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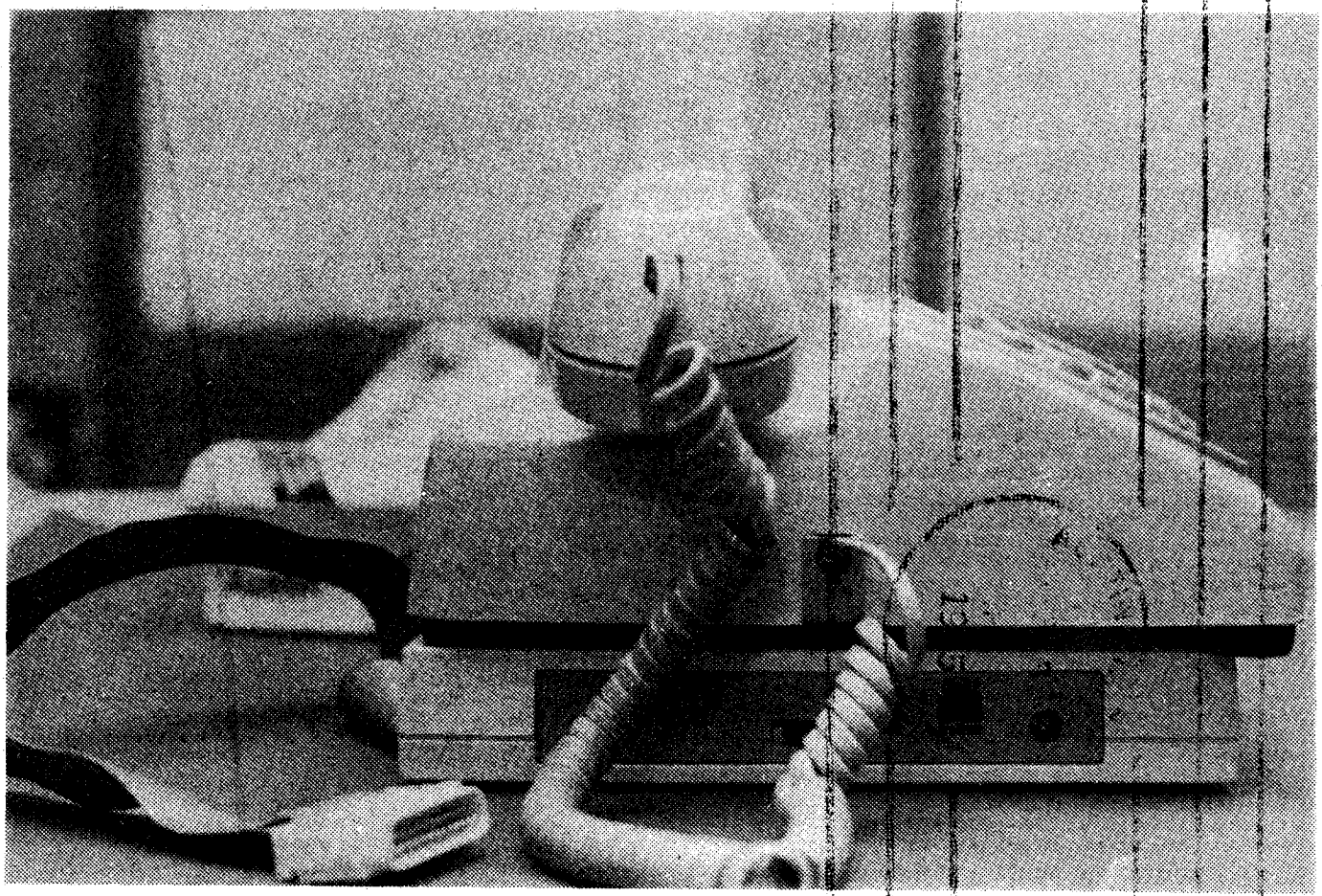
MICROpendium

Covering The TI99/4A Home Computer And Compatibles

Volume 2 Number 3 April 1985 $1.50



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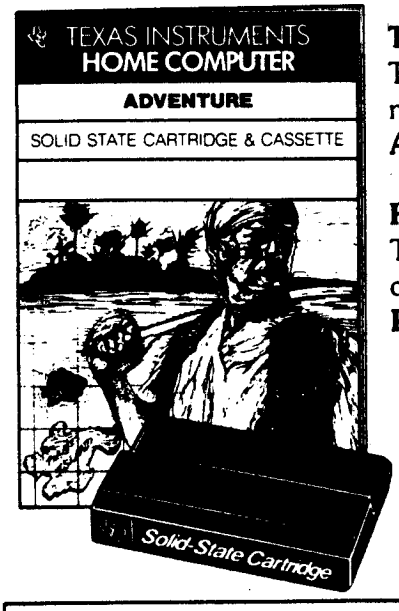

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Coming Next Month

—Getting the most out of Personal Record Keeping
—More tips on TI-Writer
—A firsthand look at the 80-column card

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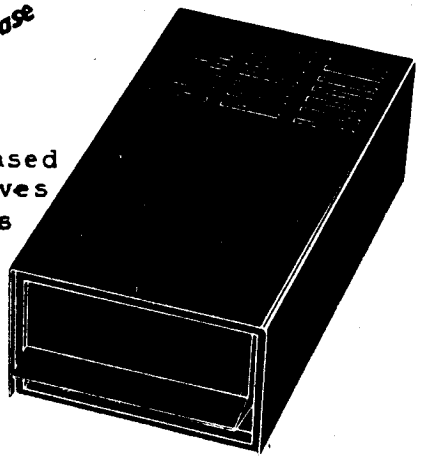

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Comments

Going full-time

MICROpendium now has a full-time editor. Laura Burns, the editor of this publication since it started, has left her position as an information specialist with a Texas state agency to devote full time to MICROpendium. We're excited by this because it means we will be able to provide a better product on a more timely basis. Also, when you call us there will be a greater likelihood of reaching her rather than a recording.

ORPHANS MAKE NEWS

Several newspapers have "discovered" orphan computers in recent months, among them the Wall Street Journal and USA Today. USA Today spoke with several TI users, including Terrie Masters of the Los Angeles 99ers and Frank Jordan of the Washington, D.C., users group. Also quoted were users of Coleco Adam and Timex-Sinclair computers. Although the article didn't go into great detail, it was generally upbeat and presented the impression that orphan computer owners are adapting quite well to the situation they are faced with. But we all knew that, didn't we?

ABOUT THAT NEW COMPUTER

Beta testing is continuing on the 99/4A compatible computer. The machine is still scheduled to make its debut at the June Consumer Electronics Show. We published information about it last month and dropped hints about it since last fall. Still, we have yet to see one.

We have received several responses about the proposed computer. Readers seem delighted with the prospect of a compatible machine that will run existing software. Although the company doesn't want to be identified yet, it is very much interested in what potential owners would like to see in the machine. Continue to send us your opinions and we will forward them to the company. It's one of those deals where the more they hear from you the better they feel about the investment they're making in time and, especially, money. Send your letters to: Computer, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680. Oh, yes, the news now is that in addition to the new computer being introduced at the June Consumer Electronics Show, some new software will be shown as well

IMPROVED DELIVERY (WE HOPE)

Good news from the post office. Recent issues, particularly the February issue, have been plagued by postal delivery problems. Although we have been bundling them and sacking them the same way since we started, the post office now tells us that many of the sacks have been returned to the original point of shipment because someone at the regional service center has been misreading the labels. They had been reading the return address as the destination address, and so they were coming back to Round Rock, Texas, rather than going out to Kalamazoo and elsewhere. That's all been taken care of. We're now displaying the return addresses on the mail sacks in such a way that postal employees aren't likely to confuse them with the destination address. (Actually, we're hiding the return address.) We've got our fingers crossed on this, but the postmaster says this will do the trick.

P.S.: We appreciate the patience of those who failed to receive their February issue in a timely fashion. In fact, many received their March issue before the February issue arrived. As a rule of thumb, if you haven't received an issue by the end of the month, let us know and we'll try to get one off to you pronto.

SOFTWARE GETTING BETTER

There is a lot of very good software becoming available for the TI this year. A case in point is the proliferation of highly sophisticated graphics programs. I've seen three or four, and heard about another, that will make it very difficult to choose between them. The elder statesman of drawing programs may be Draw-A-Bit by Data Force Incorporated and the most recent release is Master Painter by Amerisoft International. Each of these is unique in its features and unique in the market place. Draw-A-Bit lets the user create his own graphics images and then store them to be recalled for later use. Say you want to create something that looks like a brick to be used in creating a drawing of a house. You use Draw-A-Bit to create and color the brick to your satisfaction and then store it. You can call it up at any time and use it in your picture. The program lets you lay down the bricks one at a time or in rows without having to recreate it each time. That's just one of the features.

Master Painter takes a different course, offering the user a series of icons from which to choose the shape and size of his "pen." The entire program is run using icons. For example, a representation of a trash can is used to symbolize the function that will result in trashing a drawing.

I have heard of another program called TI-Artist that is supposed to offer more features than a Koala Pad. Another program, from Australia, calld GRAPHX, is regarded by some who have seen it to produce better graphics than a CAD (computer assisted design) system. Those who have seen both say that GRAPHX is better for animation and text-setting purposes while TI-Artist has features such as inverse and mirror image functions and a "stretch" function. These additions will make choosing a graphics program even more difficult than it has been. (Remember, there are a lot of good graphics programs available and those I've just mentioned are only a few. I don't want you to take these brief comments as a recommendation. Personally, I'm waiting for the reviews to come out.)

You will notice that our major feature this month has to do with CompuServe. Just so you Source fanatics don't take it personally, we plan to publish a piece on The Source and what it offers TI users in the May edition.

New *Announcing The TI-99/4A*

ADVENTURE EDITOR

NOW WRITE AND EDIT YOUR OWN GAMES FOR THE TI ADVENTURE MODULE!

TEX-COMP is proud to announce the 99/4-A Adventure Editor — an all new program which allows you to write your own adventure programs — Scott Adams move over! This disk or cassette based program allows:

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The program is written for 'Mini-Memory' or 'Editor-Assembler' command modules (cassette or disk) and offers the same features in both versions.

The program offers a full screen editor and a special easy to use mnemonic language called A.P.L. (Adventure Programming Language), and comes with a complete and detailed 75 page manual.

TEX-COMP is also organizing a new TI Adventuring Users Group which will allow low cost exchange of user-written adventures between members.

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Feedback

Battery 'repairs'

Does anyone have the solution to the problem of replacing batteries in the Mini Memory?

I found that my local Customer Service Center (#811) will not replace the battery but will just exchange the entire unit to the tune of $35!

I then called TI in Lubbock, Texas, only to be informed that they consider battery replacement a "repair" and charge $38 plus any "repairs" necessary to replace a $7.50 battery!

This is a real Catch-22. Has anyone else had this problem and found an answer? I hate TI's "public relations"!

Joyce Corker
Waltham, Massachusetts

Better than cookies

It is so nice to read an adult magazine like yours without seeing another address file or a program to tell you how to bake cookies.

Can you imagine putting your computer near the kitchen sink with the disk drive in an open drawer and pushing the computer keys with sticky, doughy fingers?

Who bakes cookies any more, anyhow?

There seems to be a real need for articles about little tricks and methods concerning just the ordinary, everyday use of computers, especially this one.

I thought that it was just me for a long time, but, at times (often!) I would forget the file name when it became time to store the program on the disk. I know; when there is a lot of room on the disk, you can file it under BLOOEY or whatever, look at the directory, and then put it where it is supposed to go and then delete BLOOEY. Or whatever.

But what do you do when the disk is about full and you don't have another? Initialized, that is, and the tape recorder is buried away somewhere? It seemed to be always happening to me until a friend of mine shoed me how to put the program name in the first line of the program (usually 100, for me) in a REM or that other! thing, and then just enter NUM and CLEAR and the name is sitting right there for you. I even space it out so that it is sitting right over the place for the program name in the SAVE command so that it is an automatic spelling checker when you are entering the command.

I didn't grow up with bits of wire hanging from my hair and solder drops on my shoes, but I will just bet that those of your readers who did have a lot of helpful hints for a beginner, and they just don't write about them because they think that everybody knows about them, but they don't. At least I don't.

Somebody ought to tell them

I notice that when you offer prizes for anything that you never offer a "free subscription to....." You know who.

(They told me to say that.)

Sally Smothers
Cypress, Texas

Inquiry answered

Re Kenneth Devlin's question, to get more than 112 characters in a program line in BASIC, or more than 140 in XBASIC, just fill up the four or five lines completely (with temporary closing quotes, if necessary). Enter it, bring it back to the screen by NUM (line number) or EDIT (line number) or line number and FCTN X, or in XBASIC by FCTN 8. You can then run the cursor along all the lines and onto the next line.

NOTE — if you put more than 140 characters in an XBASIC line, FCTN 8 brings back only 140!

Jim Peterson
Tigercub Software
Columbus, Ohio

Joystick problem

Can you help this? I have difficulty with the joystick, for it will not go up. It works down, sideways, but will not move up. I have used two different joysticks and now have wired remote controllers and after a few hours the controllers will not move up any more (on a few games, not all). It seems the difficulty is in the computer, not the joystick. Is there a solution?

Rev. Carl Hoffmeyer
Bowling Green, Ohio

It would seem to us that if the joystick works at all, the problem would not be in the computer, but our readers may be more knowledgeable about this problem. — Ed.

Bit map damage

In reponse to the letter from John Tomchick, it sounds like he has damaged the disk bit map located in sector 0. This would return a "DISK NOT INITIALIZED ERROR" when in fact everything is still there—assuming that the rest of the disk has not been subjected to stray magnetic fields. Thanks to T. Atkinson and Bill Gronos—and the people at Navarone—it is possible to fix bugs in the bit map directory. By using Disk Fixer to 1) LOAD sector 0 from a known GOOD disk and then 2) writing this entire sector back to the BLOWN disk. The bit map (a file allocation table) will not be correct, but the entire disk can be copied onto another disk with Disk Manager II. This will restore the bit map to reflect the programs/files that were "lost." A KNOWN GOOD DISK MUST BE USED TO COPY FILE ONTO. Next, reinitialize the blown disk and do a destructive test to find any bad sectors which may be present. Any programs LEFT on the disk will, of course, be gone forever!

Bruce Ryan
Ryte Data
Haliburton, Ontario

More fooling

This is a response to Kenneth Devlin's "Fooling XBASIC?" question in the Feedback section of your March edition.

You can fool Extended BASIC into

(Please turn to Page 10)

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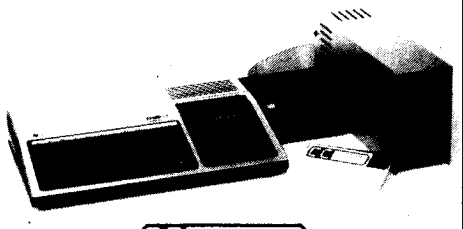

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Feedback

(Continued from Page 8)

letting you have more than 140 characters per line like in this sample line:

```
100 PRINT::PRINT::PRINT
::PRINT::PRINT::PRINT::
PRINT::PRINT::PRINT
```

If you list it back, you will get the following:

```
100 PRINT :: PRINT :: PRINT ::
PRINT :: PRINT :: PRINT ::
PRINT :: PRINT :: PRINT
```

If you fill the entire six lines of line #100 with PRINT::PRINT etc. with no spaces between the commands and the colons, then list it back, it will exceed the six-line limit by putting spaces where you left them out. You can again suck up the spaces and add more commands to your line. Try it!

Nolan LeBlanc
Scottsdale, Arizona

Further extension

In answer to Kenneth Devlin's question in the March issue, there is a very simple way to "fool" the computer. First type in as many characters as possible on the line then press ENTER. Press FCTN "REDO" and the line reappears. By using FCTN "D" (or right arrow) you can get to where you left off and continue typing in your line. When done just press ENTER as before to get extended line coverage.

L. Bendick
Newark, Ohio

On "Run CS1"

This letter is designed to request publication of information relative to the combination of the undocumented "Run CS1" command available in Extended BASIC with the VDP RAM chip used for video display for the TI99/4A. I have discovered that one can redefine character numbers 30-143, except #31, as either regular graphic or sprites, and maintain the definitions and motions of the sprites or regular graphic characters after the execution of the "Run CS1" command. Contrary to statements in the Extended BASIC manual, executing "Run CS1" does not reset the character pattern definitions to those predefined in ROM.

I believe what is happening technically is that the VDP chip maintains the data in memory while the chip controls the program to be run. The net effect is to increase the memory of the TI99/4A dramatically for graphics purposes. One can create two programs—the first containing all the definitions for sprites, their color, size and motion; the second to be "run" by the first program and controlling the sprites and graphic characters in the game or animation. I calculate that defining 28 sprites with separate and distinct characters requires 6K memory after being "Run", which is fully stored in VDP RAM memory when the "Run CS1" statement is encountered, leaving the **entire** 13928 bytes available in Extended BASIC to be utilized for the non-graphics program, for a total of approximately 20K bytes. All of the sprite commands in the second program operate on the sprites created in the first program, meaning that the operating system continues to affect VDP as usual.

Though I do not yet own a disk system, I believe the "Run DSK 1" command will produce the same results. I further believe that in bitmap mode, one could define 256 characters, store all this information in similar fashion in the total 16K available for the VDP ram chip, then execute the "Run" statement for another program utilizing the full capacities of memory expansion, for a total of 52K RAM—16K in VDP, 12K in console RAM with Extended BASIC and disk system attached and 24K usable program space in memory expansion. Thus, the TI99/4A in graphics mode is really a 64K machine—16K in console, 32K with memory expansion, 16K in VDP RAM.

Even more interesting is the fact that the data codes for the redefined characters can be accessed by the operating system chip, such that one can store numbers in VDP RAM for use perhaps in a phone dialer program or the like by redefining characters not used for displaying letter. Thus the program RAM for **data**can be increased by storing this code in VDP RAM.

Anthony B. Pennington
Springfield, Ohio

Forth & sprites

I recently purchased TI-Forth and I'm very pleased with it. Yet I have one question: following the manual's instructions I was not able to use sprites in the graphics mode. Could you possible tell what I'm doing wrong or write a short Forth program showing how to use sprites in the graphics mode.

Brian Williams
New York, NY

Any readers out there have a solution to Mr. Williams' problem? Let us know and we'll pass it on.—Ed.

The Feedback column is for readers. It is a forum to communicate with other readers. The editor will condense excessively lengthy submissions where necessary. We ask that writers restrict themselves to one subject for the sake of simplicity. Our only requirement is that items be of interest to persons who use the TI99/4A home computer. Mail Feedback items to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

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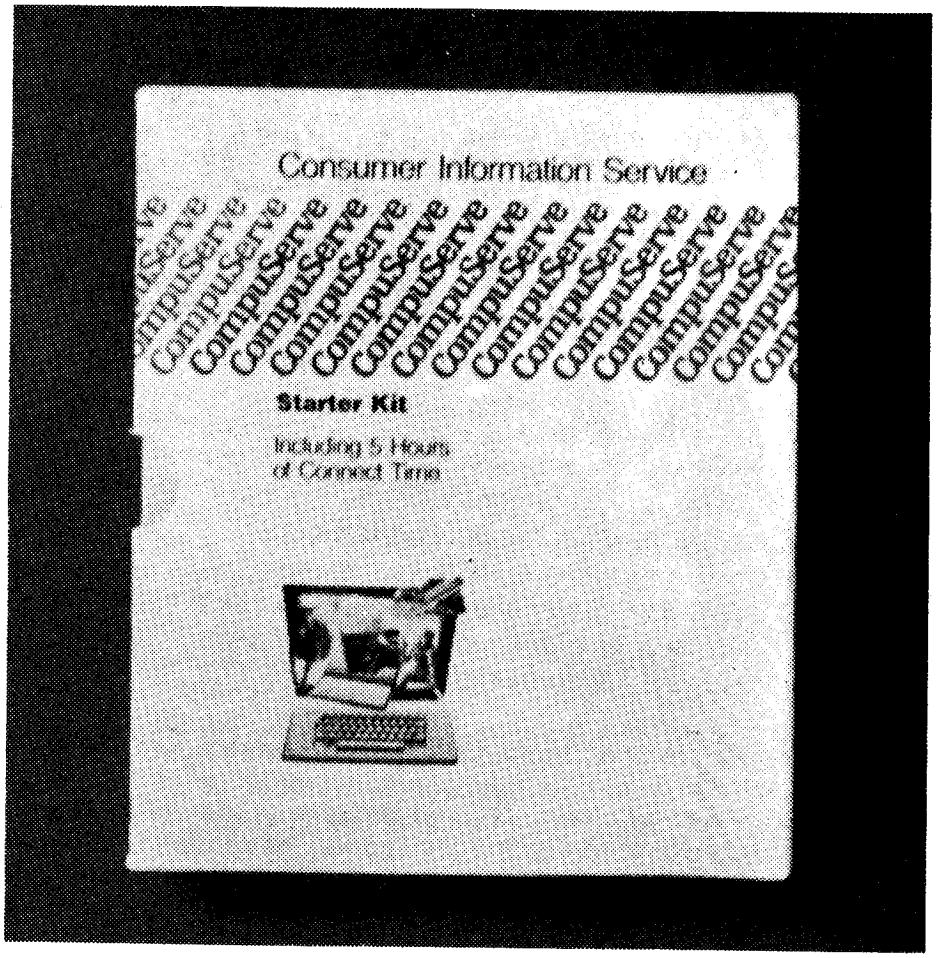
TI SWAP

Cruising the Forum

By RON ALBRIGHT

When one first thinks about logging on to a "retail" bulletin board system (and that's all CompuServe really is), one must consider how to use the time most efficiently and cost-effectively.



The Starter-Paks **do** give you five hours to play around with before the actual meter starts running, so I propose to give you a hardcopy tour of the TI Forum (applicable to other CIS SIGs as well) to allow you, we may hope, to use those first "free" five hours to learn your way around COMPLETELY so that, when the time is billed, it will be the least amount possible.

First of all, for gosh sakes, STAY CALM on line! Electronic communications (all forms) tend to make perception of time distorted. Seconds feel like minutes, minutes feel like hours. Just watch what is happening, be patient on-line, and ALL will come easy! Let's look around.

When you access CompuServe, be it by a direct CIS line or one of the additional access lines of TYMNET or TELENET (an extra $2 per hour for the latter two), you will get a "logon banner" after the correct user number and password (given in the Starter-Paks) have been accepted. The banner is usually "WHAT'S NEW IN THE ELECTRONIC MALL (tm)" (one of CIS' pride-and-joy services). You will then be given a message to enter a command and a "!" This is the CIS version of the prompt (The Source uses "->"). That is your signal to enter something. It doen't have to be any choice from the present screen menu at all! You may enter any "page" (the way CIS lays out its services) at this prompt, regardless of what the menu selections are. REMEMBER THAT!

When you get your first "!", enter "GO PCS27" (that says "go to Personal Computer SIG 27," the TI Forum). You will be immediately whisked away through the CIS "pages" to the only place I ever go there. When you reach the Forum, if this is the first time you have ever accessed that SIG, you will be presented with a short "Non-members' Bulletin" saying something like, "HI! Welcome to the TI FORUM. We have no sign-up fee, so why not join up as a member?" You will then be given the opportunity to sign up. DO IT THE FIRST TIME! It will save you getting the prompt next time. You enter the SIG and do all the fun things without becoming a member, but to avoid the Bulletin, sign up on visit #1.

Once you have signed on, you will be given the New Member Bulletin. This short Bulletin is meant to point out "points of interest" in the Forum and where you can get help when needed. Make sure you capture this Bulletin to disk or printer for reference off-line. It IS helpful info. After

(Please turn to Page 14)

****

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MESSAGES—

(Continued from Page 12)

all the bulletins have ceased (probably five minutes total at 300 baud so RELAX!), you wil get the number of messages on-line, their numbers, etc. Then, the "FUNCTION:" prompt. From here, thee are many things you can do.

The first thing I would suggest doing is inputting "NS". This simply means that you are about to read messages and you do not want to stop between messates ("no stop"). We want to get a "flavor" on our first visit and not dawdle and reply (yet!). Next, you will get the "FUNCTION:" prompt again. This time enter "RR". This command means (logically) "read reverse." You will then be tole "The FORUM contains messages xxxxxx to xxxxxx. Start at which message?" Input, for the sake of discussion, the highest message number. You will then see the messages start to scroll by, not stopping between each one. Look at the messages "headers" as they scroll by. The header for each message looks like this:

#32226 (P) Sub-topic 3 —Software/Languages
Sb: #32222-FORTH DIMENSIONS
12-Mar-85 19:01:55
Fm: HOWIE ROSENBERG 74216,1640
To: Ron Albright 75166,2473

It gives in this order, several important things of note: the message number, the Forum subtopic it was filed under, the subject, the date and time it was posted, the user who posted it and the addressee. Remember what that looks like—we'll refer to it later.

Look at your watch. If you are using TEII (God help you!), you can stop the scroll to output screen by screen with a CTRL A to stop, CTRL Q to start. After about five minutes of scrolling and outputting, hit CTRL C. The messages may scroll a bit more, then you will receive a message telling you "control C intercepted" and then several choi-

(Please turn to Page 16)

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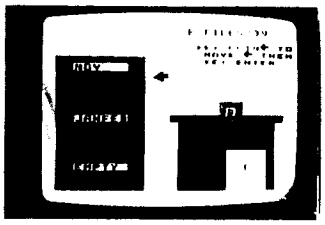

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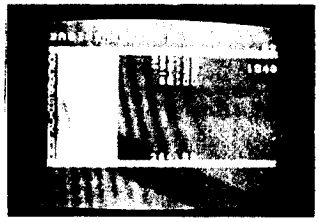

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BROWSING AT THE LIBRARY—

(Continued from Page 14)

ces (logoff, continue, return to command level). Choosing "continue" will start the messages scrolling by again. Let's choose "return to command level." With this choice, you get the function prompt back.

Now that we have gotten a quick taste of the message base, let's look briefly at the second area of interest in the Forum.

At the prompt, type "XA0". We are now going to look briefly at the files available on the Forum. There are 10 Data Libraries on the TI Forum, all chock full with various tutorials, ASCII text-file program listings, etc. XA0, or Data Library 0, contains mostly "helpfiles" which are the tutorials to help one get around the Forum. Right now, we just want to "browse" the file topics, so, guess what? When you get the prompt, type "BRO" (for browse) and you will see the first file header. It will look something like this:

[76703,446]
ACCESS.HLP 07-NOV-84 10805 9
Keywords: HELPFILE ON THE USE OF SIGACCESS

Helpfile for SIG/Access. Courtesy of the CIS Sysop Forum.

Again, several things of note. First, the ID number of the person who uplosaded the file, the title of the file, the date it was uploaded, the number of times users have read the file, the keywords for the file and its short description. The most important thing to remember in each file header is the file name ("ACCESS.HLP" in this example). If you can remember that, you won't have to scroll through the whole library to find the file you want. After the header is presented, you will get another prompt asking:

(R)ead, (D)ownload, (T)op:

Entering "R" will start the contents of the file scrolling by in a readable (ASCII) form. (D) is for other computers which have a special transfer software to "D"ownload like TEII (called VIDTEX, which is not available for our machine on CIS), and "T"op gets

(Please turn to Page 20)

The ultimate users group

By JONATHAN ZITTRAIN

What would you consider to be an "ultimate" TI99/4A users group?

A national audience? Meetings every week? Instant communication? A program and documentation library open 24 hours a day, seven days a week?

Well, there may not be an ultimate users group, but there is one that comes to mind which is rather close. It is the TI Forum on the CompuServe Information Service.

The TI Forum is a Special Interest Group (aptly called a SIG) dedicated to the TI99/4A, accessed through the telephone lines to CompuServe. The TI Forum started in February 1984 as a fledgling corner of the massive CompuServe network. The few users who found it were pleasantly surprised to find an electronic home where they could leave "mail" to other TI users. It seemed like quite an exclusive area, but as time passed other CompuServe users became aware of the Forum and use began to proliferate.

Three distinct areas developed in the Forum: A real-time conference area, a message system and data libraries capable of storing programs or information files.

Every Tuesday night a conference is held where any user from across the country can join in and have each line he or she types transmitted to the rest of the conference participants. The conference area began to realize its potential when Ralph Fowler from TIBBS became a guest speaker and members were given a chance to "grill" him with any and all questions and comments on his famous TIBBS program.

The message base provides a service whereby users may leave a question and find many different replies by the next day, all of which are correct. Lively "threads" of messages are often started, which are then archived in a Data Library for future reference. The latest TI rumors and news also find a place here.

The Data Libraries contain tutorials, documentation of tips and tricks, and a myriad of programs for the 99/4A. Users may browse the libraries using keywords to find files specific to their interests.

Yet that is only the structure of the Forum. The most important part of the Forum is the people who use it. The combination of the users and forum software make it a dynamic, energetic place where newsletter writers and electronic bulletin board operators can find tutorials and text files, beginners can get instant help on software and hardware questions and prospective buyers can get opinions from those already using the product (or may even find an

(Please turn to Page 18)

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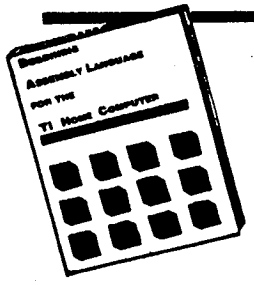

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ULTIMATE USERS GROUP—

(Continued from Page 16)

archived review in a data library). Programmers can get help on specific problems from BASIC to Forth to Pascal.

What we seem to have is a users group on a national level, with all the benefits of the computer age. Anything bad about the Forum? Well, all users groups have their dues.

While there is no charge for membership in the TI Forum, and no additional surcharges are incurred over the regular CompuServe rate, there is that very rate to contend with. Initial CompuServe sign-on is around $40 (and usually comes with five free hours of connect time), and connect time is $6.25 per hour through a local phone number and during standard time (evenings/weekends). We unfortunately have to pay our host, CompuServe, for all the privileges the TI Forum brings.

As we celebrate the first anniversary of the TI Forum, with a conference with Craig Miller of Miller's Graphics and other people from the TI world, we look toward an even better future for the TI99/4A. (Yes, there is a future!) I say this as a content and often amazed user. The TI Forum is truly the first ultimate users group of its kind!

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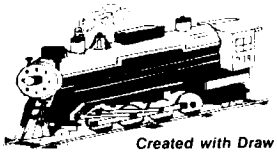

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WELCOME TO CHANNEL 30—

(Continued from Page 16)

you back to the entry level to the Data Library from which you can "EX"it. Hit ENTER now and you will be presented the header for the next file. Read a couple of headers for now. After the second or third header, enter "T"op instead of ENTER. You will get the XA0 main prompt. Then type "EX"it to get back into the SIG itself. You will see the old friend "FUNCTION:" prompt.

Now, just for fun, we'll look at the third and most unusual feature of the Forum, the "Conference Mode." Although there probably is not a scheduled conference going on while you are accessing the Forum, let's look there anyway. Type "CO" at the function prompt. First you will see the conference bulletin which informs you of the scheduled conferences on the Forum (General CO at 9:30 p.m. EST each Tuesday, Forth CO at 10 p.m. EST each Wednesday, TI Pro at 9 p.m. EST Thursday and Assembly Language CO at 9:30 p.m. EST Sunday) and any coming ones that are special and one time only (for example, Craig Miller, Saturday night March 30 at 10).

You will be told "Welcome to Channel 30 [your name]. Number of members in conference: 1 [you!]."

Conferenceing is a bit scary for first-timers, but it is actually incredibly simple. The best thing to do (later) is to download a file from XA0 entitled "HOW2CO.HLP" to explain clearly all the ins and outs. We'll do that next. Suffice it to say, for now, that CO functions are real-time "chats" with a group of users in which you simply type in comments or questions and they are transmitted to everyone's monitor "tuned" to that channel for comments and replies. It is a dynamic feature which is used often on the Forum to exchange ideas and get help. The Tuesday night General CO is a great place to start out and ask questions of the Forum sysops and to learn "how to do it." It is very informal and NO ONE WILL LAUGH AT YOU as you start out! If you like, drop me a message (we'll do that in a minute, too!) and I'll CO with you one-to-one one night to show you the ropes! OK, enough about CO. Just type "/EX" (all commands in CO mode must be preceded by a "/" so that the computer can separate a transmission from a command) and you will exit to the SIG function prompt. Easy, eh?

Now, I promised to do two more things—get the CO help file from Data Library 0 and leave (me!) a message. So let's go get the helpfile. I hope to heavens you are not still using TEII, that outdated relic of the old days. I will direct my comments,

(Please turn to Page 22)

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A second benchmark program appeared in the November 1984 issue of the MICROpendium (page 22). This program took:

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THE 'CONFERENCE MODE'—

(Continued from Page 20)

for the sake of brevity, to using an emulator with a capture buffer (PTERM, TE3, TE1200, AMA LINK, etc.). TEII can be used, but with its small screen-by-tedious-screen downloading, it will cost you a fortune. If you plan to do any serious BBS hopping, BUY AN EMULATOR! It will save you mega-$$$ in the long run. In fact, once you get the feel of the Forum, TE3 is on-line and can be downloaded for use in one of the XAs! So is another emulator called T99. Let's go on...

To download the CO helpfile to your capture buffer, let's go back to XA0 (Data Library 0). Remember how? Just type "XA0" at the function prompt. When you get the libraries prompt, instead of "BRO"wsing, let's go get a SPECIFIC file. The file's title is "HOW2CO.HLP" so type in this command:

"BRO HOW2CO.HLP" and hit enter

You wil go straight to the CO help file and be presented its header. You could have just as easily typed in "R HOW2CO.HLP" to avoid the header and just start "reading" the file contents. But we typed in the browse format. You will get the header and then the read, download, top option. This time we want to get it, so type in "R". The contents will start scrolling by. If you ARE using TEII (God forbid!), CTRL A will stop the scrolling, CTRL Q will restart it to download screen by screen. But if you have a capture buffer, just let things run along. The file is about 30 sectors long and will take about six to eight minutes at 300 baud to scroll by. When it is all finished, you will see "Press Enter to Continue". At this point, dump the buffer to disk, or, with TEII, hit CTRL 0 to close that disk file. Then hit enter. You will see the file header and be given the same three choices again (R,D,T). This time enter "T" to go to the top of the library, and, at the next prompt, "EX" to leave the library. You have just downloaded your first library file! Congratulations!

The last thing we wanted to do is leave a message. The real fun of the Forum is the active message interchanges that go on there. An incredible amount of information about every topic relevant to the TI world goes on in the SIG message base. The message base is "divided" into 10 topics. You are allowed to leave messages under any topic except "10 FORUM STAFF" (that's where your sysops chat). The subject areas are:

0 General
1 TI News
2 TI99/4A
3 Software/Languages
4 Special Information
5 Users Groups

(Please turn to Page 23)

User reports on

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LEAVE A MESSAGE—

(Continued from Page 22)

6 TI Trader
7 TI Forum Lounge
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10 Forum Staff

Also, in a general sort of way (by no means strict!), the 10 Data Libraries follow the same division. For example, as we saw, Library 0 has most of the "general" helpfiles, all files referencing the TI Pro computer are in 8, most file programs are in 3, etc. Try to leave your messages in the section in which they best fit. So let's leave Ron a message!

At the SIG function prompt, type "L" for "leave a message." You will then be prompted for "TO:". For gosh sake, when you input the name of the person to whom you want to send, ALWAYS include his ID number! If you don't, the only way the recipient will ever see the message is if he happens just to run across it while "reading" the message base. Few can afford to read every message posted, so to "flag" the message for the recipient, include his ID. If you do, when that user signs on next he will be told he has a "MESSAGE WAITING" and he can enter "RM" at the function prompt and see the message right away. So, when you get "TO:" enter:

"Ron Albright, 75166,2473"

Next you will get "SUBJECT:". Enter something silly like "HELLO!" You will then be told to enter your message and a blank line ends it. You will see the line numbers as you enter the message. Each line can be 48 characters or so, but I hit enter at the end of each screen line. When you have said, "I MADE IT!" enter a blank line. You will then get an "OPTION:" prompt. There are several things to do at this point, but let's just send it. Enter "S" to save, or, if you are REALLY shy, enter "SP". That will "save private" so that only you and I can EVER see it. All messages that are of NO interest to anybody but the recipient should probably saved "SP"—keeps from cluttering up the message base with, "JOE...I GOT YOUR DISK. THANKS." People will appreciate not spending their on-line dollars looking at such trivialities (to them). So save it "S" or "SP" and then you will get "SUBTOPIC REQUIRED:" and see the 10 subject areas listed above. Enter 0 or 3 or anything but 10 and that message is saved and flagged for me when I sign on to the Forum next. That is all there is to it. You have left your first (and I hope, not last) Forum message.

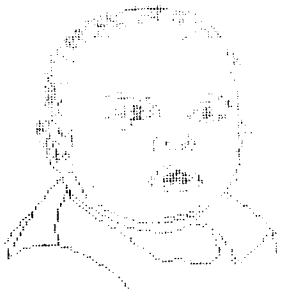
But be careful! It CAN be very addicting! Something that is fun and educational often is.

At this point we've had about all the fun we can handle for one day, so let's get off-line and reflect on what happened. You have your function prompt, so just type in "LOG" (for "log-off"). You will see a closing message telling you the highest message number in the Forum, the highest message number you read and how long you were on-line. It's good to keep track of that. Turn off your modem, sit back and take a deep breath, dry off your palms and try to recall where we went and how we got there. I'll help you.

We first went though the MESSAGE BASE and read a few messages with the "RR" (read reverse) command. We could have just as easily entered "RF" (to read forward) or "RI" to read an individual message. We entered "NS" to tell CIS we were just looking and didn't want the opportunity to have the Forum stop between messages to allow us to reply to each individual message. We hit CTRL C to break the scrolling (also works to break scrolling of the files in the Data Libraries) and then returned to the command level. We then cruised the 0 Data Library and read a few file headers; there is some incredible stuff in those 10 little vaults! We then "T"opped out to the library prompt and "EX"ited back to the SIG. Then we went to the conference area with the "CO" command (next time there, enter "/HELP" and you'll get a list of the CO commands; all commands, remember, have to have a "/" before them). We exited CO and went and got a helpfile in Library 0 called HOW2CO.HLP, "R"ead it, dumped it, "T"opped out again and "EX"ited. Then we left old lonely Ron a message, remembering to include his ID number in the "TO:" field and then "LOG"ged off. I have not mentioned a fourth area of the TI Forum, called "ACCESS", where, with a couple of gyrations, you can do true TEII transfers from CIS. Just like Texnet, the Forum has program transfers, but I have never used this area and, quite frankly, never plan to. It is there, though, and could be easily learned from another helpfile in Data Library 0 called "TE2TRN.HLP", if you're interested.

So there you have it. The magical and quite simple world of the TI Forum. Fast response time and easy commands are its hallmarks. I hope this tour will help you get a feel for it and alleviate some fears first-time users always have. It really IS easy, and enjoyable AND informative. I hope you will join us on the Forum

But be careful! It CAN be very addicting! Something that is fun and educational often is.



Graphics for beginners

This article is for the novice who wants to understand the TI screen in order to create original graphics. More experienced users may still enjoy parts of the article and the short program example.

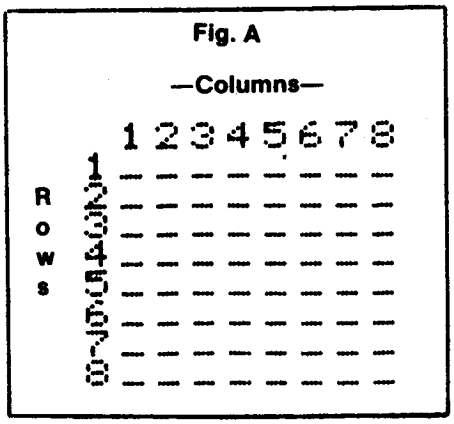
By MICHAEL CHRISTIANSON

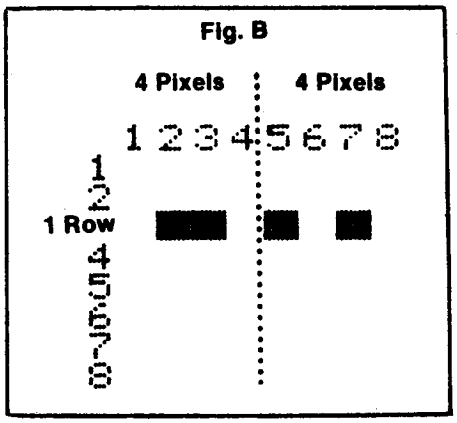
Remember the magazine ads that began "EVEN IF YOU CAN'T DRAW A STRAIGHT LINE..."? Well, even if you can't, you CAN create spectacular graphics with your trusty TI-99/4A. Let's start simple. You will soon see that nice graphics are no mystery (and not even much of a chore), thanks to those wonderful "CALL" statements. First, a little background. The TI screen is made up of little squares (or blocks), 32 squares wide by 24 squares high. These squares may contain text, graphics or nothing at all. Each DISPLAYABLE character requires one of these squares to see it on the screen. (More about displayable characters later. Right now, let's just think of them as the letters A-Z, the numbers 0-9, punctuation marks and the like.)

Each square on the screen is made up of even smaller squares. Each of these squares is a "PIXEL" or dot on the screen display. The larger squares are made up of 64 of these dots, or pixels, in 8 rows of 8 pixels each, one row on top of the other. (See Figure A)

The "CALL CHAR" statement in TI BASIC lets us take a character, such as the letter "A", and change its shape by turning pixels on or off. A pixel that is "on" fills up the pixel square and a pixel that is "off" leaves the square a blank space.

Each row of the character is divided into 2 groups of 4 pixels in the "CALL CHAR" statement. (See Figure B.) Each group of 4 pixels is represented





by a HEXIDECIMAL character. Hexidecimal notation is a short form of BINARY notation, both of which your TI understands, even if you don't. Let's take a moment for a short explanation. Hexidecimal uses the numbers 0-15, with 0-9 representing themselves but with the letters A-F representing 10 through 15. In the decimal number 1111, the rightmost 1 is in the "one's" place, the next is in the "ten's" place, next the "hundred's" place, then finally the "thousand's" place. Added together they equal 1, 111:

(1+10+100+1000=1, 111). In binary notation, the number 111 equals 15, or "F" in hexidecimal. The places, from the right, are the "one's" place, the "two's" place, the "four's" place and the "eight's" place (1+2+4+8=15 or "F"). In binary, if a "BIT" (or a pixel in this case) is

(Please turn to Page 25)

Fig. C

Hex	Binary			
	8s	4s	2s	1s
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
A(10)	1	0	1	0
B(11)	1	0	1	1
C(12)	1	1	0	0
D(13)	1	1	0	1
E(14)	1	1	1	0
F(15)	1	1	1	1

USING GRAPH PAPER—

(Continued from Page 24)

on or "SET" it equals one (pixel square filled in), if it is off, or "RESET", it equals zero (pixel square left a space). (See Figure C.) The A-F for 10-15 is a convenient way to represent these numbers using only ONE CHARACTER to do so, rather than 2. If you don't understand this yet, please re-read the previous paragraphs. If you do, then read on.

I am going to show you a method of putting almost anything you wish on the screen. There are other methods, but this works best for me and is the one I use for BASIC.

Look at Figure D. My cat inspired this drawing by sitting in the dark and looking ominous. She's black with glowing green eyes. Don't let the word "drawing" put you off. You don't need to be able to draw, remember? This method works well with tracings or whatever.

First, you need paper divided into squares (such as graph paper). The smaller the squares the better. Each square will represent one pixel on the screen. You can make your own high-resolution graph paper using a ruler divided into 16ths of an inch. Make your larger squares first. They will be one-half inch square. Further divide them into 16ths of an inch. This will give you 64 pixel squares per half-inch square. I use one-quarter inch graph paper and mark the half-inch squares in ink, dividing them further in pencil. Once you have a suitable graph, you may transfer whatever you wish to it, using carbon paper. Photocopying your master will save you a lot of time on future projects!

Center your design and transfer it to the graph paper. When you finish, you will have lines that intersect the pixel squares. Where they intersect, carefully blacken in fully until the entire design is finished. Don't try large and complicated designs until you are comfortable with this method.

Now we must break each square down into code (See Figure E.) I started by redefining ASCII character 33. The example is using ASCII 41, but the principle is the same. The first four pixels in the top row are the first hexidecimal character in the "CALL CHAR" statement. Since they are all blank, our first hex number is a "0". The next four pixels are the next hex character. They are also all blank, thus "0" also. The next row contains the next two hex characters, "0" for the first four pixels and "1" for the next four, as the last pixel is "set." This continues for the rest of the rows, until all 16 hex characters are defined for the "CALL CHAR" statement. This must be done for EACH square that will be a redefined character.

Look at the program example. The first redefined character is ASCII 33 (the "space" character) and the others are ASCII 34 to 50. After you code the 16 hex characters for the redefined characters, you have only to associate them with an ASCII number to get all the needed information for your "CALL CHAR" statements.

Now you can place your characters on the screen by "CALL HCHAR" or "CALL VCHAR" statements. In the borders of your graph, it is helpful to place numbers representing the screen rows and columns. These "CALL" statements first define the row number, then the column number and lastly, the ASCII number of the character to be displayed.

The next step is to "CALL COLOR" to the characters, so you can see them. This is done in character SETS, meaning, for example, when you color ASCII 33 green in the foreground and transparent in the background, you also color ASCII 32 and 34 to 39 the same because they are

(Please turn to Page 26)

Fig. D

"Even if you can't draw a straight line."

SOFTWARE FOR THE TI 99/4A
SATISFACTION GUARANTEED

ALL PROGRAMS IN EXTENDED BASIC

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A 16K Word Processor for Cassette or Disk
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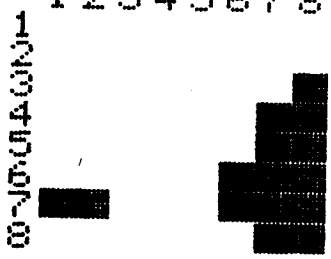
GRAPHICS FOR BEGINNERS—

Fig. E

```
CALL CHAR(41"0000010303076703")
12345678
```



=00 no pixels "set" in this row
=00 no pixels set in this row
=01 last pixel set
=03 last two pixels set
=03 last two pixels set
=07 last three pixels set
=67 first two and last three pixels set
=03 last two pixels set

(Continued from Page 25)

in the SAME character set.

When you run the example program, it will first redefine the character, then place it on the specified screen location, and finally color it so it may be seen.

Now to mention something about the non-displayable characters. ASCII characters such as ASCII 13 (the ENTER key) may not be used. Also, due to the number of available characters, you may not define a DIFFERENT character for each square on the screen. You just don't have enough!

There are other ways to put graphics on the screen, with advantages and drawbacks. Use of PRINT statements to place characters on the screen, and DATA statements to define them are examples. They are beyond the scope and intent of this article, but perhaps we can explore them in a future issue. For now, try my methods and don't be afraid to experiment!

Reviewed in MICROpendium

Listed below are the products that have been reviewed in MICROpendium and the issues in which the reviews appeared.

1984

B-1 Nuclear Bomber	February
Tandon TM-100 Disk Drive	February
Void	February
Beanstalk Adventure	February
Microsurgeon	February
On Gaming	February
Database 500	February
Star Trek	March
Escape From Balthazar	March
Garkon's Getaway	March
Sky Diver	March
Mail-Call	March
Prowriter 8510 Printer	March
Monthly Budget$ Master	April
Budget Master	April
Home Budget	April
Thief	April
Donkey Kong	April
Khe Sanh	April
Companion Word Processor	May
Q*Bert	May
Mad-Dog I&II	May
Programs for the TI Home Computer	May
Creative Expressions Accounts Receivable/Accounts Payable	June
CDC 9409 Disk Drive	June
Starship Concord	June
Lost Treasure of the Aztec	June
ASW Tactics II	June
Theon Raiders	July
Introduction to Assembly Language for the TI Home Computer	July
Game of Wit	July
Pole Position	July
TE-1200	August
Tower	August
Galactic Battle	August
Galaxy	August
Wycove Forth	September
99/4 Auto Spell-Check	September
QUICK-COPYer	September
Wizard's Dominion	September
Anchor Automation Mk XII Modem	September
Killer Caterpillar	October
ZORK I	October
Defender	October
9900 Disk Controller Card/Manager	November
Super Bugger	November
Transtar 120S Printer	November
Floppy-Copy	November
Data Base-X	November
Gravity Master	December
Data Base Manager System	December
Learning 99/4A Assembly Language Programming	December

1985

Super Sketch	January
Foundation Computing 128K Card	January
PTERM-99	January
TI-Runner	January
Super Extended BASIC	February
Beginning Assembly Language for the TI	February
ZORK II	February
Morning Star CP/M Card	March
WDS/100 Winchester Disk Drive	March
Sketch Mate	March
BMC Color Monitor	March

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9900 Micro Expansion System

A computer in a box

By JOHN KOLOEN

Review

Report Card

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

Cost: $429

Manufacturer: CorComp, Inc., 1255 N. Tustin Ave., Anaheim, CA 92807

Requirements: console, monitor or television; disk drive and cable; RS232 devices optional

The 9900 Micro Expansion System is CorComp's computer in a box. A very small box at that. Measuring 5½ x 5½ x 2⅞ inches, the expansion system provides users with 32K of expansion memory, a disk controller and one serial and parallel port. Weighing less than 1½ pounds, the black metal box provides many of the functions offered by the bulky TI Peripheral Expansion Box in a size that can easily fit into a shoebox or briefcase.

Performance: The 9900 Micro Expansion System works like a charm. It is cooled entirely through convection, which means that there's no noisy cooling fan to contend with, as in the PEB. When you plug it in, you'll hear nothing. Which is great, particularly if you do a lot of work with your computer at night when the rest of the family is trying to get to sleep.

It's a very cool box, too, transferring little heat to the outside. I expected the top of the box to get as hot as the GROM port of the TI99/4A. But it remains cool to the touch. One "coffee warmer on the desk is enough.

It would be difficult to say what the heart of this device is, though the disk controller seems to be the one element that has the greatest utility. This is basically identical with the disk controller card that CorComp sells for the PEB. The documentation for it is the same, also.

The controller allows the user to access up to four floppies, ranging from single-sided, single-density to double-sided, double-density. The connection for the controller is the same 25-pin jack used in the TI disk controller card.

The RS232 and parallel ports are also located in the back of the box. These use the same cables that are used with the TI RS232 and parallel ports. A second RS232 port may be added at additional cost.

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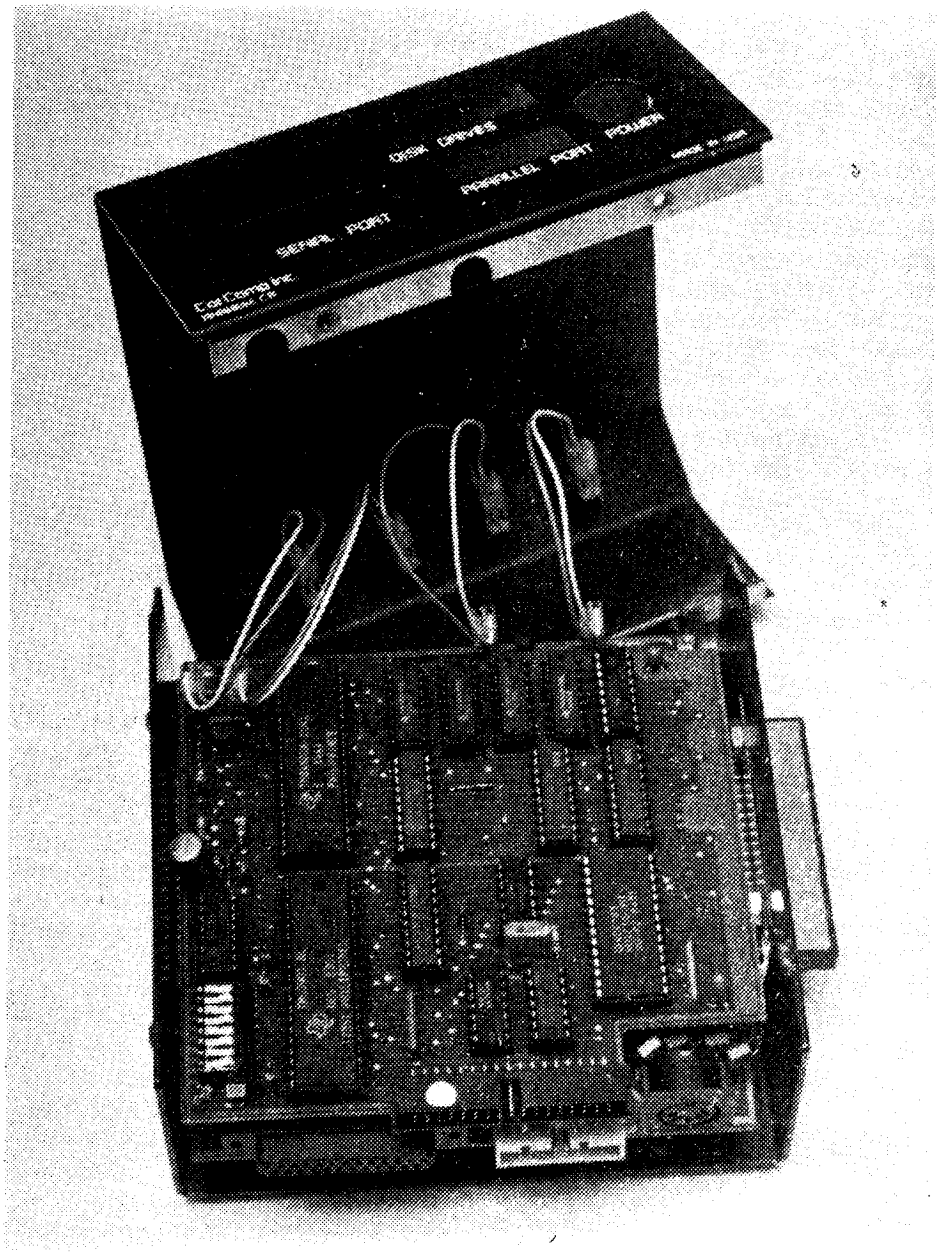

9900 MICRO EXPANSION SYSTEM—

(Continued from Page 27)

The box itself is connected directly to the console's peripheral port. Users with a speech synthesizer would plug the synthesizer into the console and then plug the 9900 into the speech synthesizer. The box fits perfectly into the console or speech synthesizer. During the month I reviewed the box, not once did it separate from the synthesizer, indicating a perfect fit.

The 32K expansion memory worked just as expected, flawlessly.

I found no discernable difference between the speed of operations conducted in the 9900 expansion memory and identical operations conducted in the TI expansion memory card. For example, the time it took to recalculate a 98-cell spreadsheet using Microsoft Multiplan was 55 seconds for the TI card and the CorComp expansion memory.

Like the CorComp disk controller card, the insides of the 9900 box are easy to get at. All that needs to be done is to remove four screws. The user then gently pulls the top of the box off, revealing the main circuit board. As with the disk controller card, the user may modify the 9900 disk controller step times by flipping an array of switches on the upper board.

There is some third-party software that will not operate with the CorComp disk controller. This seems to be a problem with some software that uses sector by sector protection schemes. There is no hard and fast rule about this, but I recommend that you check with the vendor about compatibility when buying third-party software for use with any non-TI produced hardware.

The 9900 Micro Expansion System comes with CorComp's wonderful disk manager program. It is also totally compatible with TI's disk manager cartridge. The program is identical to the disk manager software that comes with the CorComp disk controller card. This was reviewed in the November 1984 issue of MICROpendium.

CorComp considers the 9900 box to provide TI users with the potential for a portable computer. There is some truth to this. The console, 9900 box and power supplies could easily fit into an attache case. A disk drive with power supply probably could be squeezed into one, also. However, you'd still have to lug a monitor around. Compared to the PEB, however, the CorComp box seems like a portable.

If there is a limitation built into the 9900 Micro Expansion System, it lies in the fact that it cannot be expanded. There is no apparent way in which to add memory or other functions or devices. The box is fully loaded and configured by the manufacturer.

Also, the absence of a power switch seems to be an oversight on the part of CorComp. An inline switch between the power supply and the box would have been easy enough to install, if a box-mounted switch were not possible. As it is, users must either plug it into a power strip that includes a switch or must pull the plug on it after every use. I think most users will plug it into a power strip.

Ease of Use: The system is simple enough to connect that only neophytes will need to read the manual (though I would be the last to recommend that anyone ignore the printed word). There is only one way to connect the device to the console and only one way to connect other devices to its peripheral ports.

Documentation: The manual that comes with the 9900 Micro Expansion System is thorough in dealing with the disk controller and RS232 functions, but offers little information about the expansion memory. There are actually two manuals. One, a 42-page, book-sized manual that details the RS232 functions. This is punched for a three-hole binder and comes with a slick, heavy cover. The pages are numbered and it includes a table of contents. It provides a wealth of useful and technical information about the RS232/PIO functions and how to use them.

The other manual provides four pages of information about the expansion memory and a large number of pages about the disk controller. It includes a table of contents with page number references for the section on the disk controller, but, incredibly, none of the pages is numbered. Although there are enough references to make one believe that the book was written for the 9900 Micro Expansion System, virtually all of the material comes from the manual that came with the company's disk controller card, which was far better organized. Each page of CorComp card manual seems to have been reduced in size by 50 percent for the 9900 Micro Expansion System version so that two pages could be printed on each side of the 8½ x 11 paper. The paper is folded in half, horizontally. There are no holes for use with a binder, nor are the margins wide enough to permit them. Without the page numbers, I find this document to be virtually useless as the reference manual it claims to be. I have no doubt that it is loaded with information, but I do not intend to spend a lifetime looking for it.

Value: At $429, the box represents a sizeable investment for any user, but many dealers are offering generous discounts.

Anyone who is looking for a noiseless expansion system for use with a TI99/4A will want to give this box some consideration. Users with limited space, or who want the computer to fit on a desk without taking it over, may find the 9900 Micro Expansion System a wise investment. No larger than a pair of speech synthesizers, the system puts power and functionality in a box that can be held in one hand.

(Please turn to Page 32)

Disk + Aid

A unique utility

By RON ALBRIGHT

Successful software development is a pot of gold to which there are many paths.

A product may be developed for a computer because it was successful for another computer; it may be written as an entirely new idea, or it may be written as an improvement of an already-existing product. All are valid reasons for new software development and examples of success in each category easily come to mind.

An example of an "existing" category of TI software in which there are several rival products is disk sector editors, i.e., programs that allow direct reading and writing to individual disk sectors. Disk Fixer (Navarone), Disk Surgeon 99 (Amerisof) and Disko (public domain) are examples of this type of software. Each has its own unique features and drawbacks. For example, Disk Fixer is perhaps the best documented and full featured of these versions. It allows for string-search (reading each disk sector to find a single hexadecimal string), the single most powerful function available in this program class, and on-line "help screens." However, it also has several drawbacks, the major one being that it has only hexadecimal displays and printouts and the commands are quite complex and difficult to master.

Disko (or Disk Patcho) is a public-domain program which is popular because it allows one to read or write to sectors in either hexadecimal or ASCII. Thus, you can see the sector contents in alphanumeric characters instead of their hexadecimal bytes. It is limited in that it will not print to any device or search for strings.

Disk Surgeon 99, a relatively new product, is much like Disk Fixer in that it is full-featured but allows hexadecimal and ASCII display and printout. It is disk-based, whild Disk Fixer is in a module. Both of the commercial programs are relatively expensive (Disk Fixer retails for about $35; Disk Surgeon 99, about $27). Each sector editor has its proponents, but we have had to settle for the inadequacies of each. Further, due to the nature of the programs (one in a cartridge, the other extensively protected), backups are difficult, if not impossible, to make, to me a major drawback in commercial software at this price. A new program exists which I feel now combines not only the best features of each previously-existing program, but also adds new features and strengths which are unique.

Review

Report Card

Performance: ..... A+
Ease of Use: ..... A
Documentation: ..... A
Value: ..... A
Final Grade: ..... A

Cost: $20, object code; $27 object and source code
Manufacturer: M & T Utilityware, 3507 Murl, Muskegon, MI 49422
Requirements: Console, monitore or television, memory expansion, disk system and Extended BASIC, Editor/Assembler or Mini-Memory.

Disk + Aid is a new product from a new producer, M & T Utilityware (3507 Murl, Muskegon, MI 49442). The company itself is as different and refreshing as its product. M & T Utilityware is the first software producer for the TI computer (at least, that I am aware of) that has a "money-back guarantee" policy. If you are not satisfied with their product, return it with documentation to them and your purchase price (less shipping) will be returned. Further, Disk + Aid is sold UNPROTECTED so that you may make a back-up copy. Even more, while the assembly object code retails for $20 ($1.75 shipping), you can have the entire source code on disk for an additional $7. Thus, you may learn exactly how the author wrote this marvelous utility. Even if this program were no better than the existing versions, these factors alone would make it an incredible buy. Disk + Aid, though, is more than just equivalent.

Performance: The program comes as 149-sector object code on disk and requires 32K memory expansions, which can be loaded through Extended BASIC, Editor/Assembler or Mini-Memory. After a title screen and second "warning" screen (i.e., paraphrasing "Know what you are

(Please turn to Page 30)

Fig. 1

```
DISK:1   SECTOR:0032 ^ MODE: PRINT SEC

          ** MAIN  MENU **


A-ALTER SECTOR          Q-QUIT
B-BACK SECTOR           R-READ SECTOR
C-VIEW CPU MEMORY       S-SEARCH STRING
D-SCREEN DUMP           T-TOGGLE ASCII/HEX
E-COMPARE SECTORS       U-UPDATE SCREEN
F-FORWARD SECTOR        V-VIEW VDP MEMORY
G-VIEW GROM MEMORY      ~-WRITE SECTOR
H-CHANGE MEMORY ADR     '-CURRENT CPU ADR
I-DISPLAY BUFFER        )-CURRENT GROM ADR
M-MOVE SECTOR           \-CURRENT VDP ADR
N-SECTOR NUMBER         ]-TOGGLE STAT LINE
O-OUTPUT DEVICE         ?-HELP *MAIN MENU*
P-PRINT SECTORS         "-MAP DISK SECTORS
1,2,3,4-DISK DRIVE NUMBER
FCTN 9-MEMORY BACK PAGE
```

DISK+AID—

(Continued from Page 29)

doing before you write new sector data to a disk!"), you are presented with a menu screen with 28 options (Figure 1). This menu screen can be accessed at any time during the program run by simply pressing "?" (FCTN I).

At the top of the menu screen is the "status line" which displays 1) the last area of memory accessed ("C" for CPU, "G" for GROM, "V" for VDP), 2) the Disk Drive currently being accessed (1, 2, 3 or 4), 3) the current disk sector or memory address, 4) and the last mode (command) used. The commands are easily understood and almost all mnemonic. "O" allows you to specify the "output" device (printer or disk) to be implemented by the "P"rinting command. Printouts to disk are in convenient Display/Variable 80 format for viewing with TI-Writer or Editor/Assembler. Let us look at the two different program aspects this package permits.

Besides the disk sector editor functions to be discussed next, Disk + Aid is a powerful "exploring tool" to study the various memory locations in the TI computer. It accesses the Central Process Unit memory (CPU), the GROM memory and the VDP memory with equal ease. You may toggle memory output to printer or disk as well as hexadecimal to ASCII with a single key stroke. Further, you can "A"lter any memory location (except GROM, of course) at any time. Thus, as a bonus to editing sectors, you have a second tool for memory mapping the entire computer! The display for the memory locations is in 256 byte "pages" which you can scroll through forward (by simply repeated strokes of either "C", "G", or "V" for the three locations, moving ahead in 256-byte increments) or backwards (by keying FCTN 9 ("Back"). Another feature: At any time during this "memory stroll," you can get an instant screen dump to whatever device was specified by the "O" command by a single press of "D" (for Screen Dump). These features, even alone, would make the package worth the price. But I save the best for last.

The disk editing features are simple, fast, and full-features. "N" allows you to input the sector number you desire to view. "R" then reads that sector. "F" moves the sector address by one, "B" moves the sector address back by one. "T" toggles the sector display from hexadecimal to ASCII. "A" places the cursor in the upper left corner of a sector displayed for "altering." If you are in an ASCII display, you edit in ASCII; if in hexadecimal display, input is in hexadecimal. FCTN W ("~") writes the sector back to disk. Why Function W? This is a "safety" device to make two keystrokes necessary for the possible disastrous writing out of a sector to a disk! You can compare two sectors with the "E" command. You will then be prompted to enter two sector numbers which will then be read and compared in memory. The information displayed on the screen will then be the contents of the first sector entered that is different from the contents of a second sector entered. This is an invaluable feature if you have made a backup of a disk and neither the disk nor the backup runs correctly any longer. By

(Please turn to Page 32)

Fig. 2

```
M & T UTITLITYWARE  *********      DISK  +  AID      **********  PRINT SECTOR
STARTING SECTOR:0032          ENDING SECTOR:0000          CURRENT SECTOR:0032

ADR- 1  2  3  4  5  6  7  8  9  A  B  C     1  2  3  4  5  6  7  8  9  A  B  C
-------------------------------------------------------------------------------
00- 39 A9 1E 42 00 00 42 00 78 42 44 78     9        B        B        x  B  D  x
0C- 42 40 40 42 00 00 42 00 38 42 44 54     B  @  @  B        B        8  B  D  T
18- 42 48 34 42 00 00 42 00 78 42 44 78     B  H  4  B        B        x  B  D  x
24- 42 48 44 42 00 00 42 00 3C 42 40 38     B  H  D  B        B        <  B  @  8
30- 42 04 78 42 00 00 42 00 7C 42 10 10     B     x  B        B        ¦  B
3C- 42 10 10 42 00 00 42 00 44 42 44 44     B        B        B        D  B  D  D
48- 42 44 38 46 20 20 20 20 39 A9 4E 42     B  D  8  F                 9     N  B
54- 00 00 42 00 44 42 44 28 42 28 10 42           B     D  B  D  (  B  (     B
60- 00 00 42 00 44 42 44 54 42 54 28 42           B     D  B  D  T  B  T  (  B
6C- 00 00 42 00 44 42 28 10 42 28 44 42           B     D  B  (     B  (  D  B
78- 00 00 42 00 44 42 28 10 42 10 10 42           B     D  B  (     B           B
84- 00 00 42 00 7C 42 08 10 42 20 7C 42           B     ¦  B        B     ¦     B
90- 00 18 42 20 20 42 40 20 42 20 18 46           B        B  @     B           F
9C- 20 20 20 20 39 A9 7E 42 00 10 42 10                    9     ~  B        B
A8- 10 42 00 10 42 10 10 42 00 30 42 08              B     B        B     0  B
B4- 08 42 04 08 42 08 30 42 00 00 42 20              B     B     0  B        B
C0- 54 42 08 00 42 00 00 42 02 E0 42 83     T        B     B        B        B
CC- 02 42 04 C0 42 D8 00 42 83 74 42 02              B     B        B     t  B
D8- 00 42 F0 01 42 D8 00 42 83 D4 42 06              B     B        B        B
E4- C0 42 04 20 42 AC 80 46 20 20 20 20              B     B        F
F0- E5 E5 E5 E5 E5 E5 E5 E5 E5 E5 E5 E5
FC- E5 E5 E5 E5
```

Gemini Printers

Quiet, fast printing

By JOHN KOLOEN

The Gemini 10X and 15X printers are well-built dot-matrix printers that provide TI users with all the features one expects to have. They include an array of print types, use common typewriter ribbons rather than specially made cartridges, print at up to 120 characters per second and are quieter than a number of similarly priced dot-matrix printers.

Performance: Although this review is based on the Gemini 15X, it is identical to the 10X except in size. The 10X weighs 15.4 pounds and the 15X weighs 22 pounds. The 10X handles paper up to 10 inches wide while the 15X handles paper up to 15.5 inches wide. The 10X is 15.2 inches wide, 12.4 inches deep and 5.8 inches high. The Gemini comes with a standard Centronics compatible parallel port. A serial port is optional.

The printer, which is Japanese built, uses a nine-wire print head that can be replaced by the user when worn out. The company claims it will produce 100 million characters before wearing out. The printer operates at 120 characters per second in a bidirectional, logic-seeking mode. The graphics mode is unidirectonal. (Bidirectional means that text is printed in both directions that the head moves across the page. Logic seeking means that the print head will change directions after reaching the end of a line of text rather than going all the way to the end of the printer carriage. Most dot-matrix printers offer these features.)

The standard character matrix is 9-x-9 with true descenders. This configuration produces easy-to-read characters with greater density than is offered by, say, a C. Itoh Prowriter. This was apparent from the start as I first thought the normal characters were being printed in an overstrike mode because of the density of the dot pattern.

The printer offers a variety of character matrices, including 18-x-9 in emphasized mode, 18-x-18 in double strike mode, 6-x-6 block graphics, 60-x-72 low-resolution bit-image graphics, 120-x-144 high-resolution bit image, and 240-x-144 ultra-high-resolution bit image.

Review

Report Card

Performance	**A**
Ease of Use	**A**
Documentation	**A**
Value	**A**
Final Grade	**A**

Cost: $350 (Gemini 10X), $450 (Gemini 15X)

Manufacturer: Star Micronics Inc., P.O. Box 1630, El Toro, CA 92630, (714) 768-4340

Requirements: console, monitor or television, printer interface

Character sets include 96 standard ASCII characters, 96 italic characters, 64 special characters (mathematical symbols, etc.), 32 block graphic characters (squares, triangles, etc.), 96 downloadable, programmable characters and 88 international characters. The most unusual among these is the downloadable character set, which allows the user to define his own character set and load it into the printer's RAM.

Character fonts include normal (10 characters per inch), elite (12 CPI), condensed (17 CPI), emphasized, double strike, enlarged (5, 6 or 8.5 CPI), super/subscripts and italic. Most of these are standard on other printers, though not all printers have super/subscript fonts. I have never used super/subscript in text so I wouldn't miss it anyway.

The Gemini handles fanfolded, roll paper or single-sheet feeding. Paper is loaded through the back using a chrome paper guide and separator. The printer comes with a removable tractor frame. The tractor unit is removed when using single sheets.

I use fanfolded paper exclusively and find one problem with the Gemini in this regard. Because of the location of the tractor unit (above the platen), one must feed a sheet of paper through in order to be able to start printing at the top of a sheet. This is no problem when printing several copies of a document. However, when printing out, say, a one-page letter, you first have to advance a blank sheet of paper through the tractor unit. This means that you will be using two sheets of paper to print a one-page letter. Then, too, in order to separate the letter from the fanfolded paper stack, you have to advance yet another page. This may

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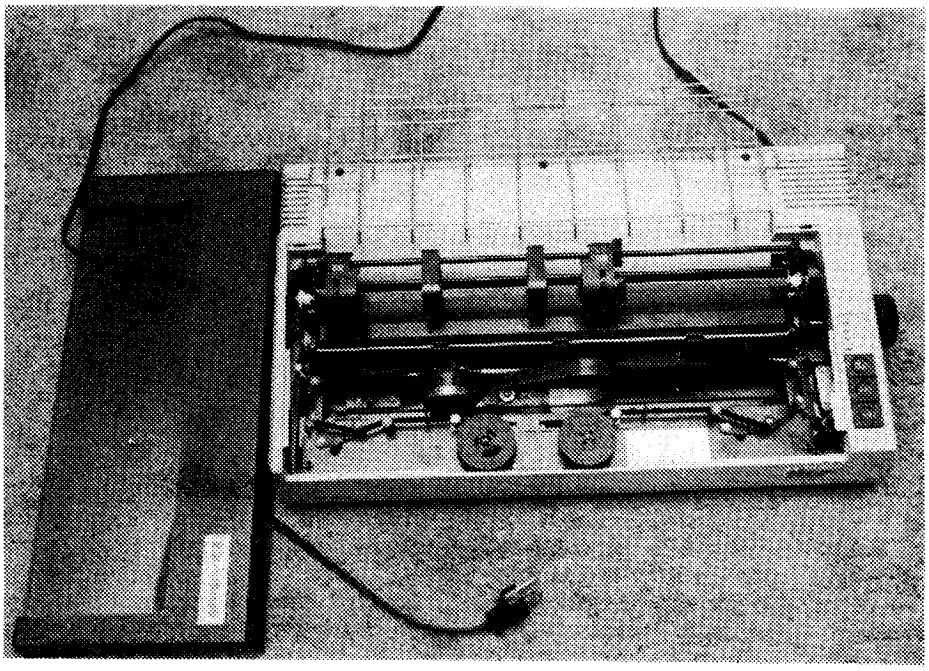

DISK + AID—

(Continued from Page 30)

comparing the disks, sector by sector, one can find the errors. Once the sector errors have been found, you can, with Disk + Aid, write the correct sector over the errored one to obtain a workable disk.

Another powerful feature is the "S"earch String function. You will be prompted to enter either a hexadecimal or ASCII string of up to 40 characters and then the range for the search. If the screen update mode is "On" each sector will be displayed as it is searched until the string is found or the range completed. If the update mode is "Off" the search is much faster (about the speed of disk initializtion with Disk Manager II) and the screen will not change until the string is found (at which time the sector will be displayed), the range is completed without the string being found or you press "CLEAR" (FCTN 4) to stop the search prematurely. Again, a useful feature to find where a program file begins on a disk or certain data is stored.

The most attactive, functional and novel function of Disk + Aid is its hard-copy format. If you have previously entered an "O"utput device, the "P"rinting command will prompt for starting sector and ending sector. It will immediately execute. It will pause at the press of any key and restart with same. You may stop the printing at any time with FCTN 4, at which time you will be returned to the command mode. The speed of the printout to disk or printer can be achieved only through efficient assembly code. The format for the printout is innovative (Figure 2). Both hexadecimal AND ASCII sector dumps are printed side by side for easy comparison and interpretation. The entire 256 bytes of each sector are presented and labeled. If you dump to disk, again, the file format is Display/Variable 80, so the disk output can be viewed and printed out by TI-Writer/Editor modules. The simple beauty of this presentation of data, I think, speaks for itself.

If I sound totally enthralled with this fine bit of software, I'm glad. That's the exact feeling I wish to convey. By the way, the documentation comes as a clearly-printed, 8½-by-11-inch booklet, bound with a vinyl covering. Though almost redundant because of the ease with which the program runs from the menu prompts, the first 20 pages clearly explain each menu function. The remaining 13 pages are a tutorial on the TI DOS and disk formatting which will get you started in recovering improperly closed files and "lost" programs. So, if you are looking for a company with remarkably reasonable prices, a "satisfaction-guaranteed" customer policy and software which is in a class totally by itself, check out Disk + Aid from M & T Utilityware. You WILL NOT be sorry—and if you are, you get your money back!

GEMINI 10X/15X—

(Continued from Page 31)

sound confusing and inconvenient, but that is because it is.

One nice thing about using fanfolded paper with the 15X is that you have a choice of loading it from the back or through a slot underneath the printer. The 10X has no slot. Also, the sprocket mechanisms are easily moved and are locked into position using a lever. I found no tendency for the paper to leave the sprocket guides once properly positioned. A release lever is used to set the printer for friction or tractor feed.

Also, I am not enamoured of the dark printer cover. I have two complaints about it: one, that it is not hinged to the body of the printer; two, that it is not transparent. You have to lift it off in order to see what's being printed on the paper. The dark plastic cover contrasts nicely with the off-white hard plastic body of the printer. It looks fine in a showroom, but it's a pain to use. The fact that it is not hinged means that you have to fiddle with it every time you move it in order to position it properly. Not a big deal, mind you, but an inconvenience that could easily have been avoided by the manufacturer.

The use of a typewriter ribbon rather than a cartridge may please a number of users. Although it is a bit tricky to thread the ribbons, they are available virtually anywhere for less than $1.50. Cartridge ribbons can be difficult to locate, particularly for users who live in smaller towns or isolated areas. The machines uses a standard Underwood spool-type ribbon. However, I have found that a cartridge ribbon on a Prowriter lasts about twice as long as a typewriter ribbon on the Gemini.

The on/off switch is located on the right side, facing the printer. The DIP switches are in the back. The platen knob is located on the right side of the printer for easy manual advancing of paper. The three-button control panel is located on the top, right side of the machine offering the standard functions of form feed, line feed and "on line." Other printers refer to this as the select/deselect button, but its function is to stop operations without turning the machine off. Four indicator lights located on the control panel are used to let you know that the power is on, that the machine is ready to operate, that the machine is on-line and that the paper has run out.

Although the printer comes with an 816-byte buffer, it can be expanded to 4K or 8K. The machine carries a 90-day warranty by the manufacturer.

Ease of Use: Most dot-matrix printers are easy to use and the Gemini is no exception. The most difficult part is getting used to the unusual way paper is fed into it.

Documentation: The machine comes with an excellent, 266-page manual. Included are sections for a variety of computers, but not the TI. Star Micronics does have an addendum for the TI that can be ordered free of charge by purchasers of its printer. The manual includes a tutorial section designed for novices and scores of charts, tables, a function code summary, code chart and plenty of technical information to keep the long-time printer user happy. The manual includes numerous helpful programs to illustrate the features of the printer, including how to create and use "macro" commands.

The manual is book-sized and spiral-bound. It includes a table of contents and an index and glossary. Included are addresses and telephone numbers of the company's four technical services offices in the U.S. A lot of care went into the manual's production, as evidenced by the absence of typographical errors. It is the best printer manual I have seen.

Value: The Gemini is a relatively quiet machine, and very fast at 120 characters per second. The speed may be what contributes to the sense I have that it is quiet. The sound of the machine in operation is rather high-pitched as a result.

This machine carries a mid-range price for quality dot-matrix printers. It offers virtually all of the features I want and some that I will never use.

Freeware (or nearly so)

This page is a regular feature of MICROpendium. MICROpendium makes no claims as to the validity of any Freeware offer nor is there any guarantee that any software will be suitable for any purpose.

Freeware requirements:
—disks sent for freeware should be initialized;
—unless otherwise stated, you must include a stamped, self-addressed return mailer to receive the freeware;
—be patient (those offering Freeware are not doing it for a profit);
—report any problems you have to MICROpendium.

Software updates

MICROpendium is offering file updates for TI-Writer and Microsoft Multiplan. Also offered at no charge is Super Bugger and an Extended BASIC loader for TI-Forth.

The TI-Writer enhancements offer new printer defaults and true lowercase letters. Multiplan enhancements include an auto-repeating cursor that speeds up program operation. The Forth loader allows TI-Forth to be used with Extended BASIC rather than the Editor/Assembler. Super Bugger is an improved version of TI-Debugger.

TI-Writer and Multiplan updates all fit on a single-sided disk. Super Bugger will fit on a single-sided disk. All three will fit on a double-sided diskette. The Forth loader requires a single-sided diskette. To order any of the above, send the appropriate number of diskettes to Freeware, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

TI-Forth is also available. The cost is $20 and includes the 232-page manual, the system disk with screens, a demo disk, postage and packaging. Purchasers are asked to include two initialized single-sided diskettes. MICROpendium will supply a third disk containing the source code for TI-Forth at no extra charge.

To order, send check or money and two diskettes to Forth, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

Free access library

Amnion Helpline is offering TI users its Free Access Library of public domain software. The library consists of 104 diskettes filled with programs for the TI99/4A.

The library is operated as a non-profit entity by Dr. Guy-Stefan Romano, director of Amnion Helpline. The helpline is a free information service for TI users who have questions about products and other aspects of home computing.

The library provides "volumes" of programs. There are 37 diskettes, or volumes, of games; 10 diskettes of graphics-oriented programs; 16 music-oriented diskettes; 14 diskettes of learning materials in many categories; eight diskettes of financial and business programs; seven diskettes of technical, scientific and statistical programs; six diskettes of personal and home use programs; and 6.5 diskettes with miscellaneous programs ranging from baseball statistics to programming utilities. There are also a limited number of Pascal and Forth programs available.

Volumes are $5 each. The cost includes the single-sided diskette, mailer and postage. Users may send their own diskettes and return postage and mailer and obtain volumes for $2.50 each.

Volumes on double-sided diskettes are $8, $4 if the purchaser sends a diskette, mailer and postage.

All programs may be copied and redistributed freely as long as no charge is made for them.

The library also will supply particular programs to fit specific purposes to any user who sends an initialized diskette with return mailer and postage. Enclose a note describing the type of program desired. Amnion will return the diskette with programs that fit the description.

Users are encouraged to donate programs to the library. There is no payment. Include a note stating that the program submitted is to be placed in the public domain.

Order forms for software volumes are available from the library. For more information, contact Amnion Helpline at (415) 753-5581 from 9 a.m. to 4 p.m. (Pacific time) or write to 116 Carl St., San Francisco, CA 94117.

Free screen dump

Danny Michael, of Route 9 Box 460, Florence, AL 35630, has a Freeware screen dump program. The program is written in assembly language and is unprotected. It requires XBASIC and works with Epson/Gemini-type printers. The program includes instructions and fully commented source code. Send a diskette with a stamped, self-addressed return mailer. Or, send $5 and he will provide the diskette, mailer and postage.

Michael is also offering Neatlist, an assembly language utility for Extended BASIC programmers. Neatlist produces an orderly listing of programs that can be a time-saver in debugging and modifying programs. The program allows the user to set margins for program listings as well as starting and ending line numbers. Listings include easy to read program lines and a list of variables used in the main and subprograms. If you like it, he says, you may pay him for the program, but not more than $10. If you don't like it, "you keep it anyway," he says. He asks that you give copies of the program to others. Send an initialized disk, postage and return mailer.

Free craps game

Ramsoft Enterprises, 1501 E. Chapman Ave., Suite 338, Fullerton, CA 92631, is offering its Computer Craps game as Freeware. The game formerly sold for $14.95. The game requires XBASIC and expansion memory. Instructions are included as a file that can be read by TI-Writer. Users are encouraged to provide free copies to others as well as long as the dedication screen is not removed. Send an initialized disk and $2 to cover shipping and packaging.

Tax templates

Mike Conway, 911 Dover Dr., South Bend, IN 46614, is offering 1984 federal income tax templates for Microsoft Multiplan as freeware. Users are asked to send a disk to Conway with return postage and mailer. He will transfer the files to the disk and return it. The spreadsheet files include Form 1040, Schedules A, B, D, W, Tax Rate Schedule and Sales Tax Table. Use of a printer is optional. Conway says that users may send him a donation of $10 if they think the templates are worth it. "In any event, you are requested to give copies of the software to your friends," he says.

Sprite Builder

John Taylor, 2170 Estaline Dr., Florence, AL 35630, is offering Sprite Builder as freeware to TI users. The program is used to design double-sized sprites. An Extended BASIC-assembly language hybrid, the program requires a disk drive, expansion memory and Extended BASIC. A speech synthesizer and printer are optional.

Those who order must send either two single-sided or one double-sided disk. Included are a cassette version and disk version of Sprite Builder, disk and cassette documentation that may be called to the screen or dumped to a printer, fully commented assembly language source code and 115 pre-defined sprite patterns that the

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Newsbytes

Music Synthesizer

Asgard Software, P.O. Box 10306, Rockville, MD 20850, has released a disk-based program called Music Synthesizer. The company also markets Stamp Manager and Balloon War. It plans to market an assembly language program called Schedule Manager in the near future.

Music Synthesizer, $16.95, features easy-to-follow menus and a simple note-placing scheme to create musical pieces using the TI99/4A. Features include the ability to save and merge parts of songs to create new compositions, a "play" mode, and a "sheet" system for maintaining data. This program gives the non-musically adept a whole new world within their computer," the company says. It requires a memory expansion, Extended BASIC and a disk system.

Balloon War, $11.95, puts the player in command of a balloon that must be flown across 30 screens. The player must avoid fire from attacking troops on the ground. The player uses the joystick to control altitude and direction. The joystick is also used to drop bombs on enemy troops and release sandbags to gain altitude. There are three levels of play. The game requires Extended BASIC and a disk system.

Forth information

The Los Angeles 99ers Computer Group is offering its TI-Forth Notes to TI users. There are three volumes. Included are screens and tips on how to get more out of TI-Forth. Volumes 1 and 2 are $1.75 each and Volume 3 is $2.50. All are postage paid. For more information, contact the group at P.O. Box 3547, Gardena, CA 90247.

From down under

An Australian software developer, QIXSOFT, is about to release a disk manager program written in assembly language. According to Lindsay Preece, who edits a TI user group newsletter in Perth, the manager makes full use of the expansion memory for speed in copying and backing up disks. It includes sector access capabilities, tracing of disk fractures and an unbreakable protection scheme. It comes with a comprehensive manual that "reveals all the secrets of the TI disk system," according to Preece.

From another source, another Australian is marketing an internal modem for the Peripheral Expansion Box. It is said to be fully Hayes compatible. The price is $160 in Australian funds. We will try to develop more information about this in the near future.

TI is out

It took more than a year, but Texas Instruments is finally out of the home computer market. TI will continue to service its home computer, but vendors will no longer be able to obtain software from the company.

Texas Instruments plans to bury thousands of over-produced cartridges, such as TI Invaders and Munchman, in a landfill, but because the cartridges contain minute quantities of lead the actual burial will be carried out by a company that specializes in the disposal of products containing lead.

Some vendors have stocked up on TI cartridges and expect to maintain inventory of most titles for some time to come. However, those who returned their merchandise to TI are effectively closed out of the market.

Big backlog

Foundation Computing continues to lose ground to an apparently unexpected number of orders for its Z80A processor card and 80-column card. The company ran short of chips and has sent notices for the second time to purchasers that shipment of their cards would be delayed. Purchasers have been waiting as long as two months after submitting an order for the cards. Orders due in early March are now expected to be fulfilled in April.

Newsbytes is a column of general information for TI99/4A users. It includes product announcements and other items of interest. The publisher does not necessarily endorse products listed in this column.

FREEWARE—

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user may modify or merge with existing programs.

Sprite Builder has 22 active functions which are accessed with a single key press. These functions include turning a dot on or off, setting automatic cursor movement, complete color control, retrieving previously defined sprite codes, saving sprite codes, animating up to four sprites, generating hexidecimal codes and rotating the sprite. Sprite Builder generates MERGE-able CALL CHAR statements on disk that can later be merged into a program.

The design screen consists of a 16 x 16 block grid and four smaller blank screen areas stacked on the right side. As you create a design on the large grid, the sprite appears on one of the small screens in actual size, allowing you to see exactly what it will look like before it is finished.

Those who wish to obtain the programs without sending disks and prepaid return mailers may do so by sending $5 for a double-sided version or $7.50 for two single-sided disks.

Texnet freeware

Texnet, the Texas Instruments electronic network operating on The Source, offers some 250 downloadable programs at no charge to Source subscribers. For more information, write Texnet at Soft Mail Inc., P.O. Box 745, Rockwall, TX 75087.

Anyone wishing to have a Freeware announcement included on this page may do so by submitting a copy and brief description of the program, and a note indicating that it is in the public domain, to MICROpendium. The notice will appear monthly, subject to approval by the publisher. Freeware announcements will continue to be published until withdrawn by the person submitting it.

User Notes

The Phoenix

The Phoenix is a 24-hour per day bulletin board operated out of Houston, Texas. The board uses TIBBS Version 4 with true downloads. It operates at 300 baud. The board can be reached at (713) 537-0741.

Book of tips

John Hamilton, president of the Central Iowa 99/4A Users Group, Box 3043, Des Moines, IA 50316, has a book of computer tips for TI99/4A users. Called 99/4A Tips, the book consists of 22 8½ x 11-inch pages of programming hints and how-to's. The information appeared over the past 18 months in the user group's newsletter. It includes a number of interesting items, including a list of dozens of PEEKS and POKES.

The cost is $4.

Incidentally, Hamilton reports that an item appearing in the December 1984 User Notes credited to the Arizona 99 Users Group of Phoenix actually appeared first in the December 1983 Central Iowa UG newsletter. The item had to do with operating in the normal, text, multicolor and bit map mode out of BASIC using the Mini-Memory or Editor/Assembler cartridges.

Modify Multiplan

Earl Hall of Chicago, Illinois, placed the following tip on CompuServe and sent us a copy. It describes changes that can be made to the Multiplan MPINTR code file (with programs that offer sector by sector access to a disk) to:

—Change the defaults for the data disk drive and printer assignments;

—Change the filenames for the OVERLAY and MPHLP files.

The second segment of the MPINTR file contains the default entries for:

—Disk drive for Transfer commands

—OVERLAY file name

—MPHLP file name

—Default printer assignment

Each entry starts with a 1 byte length field (non-inclusive) and (except for the printer assignment field) unused bytes are filled with HEX zeros (the printer assignment field is space-filled). The location of the fields are:

Location	Entry
>0055 - >005C	Default data drive
>005D - >006E	Overlay file name
>006F - >008A	MPHLP file name
>00BD ->00E5	Printer default

For example, to change the printer assignment to "PIO" the entry in >00BD should be: 03 50 49 4F. Note that the length value (03) does not include itself. The rest of the field (through location 00E5) should be filled with spaces.

The easiest method of getting to the right segment of the file is to initialize a new disk and copy MPINTR to it. Then, unless disk errors during the initialization messed things up, the needed segment will be at sector address 0023. Use a sector access program (such as Disk Fixer, Disko, Disk + Aid, etc.) to change the data and write it back to disk. Then (after making sure you have a back-up copy of the original MPINTR file!) copy the new MPINTR file to the TIMP disk.

The Multiplan cartridge requires that the four program files be loaded from a disk titled TIMP, but once they are loaded they are no longer used. The ability to change the disk volume name for the OVERLAY and MPHLP files means that you can put them on a separate disk that you switch to after the program files are loaded. This will save you 117 segments of disk space (275 if you don't need the MPHLP file) that could be put to better use.

One last note. The time it takes to initialize Multiplan and the response time when it is working with the OVERLAY file is affected by the location of the files on disk. You can load the files in a desired order by copying them one at a time to a newly initialized disk. The best order appears to be: OVERLAY, MPHLP, MPCHAR, MPDATA, MPINTR and then MPBASE. The last four files are accessed only at start-up of Multiplan and in that order. The OVERLAY file should be loaded first because it is opened at each use, thereby causing disk access to the directory area at the beginning of the disk. (The further the files are from the disk directory at the beginning of the disk, the longer the seek times.)

Forth changes

We hadn't heard about using Forth to make changes to TI-Writer defaults, but Joseph H. Spiegel, treasurer of the Shippingport Regional Users Group of Shippingport, Pennsylvania, noted that it can be done. It sounds very easy, too.

Spiegel says that to change the printer default on TI-Writer, for example, load the FORMA1 file onto an otherwise unused initialized disk. Boot Forth and load the EDITOR (type -EDITOR). Remove the Forth disk and insert the disk with the FORMA1 file. Type in 10 EDIT. The printer format will be shown on the screen starting at line 12, column 30.

"Just replace the current settings with whatever you wish, being sure to start at the same screen location and space over any extra characters in the old default setting," he writes.

Then exit the editor using FCTN 9 and use FLUSH to write the corrections to the disk. Then leave Forth, resave the modified FORTH1 file to your working copy of TI-Writer and you are in business.

A note of caution: we found the RS232 command line to be on screen 8 near the end of line 10. Although the TI-Forth editor allows single-sector access (in this case, single screen access), we recommend that anything you do in this way be done only on backup disks. Incidentally, make sure that you reinitialize the disk to which you will copy the FORMA1 file before copying

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User Notes

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FORMA1. Even though you may have erased file names, you will find that the data written to them will continue to be read by the Forth editor. We copied the FORMA1 file to a disk that had had its file names deleted but had not been reinitialized. Using the Forth editor, we were able to locate every piece of data that had been written to the disk, screen by screen. The Forth editor may offer hope for those who inadvertently delete file names but need to reclaim the data. Until the disk has been reinitialized, the data is still there and can be read easily by the Forth editor.

One can only guess at how much more can be done to modify and customize other programs using the Forth editor.

Alignment

George Wentzel of Chevy Chase, Maryland, writes: "We enjoy using lower-case letters with true descenders as found in User notes of the January issue. By adding this one line in Extended BASIC, one may shift the upper-case letters to proper alignment with the true descenders.

```
105 FOR U =TO 94 :: CALL CHARPAT(U,U$) :: CALL CHAR(U,SEG$(U$,3,14))) :: NEXT U
```

"The Mini-Memory module also has the CALL CHARPAT subprogram with BASIC.

```
102 FOR U=33 TO 94
104 CALL CHARPAT(U,U$)
106 CALL CHAR(U,SEG$(U$,3-,14))
108 NEXT U
```

The original descender routine was published in the January 1985 issue.

For assemblers

The following program was written by John Clulow and comes courtesy of the New Horizons Users Group of Ohio. It was supplied to us by Ed York of the Cin-Day Users Group. Minimum requirements are a disk drive, memory expansion and Extended BASIC and either Editor/Assembler or TI-Writer.

There are actually two programs, one in Extended BASIC called SCREENDEMO and the other an assembly language routine that permits users to scroll in BASIC and Extended BASIC.

Those with an Editor/Assembler cartridge may want to use it to input the assembly code and then save it in Dis/Fix 80 format under the filename SCROLL. Those with TI-Writer may enter the assembly code

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SCROLL DEMO

```
100 CALL CLEAR :: CALL INIT :: CALL SCREEN(16):: CALL MAGNIFY(4):: CALL CHAR(124
,RPT$("F",64)):: FOR A=2 TO 15 :: CALL SPRITE(#A,124,A,128,96,A*3,A*3):: NEXT A
:: CALL LOAD("DSK1.SCROLL")
110 A$="This program demonstrates the use of the line scrolling utility. To scro
ll the string A$ at line A (1 -"
120 A$=A$&" 24) on the screen use the EXTENDED BASIC statement: CALL LINK(""SCRO
LL"",A$,A). NOTE: A$ and A can be a"
130 A$=A$&"ny simple expression or constant but not arrays." :: B=12 :: CALL LIN
K("SCROLL",A$,B):: GOSUB 210
140 A$="The utility uses characters 128 to 159 and will erase any user defined p
atterns stored in these characters (128 - 143) in EXTENDED"
150 A$=A$&" BASIC). Also, any sprites in motion must be restarted after each CAL
L LINK statement." :: CALL LINK("SCROLL",A$,B+4):: GOSUB 210
160 FOR C=13 TO 14 :: CALL COLOR(C,16,5):: NEXT C :: DISPLAY AT(14,3):"An existi
ng screen line." :: FOR D=1 TO 400 :: NEXT D :: A$="By redefining the foreground
 and background colors for "
170 A$=A$&"character sets 13 and 14, you can ""highlight"" the messages scrolled
. Any text already present on the screen will be restored "
180 A$=A$&"when the scrolling is complete." :: CALL LINK("SCROLL",A$,14):: CALL
CLEAR
190 DISPLAY AT(23,1):"TRY ENTERING A STRING BELOW:" :: GOSUB 210 :: A$="Here is
your string: " :: INPUT "                                ":B$ :: A$=A$&B$ :: CALL LI
NK("SCROLL",A$,5):: B$=""
200 CALL CLEAR :: IF E<>1 THEN DISPLAY AT(12,1):"LET'S DO THAT ONE MORE TIME.":
: :: E=1 :: GOTO 190 ELSE CALL DELSPRITE(ALL):: END
210 FOR F=2 TO 15 :: CALL MOTION(#F,F*3,F*3):: NEXT F :: FOR G=1 TO 1000 :: NEXT
 G :: RETURN
```

User Notes

(Continued from Page 36)

exactly as it appears below, using an 80-column line. Save the code as a Dis/Var 80 TI-Writer file named SCROLL and then run the file through the accompanying file conversion program to convert it to Dis/-Fix 80.

Enter the SCROLLDEMO program in Extended BASIC and save it as SCROLLDEMO.

The line scrolling program allows you to scroll any string horizontally across any screen line providing the string length is not greater than 255 characters. In order to load this utility, use: CALL LOAD("DSK1.SCROLL"). (Enter CALL INIT first to initialize the expansion memory.)

In order to link to this utility, use: CALL LINK("SCROLL",A$,A), where A$ may be any valid string expression, not an array, and A may be any numeric expression which when evaluated is a whole number between 1 and 24.

Run the SCROLLDEMO program and follow the on-screen directions. It will give you a good idea of what this scroll utility can do for you.

```
106 INPUT "FILE TO CONV
ERT ":ABC$
107 INPUT "FILE TO CREA
TE ":DEF$
110 OPEN #2:DEF$,DISPLA
Y ,FIXED 80
120 OPEN #1:ABC$,DISPLA
Y ,VARIABLE 80
130 LINPUT #1:A$
140 PRINT #2:A$
145 PRINT A$
150 IF EOF(1)THEN 170
160 GOTO 130
170 CLOSE #2
180 CLOSE #1
190 END
```

SCROLL—

```
003EC          A0000A0020A0130A0230A0250B0100B6000B4018B0000B00007F379F          0001
A025ABC80BC0256B02E0C0230B0200B081DB0420B2028B0200B081EB04207F2EBF          0002
A0270B2020B0200B081FB0420B2020BD820B837AC0258BD820C0251B837A7F2DFF          0003
A0286B0200B0000B0201B0002B0420B200CB9820B834AC0254B160BB98207F315F          0004
A029CB834BC0255B1B07B04C9BD260B834BB06C9B0609B0A59B1004B02007F298F          0005
A02B2B1E00B0420B2034BC009B0201C0000B0202B0020B0420B202CB02037F32FF          0006
A02C8B001FB04C4BD123C0000B06C4B0A34BC143B0A35BC004BC045B02217F2A7F          0007
A02DEC0028B0202B0008B0420B202CB0603B1101B10EEB0200B0700B02017F310F          0008
A02F4C0028B0202B0100B0420B2024BC109B0205B00E0B06C5BD045BC0047F2EDF          0009
A030AB0420B2020B0584B0225B0100B16F8B0200B0000B0201B0001B02027F34AF          0010
A0320C0130B0203BFF00BD803C0130B0420B2014B04C5BD160C0130B06C57F2ECF          0011
A0336B0206C0131BC085BC046BBC60C0252B0602B16FCBD820C0253C02517F2BCF          0012
A034CB04C0BD036B06C0B0A30B0201C0128B0202B0008B0420B202CB02077F2F6F          0013
A0362B0008B0204C0028B0203B0108B04C8BD214B0A18B1801B1003BF9207F2FDF          0014
A0378C0250BFFF8BD508B0584B0603B16F5B0200B0700B0201C0028B02027F2D6F          0015
A038EB0100B0420B2024B0607B16E6B0605B16D8B9820C0253C0251B16127F2F5F          0016
A03A4B0200B0020B0201C0131B0202B8000BDC42B0600B16FDB0205B00207F314F          0017
A03BAB0206C0131BD820C0250C0251B0460C034CBC009B0201C0000B02027F306F          0018
A03D0B0020B0420B2024BD820C0251B837CBD820C0258B837AB02E0B83E07F2B7F          0019
A03E6BC2E0C0256B045B7FB51F                                                  0020
5025ASCROLL7FCEDF                                                           0021
:       99/4 AS                                                             0022
```

Text sorter

Reader Richard Sutor writes:

Reading Ron Castleton's letter in the December 1984 issue gave me an idea for a program that would sort a TI-Writer file. It's called TEXTSORT and is a bare-bones program written in Extended BASIC for one disk drive—it could be converted into BASIC easily. I've included a listing.

Here's the way it works:

Using TI-Writer, make a list, using one line (up to 80 columns) for each entry. Give the list a name and file it to disk. Leave TI-Writer, get back to Extended BASIC and run TEXTSORT. It will first ask for the "Source Name"; type in the name of the file you just made (just the name, not "DSK1.etc."). Hit enter and then give a name for the Output file—it should be different from the Source file so the Source isn't written over.

TEXTSORT will read in the TI-Writer file, sort it and then prompt you to put in the disk you want the copy on (in case you don't want it on the same disk as the TI-Writer file).

(Please turn to Page 39)

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SCREEN PRINTS OF BASIC, CARTRIDGES, and SUPER SKETCH DFX-PRINT Ver. 1.2 is an Assembly language screen dump utility which executes in BASIC or XBASIC programs by pressing a Function key duplicating the screen on paper. Prints to disk file for later printing. Using load interrupts (instructions included), it prints screens from SUPER SKETCH and TI cartridges like TAX INVESTMENT RECORD-KEEPING, VIDEO CHESS, and others. Loads from XBASIC, Editor/Assembler, or Mini-Memory and requires disk system, 32K, printer and interface. Uses TI, Epson, Gemini, Panasonic, BMC, Prowriter, MPI, and Okidata 92 printers. Send $26.95 (Indiana residents add 5% sales) to DATAFLEX SOFTWARE, 4420E 100N, Marion, IN 46952. v2n3

User Notes

(Continued from Page 37)

The sorted file may be treated as a normal TI-Writer file.

Some comments:

Everything will be sorted, including blank lines, carriage returns, format commands, etc., so put these in later.

It should be possible to add code to make the program skip (not sort) some lines so that format commands put in at the beginning would be left alone.

It should also be possible to sort "blocks" of lines using the first line as a key.

A program could be written that would turn TI-Writer into a kind of simple data base.

If you write out the alphabet, each letter followed by a carriage return, at the beginning or end of your list, each sorted group will be headed by its letter.

Now the problem is whether this program can be called from the TI-Writer utility option. Any suggestions?

```
100 DIM A$(300)
110 REM RICHARD SUTOR
120 REM TO SORT TI-WRIT
ER LINES
130 CALL CLEAR
140 PRINT "           TEX
T SORT": : : : : : : : :
: : : : : :
150 INPUT "Source Name:
":SN$ :: INPUT "Output
name:":ON$
160 OPEN #1:"DSK1."&SN$
,DISPLAY ,VARIABLE 80,I
NPUT
170 IF EOF(1)=1 THEN 22
0
180 LINPUT #1:B$
190 N=N+1
200 A$(N)=B$
210 GOTO 170
220 CLOSE #1
230 REM quicksort
240 P=1 :: L(P)=1 :: R(
P)=N-1
250 IF P<=0 THEN 530
260 LB=L(P):: RB=R(P)::
P=P-1
270 IF RB<=LB THEN 250
280 I=LB :: J=RB :: T$=
A$(I)
290 IF J<1 THEN 330
300 IF T$>=A$(J)THEN 33
0
310 J=J-1
320 GOTO 290
330 IF J>I THEN 360
340 A$(I)=T$
350 GOTO 460
360 A$(I)=A$(J)
370 I=I+1
380 IF I>N THEN 420
390 IF A$(I)>=T$ THEN 4
20
400 I=I+1
410 GOTO 380
420 IF J<=I THEN 450
430 A$(J)=A$(I):: J=J-1
440 GOTO 300
450 A$(J)=T$ :: I=J
460 P=P+1
470 IF I-LB>=RB-I THEN
500
480 L(P)=I+1 :: R(P)=RB
:: RB+I-1
490 GOTO 270
500 L(P)=LB :: R(P)=I-1
:: LB=I+1
510 GOTO 270
520 REM put sorted file
on disk
530 CALL CLEAR :: PRINT
"  Put in Copy Disk-ENT
ER"
540 CALL KEY(5,K,S):: I
F S=0 THEN 540 :: IF K=
13 THEN 550 :: GOTO 540
550 OPEN #1:"DSK1."&ON$
,DISPLAY ,VARIABLE 80,O
UTPUT
560 FOR I=1 TO N
570 B$=A$(I)
580 PRINT #1:B$;
590 NEXT I
600 CLOSE #1
610 END
```

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v2n2