



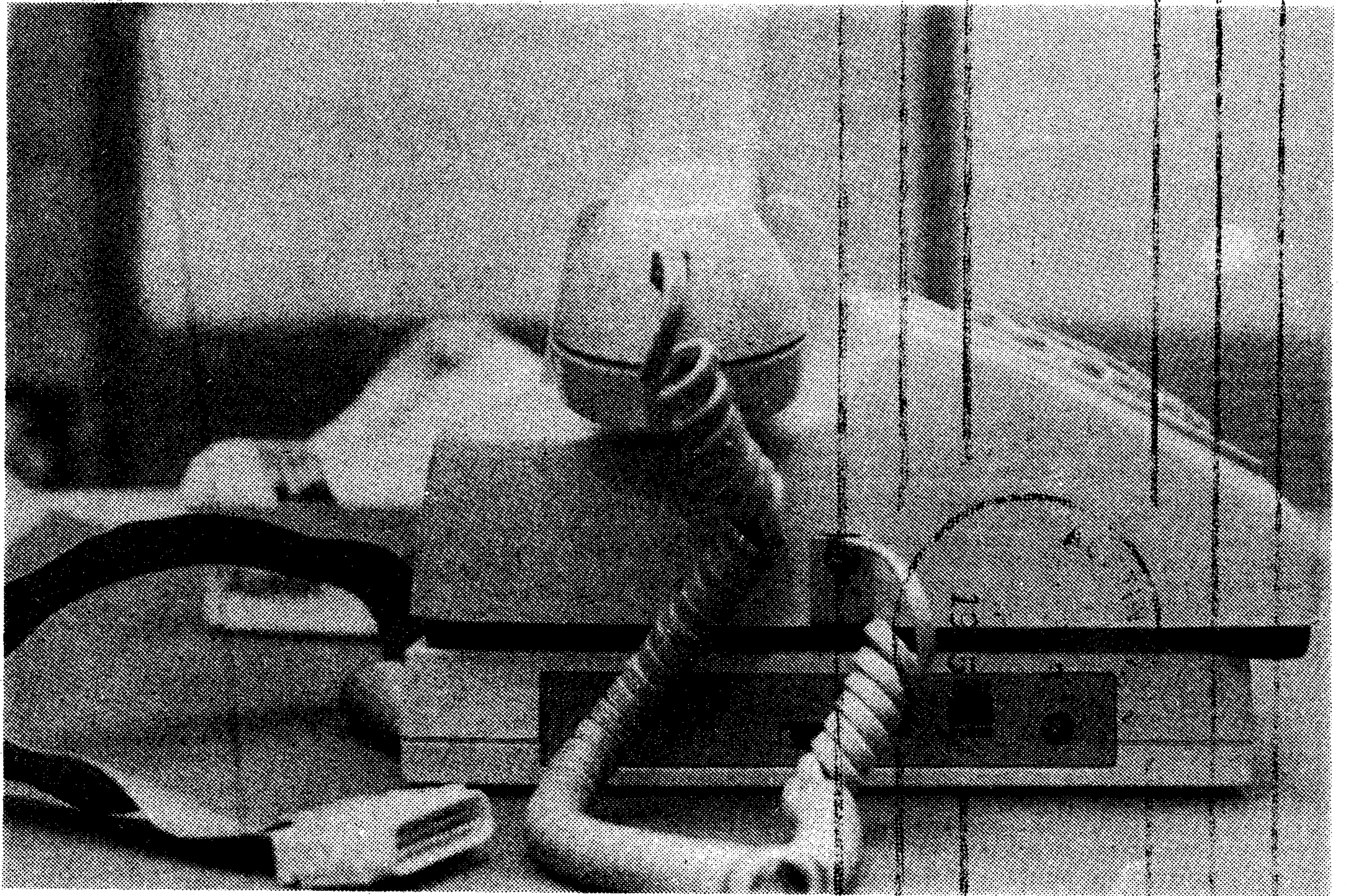
MICROpendium

Covering The TI99/4A Home Computer And Compatibles

Volume 2 Number 3

April 1985

\$1.50



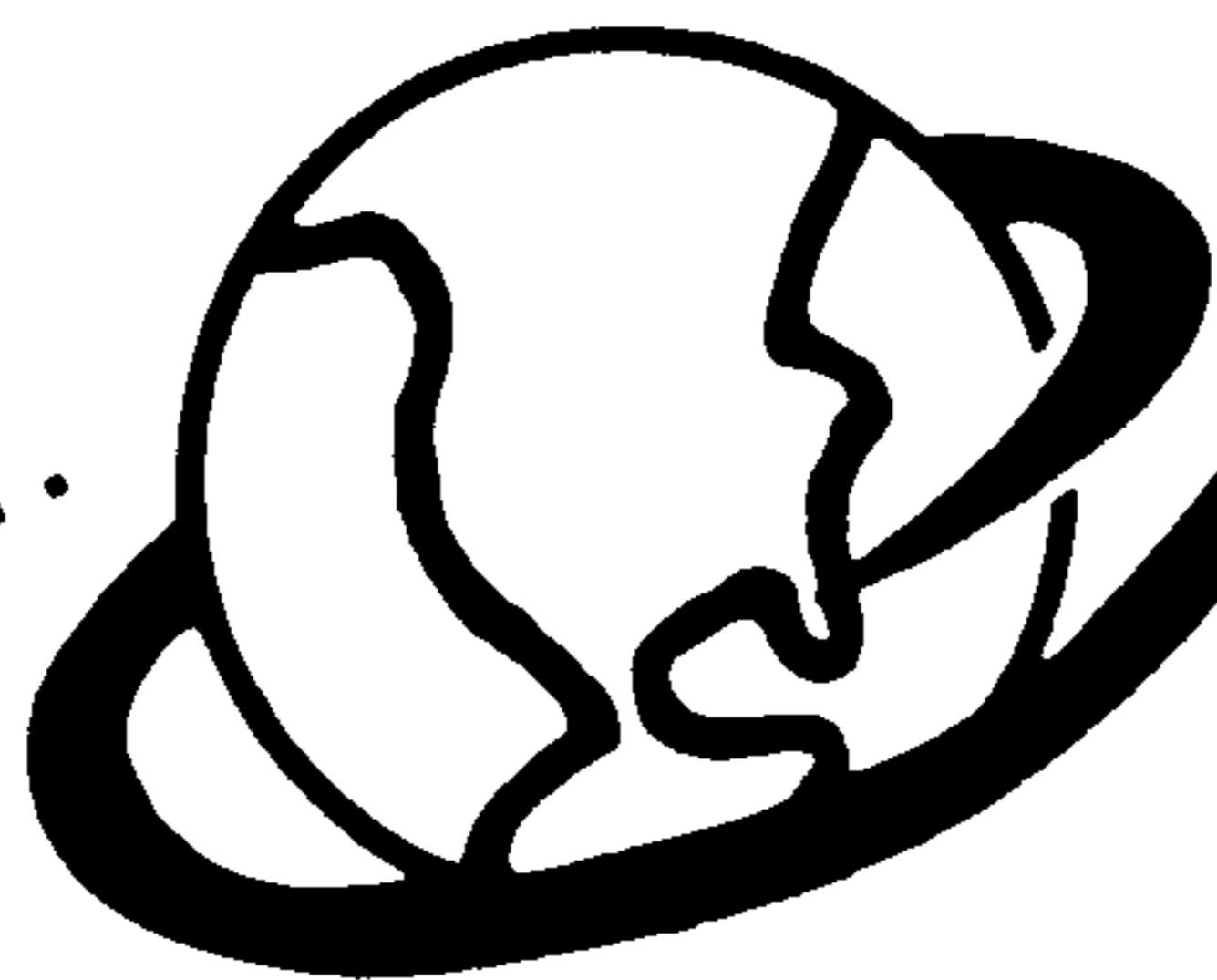
Cruising the Forum

Texas Instruments TI-99/4A — COMPUTERS, COMPONENTS AND SOFTWARE

TEX+COMP[™]

Proudly Introduces
America's Number One TI computer retailer

The
COMPLETE...



Adventure

For the Texas Instruments

ATTENTION TI OWNERS,

By special arrangement with Texas Instruments and Adventure International, TEX-COMP is now able to offer the entire 12 volume series of Scott Adams's Adventure for the TI-99/4A Home Computer. At a special package price of only **\$49.95**, you are saving hundreds of dollars off of the original suggested retail price for these adventures when purchased separately. The Scott Adams Adventure Series has been

produced for every major brand of home and personal computer and is recognized as the leading name in adventure gaming.

If you are tired of shooting down aliens or running around mazes, then the intellectual challenge that comes with adventure gaming may be waiting for you. No special equipment other than the TI-99/4A (or 99/4) console and a tape recorder or disk drive storage capability. You just insert the TI Adventure Module* into the

THE ADVENTURES...

#1 ADVENTURELAND — Wander through an enchanted realm and try to uncover the 13 lost treasures. There are wild animals and magical beings to reckon with as well as many other perils and mysteries. This is the Adams Classic that started it all! Difficulty Level: Moderate

#2 PIRATE ADVENTURE — Only by exploring this strange island will you be able to uncover the clues necessary to lead you to your elusive goal — recovering the lost treasures of Long John Silver. Difficulty Level: Beginner

#3 ADVENTURE #3 — In this exciting Adventure, time is of the essence as you race the clock to complete your mission in time — or else the world's first automated nuclear reactor is doomed! If you survive this challenging mission, consider yourself a true Adventurer! Difficulty Level: Advanced

#4 VOODOO CASTLE — The Count has fallen victim to a fiendish curse placed on him by his enemies. There he lies, with you his only possible hope. Will you pull off a rescue, or is he really down for the Count? Difficulty Level: Moderate

#5 THE COUNT — It begins when you awake in a large brass bed in a castle somewhere in Transylvania. Who are you, what are you doing here and WHY did the postman deliver a bottle of blood? Difficulty Level: Moderate

#6 STRANGE ODYSSEY — At the galaxy's rim, there are rewards aplenty to be harvested from a long-dead alien civilization, including fabulous treasures and advanced technologies far beyond human ken! Prepare yourself for the incredible! Difficulty Level: Moderate

#7 THE MYSTERY FUN HOUSE — As Adventure #7 begins, you find

yourself hopelessly lost in the middle of a carnival fun house. While escape may elude you, one thing is very clear — you're NOT here to have a good time! Difficulty Level: Moderate

#8 PYRAMID OF DOOM — This is an Adventure that will transport you to a dangerous land of crumbling ruins and trackless desert wastes into the PYRAMID OF DOOM! Jewels, gold — it's all here for the plundering — IF you can find the way. Difficulty Level: Moderate

#9 GHOST TOWN — You must explore a once-thriving mining town in search of the 13 hidden treasures. With everything from rattlesnakes to runaway horses, it sure ain't going to be easy! Includes a special bonus scoring system too! Difficulty Level: Advanced

#10 SAVAGE ISLAND PART I — A small island holds an awesome secret — will you be able to discover it? This is the beginning of a two-part Adventure. (The story continues in SAVAGE ISLAND PART 2, ADVENTURE #11.) NOTE: This one's a toughie — for experienced Adventurers only! Difficulty Level: Advanced

#11 SAVAGE ISLAND PART II — The suspense begun in Adventure #10 now comes to an incredible conclusion with SAVAGE ISLAND PART II! This Adventure requires you to have successfully finished #10, wherein you were given the secret password to begin this final half. NOTE: For experienced Adventurers only! Difficulty Level: Advanced

#12 GOLDEN VOYAGE — The king lies near death in the royal palace. You have only three days to bring back the elixir needed to rejuvenate him. Journey through the lands of magic fountains, sacred temples, stormy seas and gold, gold, GOLD! This one is for experienced Adventurers only! Difficulty Level: Advanced

HINT BOOK

Our hint book provides clues and solutions to help you out of those sticky spots you have gotten into, while still enabling you to solve the Adventure yourself. So if you can't seem to get out of the bog, or locate the Pharaoh's heart, then you've come to the right place for help. This edition includes hints for all SCOTT ADAMS Adventures 1 - 12. There is also a special section on the making of Adventure Maps. For those that just want answers, there is a solution section, too. But don't worry. All clues and solutions are specially encoded so that the only time you can get a clue or answer is when you want one.

Buy now and SAVE

Hint Book \$7.95

SEND \$2.00 FOR OUR NEW 30-PAGE 99/4A CATALOG & BUYERS GUIDE—WE INCLUDE A \$5 SAVING CERTIFICATE!

INTRODUCTORY SPECIAL \$49.95

All 12 Adventures Plus Bonus Adventures
ON CASSETTE OR DISKS
Never Before Pricing!

Series

Home Computer . . . by **SCOTT ADAMS**

console and load the particular game you want to play from cassette or disk. You will immediately be transported to another time and place where two word commands allow you to manipulate objects and perform acts just as if you were actually there. The object of each game is as varied as the games themselves and to win the game you must complete it. This may take hours, days or even months. Like a good novel you can lay it down and then continue where

you had left off. The program provides for saving the game on cassette or disk and then recalling it.

TEX-COMP has made getting into TI adventuring inexpensive and exciting. If you are ready for adventuring then TEX-COMP is ready for you with complete supporting products such as the TI Adventure Command Module at only \$6.95, and the Official Scott Adams Adventure Hint Book at only \$7.97.



TI ADVENTURE COMMAND MODULE

This module is required to use the games advertised on this page. If you do not already have it, it may be purchased from TEX-COMP for only \$6.95.

Adventure Module PHM3041 \$6.95

RETURN TO PIRATE'S ISLAND

The sequel to Pirates Adventure is now available from TEX-COMP on a self contained module with graphics!

PHM3189 \$11.95

EXTRA VALUE BONUS

WITH EACH ADVENTURE SERIES ORDER ON CASSETTE OR DISK, TEX-COMP IS INCLUDING THE LATEST ADVENTURE FROM EUROPE . . . "KNIGHT IRONHEART" . . . WHICH SELLS FOR \$9.95 IN THE BIG TEX-COMP CATALOG . . . (REQUIRES MODULE)



VISA and MASTERCARD
HOLDERS CALL DIRECT:
(818) 366-6631

SEND ORDER AND MAKE CHECKS PAYABLE TO:

TEX-COMP™
P.O. BOX 33084 — GRANADA HILLS, CA 91344

Texas Instruments

AUTHORIZED DEALER

TERMS: All prices F.O.B. Los Angeles. For fastest service use cashiers check or money order. Personal checks take at least ten days to clear. Add 3% shipping and handling (\$3.00 minimum). East of Mississippi 4½%. (Free shipping on all software orders over \$100.00).

NOTE: Payment in full must accompany all orders. Credit-Card, Company Check or Money Order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6½% sales tax.

SEND \$2.00 FOR OUR NEW 30-PAGE 99/4A CATALOG & BUYERS GUIDE—WE INCLUDE A \$5 SAVING CERTIFICATE!

Contents

MICROpendium

MICROpendium is published 12 times annually in Round Rock, Texas. No material published in the pages of MICROpendium may be used without permission of the publisher. Computer user groups that have signed exchange agreements with MICROpendium may excerpt articles appearing in MICROpendium without prior approval.

While all efforts are directed at providing factual and true information in published articles, the publisher cannot accept responsibility for errors that appear in advertising or text appearing in MICROpendium. The inclusion of brand names in text does not constitute an endorsement of any product by the publisher. Statements published in MICROpendium which reflect erroneously on individuals, products or companies will be corrected upon contacting the publisher.

Unless the author specifies, letters will be treated as unconditionally assigned for publication, copyright purposes and use in any other publication or brochure and are subject to MICROpendium's unrestricted right to edit and comment.

Display advertising deadlines and rates are available upon request.

All correspondence should be mailed to MICROpendium at P.O. Box 1343, Round Rock, TX 78680. We cannot take responsibility for unsolicited manuscripts but will give consideration to anything sent to the above address. Manuscripts will be returned only if a self-enclosed, stamped envelope is included.

All editions of MICROpendium are mailed from the Round Rock (Texas) or Smithville (Texas) Post Office. Subscriptions are \$15 for 12 issues, delivered via third class mail. In Canada, add \$3.50. Subscribers in the United States who wish first class delivery may also add \$3.50 to the basic subscription price.

Mailing address: P.O. Box 1343, Round Rock, TX 78680

Telephone: (512) 255-1512

Source: TI4596

John Koloen..... Publisher

Laura Burns..... Editor

Coming Next Month

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

©Copyright MICROpendium

Table of Contents

Cruising the Forum

Tips on making the most of your first hours with telecommunications on CompuServe.....Page 12

The ultimate users group

You can have access to this one any time at all, if you don't mind paying the bills.....Page 16

Graphics for beginners

Even if you can't draw a straight line, you can be a high-tech Picasso, Michelangelo, Rembrandt or whatever.....Page 24

Reviews

9900 Micro Expansion System.....Page 27

Disk + Aid.....Page 29

Gemini 10X/15X.....Page 31

Freeware (or nearly so)

Our offers, and those of others.....Page 33

Newsbytes

A music synthesizer, an Australian disk manager and TI's farewell to the market.....Page 34

User Notes

Modifying Multiplan, changing TI-Writer with Forth and a book of tips from Iowa.....Page 35

Classifieds

.....Page 38



Texas Instruments TI-99/4A - COMPUTERS, COMPONENTS AND SOFTWARE

TEX+COMP™



AUTHORIZED DEALER

America's Number One TEXAS INSTRUMENTS dealer.

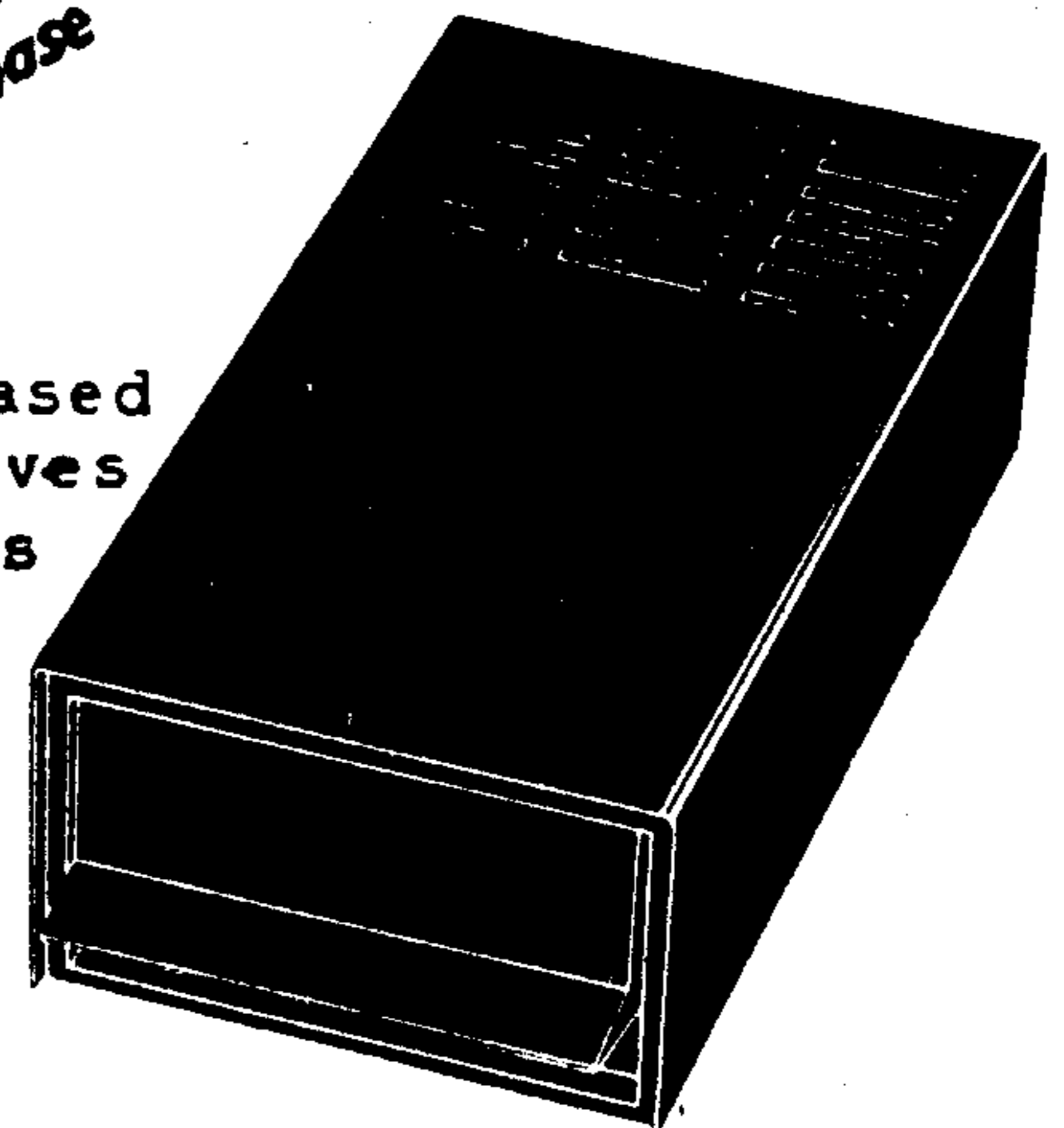
Now get more out of your TI Home Computer — for less.

ADD A 2ND DISK DRIVE TO YOUR TI/99/4A SYSTEM FOR ONLY

Texas Instruments Disk Memory Drive *Model PHP1850*

TEX+COMP™
*Special
Purchase*

\$129⁹⁵



TEX-COMP with its enormous buying power has purchased the entire stock of TI PHP1850 stand alone disk drives from a major chain store and is passing the savings on to you. These units come complete with cable, ready to be installed as a number two or three disk drive.

By adding a second drive to your system you can free yourself from swapping program and data disks on many programs. You can also make backups without any disk swapping.

This is a limited offer subject to prior sale so act fast or you will miss the greatest value in a TI-99/4A disk drive that has ever been offered.

These units are sold with a 90 day TI factory warranty honored at any TI exchange center.

EXTRA VALUE BONUS

With each disk drive ordered we are including a HEAD brand disk drive head cleaning kit which regularly sells for \$15.95 in the big TEX-COMP catalog.

Due to this outstanding value, we reserve the right to limit quantities.

SEND \$2.00 FOR OUR NEW 30-PAGE 99/4A CATALOG & BUYERS GUIDE—WE INCLUDE A \$5 SAVING CERTIFICATE!



VISA and MASTERCARD
HOLDERS CALL DIRECT:
(818) 366-6631

add 3% for credit card orders

24 HOUR
ORDER LINE

TERMS All prices F.O.B. Los Angeles. For fastest service use cashiers check or money order. Personal checks take at least ten days to clear. Add 3% shipping and handling (\$3.00 minimum) East of Mississippi 4 1/2%.

SEND ORDER AND MAKE CHECKS PAYABLE TO:
TEX+COMP™
P.O. BOX 33084 - GRANADA HILLS, CA 91344

NOTE: Payment in full must accompany all orders. Credit-Card, Company Check or Money Order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6 1/2% sales tax.

SEND \$2.00 FOR OUR NEW 30-PAGE 99/4A CATALOG & BUYERS GUIDE—WE INCLUDE A \$5 SAVING CERTIFICATE!
Watch for many more outstanding TI-99/4A offers coming from TEX-COMP.
"THE LEADER OF THE PACK"

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, called 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:

1. Any existing adventure for the 'Adventure' command module to be edited, altered, listed, copied from any storage medium to any other storage medium (i.e. tape to disk or vice versa).
2. New adventure games can be created freely, using a 'template' game as a start-up step. These games can be conceived using the full power and capabilities of the TI 'Adventure' command module.

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.

TI-99/4A Available NOW From TEX-COMP

Specify Mini-Memory (Cassette) or Editor Assembler (Disk) Versions

29⁹⁵ add 3.00 shipping and handling

For the Texas Instruments Home Computer . . .
FROM QUALITY 99 SOFTWARE

DRAW 'N PLOT®



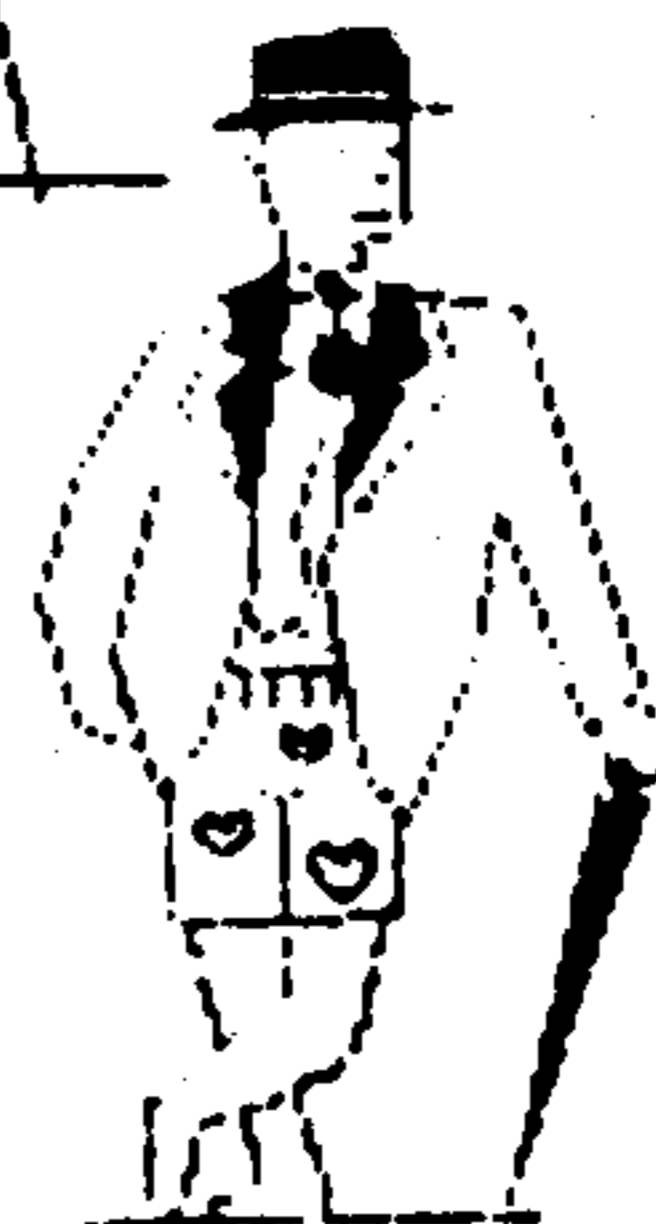
Now you can draw any image on the screen with PIXEL accuracy and assembly language SPEED. You can also save any image or drawing you create to disk and read it into another program. Mix any combination of text and graphics, specify background and line colors. PRINT any image from the screen on an EPSON or GEMINI 10x compatible printer. This is the ultimate TI-99/4A screen dump program!!! Lets you use your screen or printer like a expensive plotter, with 8 plotting commands. Create and print drawings, graphs, designs, and illustrations. The only limitation is your imagination.

Requires: Disk Drive, 32K, EX-BASIC & JOYSTICK **\$39.95 postpaid**

CHART MAKER®

This is an accessory program for use with the new "Draw 'N Plot" program. Lets you quickly and easily create graphs and charts from ordinary figures. Produces both screen displays and printed copies.

Menu driven **\$19.95** (postpaid)



DATABASE 99®

The Database Manager

At Last! A fast, flexible, friendly Data Base Management Program for the TI-99/4A. Quality 99 software has created this all new program which contains everything you ever wanted from TI's personal record keeping but couldn't have due to memory limitations. Now you can create records with up to 28 fields with up to 28 characters each. You can sort on any field and print any field in any column on any line. Very, very fast! Store 350 records on a single density disk or 1400 records on a DD/DS disk. Can be expanded to multiple drives! Create custom mail lists, keep track of collections, appointments, reservations etc. Finally, high powered Data Base Management can be yours on a TI-99/4A. Requires: Disk, 32K, EX.BASIC

\$39.95 POSTPAID



All hardware required to run these programs and Extended Basic are available from TEX-COMP

SEND ORDER AND MAKE CHECKS PAYABLE TO:

TEX-COMP TM

P.O. BOX 33084 - GRANADA HILLS, CA 91344
NOTE: Payment in full must accompany all orders. Credit Card, Company Check or Money Order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6 1/2% sales tax.

Texas Instruments



Authorized Dealer



VISA and MASTERCARD
HOLDERS CALL DIRECT:
(818) 366-6631

ALL PRICES REFLECT A 3% DISCOUNT FOR CASH
ADD 3% IF PAYING BY CREDIT CARD

When in Southern California visit our modern Warehouse Outlet Store where you can purchase the entire TI line at our regular discount price

SEND \$2.00 FOR OUR NEW 30-PAGE 99/4A CATALOG & BUYERS GUIDE—WE INCLUDE A \$5 SAVING CERTIFICATE!

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 hap-

pening 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!

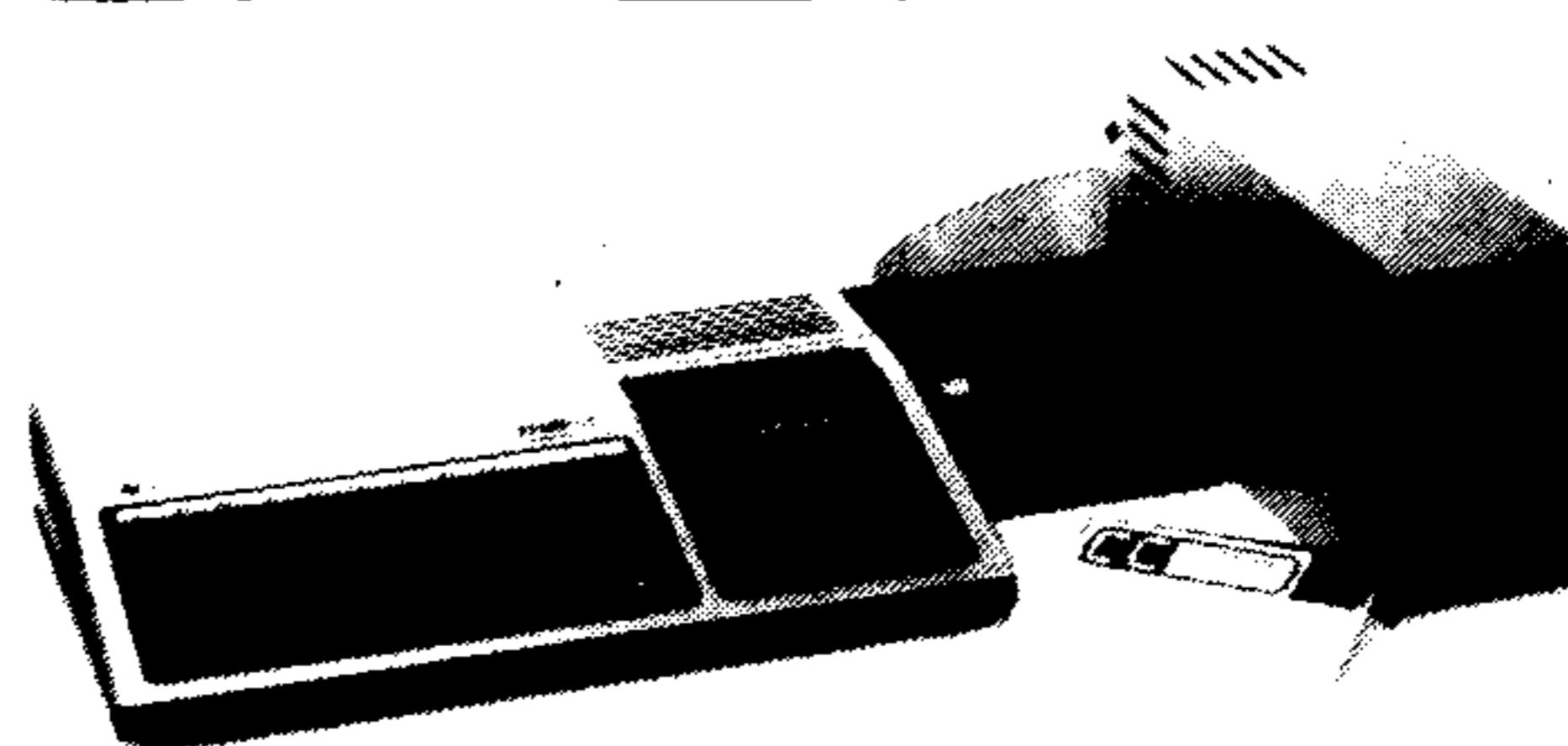
Bruce Ryan
Ryte Data
Haliburton, Ontario

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)

**9900 + FOR THE TI99/4A
THE ULTIMATE
99/4A EXPANSION SYSTEM
AT A SPECIAL
INTRODUCTORY PRICE
FROM TEX-COMP™**



CorComp

**COMPLETE
EXPANSION SYSTEM
NOTHING ELSE TO BUY!**

TEX-COMP, the undisputed leader in supplying the 99/4A User, has now put together the finest and most complete expansion system ever offered for the TI99/4A.

Based on the new COR-COMP 9900 System, you receive the following:

- **9900 Expansion Box & Regulated Power Supply (UL Approved)**
- **32K Memory Upgrade** Adds 32K bytes of Random Access Memory to your system.
- **Double Sided/Double Density Disk Controller** (operates up to 4 drives)
- **RS232 Interface** Lets you add a wide range of other accessories, such as printers or telephone modems, one parallel and 2 serial outputs.
- **1 SS/SD Disk Drive** Allows you to store and retrieve data on 5¼-inch single-or doubled-sided floppy diskettes.
- **1 Disk Drive Case & Regulated Power Supply** Handles two ½-height drives easily (UL or LAC Approved)
- **New Disk Manager with Improved Disk Utilities**
- **All Cables & Instructions** Including a free TI RS232 Y-Cable. Plus S&H

**ALL FOR
\$449.95**

For above system with upgrade to 1 DS/DD ½-height TEAC 55B Drive, ADD \$24.95
For above system with upgrade to 2 DS/DD ½-height TEAC 55B Drives, ADD \$154.95

Other Leading TEX-COMP Hardware Values:

TI-99/4A Console w/1 year warranty	79.95
New Star SG-10 Printer w/TI Instructions (replaces Gemini 10X same specs but improved letter quality)	259.95
Axiom ParallAx TI Interface (Directly connects any parallel printer to 99/4A)	79.95
Parallel Printer Cable	24.95
Cor-Comp RS232 Card (for TI P-Box)	79.95
Cor-Comp 32K Card (for TI P-Box)	99.95
Cor-Comp DS/DD Controller (for TI P-Box)	159.95
Cor-Comp 9900 System with Free RS232-Y Cable	324.95
TEAC ½-Height DS/DD Drive	149.95
Cable & Hardware Kit for up to 2 ½-height Drives (specify P-Box or stand alone)	29.95
TEX-COMP Disk Drive Case & Regulated Power Supply (Heavy duty, fused & switched, UL or LAC approved with cable for one drive included)	99.95
TI Extended Basic with TI Warranty "The Real Thing"	89.95
BMC Color Monitor Includes Free Cable (Reg. \$14.95)	239.95
Port Expander (Widget by Navarone)	29.95
TI Editor/Assembler	38.95
TI Mini Memory NEW REDUCED PRICE	38.95



add 1% for credit card orders



VISA and MASTERCARD
HOLDERS CALL DIRECT
(818) 366-6631

SEND ORDER AND MAKE CHECKS PAYABLE TO

TEX-COMP™

P.O. BOX 33084 - GRANADA HILLS, CA 91344

Texas Instruments



AUTHORIZED DEALER

TERMS: All prices F.O.B. Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 minimum). East of Mississippi 4½%. (Free shipping on all software orders over \$100.00). Prices and availability subject to change without notice. We reserve the right to limit quantities.

NOTE: Payment in full must accompany all orders. Credit-Card, Company Check or Money Order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6½% sales tax.

SEND \$2.00 FOR OUR NEW 30-PAGE 99/4A CATALOG & BUYERS GUIDE—WE INCLUDE A \$5 SAVING CERTIFICATE!

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 bit-map 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 con-

sole, 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 possibly 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.

Support
Our
Advertisers

"you give me one warfish and I'll swap you two schmoo's."

Oh, how we remember those younger days of swapping baseball cards, marbles, and an occasional model airplane.

Well, those days are back again, but instead the toys of our youth have become the teachers for tomorrow.

Software is what we swap. If you have a TI 99 /4A you can become a member of TEX/NET. We offer over 250 tried, trued, and tested programs for your business, education, and recreational pleasure.

TI SWAP is just one of the many services provided by TEX/NET.

For more information write:

Soft Mail Inc.
P.O. Box 745
Rockwall, Tx 75087

TI SWAP

Cruising the Forum

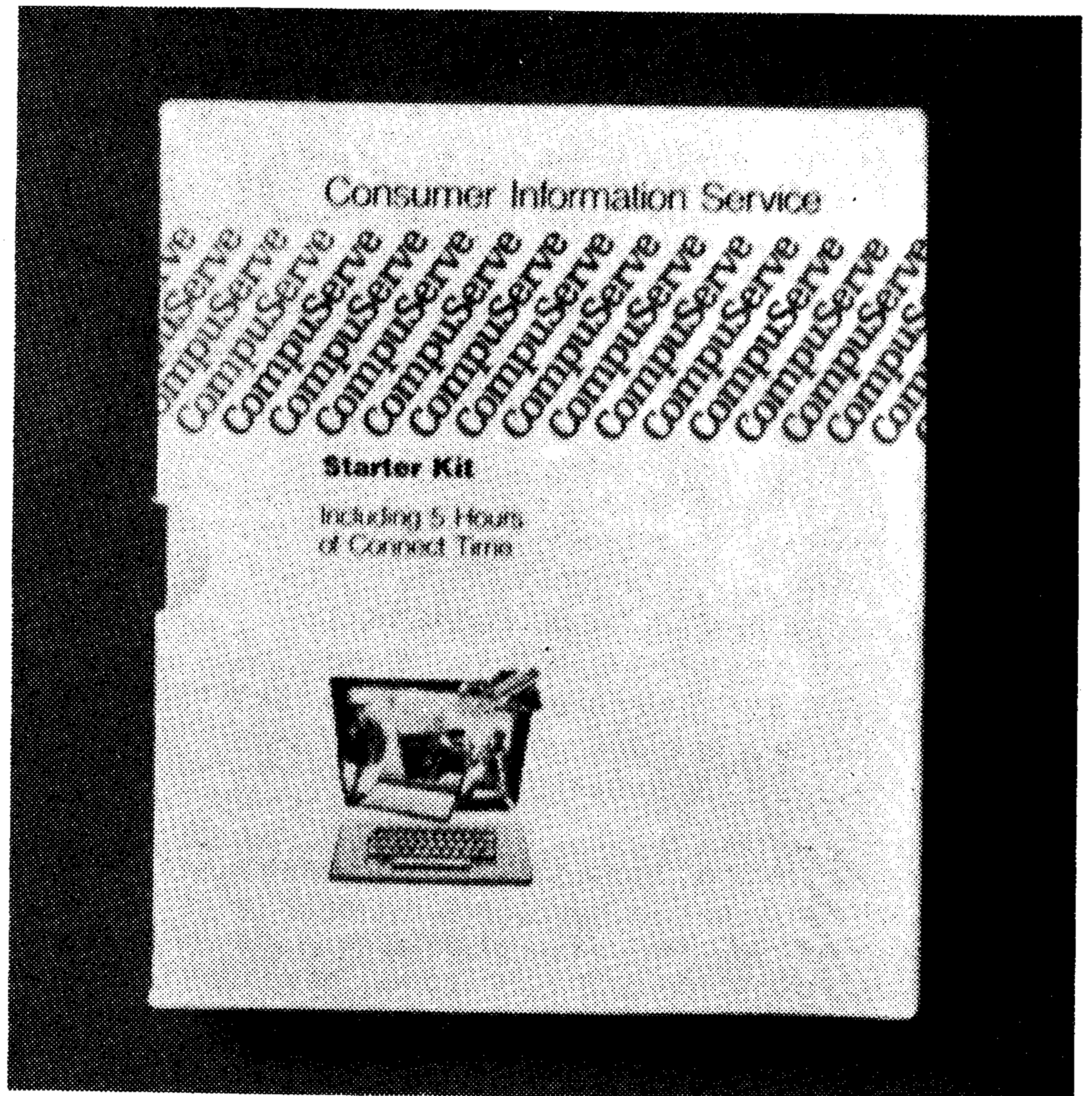
By RON ALBRIGHT

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 doesn'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)

*** \$9.95 FORTH MAILING LIST ***

Now available, exclusively from Ramsoft Enterprises, is TC-MAIL. TC-MAIL was written entirely in TI-FORTH by long-time 99er Thi Chau. TC-MAIL has unique advantages over Extended BASIC mailing list programs and has the following features:

- *** TITLE FIELD ***
- *** MULTIPLE SORTS ***
- *** SORTS BY ANY FIELD ***
- *** FULL SCREEN DATA EDITOR ***
- *** 40-COLUMN SCREEN DISPLAY ***
- *** 710 RECORDS PER DATA DISK ***
- *** ONE, TWO, OR THREE UP LABELS ***
- *** NO UNNECESSARY DISK SWAPPING ***
- *** WHOLE PROGRAM RESIDES IN MEMORY ***
- *** DATA DISK INITIALIZING FROM PROGRAM ***
- *** BINARY SAVED FOR FAST PROGRAM LOADING ***
- *** PROGRAM COMES ON A MAXELL MD1 QUALITY DISKETTE ***
- *** PREPARES PHONE LISTS (NAME AND PHONE NUMBER ONLY) ***
- *** SETS COLORS FOR EITHER COLOR OR MONOCHROME MONITORS ***

TC-MAIL is available for only \$9.95 plus shipping and handling. This program is being marketed at this price to try to reduce unauthorized copying, thereby benefitting everyone involved (consumers—good product at a good price; retailer—less copying equals more sales; author—less pirating means more returns for programming effort). The program is not protected in any way and requires 48K, one disk drive, printer, and Editor/Assembler command module.

To obtain your copy, send \$9.95 plus \$1.50 shipping and handling to:

RAMSOFT ENTERPRISES
1501 East Chapman Avenue, Suite 338
Fullerton, California 92631
(714) 738-5665

California Residents add 6 percent sales tax
 COD orders add \$5.00

*** VOLUME ORDERS SHIPPED TO ONE ADDRESS ***
 10 or more orders: \$9.95 per copy and FREE SHIPPING AND HANDLING!
 25 or more orders: \$8.95 per copy and FREE SHIPPING AND HANDLING!

hen
up.
will
text
all
g a
tin,

will
tin.
point
rum
when
this
refer-
After

MESSAGES—

(Continued from Page 12)

all the bulletins have ceased (probably five minutes total at 300 baud so RELAX!), you will get the number of messages on-line, their numbers, etc. Then, the "FUNCTION:" prompt. From here, there 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 messages ("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 told "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 —Soft-
ware/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 choices
(Please turn to Page 16)

ATARI HARDWARE / SOFTWARE		TEXAS INSTRUMENTS TI99/4 HARDWARE	
810 Disk Drives	\$265 (7)	TI99 Replacement Keyboard	\$ 7 (3)
810 Disk Drive Kits	\$240 (7)	TI99 Power Supply Board	\$ 7 (2)
810 Happy Enhancement	\$185 (4)	TI99 Power Adapter	\$12 (3)
1050 Happy Enhancement	\$185 (4)	TI99 Video Modulator Unit	\$12 (3)
810 Analog Upgrade Kit	\$ 37 (3)		
850 Interface Module	\$125 (7)	TI99 Integrated Circuit Chips	
Atari 800 Computer Kits		TMS 9900 — \$13 (1)	TMS 9901 — \$ 5 (1)
48K Electronics	\$100 (7)	TMS 9904 — \$ 5 (1)	TMS 9918 — \$ 9 (1)
Atari 400 Computer Kit	\$ 47 (5)	Complete set of all four:	\$27 (3)
800 OS 10K ROM 'B' Board	\$ 17 (2)		
CPU 'GTIA' Board	\$ 18 (2)	TIMEX/SINCLAIR TS-1000 CASSETTES	
16K Memory Board	\$ 19 (2)	Statistics, Algebra 1, Geometry 1, Money	
400/800/810/850 Power Adapter	\$ 15 (3)	Analyzer 1, Mixed Game Bag 2, Pwr. Pack 1 —	
I/O Data Cable, 6'	\$ 12 (2)	\$ 3 (1) each	
13 pin I/O Plug Kit (cable end)	\$ 3 (1)	Stock Analyzer, College Cost Analyzer, IRA	
13 pin I/O Jack (Port)	\$ 3 (1)	Planner, Home Improvement Planner,	
Atari Joystick (standard)	\$ 5 (2)	Checkbook Manager, Coupon Manager, The	
Atari Paddles (set)	\$ 8 (2)	Organizer — \$ 4 (1) each	
All types of other boards and parts are available! Call now!!		MORE TITLES AVAILABLE/CALL NOW!	
Atari Microsoft Basic II		SPECIAL CLOSE-OUT: PRINTER, TIMEX	
Cartridge w/manual	\$ 27 (3)	TS-1000 16-Column Printer, uses plain	
Atari Pilot, Cart. w/manual	\$ 22 (3)	paper... NO INTERFACE REQUIRED. MADE	
Atari Basic Cartridge Kit	\$ 15 (3)	IN U.S.A. — \$25 (4) Limited Quantities	
Atari Assembler/Editor Cart. Kit	\$ 15 (3)		
CALL OR WRITE FOR FREE CATALOG!!!			
Ordering Information: All boards listed are complete with all parts and are fully guaranteed. UPS shipping charges are shown in brackets next to the price. Shipping charges must be included with all orders. Orders may be placed by phone using your VISA or MasterCard, or you may mail your order in with a check or money order. Hurry, some supplies are limited.			
CENTURIAN ENTERPRISES (805) 544-6616			
Post Office Box 3233, San Luis Obispo, CA 93403-3233			
Sales Office: 890 Monterey Street, Suite B, SLO, CA 93401			



E-FILES99

A VERSATILE ELECTRONIC CARD FILE DATA BASE, WITH EASY TO USE PICTURE DRIVEN MENUS. JUST POINT TO THE DESIRED DRAWER, DEFINE THE FILE ACCORDING TO YOUR OWN SPECIFICATIONS. SORT OR SEARCH BY ANY USER DEFINED FIELD. ADDRESS BOOK CAPABLE, MAIL LIST/LABEL OPTION. SELECTIVE PRINTOUTS AVAILABLE.
3 DRAWERS WITH A MAX 200 RECORDS PER DRAWER.
X-BASIC 32K MEM REQ'D. DISK ONLY \$ 20.95

BASI-CALC 99

mini spreadsheet program

NEW IMPROVED VERSION OF THE MINI SPREADSHEET FOR THE BASIC CONSOLE TI-99/4A WITH REAL NUMBER CRUNCHING CAPABILITIES. EASY COMMANDS FOR FORMULAS, TITLES, NUMERIC DATA, WITH PRINTOUTS. 15 ROWS BY 10 COLUMNS. MOVING WINDOWS, HELP SCREEN.
X-BASIC DISK \$18.95 CAS \$16.95



CHECK OR MONEY ORDER PLUS \$2.00 SHIPPING & HANDLING N.Y. RES ADD SALES TAX

VMC SOFTWARE P.O. BOX 326 CAMBRIA HTS.N.Y.11411



Super specials

- WE DO A GREAT DEAL MORE THAN JUST SELL PRODUCTS -
WE SUPPORT AND STAND BEHIND EVERYTHING THAT WE SELL!

Direct-Connect Disk Drive and Controller

(No Peripheral Expansion Box Required)

only \$199.95

"SKETCH MATE"

Now you can "Dump" your drawings created with "Super Sketch" to your printer or save them to your disk drive.

Only \$29.95

ALL NEW Disk Mgr. III

All commands can be accessed at any time, either from your programs or from command mode.

Only \$39.95

"INTRODUCING"

ALL NEW 300/1200 BAUD MODEM

A VERY SMART AUTO ANSWER - AUTO DIAL

DIRECT CONNECT - BELL 103, 212A COMPATIBLE - VOICE/DATA SWITCH
MAKES COMPUTER-TO-COMPUTER COMMUNICATIONS SMARTER, FASTER AND EASIER

ONLY ~~~~ \$199 ~~~~ ONLY

Direct-Connect T1 Printer

(No RS-232 or other Interface Required)

only \$99.95

DELUXE COLOR MONITOR
(Only \$199)

Great resolution and a large 14" screen. Dual mode, Full-Color or Green-Screen.

DELUXE COLOR MONITOR
(Only \$199)

Great resolution and a large 14" screen. Dual mode, Full-Color or Green-Screen.

Specialist In

The Texas Instruments Home Computer

(612) 544-6219

1815 Ford Road

Minnetonka MN 55343



We also carry a complete line of 3rd party
Software, Hardware and Books



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 uposaded 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)

WIN \$1000.00*

Do you think your computer is boring and your game selections are like old record albums and television re-runs? Blow the dust off your keyboard and pull up a comfortable chair because the staff of **D & D Publishing Company** is submitting to you, the bored computer enthusiast, a challenge. If you possess common sense, the ability to succeed and the will to live, this challenge is upon you! If you think you have played all the games, killed all the demons and out maneuvered all the enemies — you're wrong!! We will put our money up front to cover our challenge! You may win \$1,000.00 in cash —

IF YOU DARE TO SURVIVE . . .

D & D Publishing Company, introduces an incredible adventure in software for your T.I. home computer. Awaiting you is a challenge where you decide your own destiny as you explore the exciting new dimension of **SAXSAAN**. The world of **SAXSAAN** is extraordinarily unique. Not a simple arcade game or boring maze, but a journey through your very imagination . . .

WHY IS SAXSAAN SO UNIQUE?

First of all, it is a continuing adventure saga written in complete prose. 100% words, no memory eating graphs or pictures. Vivid descriptions live in your imagination as you become involved in the adventure by typing in simple sentences, the program understands and comprehends your every request, no need to play guessing games to find a command your program will understand.

ADVANCED PARSAR

The program uses an advanced parsar to dissect your sentences and recognizes hundreds of adjectives, nouns and verbs. Your commands are accepted and executed with ease. **SAXSAAN** is a thrilling adventure which challenges the T.I. user to collect treasures, wander through underground labyrinths, face battles, and discover clues that may allow you to escape and survive!!

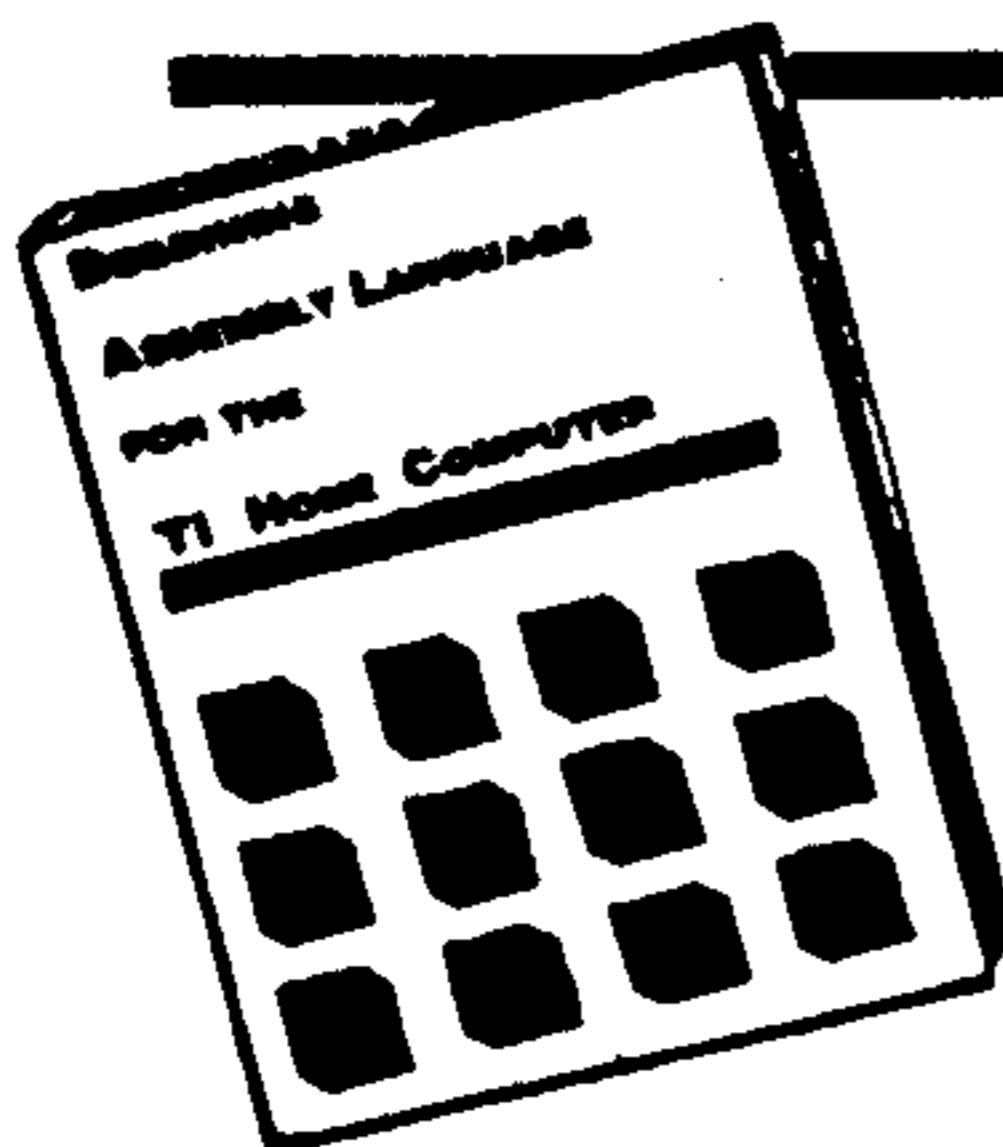


WIN \$1000.00

Adventures of this magnitude are not usually seen in the world of computer games where your mind becomes the ultimate video screen!! Escape from **SAXSAAN** in the shortest time and win \$1000.00!!!!

The Game is supplied on one disc and requires a Texas Instrument console, one disc drive, extended BASIC, and 32K memory.

*Exact details of cash prize included in game package.



Also available at a special price, with this ad only, is **D & D's** hottest selling book for the T.I. enthusiast; *Beginning Assembly Language For The T.I. Home Computer* is now being sold in 2nd edition form to compliment the introduction of our fabulous **SAXSAAN** adventure.

SECOND EDITION

Finally . . . a book that takes you "by the hand" through the basics of assembly language for the T.I. Home computer. This comprehensive guide covers everything from basic numbering systems through advanced graphics, sprites and sound processing. Many complete programs are presented to illustrate points as they are covered. Hundreds of examples are included. Topics include a complete description of the powerful disk based Editor/Assembler. This book assumes that you have no previous knowledge of assembly language; If you know BASIC you can use this book! Link fast executing assembly program modules to your game programs, or add additional BASIC commands! Chapters include: Simple numbering systems/Using the assembler/The instruction set/Assembler Directives/Creating and Controlling Sprites/Graphics made easy/MMM & Line-by-line assembler/Converting BASIC into assembly language/Sound made easy/Utility programs/Illustrations/Study Exercises/Game programming examples/Appendices/Index and much more!!

DISCOVERY SPECIAL

If you accept our challenge, why not take advantage of our special offer!! You will receive our **SAXSAAN** Adventure disc and your chance at \$1000.00 cash **AND** the new second edition of our book *Beginning Assembly Language For The T.I. Home Computer* (Selling for \$19.95 each) at the discovery price of \$39.95!!!!

Please rush me one D & D Publishing Co. Introductory Special which includes the incredible "SAXSAAN" Adventure and one copy of the 2nd Edition *Beginning Assembly Language For The T.I. Home Computer* for the special price of \$39.95 for both.

Please rush _____ **SAXSAAN** Adventure Disc(s) at our special introductory price of \$26.95.

Please rush _____ Copy(s) of D & D's 2nd Edition *Beginning Assembly Language For The T.I. Home Computer* at our regular price of \$19.95 a copy.

Name _____

Address _____

City _____ State _____ Zip _____

Check M.C. Visa
If M.C. or Visa, Check above and fill out information below:

MUST HAVE

Card no. _____ Exp. Date _____

Signature _____

Remit to:

D & D Publishing Company

3177 Bellevue
Toledo, Ohio 43606
Ohio Residents add 6% Sales Tax



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!]."

Conferencing 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)

USER COMMENTS ON DISK + AID ver 2.0

"..The ultimate Single Sectoring Program Today..." / "...Far Surpasses anything on the market today as far as single sectoring programs goes..." / "...Using the program and manual, I was able to recover a 500 sector fragmented file and build a directory sector from scratch.."

SEE FOR YOURSELF THE PROGRAM THAT IS RECEIVING RAVE REVIEWS IN TI USER GROUP NEWSLETTERS ALL OVER THE COUNTRY.

DISK + AID ver 2.0

Unlock the hidden secrets of the disk operating system. DISK + AID will read or write any sector on any type of TI formatted disk. over 30 single key menu driven operations. Display all 256 bytes of a sector in a neat and readable format in ASCII or hex. Turn all the bits and bytes of Sector Zero or any directory sector into a human readable format with a single key stroke. Screen dumps at any time to save valuable disk information. Search for ASCII or hex string up to 40 bytes long. Print output in D/V 80 for compatibility with TI-Writer and E/A. Get a display of sectors being used and sectors not being used. Disk based, 100% assembly language program will run with E/A, MM, or XB. \$20.00 (object code). \$27.00 (source)

MEMORY MANIPULATOR

Unlock the hidden secrets of the TI-99/4A with this fast, 100% assembly language, memory exploration tool. Access VDP CPU or GROM memory at any time with the touch of a key. Over 14 single key menu driven operations. 100% assembly language. Disk based to run in E/A, MM, or XB. Assembly language trace routine on disk to help you get at those hard to find bugs in your assembly programs. \$12.00

CREDIT CARD DATA BASE

This relational data base will enable you to track all important information on your credit cards plus give you an analysis of payments you are making. Analysis program features screen dump for hard copies. Store up to 9 credit cards and 200 transactions. \$7.00

For free brochure send name and address. To order, send check or money order plus \$1.75 S&H to:

M & T UTILITYWARE (616) 773-4504
3507 MURL, MUSKEGON, MI 49442

SST Expanded Basic Compiler System

"The most powerful high level language available for the T.I. 99/4A"

NOW ONLY \$49.00

The **SST EXPANDED BASIC COMPILER** contains all of the features of the **SST BASIC COMPILER**, plus most of the features of **EXTENDED BASIC**. It also includes many commands that are not available in **TI BASIC** or **TI EXTENDED BASIC**. A major feature of the **SST EXPANDED BASIC COMPILER** is the ability to add your own commands. If you have need of a command not commonly found in Basic, you can easily add it to our compiler (*Editor/Assembler* module only).

The **SST EXPANDED BASIC COMPILER** package translates a Basic program into TMS9900 machine language, resulting in a great gain in program execution speed. The compiled commands are up to 160 times faster than the corresponding commands in **TI BASIC** or **EXTENDED BASIC**. For a comparison we used our Compiler to run the benchmark program for making change in the April 1984 MICROpendium. This program takes over 30 minutes in **TI BASIC**. When the program was compiled using the **SST EXPANDED BASIC COMPILER**, the program ran in 37 seconds. In fact, you can compile the program, save it on a disk, recall it, run it and still be considerably faster than **TI BASIC**.

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

209.4 seconds in TI BASIC	7.2 seconds in TI FORTH
219.6 seconds in TI EXTENDED BASIC	4.9 seconds in WYCOVE FORTH

2.5 seconds in SST BASIC or EXPANDED BASIC

The **SST EXPANDED COMPILER** is also many times faster than **TI PASCAL**.

The **SST EXPANDED BASIC COMPILER** contains most of the standard features of **EXTENDED BASIC** and is especially useful for number crunching, text manipulation and for producing arcade type games. However, some translation of a Basic program may be required.

SST Software has invested about two and one half man-years in the development of this package. With the requirements of *Memory Expansion*, *Disk Drive* and either *Editor/Assembler* or *Mini-Memory* the **SST EXPANDED BASIC COMPILER** gives you the following features:

- The ability to use sprites, sound, joyst, graphics, and string functions.
- The ability to write and compile up to 470 lines of Basic code.
- The ability to link compiled programs together as one large system.
- The ability to call up to seven compiled programs from a TI Basic program.
- The ability to dimension up to 1800 element floating point arrays.
- The use of many of the floating point function statements available in TI Basic.
- The ability to do integer arithmetic for extremely fast execution speed.
- The ability to dimension up to a 12000 element integer array using Memory Expansion.
- The use of strings for input, output, character definition and text manipulation.
- The ability to write and debug a Basic program using the TI console and interpreter, and then compile it without the need for retyping.
- The ability to use Bit Map mode for high resolution graphics.
- The ability to add up to five of your own commands.
- The ability to access a disk drive and the RS232 interface.
- The ability to store the compiled program permanently on disk so that it never needs to be compiled again.
- The ability to use the TI Loader for faster loading speeds of compiled programs.
- A manual of more than 60 pages.

SST Expanded Basic Compiler System with a High Resolution Graphics Package and Text Mode

NOW ONLY \$59.00

The \$59.00 version gives you all the features of the **EXPANDED COMPILER** plus 40 column mode and 12 new commands for high resolution graphics.

SST Basic Compiler NOW ONLY \$30.00

Contains many of the features of **TI BASIC**. Contains graphics, floating point arithmetic and integer arithmetic. Requires only mini-memory and a cassette recorder. Now available on Tape or Disk and can be used with memory expansion.

SST SOFTWARE, INC.

BOX 26 • CEDARBURG, WI 53012 • (414) 771-8415

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 will 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

COMPANION

THE Assembly Language Word processor for the 99/4A

"Your program is superb...the program is so good that I expect it to be the standard against which all others for the TI are judged. ...I have a degree in Computer Science...I am particularly impressed with the screen editor. You have obviously very carefully thought out your system and it is a joy to use. ...It is a pleasure to see truly first class software finally available for the TI-99/4A." — Dr S. Jacobs, M.D., Calif.

"After having purchased or reviewed close to a hundred programs for the TI-99/4A computer during the past year, I can recommend without qualification that COMPANION is the best program published to date for this computer. It is also certainly the best documented. Your program and text are a joy to work with... Thank you for creating a program worthy of its investment." — Robert Wolff, Somerset Electronics, N.J.

"I was particularly surprised at the sheer speed... I never knew that my TI-99/4A had so much power. ...COMPANION is definitely a good buy, even at twice the price." — C. Beaulieu, Montreal

"This is without doubt the best word processing program I've seen. ...The short, readable, and most importantly understandable instruction manual is superbly done." — Dr. R. Crampton, Alabama

"I feel that your program is the finest forty column word processor on the market today. ...Keep up the good work! It is most refreshing in this age of half-hearted software to acquire a program that is professional in all respects." — D.W. Thorpe, Houston

"All the claims you make for COMPANION it satisfies, and more. ...I certainly find it easier and more pleasant to use than the WORDSTAR Professional Package on our IBM, and far more pleasant to manipulate than the BUSINESSPAK WORD+ software for my TRS Model 100. My only problem is that my son and daughter have virtually monopolized the TI system for the past week, churning out 'optional' work for courses to give themselves excuses to experiment with the various features." — Dr. E.N., North Carolina

Diskette \$79.95
5825 Baillargion St.

INTELPRO

(514) 656-8798

Brossard, Quebec, Canada

J4Z 1T1

WRITE or PHONE for our free 8-page brochure!!!

LEAVE A MESSAGE—

(Continued from Page 22)

6 TI Trader
7 TI Forum Lounge
8 TI Professional
9 Administrivia
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

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

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.

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.

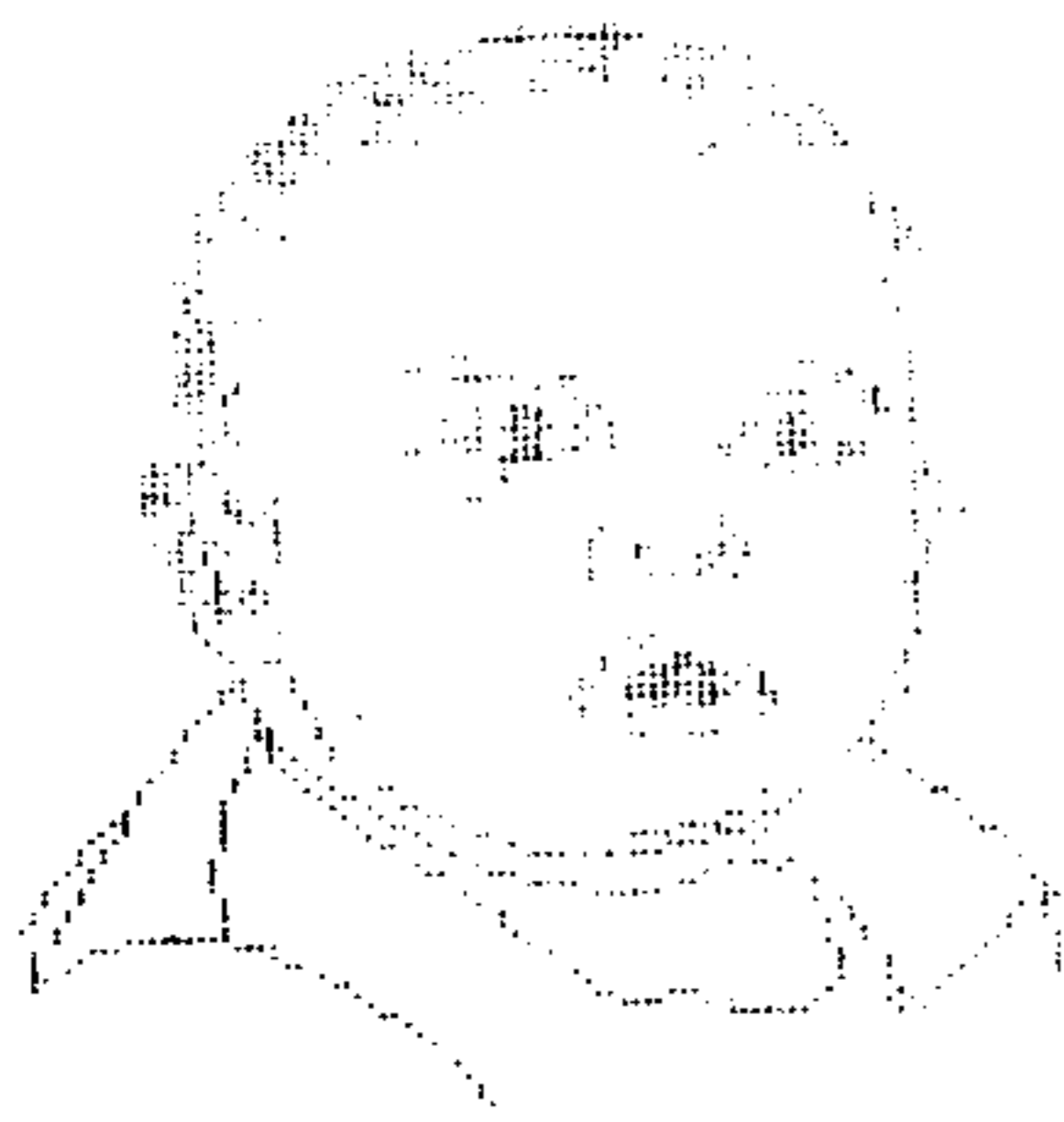
We first went though the MESSAGE BASE and read a few messages with the "RR" (read reverse) command. We could have just as easily entered "RF" (to read forward) or "RI" to read an individual message. We entered "NS" to tell CIS we were just looking and didn't want the opportunity to have the Forum stop 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.

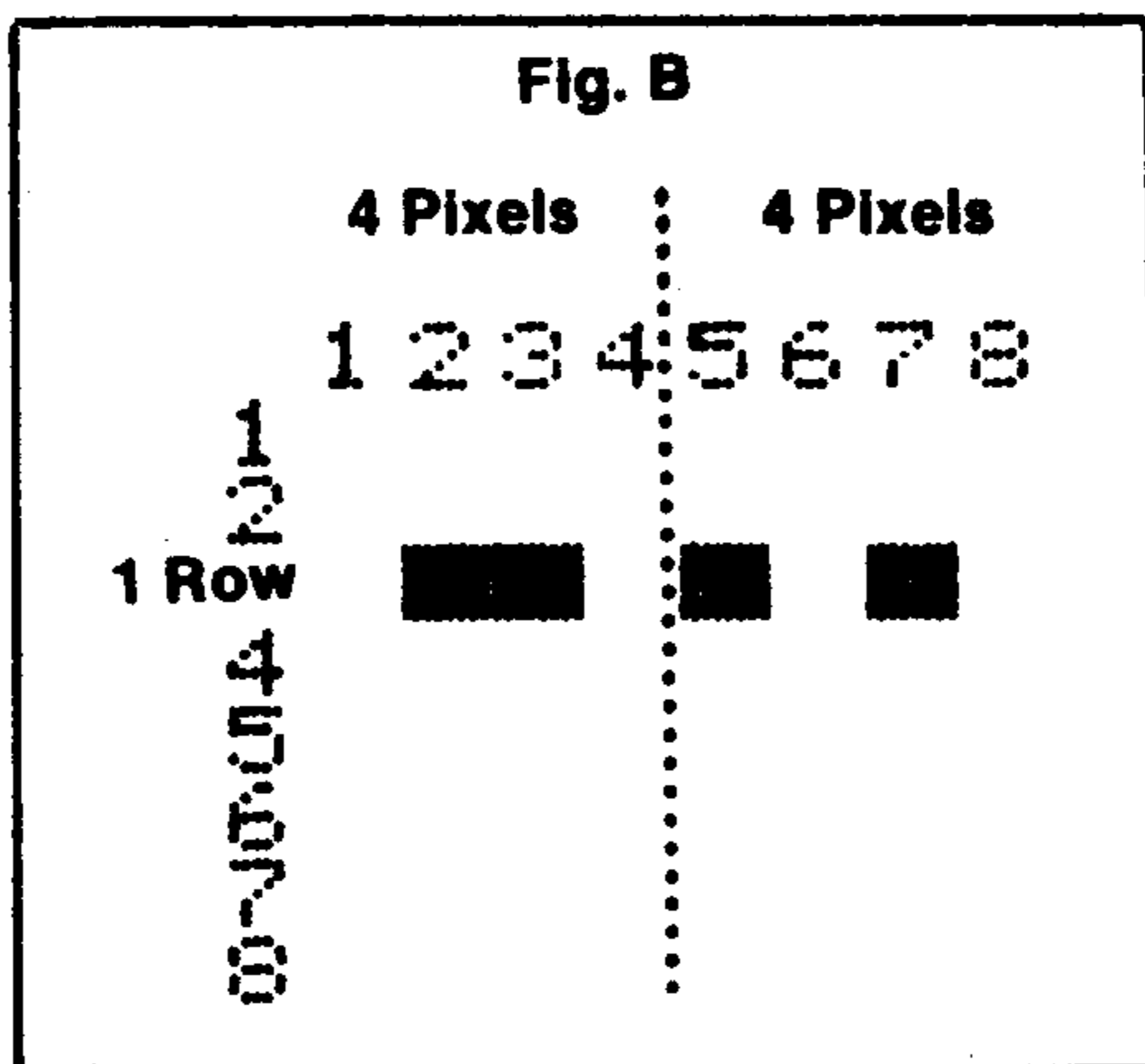
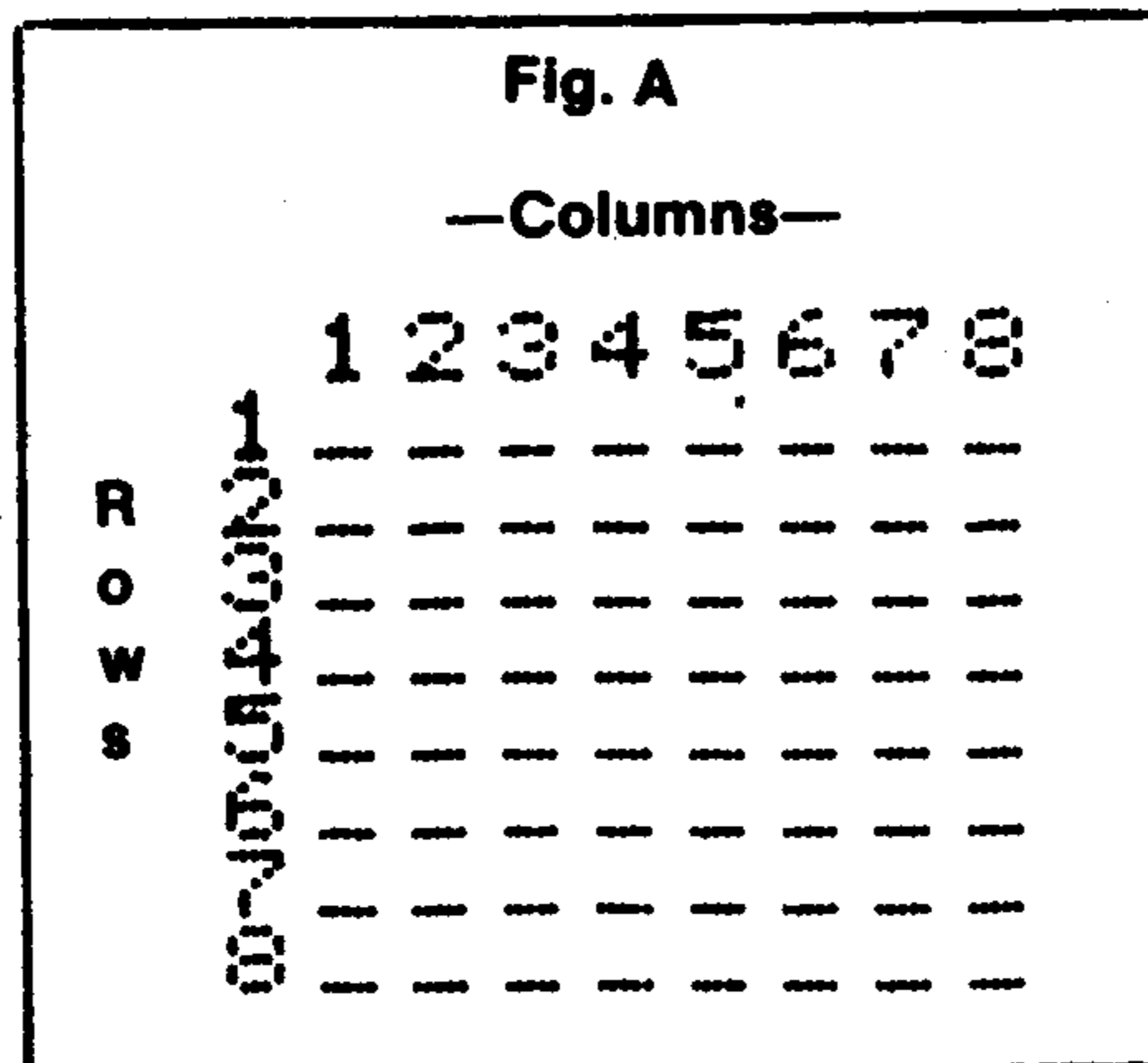
By MICHAEL CHRISTIANSON

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. Hexadecimal 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 hexadecimal. 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

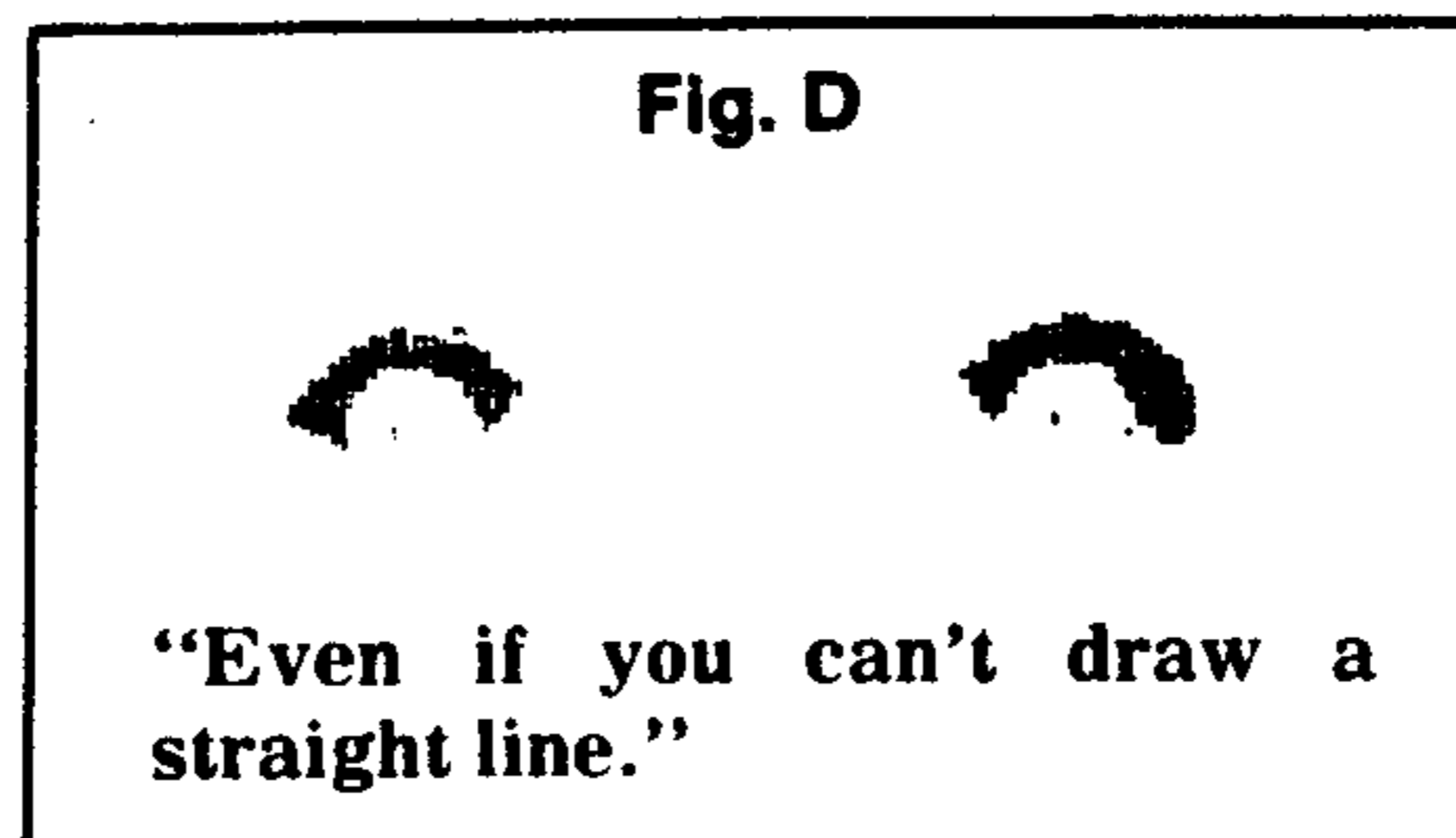
started by redefining ASCII character 33. The example is using ASCII 41, but the principle is the same. The first four pixels in the top row are the first hexadecimal character in the "CALL CHAR" statement. Since they are all blank, our first hex number is a "0". The next four pixels are the next hex 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)



SOFTWARE FOR THE TI 99/4A SATISFACTION GUARANTEED

ALL PROGRAMS IN EXTENDED BASIC

TYPWRITER

A 16K Word Processor for Cassette or Disk

(does not require 32K mem. exp.)

INCLUDES: Right Justify, complete text editing (arrow keys move cursor to screen location of text), printer formatting shown in on-screen text, auto-centering, tab, etc.

ANY PRINTER: T.I., Epson, Gemini, Prowriter, Okidata, MPI, Smith-Corona, Royal, Brothers, Selkosh, Alphacom, Radio Shack, IDS, GE, NEC, Diablo, Gorilla, Abati, etc.

ANY I/O PORT INTERFACE: T.I. RS232 card, Doryt, Axiom, Intellitec, Ultra-Comp, etc. Parallel or Serial data. (PIO, RS232, etc.)

SPECIAL PRINTER CONTROLS: CPI changes, Bold, Condensed, lines/inch, proportional, reverse line feeds, form feeds, etc. (depends on printer capabilities)

HOLDS 3000 CHARACTERS: PRINTS MULTIPLE PAGES WITH CONTINUOUS INPUT/PRINT
CASSETTE: \$32.00 DISKETTE: \$35.00

NAME-IT

16K Mail List/Data Base for Cassette or Disk

Control & Print: labels, lists, files.

DISK: 250 records, 9 fields of 28 chrs. per record.

CASSETTE: 2500 chrs., 9 fields of 28 chrs.

FAST SORT: 250 records in 100 seconds!

INCLUDES: Search, Selective print, 7 Print formats for labels & lists (user modifiable), Pre-set, etc.

MAIL MERGE FILES USING TYPWRITER (cassette or disk) or TI-WRITER module.

CASSETTE: \$32.00 DISK: \$35.00

MASTER DISK FILE

A PERPETUAL DISK FILE

Insert disk into drive; it is catalogued and filed.

Up to 120 disks or 1100 programs per file.

Does not require memory expansion.

Use single or double sided disks (or mixed).

Single or multiple drives.

List on screen or printer in alphabetical order by program name or disk name.

SEARCH by disk or program name. Look-up time from a cold start in less than one minute; from a running start in 15-25 seconds.

Automatically up-dates old information.

Any printer; parallel or serial.

DISK ONLY — \$15.00

SCREEN/DUMP

Print the screen to an 8-dot addressable, 8 bit printer. Does not require memory expansion! Disk version is easy to use. Cassette version requires mild programming knowledge.

CASSETTE or DISK — \$12.00

GAMES

All Games Available on Cassette or Disk

DIABLO — 232 movable tracks on the screen at one time and an ever-advancing ball. Unique!

"Devilish..." BYTE MAGAZINE

"The graphics are quite superb and the best I have ever seen on the Texas computer."

COMPUTER & VIDEO GAMES
"...truly worth its \$19.95 price."

ENTHUSIAST '99

"PLAYABILITY: 10..." THE BEST T.I. SOFTWARE
Consumer Guide Editors)

"You'll be hooked." The SPRITE (newsletter)

CASSETTE or DISK — \$19.95

KONG..... \$15.00

BOUNCER..... \$15.00

ROMEO..... \$15.00

ARTILLERY..... \$ 9.95

FROGGY..... \$ 9.95

EXTENDED BASEBALL..... \$ 9.95

EXTENDED HANGMAN..... \$ 9.95

Economical Games/Paks Available

...AND MORE

Write or call for detailed FREE CATALOG

VISA & MASTERCARD ACCEPTED

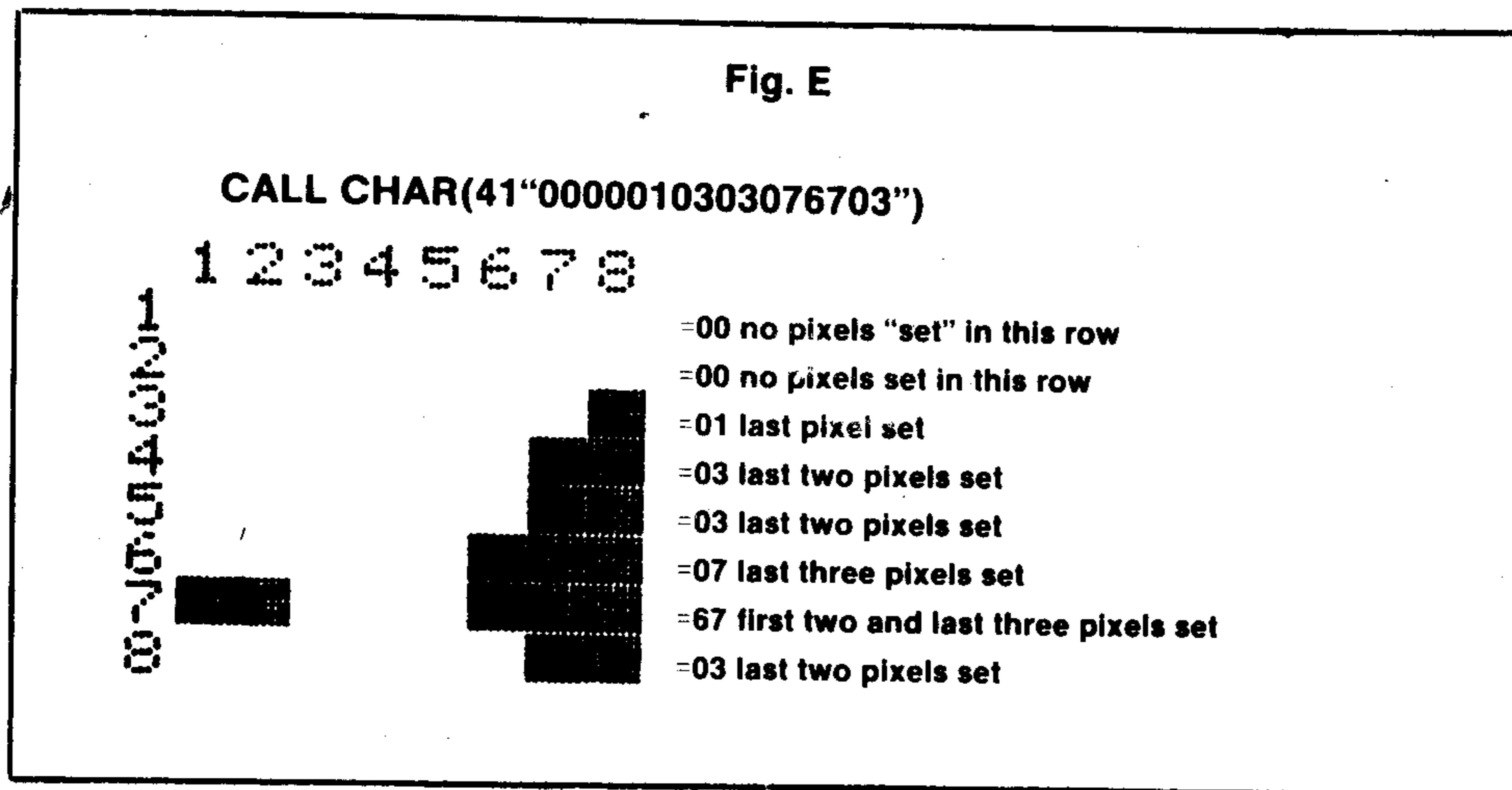
EXTENDED SOFTWARE CO.

11987 CEDARCREEK DRIVE

CINCINNATI, OH 45240

(513) 825-6645

GRAPHICS FOR BEGINNERS—



(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/Ac-	June
counts 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	July
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 Program-	December
ming	December

1985	
Super Sketch	January
Foundation Computing 128K Card	January
PTERM-99	January
TI-Runner	January
Super Extended BASIC	February
Beginning Assembly Language	February
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

99/4A

AUTO SPELL-CHECK

* for TI-WRITER *

Quickly check your text
for unsightly spelling
errors.

send:
\$ \$49.95+\$3.00 S&H \$
MC/VISA: Include card #,
phone #, expiration date.


to:
DRAGONSLAYER ASC
2606 PONDEROSA DR.
OMAHA, NE 68123
(402)291-8323

**Quality Soft Ware for
the TI99/4A Computer**

BRAND NEW!

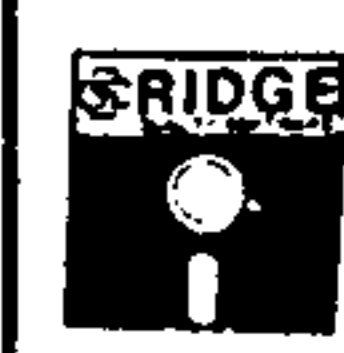
TI BASIC

\$24.95



**Lotto
PICKER**

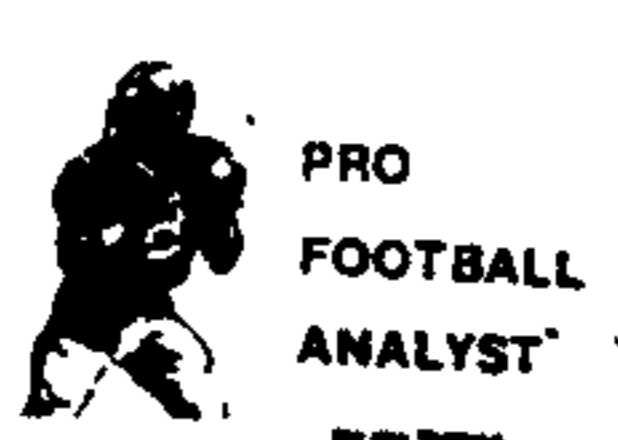
- * For All Lottery Games—
Lotto
Daily Number
Pick 4
- * Pre-Programmed For All
Games in USA & Canada
- * Customize To Any System
- * Improves Your Chance For
Million Dollar Jackpots!



Send for
free
catalog

The Ultimate Pro Football Analyzer

- * For NFL and USFL
- * Winning Track Record
- * Easy To Use—Requires
Only 5 Minutes A Week
- * Any Newspaper Supplies
Stats
- * Pays For Itself
- * Our Best Seller




**PRO
FOOTBALL
ANALYST**

ONLY \$34.95

BASIC

ORDER TODAY!

Mail check or money order to:
RIDGE SERVICES
170 Broadway, Suite 201
New York, NY 10038

C.O.D. Orders

CALL (718) 833-6335

Include 5% Shipping Charges. All refused C.O.D. orders are
subject to a \$7.50 restocking charge.
NY residents add 8.25% tax.

9900 Micro Expansion System

A computer in a box

By JOHN KOLOEN

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.

(Please turn to Page 28)

Review

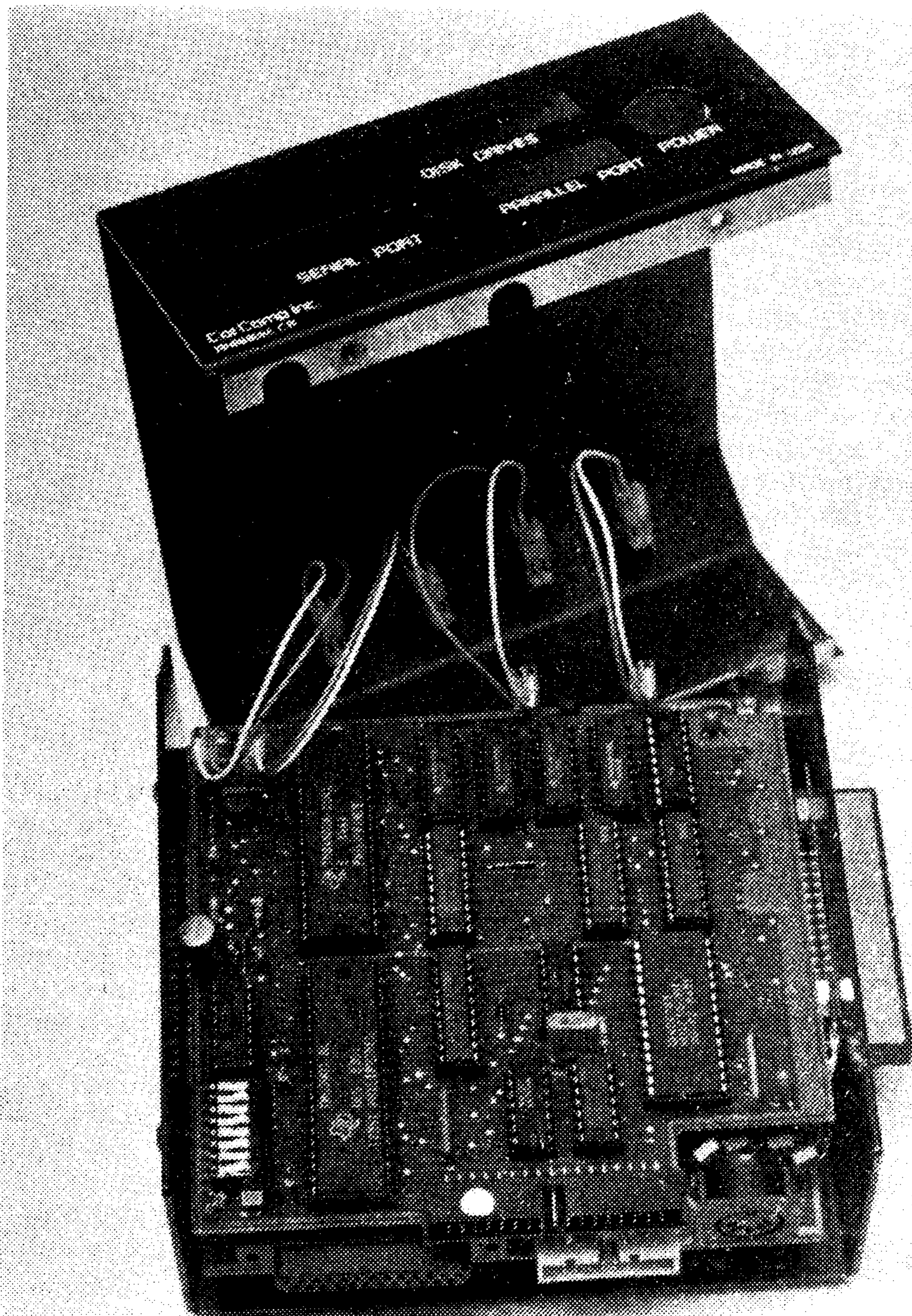
Report Card

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



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, while 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

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, monitor or television, memory expansion, disk system and Extended BASIC, Editor/Assembler or Mini-Memory.

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.

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
FCFN 9-MEMORY BACK PAGE

```


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 unidirectional. (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.

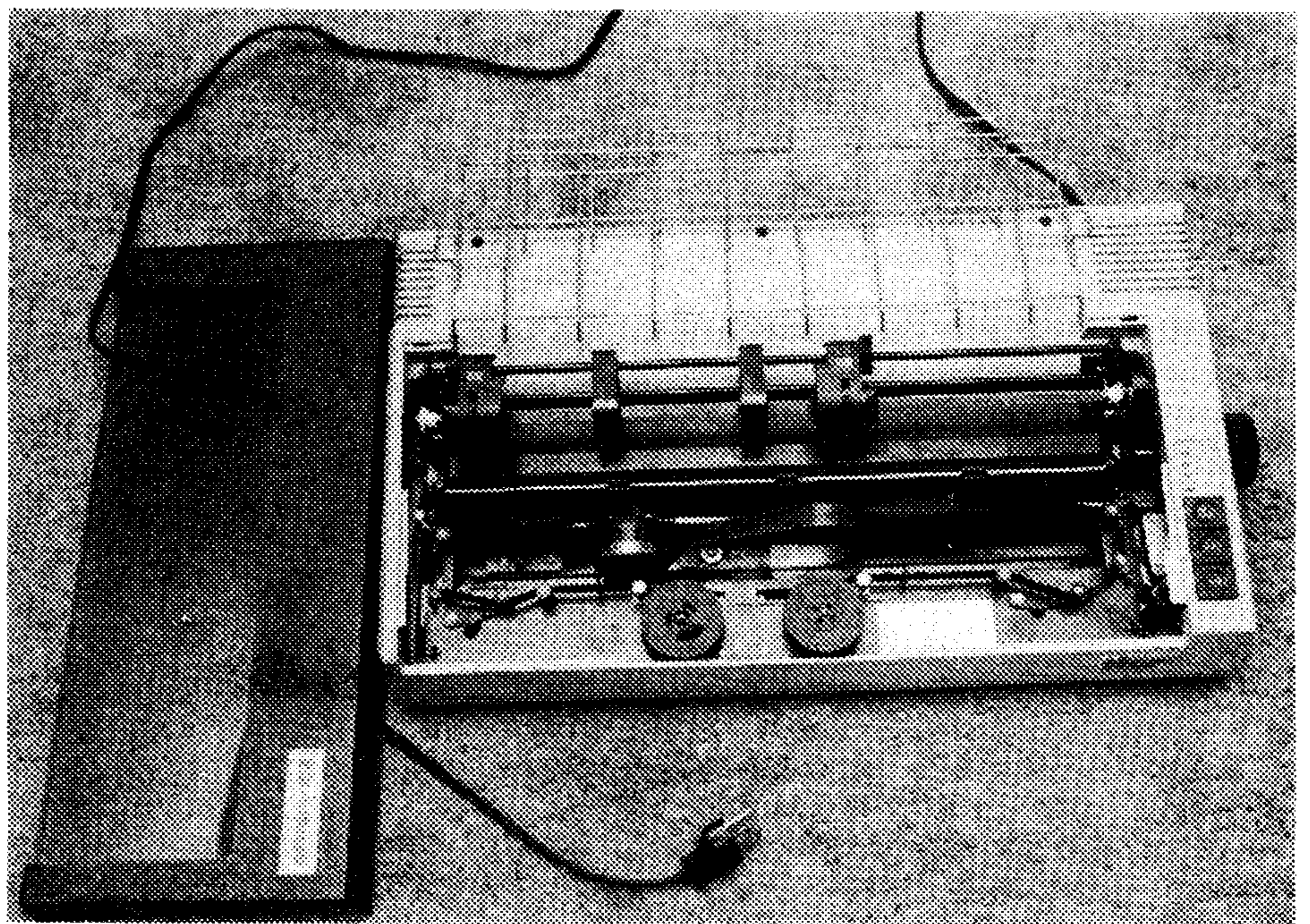
Character fonts include normal (10 characters per inch), elite (12 CPI),

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

(Please turn to Page 32)



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 initialization 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 attractive, 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 sub-programs. 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

Ramssoft 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

(Please turn to Page 34)

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—

(Continued from Page 33)

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 hexadecimal 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 Compu-Serve 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 FORM1 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 FORM1 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 FORM1 file before copying

(Please turn to Page 36)

User Notes

(Continued from Page 35)

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$) :: CALL CHA-
R(U,SEG$(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

(Please turn to Page 37)

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 util-

ity, use: CALL LOAD("DSK1.S-CROLL"). (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
A02CBB001FB04C4BD123C0000B06C4B0A34BC143B0A35BC004BC045B02217F2A7F      0007
A02DEC0028B0202B0008B0420B202CB0603B1101B10EEB0200B0700B02017F310F      0008
A02F4C0028B0202B0100B0420B2024BC109B0205B00E0B06C5BD045BC0047F2EDF      0009
A030AB0420B2020B0584B0225B0100B16F8B0200B0000B0201B0001B02027F34AF      0010
A0320C0130B0203BFF00BD803C0130B0420B2014B04C5BD160C0130B06C57F2ECF      0011
A0336B0206C0131BC085BC046BBC60C0252B0602B16FCBD820C0253C02517F2BCF      0012
A034CB04C0BD036B06C0B0A30B0201C0128B0202B0008B0420B202CB02077F2F6F      0013
A0362B0008B0204C0028B0203B0108B04C8BD214B0A18B1801B1003BF9207F2FDF      0014
A0378C0250BFFF8BD508B0584B0603B16F5B0200B0700B0201C0028B02027F2D6F      0015
A038EB0100B0420B2024B0607B16E6B0605B16D8B9820C0253C0251B16127F2F5F      0016
A03A4B0200B0020B0201C0131B0202B8000BDC42B0600B16FDB0205B00207F314F      0017
A03BAB0206C0131BD820C0250C0251B0460C034CBC009B0201C0000B02027F306F      0018
A03D0B0020B0420B2024BD820C0251B837CBD820C0258B837AB02E0BB3E07F2B7F      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)

Classified

Policy

Classified advertising is a unique feature of MICROpendium. The cost is 20 cents per word. Classified advertisements must be paid in advance. Classified advertisers may request a category under which they would like their advertisement to appear, but the final placement decision is the responsibility of the publisher.

Classified deadlines will be kept open for as long as practical. For the purpose of classified advertising deadlines, any classified ad received later than the first day of any month cannot be assured of placement in the next edition. We will do our best to include every advertisement that is submitted in the earliest possible edition.

The publisher offers no guarantee that any advertisement will be

published in any particular issue. Any damages that result either from errors in copy or from failure to be included in any particular edition will be limited to the amount of the cost of the advertisement itself. The publisher reserves the right to reject any advertisement.

The advertiser may elect to publish the advertisement in subsequent editions at the same charge, payable prior to publication. The deadline for carryover classifieds is the same as for new advertising.

In submitting an ad, please indicate whether you would like a refund if it is not published in the requested edition or whether you would like us to hold it for the next edition. Cancellations and refunds cannot be made after the second day of the month.

Send classified advertising to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

Software For Sale

SOFTWARE--THE LOWEST PRICE! Shop No Further! A SUPER collection of 140 terrific cassette programs for your TI99/4A. Each program at the UNBEATABLE PRICE of 50¢. Why pay more? Free catalog/bonus coupon. Hours of fun! The Exchange, MC-15, P.O. Box 46, Sterling, VA 22170. Visa/Mastercard. SASE appreciated. (703) 435-2789. The AFFORDABLE software package. v2n7

TI99/4A SOFTWARE

140 programs available, only \$3 each! Not public domain, not translations, not pirated, not brief routines, these are absolutely original, innovative programs utilizing full color and sound capabilities of the TI99/4A. Games, education, music, displays, programmers' aids, etc. Catalog \$1, refundable. Tigercub Software, 156 Collingwood, Whitehall, OH 43213. v2n11

WORD SOFTWARE

Word processing program in TI BASIC only \$20! Also available in X-BASIC for \$30. Mailing List program and other BASIC programs available. For information write: WORD, 2706 Inridge Dr., Austin, TX 78745. v2n3

CHILDREN'S PROGRAMS

KIDware has the largest selection of kid's TI99/4A software anywhere. Over 120 fun, original, educational programs at less than \$5 each! Free Brochure. KIDware—P.O. Box 9762, Dept. M, Moscow, Idaho 83843. v2n5

NUTS & BOLTS

A diskfull of 100 (!) utility subprograms for the TI99/4A in XBASIC MERGE format, ready to merge into your programs. With documentation, just \$19.95 postpaid! Tigercub Software, 156 Collingwood, Whitehall, OH 43213. v2n4

TURN YOUR MINI-MEM INTO A 40-COLUMN CARD! 17 machine-language utilities load into the MINI-MEM allowing complete access to 40-column text mode. No other hardware needed! Display and keyboard input routines emulate PRINT, DISPLAY AT, INPUT, ACCEPT AT, plus three selective screen scrolls, alternate character set, inverse video, more. Cassette only. \$12.95 includes shipping and documentation. NEW! Machine Language graphics dump for OKI-DATA printers! Disk only. Just \$10.95 includes shipping and documentation, and bonus utility that works with Extended BASIC. (MA residents add 5% sales tax.) R.G. Minutillo, 74 Hawthorne St., Roslindale, MA 02131. v2n3

SKETCH FILER DISK UTILITY

Adds fast disk functions to your SUPER-SKETCH. Loads a previously saved picture in 15 seconds! Transfer from cassette to disk. Integrates with DFX-PRINT (sold separately) for screen printing. Loads from XBASIC, Editor/Assembler, or Mini-Memory and requires 32K, disk system, and wiring of the LOAD interrupt switch (instructions included). Send \$19.95 (Indiana residents add 5% sales) to DATA-FLEX SOFTWARE, 4420E 100N, Marion, IN. 46952. v2n3

TI99/4A X-BASIC SOFTWARE

Five colorful arcade games will provide hours of enjoyment for only \$15. Cassette or diskette contains TREK2, FROGGERY, ROBOT, BLADERUN, and FREEWAYS. TREK2 is the classic game with many commands and witty comments from your crew. FROGGERY features a hopping frog trying to cross five lanes of traffic and three rows of turtles to reach your lilly pad. Great music and graphics. ROBOT is a maze chase and shoot game as you try to escape ever-changing rooms before evil Blotto or a robot zaps you. BLADERUN features a missile firing base which must destroy only the enemy robots without harming the civilian ships. In FREEWAYS your chick must cross your choice of five busy highways. All games require joystick and include skill levels. Individual game cassettes \$5 each or \$15 for all five. BEST SOFTWARE, P.O. Box 22446, Baltimore, MD 21203. v2n4

Educational Adventures—TI Classics You've read about us in Enthusiast '99, MICROpendium and Electronic Learning—Now experience the finest educational software available. Drastic "Spring Slump" savings. Purchase our entire set of 15 programs for \$60.00 (postage included). Programs for everyone—math, science, authoring system, and our incredible simulations that bring your computer to life. This limited-time offer available only with this ad. Intelstar, 25 West Middle Lane, Rockville, MD 20850, (301) 898-7581. MC/Visa. (All programs require Extended BASIC for outstanding graphics. Specify tape or disk. VYGER available on disk only. v2n5

Classified

ROCKETMAN Checkbook Program
Reconcile your checking account to the penny. This is the first step to organization of business or home finances. Try this system. Our purchasers use this program consistently.

TI-99/4A Cas. \$24.95/Disk \$39.95, or write for more information. ROCK-ETMAN 4104 San Pablo Dam Rd. El Sobrante, CA 94803. (415)222-1626. v2n4

NEW—CHARACTER SETS AND GRAPHICS DESIGN PACKAGE.

Print to Epson or Prowriter compatible printers, lines of text using any of the specially created character sets, TEN in all, or create your own character set to print. The sets are made up of characters four lines high and three

character blocks across. Package includes many other features. Requires XB, 32K, DISK and printer. Select Epson or Prowriter version if ordering at \$17.95 or send for more information. Also available are game, educational and business software and an ASSEMBLY LANGUAGE SCREEN IMAGE DUMP program that prints screen images to Epson or Prowriter compatible printers in just 45 seconds for \$15.00. Send for catalog to BRIGHT MICRO COMPUTERS, 2781 RESOR ROAD, FAIRFIELD, OHIO 45014. v2n5

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 X BASIC 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 X BASIC, 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 DATA-FLEX 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-WRITER 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 F=1 :: L(F)=1 :: R(
P)=N-1
250 IF F<=0 THEN 530
260 LB=L(F):: RB=R(F)::
F=F-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 F=F+1
470 IF I-LB>=RB-I THEN
500
480 L(F)=I+1 :: R(F)=RB
:: RB=I-1
490 GOTO 270
500 L(F)=LB :: R(F)=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 80,0
UTPUT
560 FOR I=1 TO N
570 B#=A$(I)
580 PRINT #1:B$:
590 NEXT I
600 CLOSE #1
610 END
```

The information provided here comes from many sources, including TI home computer user group newsletters. MICROpendium will pay \$10 for any item sent in by readers that appears in this column.

The ONLY monthly devoted to the 99/4A

Subscription Fees

\$15 for 12 issues via domestic third class mail
 \$18.50 for 12 issues via domestic first-class mail
 \$18.50 (U.S. funds) for 12 issues Canadian delivery
 \$21.50 (U.S. funds) for 12 issues foreign delivery via surface mail
 \$28.50 (U.S. funds) for 12 issues foreign delivery via air-mail
 (Texas residents add 5.125% sales tax)

Address Changes

Because MICROpendium requests address changes from the postal service, subscribers who move will have the delivery of their most recent issues(s) delayed unless MICROpendium is notified six weeks in advance of address changes. The U.S. Postal Service will not forward MICROpendium but will supply us with the new address of the subscriber, eventually. Please include your old address as it appears on your mailing label when making an address change.

New Back Issue Policy

Back issues of MICROpendium are available to subscribers only. Those wishing back issues may notify us of the issues(s) desired and include \$1.35 per issue desired in a check or money order. These will be mailed first class to the subscriber.

Time to RENEW?

Readers who are interested in renewing their subscription to MICROpendium without missing a single issue must do so before their current subscription expires.

At right is a facsimile of a typical mailing label that is attached to the front of subscriber copies.

The upper line includes information about the month the subscription was entered and the number of the first issue the subscriber received. This information is accurate for those who have backdated their subscriptions as well as those who have not. (An asterisk included with the numbers indicates that the subscription has been renewed. Renewals changing from third to first class mailing will not have the asterisk added until the month the first class mailing begins.)

When renewing subscriptions, include a copy of a mailing label or write out the codes that appear on the label.

The next 2-4 characters represent the type of subscription and the number or initial of the month of the year the subscription started. "S" means subscriber. Refer to the following definitions for the issue your subscription started:

- | | | |
|------------|-------------|------------|
| 2=February | 6=June | 0=October |
| 3=March | 7=July | N=November |
| 4=April | 8=August | D=December |
| 5=May | 9=September | 1=January |

Our subscription year runs from February to January. In other words, our first edition of any year will be the February edition. The last edition of any year will be the following January's edition. Those who have "S2" subscriptions must renew this month to receive this year's February edition.

A1284S2 105
 JOHN SMITH
 1324 ELM ST.
 PEORIA IL 60001

Code description

Refers to status of subscription. "A" means active.

The combination of the next four numbers refers to the month and year the subscription was actually entered.

SUBSCRIBE NOW!

Keep Up With TI99/4A News & Views

Send me the next 12 issues of MICROpendium. I am enclosing \$ _____ in a check or money order in U.S. funds. (Texas residents add 5.125% sales tax.) Mail to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

Name _____
 Address _____
 City _____
 State _____ ZIP _____