, 3 or even WDS1 as the path where your files will be read from or written to. DSK1. is the default.

NotePad also allows you to specify a length for the input line of from 1-40 characters, with 40 being the default when the program first loads. This can be useful if you wish to print two pages in side by side columns newsletter style. In that case you would likely use a length of 36 for the input line. When page 1 was printed a tab spacing of 1 would be chosen. The paper in your printer would then be rolled back to the top and page 2 would be printed with a tab spacing of 40 or so. Some things that NotePad will not do:

- check spelling,
- reformat text,
- merge files,
- word wrap,
- auto-hyphenate,
- support special printer codes such as
- bold face and underline or
- justify indented paragraphs.

NotePad was written specifically for use with Brad Snyder's 40-Column Utilities package for XB programmers. This is the same package that Harry Brashear featured in the June '89 MICROreviews. To use NotePad you will have to have a copy of those utilities. Rename the 40-XB program as LOAD and change the line that reads RUN "DSK1.DEMO" to RUN "DSK1.NOTEPAD". Key in this program in Extended BASIC and then save it to disk under the name NOTEPAD.

The 40-Column Utilities package may be purchased for \$5 from: Brad Snyder 148 Ave. A Palmerton, Pa. 18071.

```
100 ON BREAK NEXT :: CALL L1
NK("TEXT",2,4):: GOSUB 920 :
: CALL LINK("CLS"):: LN=40 !
090
110 DR$="DSK1." :: PR$="PIO"
:: CALL CHAR(124,"0010F8848
4F81000",126,"00FF")!118
120 CALL LINK("DISP",20,1,""
~~~~~")!221
130 ON WARNING NEXT :: CALL
KEY(5,K,S):: OPTION BASE 1 :
(See Page 42)
```

User Notes

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```

: DIM A$(66),B$(66):: ON ERR
OR 160 !031
140 CALL LINK("DISP",24,1,"
    Press ENTER to begin t
yping "): I,M,R=1 :: GOSUB
590 :: GOSUB 1060 !094
150 CALL KEY(5,K,S):: I$=STR
$(I):: CALL LINK("DISP",23,3
6,I$):: CALL LINK("ACCEPT",R
,1,-LN,"",A$(I),Y):: B$(I)=A
$(I):: M=I !204
160 GOSUB 1080 :: CALL KEY(0
,G,H):: IF G=11 THEN 170 ELS
E IF G=10 THEN 270 ELSE 210
!237
170 IF I<=1 THEN 150 ELSE I=
I-1 :: R=R-1 :: G=0 !000
180 IF I=38 THEN RS=20 :: RE
=38 :: RO=1 :: GOSUB 1000 ::
GOTO 150 !010
190 IF I=19 THEN RS=1 :: RE=
19 :: RO=1 :: GOSUB 1000 ::
GOTO 150 !214
200 GOTO 150 !229
210 IF I=19 THEN RS=20 :: RE
=38 :: R=1 :: GOTO 240 !087
220 IF I=38 THEN RS=39 :: RE
=57 :: R=1 :: GOTO 240 !099
230 GOTO 270 !094
240 GOSUB 1070 :: RO=1 :: FO
R I=RS TO RE :: CALL LINK("D
ISP",RO,1,A$(I)):: RO=RO+1
: NEXT I !077
250 IF K=69 THEN I=57 ELSE I
=RS !224
260 GOTO 150 !229
270 IF G=10 THEN GOSUB 670 :
: GOSUB 590 :: GOTO 150 !221
280 IF I=57 THEN 300 !103
290 R=R+1 :: I=I+1 :: GOSUB
1060 :: GOTO 150 !011
300 CALL LINK("DISP",24,1,"
    Escape Print Save.
    "): CALL KEY(3,S
,K)!140
310 IF K=0 THEN 300 ELSE IF
S=69 THEN 580 ELSE IF S=80 T
HEN 320 ELSE IF S=83 THEN 40
0 ELSE 300 !008
320 CALL KEY(3,K,S):: GOSUB
1090 :: CALL LINK("DISP",24,
1," Printer:PIO"): CALL LI
NK("ACCEPT",24,11,-20,"",PR$
,Y):: IF PR$="" THEN 150 !12
1
330 CALL KEY(3,K,S):: GOSUB
1080 :: CALL LINK("DISP",23,
1," Report Title:"): CALL
LINK("ACCEPT",24,1,40,"",RT$
,Y):: GOSUB 1080 :: GOSUB 10
90 !026
340 CALL LINK("DISP",24,1,"
    Tab spaces from left margin
:20"): CALL LINK("ACCEPT",2
4,31,-2,"0123456789",T$,Y)::
GOSUB 1080 :: GOSUB 1090 !0
29
350 TB=VAL(T$):: ON ERROR 72
0 :: OPEN #1:PR$,OUTPUT :: C
ALL LINK("DISP",24,1," Prin
ting line:"): PRINT #1:TAB(
TB);RT$: :: PRINT #1 !049
360 FOR I=1 TO 60 :: PRINT #
1:TAB(TB);A$(I)!006
370 CALL KEY(0,G,H):: IF G=3
2 THEN 370 ELSE IF G=15 THEN
390 !012
380 I$=STR$(I):: CALL LINK("
DISP",24,18,I$):: NEXT I !13
5
390 PRINT #1:CHR$(12):: CLOS
E #1 :: I=M :: GOTO 150 !014
400 CALL KEY(3,K,S):: GOSUB
1090 :: CALL LINK("DISP",24,
1," Save: (Enter=
Exit)"): CALL LINK("ACCEPT"
,24,8,10,"",P$,Y):: IF P$=""
THEN 590 !251
410 IF OP=1 THEN 490 ELSE OP
EN #4:DR$,INPUT ,RELATIVE,IN
TERNAL :: INPUT #4:E$,E,E,F
!113
420 FOR H=1 TO 127 :: INPUT
#4:E$,D,E,F !182
430 IF P$=E$ THEN CLOSE #4 :
: GOTO 470 !017
440 IF ABS(D)=0 THEN 460 !25
3
450 NEXT H !222
460 CLOSE #4 :: GOTO 490 !08
6
470 GOSUB 1080 :: CALL LINK(
"DISP",23,1," Existing file
. Overwrite Y/N:"): CALL LI
NK("ACCEPT",23,32,1,"",YN$,Y
)!061
480 IF YN$<>"Y" THEN GOSUB 1
080 :: GOTO 150 !146
490 ON ERROR 700 :: IF P$=""
THEN 140 ELSE P$=DR$&P$ ::
GOSUB 1080 !114
500 OPEN #2:P$,OUTPUT,DISPLA
Y ,VARIABLE :: FOR I=1 TO 60
!085
510 PRINT #2:A$(I):: I$=STR$(
I):: CALL LINK("DISP",23,36
,I$):: NEXT I :: CLOSE #2 ::
I=M :: GOTO 150 !195
520 GOSUB 1070 :: GOTO 150 !
233
530 CALL KEY(3,K,S):: GOSUB
1090 :: CALL LINK("DISP",24,
1," Load: (Enter=
Exit)"): CALL LINK("ACCEPT"
,24,8,10,"",P$,Y)!036
540 CALL KEY(0,K,S):: IF K=1
0 OR K=11 THEN 730 !057
550 IF P$="" THEN 590 ELSE P
$=DR$&P$ :: GOSUB 1070 !227
560 ON ERROR 710 :: OPEN #2:
P$,INPUT ,DISPLAY ,VARIABLE
!083
570 FOR I=1 TO 60 :: LINPUT
#2:A$(I):: I$=STR$(I):: CALL
LINK("DISP",23,36,I$):: B$(
I)=A$(I):: NEXT I :: CLOSE #
2 :: I=1 !126
580 GOSUB 1070 :: GOSUB 1090
:: FOR I=1 TO 19 :: CALL LI
NK("DISP",I,1,A$(I)):: NEXT
I :: GOTO 140 !068
590 CALL LINK("DISP",21,1,"
    Clear Delete End File Help
    Justify Insert Load Outp
    ut Print Quit Save Top"):213
600 CALL KEY(3,K,S):: IF S=0
THEN 600 ELSE IF K=72 THEN
980 ELSE IF K=67 THEN 520 EL
SE IF K=68 THEN 840 ELSE IF
K=69 THEN 680 ELSE IF K=70 T
HEN 910 !183
610 IF K=84 THEN 690 ELSE IF
K=79 THEN 990 ELSE IF K=73
THEN 850 ELSE IF K=76 THEN 5
30 ELSE IF K=6 THEN 1050 ELS
E IF K=12 THEN 1060 !244
620 IF K=80 THEN 320 ELSE IF
K=81 THEN 900 ELSE IF K=61
THEN 1010 ELSE IF K=83 THEN
400 ELSE IF K=2 THEN 1020 EL
SE IF K=74 THEN 1100 ELSE IF
K=14 THEN 1240 !211
630 IF K=6 THEN 1240 ELSE IF
K=49 THEN RS=1 :: RE=19 ::
R=1 :: GOTO 240 !139
640 IF K=50 THEN RS=20 :: RE
(See Page 44)

```

User Notes

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```

=38 :: R=1 :: GOTO 240 !084
650 IF K=51 THEN RS=39 :: RE
=57 :: R=1 :: GOTO 240 !096
660 RETURN !136
670 CALL LINK("DISP",24,1,"
  Press C,D,F,H,I,L,O,P,Q
  or S      "): RETURN !086
680 R=19 :: RS=39 :: RE=57 ::
: GOTO 240 !045
690 I,R=1 :: RS=1 :: RE=19 ::
: GOTO 240 !177
700 GOSUB 1080 :: CALL LINK(
"DISP",23,1," * Can't s
ave File! *"): GOTO 150 !00
8
710 GOSUB 1080 :: CALL LINK(
"DISP",23,1," * File No
t Found! *"): GOTO 150 !248
720 GOSUB 1080 :: CALL LINK(
"DISP",23,1," * Printer
error! *"): GOTO 150 !056
730 GOSUB 1070 :: ON ERROR 8
30 :: OPEN #2:DR$,INPUT ,REL
ATIVE,INTERNAL :: INPUT #2:E
$,E,E,F :: RO=1 :: CO=4 !039
740 FOR H@=1 TO 127 :: INPUT
#2:E$,D,E,F :: CALL LINK("D
ISP",RO,CO,E$):: RO=RO+1 ::
IF RO>18 THEN 750 ELSE 800 !
215
750 IF CO=4 THEN CO=16 :: RO
=1 :: GOTO 800 !209
760 IF CO=16 THEN CO=27 :: R
O=1 :: GOTO 800 !007
770 IF CO=27 THEN CO=4 :: RO
=1 :: GOTO 780 !191
780 CALL LINK("DISP",24,1,"
  Press any key...
  "): CALL KEY(0,A
A,BB):: IF BB=0 THEN 780 !00
7
790 GOSUB 1070 :: IF AA=15 T
HEN 820 !168
800 IF ABS(D)=0 THEN 820 !10
3
810 NEXT H@ !030
820 CLOSE #2 :: GOTO 530 !12
5
830 GOSUB 1080 :: CALL LINK(
"DISP",23,1," * Drive E
rror! *"): GOTO 150 !044
840 GOSUB 880 :: FOR I=1 TO
58 :: A$(I)=A$(I+1):: CALL L
INK("DISP",23,1," <Del>"):
NEXT I :: I=I-1 :: GOSUB 107
0 :: GOSUB 860 :: GOTO 150 !
004
850 GOSUB 880 :: FOR I=58 TO
I STEP -1 :: A$(I)=A$(I-1):
: CALL LINK("DISP",23,1," <I
ns>"): NEXT I :: A$(M)=" "
:: GOSUB 1070 :: GOSUB 860 ::
: GOTO 150 !065
860 IF RS=0 THEN RS=1 :: RE=
19 !248
870 RO=1 :: FOR I=RS TO RE ::
: CALL LINK("DISP",RO,1,A$(I
)): RO=RO+1 :: NEXT I :: CA
LL HCHAR(R,1,32,1):: I=M ::
GOTO 150 !211
880 IF I=1 AND K=73 THEN 890
ELSE CALL LINK("HORZ",R,1,1
24,1):: RETURN !132
890 GOSUB 1080 :: CALL LINK(
"DISP",23,1," * Can't i
nsert line there. *"): GOTO
150 !131
900 CALL LINK("DISP",24,1,"
  Are you sure? (Y/N)
  "): CALL KEY(3,K,
S):: IF K=78 THEN 140 ELSE I
F K<>89 THEN 900 :: CALL CLE
AR :: END !161
910 GOSUB 1080 :: CALL LINK(
"DISP",23,1," FileName:"):
CALL LINK("DISP",23,12,P$):
RETURN !016
920 DISPLAY AT(2,1)ERASE ALL
:"Clear -erase current scree
n": "Delete-remove line of te
xt" !102
930 DISPLAY AT(4,1): "End -
go to end of file": "File -d
isplay active file" !155
940 DISPLAY AT(6,1): "Insert-
insert a blank line": "Justfy
-right justify text": "Load
-retrieve a file" !135
950 DISPLAY AT(9,1): "Output-
change data path": "Print -se
nd file to printer" !110
960 DISPLAY AT(11,1): "Save
-write file to disk": "Top
-go to start of file": "F4
-toggle overwrite": "F5 -
alter line length" !213
970 DISPLAY AT(15,1): "F8
-restore purged file": "=
-purge current file" :: DIS
PLAY AT(24,1): "Press <ENTER>
to return.." :: RETURN !238
980 CALL LINK("NORM"):: CALL
KEY(0,X,Z):: IF X<>13 THEN
980 :: CALL LINK("TEXT",2,4)
:: GOTO 150 !018
990 CALL LINK("DISP",24,1,"
  Data Path:
  "): CALL LINK("AC
CEPT",24,13,15,"",DR$,Y):: I
F DR$="" THEN 990 :: GOTO 15
0 !212
1000 GOSUB 1070 :: FOR I=RS
TO RE :: CALL LINK("DISP",RO
,1,A$(I)): RO=RO+1 :: NEXT
I :: I=RE :: R=19 :: RETURN
!098
1010 GOSUB 1090 :: GOSUB 107
0 :: CALL LINK("DISP",24,1,"
  Initializing memory..."):
FOR I=1 TO 60 :: A$(I)=" " :
: NEXT I :: GOTO 140 !123
1020 IF OP=0 THEN 1030 ELSE
1040 !187
1030 CALL LINK("DISP",23,1,"
  Overwrite protect disabled
..."): CALL LINK("HORZ",21,
39,42,1):: OP=1 :: GOTO 150
!094
1040 CALL LINK("DISP",23,1,"
  Overwrite protect enabled.
..."): CALL LINK("HORZ",21,3
9,32,1):: OP=0 :: GOTO 150 !
238
1050 FOR I=1 TO 60 :: A$(I)=
B$(I):: NEXT I :: GOTO 690 !
203
1060 CALL LINK("DISP",24,1,"
  Use Fctn X to exit te
xt mode "): RETURN !146
1070 CALL LINK("HORZ",1,1,32
,760):: RETURN !115
1080 CALL LINK("HORZ",23,1,3
2,40):: RETURN !110
1090 CALL LINK("HORZ",24,1,3
2,40):: RETURN !111
1100 GOSUB 1070 :: CALL LINK
("HORZ",21,1,32,160):: RS=1
:: RE=19 :: GOSUB 1230 !040
1110 FOR Z=1 TO 57 :: Y$=A$(
Z):: Z$=" " :: L$=STR$(Z)::
CALL LINK("HORZ",21,38,32,2)
:: CALL LINK("DISP",21,38,L$
)!190
1120 IF Z=20 THEN RS=20 :: R
E=38 :: GOSUB 1230 :: GOTO 1
140 !000

```

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```

1130 IF Z=39 THEN RS=39 :: R
E=57 :: GOSUB 1230 !204
1140 CALL LINK("DISP",22,1,Y
$):: CALL LINK("DISP",24,1,"
Fctn X-skip, ENTER-justify,
Fctn 9-exit.")!161
1150 CALL KEY(0,P,Q):: IF Q=
0 THEN 1150 ELSE IF P=10 THE
N 1220 ELSE IF P=13 THEN 116
0 ELSE IF P=15 THEN 580 !142
1160 P,Q=0 :: X=LEN(Y$):: IF
X=LN OR X=0 THEN 1220 !034
1170 T=POS(Y$,Z$,1):: IF T=0
THEN 1220 ELSE G=T !223
1180 S=POS(Y$,Z$,T):: C$=SEG
$(Y$,1,S):: D$=SEG$(Y$,S+1,(
LN-S))!034
1190 IF C$="" THEN E$=D$ ::
T=G+1 :: GOTO 1180 !182
1200 E$=C$&Z$&D$ !28
1210 CALL LINK("DISP",22,1,E
$):: Y$=E$ :: IF LEN(Y$)=LN
THEN 1220 ELSE T=S+G :: GOTO
1180 !140
1220 A$(Z)=Y$ :: CALL LINK("
HORZ",22,1,32,40):: NEXT Z ::
: GOTO 580 !213
1230 GOSUB 1070 :: RO=1 :: F
OR I=RS TO RE :: CALL LINK("
DISP",RO,1,A$(I)):: RO=RO+1
:: NEXT I :: RETURN !087
1240 CALL LINK("DISP",24,1,"
Enter length of text line:
40 "): CALL LINK("
ACCEPT",24,29,-2,"0123456789
",LN$,Y):: LN=VAL(LN$):: IF
LN<1 OR LN>40 THEN 1240 ELSE
150 !140

```

Using PATH with a back slash

This comes from Bob Sherburne, of Las Vegas, Nevada, and concerns MDOS on the Geneve. He writes:

I have made a discovery which will allow the PATH command to work when not in the root directory of the hard drive, although no mention of it was made in the Myarc manual on pages 56 or 80. In the IBM DOS manual, the PATH command example is shown as "PATH

C:\SALES\WUTH\REPORTS\WEEKLY.REP". Although this format will not work in MDOS after the first directory, the insertion of the backslash character in the MDOS PATH format allows use of the path at any time.

As an example, "PATH H:\BATS:H:\MDOS:H:\UTIL:" is a valid path and works perfectly at all times. As a side note, I have found that TREE/W will display the files in "wide" format and TREE/P will display them in "page" format. Both are valid commands which are undocumented.

A note on Myarc disk formats

This comes from Rick Fallstrom of Lifestream Computer, Port Orchard, Washington. He writes:

I have enjoyed your magazine through the years of being a 99er and have come to enjoy the expertise of the columnists and other readers. However, there are those who need a little more data available in their articles, i.e. what formats the Myarc floppy disk controller will produce and which ones are readable by others; also, which disk manager/utility software is in use to produce these formats.

The Myarc card with DSR EPROM version F03E will produce the following disk formats using Myarc's Disk Manager Level III:

Format	Sectors	Sec/Trk	Compatible with
SS/SD	360	9	CC, TI, HFDC
SS/DD-1	640	16	
SS/DD-2	720	18	CorComp, HFDC
DS/SD	720	9	CC, TI, HFDC
DS/DD-1	1280	16	
DS/DD-2	1440	18	Corcomp, HFDC

I should note here that any disk manager other than Myarc's will produce a 16-sector per track format in the double-density mode thereby making the disk unreadable by any other controller card. So, if you want to exchange disks with other people who have other than a Myarc floppy disk controller, and are using double-density, then make sure that the disk is formatted by the Myarc Disk Manager or stand by for complaints.

As a clarification, the CorComp disk controller, using its disk manager soft-

ware or DM1000, formats double-sided/double-density disks at 18 sectors/track for 1440 sectors. It requires the Myarc disk manager to format at 8 or 16 sectors/per track.—Ed.

Header standard for graphics program

This comes from Alexander Hulpke, of Aachen, West Germany. He writes:

I'm writing a program which will resemble and improve MY-Art for uses with the Geneve, a Mechatronics 80-column Card or the DIJIT AVPC. Since the program should include interlace mode, etc., I'd like to disclose some of its interface to prevent incompatibilities. This is due to the fact that MY-Art stores only the background color in the header.

The program I am writing stores pictures in MY-Art format (see the documentation to my XHi freeware for a discussion of this format). Since MY-Art really plays Old Harry with the header word, I'll declare this to be my official definition of this word (at the moment it is not used). My intent is to be as compatible as possible with existing standards:

MSB 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 LSB

BACKGROUND COLOR	IL	OM	XX	AO	G7	A1	A2
------------------	----	----	----	----	----	----	----

DEFINITIONS

IL: When reset the picture is in Interlace mode (I).

OM: When reset the picture is stored in the "wrong" mode, just to save disk space. This feature will be included last. Regard this bit as reserved (I).

xx: Reserved for future expansion (I).

G7: When Set, the picture is in G7 mode, otherwise G6 mode.

A0, A1: (I).

A2: (O) these bytes are set for compatibility with the "Austri" format (see XHi documentation).

Interlaced pictures will be stored in logical order (like on the screen) and not in physical order (like in memory). This allows better compatibility between the two modes and prevents possible dark stripes in the picture when loaded in inter-

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lace mode.

Caution for users of MDOS 1.14

This comes from Edwin Donovan, of Monroe, Washington. He writes:

Under normal setup conditions and in certain cases your files and programs can be corrupted by the internal RAMdisk when using System/Sys 1.14. These bad files are showing up on the networks in both archived and normal formats with increasing frequency.

The bug is activated when the Autoexec file is set to: TIMODE and RAMDISK 120. In this case, the last sector of the internal RAMdisk (480 or 01DF) is filled with hex code (01 through FF) in numerical order. This last sector is protected somehow and cannot be overwritten when copying files to the RAMdisk. The sector bitmap does not indicate that the 01DF sector is in use. Therefore, when you copy a file or program to the RAMdisk that will occupy that sector, the copy will be corrupted. The corrupted file can be copied back to other disks or drives and all will appear to be normal, but the copied file will have the wrong hex code from sector 01DF in it. Setups with RAMdisks more or less than 120 or with different versions of MDOS may not have this problem.

A printout of the rogue sector code is listed below. The version of MDOS that I am using is 1.14, updated Nov. 9, 1988. Note also

that the number of free sectors remaining will not always determine when sector 01DF comes up for use. Other factors, including the number of files on the disk, also apply.

Sector	> 01DF	Byte 0	>00	EDIT
0102	0304	0506	0708	090A 0B0C 0D0E 0F10
1112	1314	1516	1718	191A 1B1C 1D1E 1F20
2122	2324	2526	2728	292A 2B2C 2D2E 2F30
3132	3334	3536	3738	393A 3B3C 3D3E 3F40
4142	4344	4546	4748	494A 4B4C 4D4E 4F50
5152	5354	5556	5758	595A 5B5C 5D5E 5F60
6162	6364	6566	6768	696A 6B6C 6D6E 6F70
7172	7374	7576	7778	797A 7B7C 7D7E 7F80
8182	8384	8586	8788	898A 8B8C 8D8E 8F90
9192	9394	9596	9798	999A 9B9C 9D9E 9FA0
A1A2	A3A4	A5A6	A7A8	A9AA ABAC ADAE AFB0
B1B2	B3B4	B5B6	B7B8	B9BA BBBC BDBE BFC0
C1C2	C3C4	C5C6	C7C8	C9CA CBCC CDCE CF00
D1D2	D3D4	D5D6	D7D8	D9DA DBDC DDDE DFE0
E1E2	E3E4	E5E6	E7E8	E9EA EBEC EDEE EFF0
F1F2	F3F4	F5F6	F7F8	F9FA FBFC FDFF FFF0

User Notes is a column of tips and ideas to help readers put their computers to better use. The information provided here comes from many sources, including user group newsletters and MICROpendium readers. MICROpendium pays \$10 for items sent in by readers that appear in this column. Mail *User Notes* to: MICROpendium User Notes; P. O. Box 1343; Round Rock, TX 78680.

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These disks contain programs downloaded from electronic bulletin boards. They are for use with the Myarc Geneve 9640 and cannot be used with the TI99/4A. Some of the programs are distributed under the shareware concept and may require payment to individual software authors. MICROpendium encourages shareware payments. Cost is based on disk format and number of disks required.

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