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TI LINES

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Volume 2, Issue 2

July 1st., 1985

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TI-LINES is produced and published by:

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*****  
*                                     *  
*   Peter G. Q. Brooks               *  
*                                     *  
*   96 Banbury Road                 *  
*   OXFORD                          *  
*   OX2 6JT                         *  
*                                     *  
*   Tel: Oxford 50822               *  
*                                     *  
*****
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Contributions should be submitted either on diskette in TI-Writer compatible files, or in a form which is as legible as possible. Art work should fit within an A4 area and should not contain colour. Very high contrast line drawings are preferred, and these may be produced by arrangement with the publisher.

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E D I T O R I A L  
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TWO FOR ONE  
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It took so long for me to get issue 1 together that I decided to prepare issue 2 and put both out together (and thus save myself some postage!). Having seen the quality of the work done by OTIUser JOHN MATTHEWS in the final production of that first issue I dare not compare it with the quality of any of the previous 14 issues! The moral is: get a professional in and do it right first time.

There is also the fact, as John says, that the photocopier I used probably cost £5000 while his cost £50000 - gulp.

Through John I have managed to get a decently-black printer ribbon, which should also ease the problems of photocopying, and there is even the prospect of using a carbon film ribbon with my OKI Microline 80, something which I had hitherto discounted. You (I) live and learn!

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IUG: RIP  
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STEPHEN SHAW tells me that the INTERNATIONAL USER GROUP, which also went under a plethora of other names, is now officially declared bankrupt, and with NO assets whatsoever. There is to be a creditors meeting (in Oklahoma, I believe!), although what that will achieve with no assets to dispose of, I do not know. I believe that some of our happye throng subscribed to, or were otherwise connected to, the IUG, so I hope that you haven't lost too much. I understand that CHARLES LAFARA was the driving force behind the IUG and a number of other enterprises (he also helped TIHOME on its way in the early days) and I have a feeling that he will probably attempt to personally make some kind of restitution. I have no idea how large the deficits are, or how feasible such a restitution would be. Contact Stephen for more detailed information. Also see later in this issue a comprehensive letter from Stephen detailing some of his findings re: TI-Writer and a list of Public Domain Software which he is able to supply.

~~~~~  
CONFIRMATION  
-----

BOB MACK from Mississippi wrote to me recently confirming my discovery of the TI-Writer colour combinations in EDITAL. He also said that he uses his TI in the furtherance of his work as a Baptist pastor, using its word processing facilities for sermons, recording visits, and "personal Biblical commentary". He asked for anyone with similar interests to get in touch with him, and in fact I was able to put him in touch with a kindred spirit immediately. If any other OTIUser wishes to make contact, Bob's address is:

Route 1 Box 135  
Crystal Springs  
MISSISSIPPI 39059  
U. S. A.

Bob supplied a better (i.e. more exact) method of finding the bytes which make the colour difference, and I will be publishing that in the next issue.

QUESTIONING THE SYSTEM  
-----

DAVE HEWITT wonders if anyone knows of any System Variables which keep track of the area of free RAM, so that a BASIC program might make use of them (through Extended BASIC + 32K, or MiniMem, or Editor/Assembler). I vaguely remember being told, many moons ago, that the odd way that the System manages its memory means that the memory use changes from moment to moment and thus makes keeping track of such data virtually impossible. Anyone know better ?

~~~~~  
PHANTOM BUGGER  
-----

I have long believed that there were two Assembly Language Debuggers knocking around, both in the Public Domain. One, I thought, was TI's own Advanced Assembly Language Debugger, and the other was Navarone's SuperBugger.

I now believe that TI's AALD was in fact the SuperBugger, and that the second Debugger was also produced by Navarone: Bug Fixer. A patch was published a while back for both SuperBugger and Bug Fixer, and no mention has yet been made of a TI product other than its bog-standard Debugger available with the Ed/As system.

And yet, and yet... I am also told that the Source Code to the TI AALD has now become available, and that it is described as such, which throws me further into confusion (not a difficult thing to achieve).

Is there, or has there ever been, a TI Advanced Assembly Language Debugger ?

The one sold through the TIHOME SOFTWARE COLLECTION, and supplied by TI themselves, is in fact the Navarone SuperBugger, despite its description in the early days. (See the Bulletin Board for a description of the current services offered by TSC, and the new prices).

~~~~~  
THE LESS, THE MORE  
-----

You may notice that there is a reduced Editorial content in this issue, caused largely by the short time elapsed between issues. It gives me the opportunity to include more material from fellow DTIUsers and some material for the newly-afflicted TI owner.

I am always on the lookout for more material, so don't be afraid to put either pen to paper, finger to typewriter key, or to TI-Writer key. If you don't have TI-Writer but do have a disk system, 32K, and Extended BASIC, why not invest in the special Loader which will enable you to use TI-Writer's facilities ?

~~~~~  
TI\*MES CAPTURES OL' BALDIE ON FILM  
-----

The latest copy of TI\*MES contains a photo of someone purporting to be me, purporting to be talking to ALLEN BURT at the Brighton Meeting this year. The balding, pot-bellied, goggle-eyed bruiser who looks as though he is about to belt Allen in the chops could not possibly be me, I was nowhere near 'im Your Worship, dunno who the bloke in the photo could have been, must have been dirt on the lens cap, no, looks nuffink like me and I'll floor anyone who says otherwise:..

PIPPED AT THE POST

~~~~~

The other weekend I experimented with the possibility of producing a series of training videotapes for the TI; I made sure that I could get good images direct from my machine, and I played around with various camera techniques (learn from the politicians: look straight down the lens at the furthest point inside; do anything else and you look shifty and unreliable!). What happens? Two days later I receive a book from PERSONAL COMPUTING TODAY for me to review, covering Programming In BASIC (general coverage). It is well-written, and in fact I am quite pleased to have been sent it, but... It is twinned with a video series, and although I didn't receive the video, if it is anything like the book it is almost EXACTLY the same format that I was fixing to use. I know that it is not a machine-specific course, but it does rather take the wind out of my sails a little.

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ERRATA

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STEPHEN SHAW also wrote to me concerning some of the CALL LOADs which I passed on from other newsletters in issue 13 of volume 1 of TI-LINES:

CALL LOAD() will only work with the 32K attached, so the CALL LOAD() which used the parameters -32116,4 to transfer the system from Extended BASIC to console BASIC must therefore have the 32K attached in order to work, contrary to what I'd written (obviously not examining what you're writing again, Brooks!).

Also, on Stephen's console that command would only work in Immediate Mode.

Further:

CALL PEEK(-31952,A) was wrongly described as returning 55 if the 32K was on when in fact it should have been 255.

CALL LOAD(-31962,255) only works on Stephen's console in Immediate Mode; its use in a program has dire consequences.

CALL LOAD(-31804,0,36) works on Stephen's console but not others. The correct form is:

CALL PEEK(2,A,B) :: CALL LOAD(-31804,A,B)

Stephen has added to the list the following p Code Warm Start (how to move from BASIC to Pascal without turning the console off):

CALL LOAD(14586,0,0) followed by FCTN= (i.e. Quit BASIC)

~~~~~

BBSs

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A recent newsletter from across the pond listed a number of BULLETIN BOARDS which might be of use/interest to 99 owners. ERNST NOWAK of the PHILADELPHIA AREA 99/4A USER GROUP has sent me downloads from another BBS (Compuserve, if I remember rightly) and I will be plodding through the wealth of material which he and others have kindly sent through to me over the last couple of months. What with one thing and another I have had little time to do other than glance over this material; I hope to do it justice shortly.

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MYARC 128k R.A.M. card REVIEW

After many delays and much double-talk from Myarc, I finally received the first delivery of the most expensive peripheral card I've yet had through my hands. (Never having laid my hands on a P-Code card). Was it worth the wait, is it worth £249.95?

Like all the Myarc cards, this one was encased in a plastic shroud identical to the T.I. cards. Only by tapping them can you tell it's not a T.I. made card, they really are that similar. At the back of the card was a small section of P.C.B. sticking out, in the same manner as the disc controller and RS232 cards. In this case though, there was no edge connector, merely a small 2.5mm socket. This is where you plug in the mains adaptor. Why should a peripheral card need a mains adaptor? After all, the box was designed to eliminate the need for messy mains cables floating around. Read on...

The first thing I did, was to take out my own 32k card, and drop in the Myarc. I didn't plug in the mains adaptor. Turn on and try out T.I.-Writer. I always use TI-Writer for checking the memory expansion. The program needs it and won't even start without. The TI-Writer worked okay, so I then tried to save a small file to the RAM DISK segment. Back came an I/O error message. It was time to read the manual.

The theory behind the 128k card is that 32k of it is a replacement for the T.I. 32k card with the extra 96k being R.A.M. disc. I have a feeling that this number wasn't just pulled out of a hat. 90k is the size of a disc (in T.I. format, Myarcs is much bigger). So the first thing to do is to power up not only the 32k segment, but the 96k part too. The reason for the mains adaptor is that if you leave it turned on, the RAM DISC loses power whilst the rest of the system is turned off.

This time, I powered up the 96k segment, then turned on the box and the computer. Flipping through the manual, I discovered at least three CALLs to be implemented in BASIC, before starting work. (Actually, only two are necessary and the third is really to make you feel comfortable. The first was CALL PART(x,y). The RAM DISC is split into two areas of your own choice. It can act as 100% RAM DISC or 100% printer buffer. Or any split of the two. But you have to decide first. My favourite is CALL PART(90,6). This means I have partitioned the RAM DISC as 90k RAM DISC and 6k printer buffer. The next trick is to choose what disc number you want to emulate. It can be anything from 1-5. I choose DSK1, since that's where most auto-loading software starts. The call for this is CALL EMDK(x), x being the disc number. The final CALL is CALL VOL("NAME") and this assigns a disc name to the RAM DISC. There is another call to emulate the directory function in the disc manager, so you can find out from BASIC what files are in the RAM DISC.

So with the first three calls now made, you then have to decide what to do with the thing. (I have to point out at this stage that the 128k card is an indulgence for anyone who doesn't do constant swapping between programs. I use it for TI-Writer, but I can see Editor/Assembler owners also realising its full potential.) Getting out my disc manager, I then backed up the the TI-Writer and a couple of regularly used files to the R.A.M disc. Finally, with all this preparation done, I was ready to commence using the card. Inserting the TI-Writer module, I pressed 1 for Editor and BANG, there it was. It took about 1 second as opposed to the 15-20 seconds the normal disc operation requires. I then wrote my letter as per normal and saved it to DSK1. That took all of 1/2 a second! Then @ (uit) and E (exit) to load the Fromatter. As with the Editor, that took about a second. Type in the filename, and instead of using PIO.LF as the

printer name, it becomes SPPIO.LF. (SP is for Spooler). Run through the rest of the prompts and within two lines of the printer starting to print, the title screen is back on. It really was remarkable. One gentleman I know who not only owns, but is quite fluent in the use of the Editor/Assembler, claims it can save him much frustration as he constantly swaps from one section of the program to another.

So, back to those two questions ; Is it worth the wait, is it worth the money? Well, the first question is unanswerable.

Is it worth the money? Assuming you could actually get the outer case, the card would still cost £180.00 to build in this country by buying the same grade components from a recognised distributor. The price of memory may be falling, but it's not cheap yet and there are 16 R.A.M. chips in there. Added to that, the problems of writing the new software that sits in the card and Myarc have the price about right. Naturally, it would be nice if it could be sold for £125.00, but that simply isn't possible. Allowing for Myarcs determination to produce good 3rd party documentation (something noticeably lacking in minor producers) and they've done a good job at a fair price.

My main criticism of the card was made long before I even ordered them. Since most box owners first card purchase is the 32k R.A.M., what was going to happen to all those owners who wanted a 128k card, but didn't consider it right that their 32k card should be slung. It seems I wasn't the only one to think this way and Myarc have now finished development work on a pure 128k card with no 32k segment. I already have some on order and they may even arrive before this edition goes to print.

Oh, there is one feature of the RAM DISC I didn't mention. It has another CALL. CALL RDTEST. *Anyone work out what that does? Entries to be written on a £20.00 note and sent to Howard Greenberg at Arcade Hardware.* The first card I tried out gave problems, in that it worked up to a point, but seemed unhappy in taking as much in as it was supposed to. I finally read the manual and came across this feature. Out popped the message-"BANK 2 BAD". A quick call to Myarc gave me the way in which the banks were arranged and the promise of a replacement set of chips was made. Bad mark for sending out faulty gear, full marks for having someone who knows what they're doing answering the 'phone and giving quick and simple diagnosis, with assurance of immediate solution.

I grow more and more confident with my dealings with Myarc. They make mistakes, (who doesn't), but they put them right. They have a first class product range, possibly a little pricy, but in every case superior to their T.I. predecessors. I had a choice of buying from Myarc or Cor-Comp, who claim a similar line up. I know I made the right decision, and if anyone out there chooses one of their products, you'll learn that you did too.

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 B U L L E T I N   B O A R D  
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 T H E   T I H O M E   S O F T W A R E   C O L L E C T I O N   1 9 8 5  
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Items are available from: PETER BROOKS, 96 BANBURY ROAD, OXFORD, OX2 6JT  
 Tel: OXFORD 50822

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*****
*
* PUBLIC DOMAIN DISK-BASED SOFTWARE                                ££. pp *
* -----
*
* TI FORTH (includes disk and 236 page manual)                    15.00 *
*
* SOURCE CODE TO TI FORTH (2 disks)                               5.00 *
*
* EXTENDED BASIC LOADER FOR TI FORTH                             2.50 *
*   (does not include manual but does include Forth)
*
* TI-WRITER/MULTIPLAN ENHANCEMENTS (on one disk)                 2.50 *
*   (does not include TI-Writer manual; apply for details)
*
* EXTENDED BASIC LOADER FOR TI-WRITER                             2.50 *
*   (does not include manual but does include Enhancements to TI-Writer)
*
* NAVARONE SUPERBUGGER ASSEMBLY LANGUAGE DEBUGGER                2.50 *
*
* *****
* DOCUMENTATION
* -----
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* BEGINNERS BASIC                                                5.00 *
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*   (Available shortly: detailed booklet on using Enhanced BASIC)
*
* ERRORS IN BASIC/EXTENDED BASIC                                  2.50 *
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STEPHEN SHAW

PD programs have been flooding in recently, so I enclose an up to date list. These programs are of course available to you, and to any OTIUsers ... minimum SAE required if anyone wants a list! If anyone has a desperate need for something and can't find it, I'd be happy to hear from them... I can't reply without an SAE, and will probably not be able to help, but at least we can spread the word that a program to..... is wanted, and maybe our expert programmers (no doubt searching for a program to write!!!) can help out!!

Lots of rumours of new products but more than half of it is grapeshot. JUST learned to do something I had thought TI Writer could not do....

1. Prepare standard paragraphs
2. Write a letter prepared from those paras  
NOT by preparing a new record for the Formatter but by just keying in the para names.

How? Prepare a simple formatter letter:

```
.DP 1:"Para:"  
.IF DSK1.*1*  
.SP 1
```

and repeat this as often as you wish...NB .IF does not allow nesting (unfortunately) so you need to have a long calling file. If you wish to allow for input of text into the letter from the keyboard you can insert into the short form the following:

```
.DP 2:"text"  
.DP 3:"text"  
.DP 4:"text"  
*2* *3* *4*
```

Remember that dot commands send a line feed! and you can have more than one on a line. If you press enter to these prompts without any input nothing will be printed! Three are required to provide 80 chars on the line. And don't forget .AD

CATALOGUE OF PUBLIC DOMAIN SOFTWARE AVAILABLE ON DISK ONLY

ALL DISKS LISTED ARE SOLD AS ENTIRE DISKS ONLY  
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FREE OF DEFECTS CAN BE GIVEN. ALL PROGRAMS SUPPLIED "AS IS"

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FIRST DISK: £4.00 Subsequent disks in same order £3.00

OR send your own BLANK BUT INITIALISED DISKS and the price is:  
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At the end of the list a few items may be found which are a different price.

OVERSEAS: By quotation only. Two IRC for airmail response please.

U.K. ENQUIRIES; This service can only be offered at this price if enquiries are kept to a minimum. An SAE is essential.  
Detailed program reviews are not available.

#### FORTH:

The version of TI Forth offered is the Oct 1983 revision, and includes the revisions to MCHAR and SPRITE ROUTINES.

- > TI FORTH TO LOAD WITH EDITOR/ASSEMBLER MODULE
- > TI FORTH TO LOAD WITH MINI MEMORY MODULE
- > TI FORTH TO LOAD WITH EXTENDED BASIC MODULE
- > TI FORTH SOURCE CODE: TWO DISKS (Cost: as for 2 disks)
- > FORTH SCREENS 1: A disk of PD Forth software, including utilities and games. Real time clock. Music. Call sound.
- > DOUBLE SIDED FORTH: Supplied as TWO single sided disks, includes a few tools and demos. Easily put back together on a single double sided disk. (Cost as 2 disks!)

Above do NOT include manual.

- > TI FORTH MANUAL revised to Oct 1983. Xeroxed and ring bound in laminated cover: £35.00
- > LOAN COPY FORTH MANUAL (Specify LOAN!) available for £35.00 deposit, £32.00 refunded on return within 10 days.
- > MANUAL ON DISK: Somewhat more up to date than the above, with an Appendix H (Error Messages) not in the above, but lacking the print outs of the Forth screens on the Forth Disk (which you could print yourself with SWCH screen no. LIST UNSWCH)  
Needs FIVE DISKS.

#### TI REVISIONS:

- > MULTIPLAN REVISED. Faster entry and auto key repeat added. Multiplan module and manual are not supplied.
- > II WRITER REVISED: True lower case letters when using the Editor. Your choice of printer default for the Formatter: when ordering please specify the printer file name you use with the formatter, eg PIO.CR or PIO.LF or RS232... etc. Supplied with an Extended Basic loader, which allows you to load TIW from ExBas. Page feed at start of formatting has been suppressed in this revision. MANUAL NOT SUPPLIED.
- > SUPER BUGGER (Navarone). Complements the Debugger supplied with Editor/Assembler. Permits output to printer. Supplied to load with ExBas or Ed/As.

STAINLESS SOFTWARE: From titles now deleted from the Stainless Software catalogue, a collection courtesy of the program authors. Some very playable programs.

- > SSPD1... Assorted mainly games. Nearly full disk.
- > SSPD2... A different collection. Many XB games.

AMNION DISK LIBRARY: Amnion supplied the IUG library, and their references are used in the IUG catalogue should you have one handy. Each disk is almost full of programs, bundled into specific headings. The lower the number the older the contents. Order by disk ref, e.g. C13, D+H, A33 etc etc.

## DISK REF

### GAMES. Series A. IUG Series 1000.

- >A26..16 pr. Together with A27 & A28, shows its age a bit.
- >A27..18 pr inc 6 text only pr.
- >A28..13 pr. inc 3 text only pr.
- >A29..12 pr inc one for TE2,DUNKMAN nice Hangman prog.
- >A30..17 pr inc nice TI Basic Poker game
- >A31..16 pr inc Kaktus Kill
- >A32..12pr.INCLUDES 119 Sector TIB graphic adventure
- >A33..14 pr inc Peg Jump and Tunnel Vision
- >A34..13pr:includes 1 player L Game and Kroakers
- >A35..12 pr inc Frogger, and Runes & Glyphs board game
- >A36..9 pr Air Drop and Color Logic. Complex ASW game.
- >A37..12 pr. inc Springer, Shufflesquares, Space Maze
- >A38..11 pr inc 3 machine code for ExBas. inc Cat & Mouse
- >A39: refer to A+C below
- >A40..ONE game: Computer Craps. A gambling game in ExBas with parts in Machine Code (32k rqd). It helps if you know the gambling game of Craps. (A dice game).

\*\*\*There are VERY few duplications between disks and none on one disk. \*\*\*

### GRAPHICS & DEMOS. Series B. IUG Series 2000

- >B7..15 pr inc 1 for TE2 & interesting DEFENDER demo screen
- >B8..14 pr inc a few character definition utilities
- >B9..Two bit map mode machine code programs plus a suite of programming utilities.
- >B10..8 pr inc Sprite Creator (files B137 & B134)
- >B11 & B12 are not on offer.

### MUSIC. Series C. IUG Series 3000. Some excellent programs in this section.

- >C9..15 pr, solo boogie program for you to play yourself!
- >C10..16 pr inc Jim Petersons Kojo No Tsuki
- >C11..15 pr inc Gymnopedie by Eric Satie
- >C12..17 pr inc Hey Jude and Let It Be
- >C13..16pr:includes several by SAM MOORE
- >C14..17 pr. Lovely 'House of the Rising Sun'
- >C15..14 pr inc 1 for TE2. Inc nice Fiddler on the Roof Medley
- >C16..20pr:Mainly Christmas music

A+C: Latest programs in series A and C. 2 Games,13 Music. (Includes programs from A39 and C17 which are not yet full disks.) inc several music pr by Jim Peterson.

### EDUCATIONAL. Series D. IUG Series 4000.

- >D13..8 pr inc 1 for TE2.(Singing!). Inc Typing Trainer
- >D14..11 pr..Czech Vocab(!),Volcano Facts

### HOME. Series G. IUG Series 7000

- >G4+G5..The best of G4 & G5 on one disk.14pr Mainly file programs + Bar Tender & Diet Calc.
- >G6..10 pr inc a mailing list program

MISCELLANEOUS. Series H. IUG Series 8000

- >H2..19 pr inc rem remover, program compactor, Morse generator
- >H3..25 pr inc good Calendar prog, banner printer
- >H4..15 pr 5 inc good planning calendar
- >H5.20 pr inc 2 M-c utilities: scroll & sorter.
- >H6..15 pr. inc filing programs, and a square dance timer!
- >H7+H8..Best of two disks. Includes an ExBas TI Writer loader (Version 1).

NB: Disk H3 includes Source & Object code w/c program to transfer Adventure cassettes to disk.

D+H: Latest programs in series D and H.

Inc original USA TIW Ex Bas loader & excellent Hangman variant. Includes programs from D15, not yet a full disk, and one program from H7 not included on H7+8. Also has version 1 TIW ExBas loader.

PROGRAM INFORMATION IS FOR GUIDANCE ONLY. Detailed catalogues not available nor possible at these prices!!!

FREWARE: SPECIAL PRICE: SEND INITIALISED BLANK DISK FOR EACH ITEM TOGETHER WITH RETURN POSTAGE AND ADEQUATE PACKING AND THE PROGRAMS ARE free (If you prefer you MAY send regular price).

>NEATLIST: Full disk source and object code. List your program, or the names of the variables you have used, or both. FAST machine code. Instructions in D/V80 file.

Neatlist can list your ExBas programs with each command on a separate line for greater clarity, and list the variables with or without the line numbers they occur in.

>DUMP: Full disk of source and object code. Quickly dumps VIA PIO to Epson compatible printer. Choice of horizontal, vertical, inverted, double size. Will dump the screen display some modules if an interrupt switch is fitted. Instructions in D/V80 file.

Version Three of Dump carried from 10.7.85: uses ISR's so that to dump your XB program, you can just press FCTN 0, without having to insert a CALL LINK in the program or fit an external interrupt switch. NB: Vn 3 is longer than Vn2, and Danny has removed some of the source code to fit it on one disk. The FULL source code of Vn2 is still available: if you would like it, please specifically ask for DUMP Vn.2. If the version is unspecified, Version 3 will be supplied (You CAN have both if you wish!!!- two disks note!).

>MASSCOPY: Fast disk copier. ExBas+32k. 1 to 3 drives in any format. Can copy to drives 2 & 3 in one go. Said to be able to copy to different formats. With 2 drives copies a disk in under 3 minutes. Can be used with one drive alone. Copies entire disk: files NOT selectable.

>TE3C by TI. "a half finished product. It is a long way from being finished and the user should allow for this". Modified and made to work by Joe Freeman. Requires Ed/As module and communications peripherals. ADM3A protocol optional. 40 & 80 column mode. 24k ram buffer. Source code included for interest. 313 sectors total.

>FastTerm. TWO DISKS. Includes Source Code and Dissassembler listed below. Uses undocumented TI routines and may not work on third party equipment. The documented routines cause problems at 1200 Baud: this program works at 110, 300, 600, 1200, 2400, 4800, 9600 and 19200 Baud. (The telephone lines may not be able to handle the faster speeds! nor your modem).  
Parity odd even or none.  
Printer files:  
PIO/1,PIO/2,AXIOM(1),AXIOM(2),CORCOMP/1,CORCOMP/2,RS232/1,RS232/2,RS232/3,RS232/4  
40 & 80 COLUMN MODES.  
12K DATA BUFFER, 4K PRINT SPOOLER  
Supports ADM3A codes.  
Works with Ed-as, MiniMem or XB. 32k etc required.

>DISSASSEMBLER. Included in FastTerm but also available separately. Requires Ed/As. Fast machine code dissassembler, will give you mnemonics or text or data output. Output to scree printer or disk. Source code created may be assembled.  
Ref Def table is checked and entry name placed in comment field if appropriate. Jump instructions relocatable, actual jump address given in comment field.

>TI WRITER EX BAS LOADER: At present, Version One is supplied with the revised TI Writer, and on disks D+H and H7+8. Version one may be configured for your output file name ONLY on the revised TI Writer disk.

Version Two can be supplied separately if required. This version allows the user to insert default printer names for both the Editor and the Formatter in the loading ExBas program. Please specify Version 2.

See news below for Version Five, forthcoming...

NORMAL PRICES ON ITEMS BELOW:

New items:

TEXT ON DISK: (Dis/Var 80 files)

>TE2 PROTOCOL MANUAL: Contains information which should have been in the Editor Assembler Manual! TWO DISKS.

>EX BAS TUTORIALS 1 to 6 by Tony McGovern. TWO DISKS.

>FORTH MANUAL ON DISK. \_\_5\_DISKS. Dis Var 80 files.

>SAMPLE BB DISK: Items downloaded from SUBFILE99 (on The Source) in August 1984. About 42 pages of text, depending on your printer. Exactly as downloaded, complete with glitches! Contents include: DV80 to Merge format converter, Forth screens to DV80 converter, commented source code illustrating use of 40 column mode, commented source code for call key routines, review of Spell-Checker, some CALL LOAD addresses, Forth disk copier program, and a review of the SST Compiler.

If this item is popular, more similar disks can be obtained. To cover costs, a minimum of 10 TI owners must be prepared to subscribe.

>BEHNKE: A disk with TWO alternative scenarios for your Tunnels of Doom Module, plus 5 other ExBas programs, including a nice 9 pin bowling program. Some of the best XB PD games I've seen. 202 sectors used.

Three volumes of Pascal items, expected.

#### NEWS:

IN DEVELOPMENT: Extended Basic loader for TI Writer, with Show Directory, default printer name for Editor and Formatter, File name carry forward to Formatter, and faster improved show directory, marking any fractured files.

F O R T H   D I S K   F I X E R

by Joel Gerdeen from MSP 99 NEWSLETTER  
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The October ASSEMBLER SUBGROUP meeting covered a review of the TI99 disk format and the use of the language FORTH as a disk fixer. This article continues that discussion and also reviews the operation of the NAVARONE INDUSTRIES' DISK FIXER command module.

The DISK FIXER module allows you to access floppy disks by sector rather than by file. You can display, print or change any byte (character) or series of bytes anywhere on the diskette. This allows you to UNDELETE files that have been inadvertently deleted, CLOSE files that were improperly closed and recover data that is otherwise inaccessible. Note, details of these operations will not be covered in this article. Only a review of the capabilities of DISK FIXER and how FORTH can be used to accomplish the same is covered. In summary, anyone who is inclined to fix disks should learn FORTH and can come to the ASSEMBLER SUBGROUP for further assistance.

First, a definition of some terms. The TI99, single-sided, single-density disk is divided into 360 sectors, a minimum of two of which are always used for diskette directory information. DISK FIXER works with sectors while FORTH works with SCREENS or BLOCKS. Each block is made up of four sectors, so there are only 90 BLOCKS on the SSSD diskette.

FORTH contains two different full-screen editors that edit a complete screen or block all at once. Each screen is made up of 16 lines of 64 characters each for a total of 1024 characters or bytes. One of the editors displays only 40 characters wide while the other displays the full 64 characters. FORTH allows you to change any character on the screen as long as it is displayable. Remember that only 95 of the 256 ASCII codes are displayable. The non-displayable codes must be changed in a different manner that will be described later. Note that DISK FIXER does not allow any characters to be edited in this full-screen editor fashion.

To load disk data into memory, the DISK FIXER has a command called READ SECTOR with the syntax "R sss,d", where sss is the sector number and d is the disk drive device code. Both sss and d can be omitted to allow sequential reading of the same diskette. Only one sector is in memory at any time.

FORTH loads a block from diskette in two ways. Typing "b Block" will load block numbered b if it is not already in memory. Typing "b EDIT" will both load the block and place you in the editor mode for changes. As many as five blocks of data can be in memory at once.

To store a sector of data back to disk, DISK FIXER uses the WRITE SECTOR command with the syntax "W sss,d" where variables are the same as before. Care must be taken because the sector number sss is incremented by other

commands and other disk sectors could be overwritten.

FORTH will store any block in memory to disk with the simple command "FLUSH". Note that all changed blocks in memory will be flushed. You can erase all blocks in memory with the "EMPTY-BUFFERS" command.

To display a sector, DISK FIXER uses the DISPLAY BUFFER command with the syntax "D". The current sector in memory will be displayed. The display will show both the hexadecimal and ASCII forms of the data along with a memory location required for further changes.

FORTH will display any block in memory or on disk with the command "b BLOCK n DUMP" where again b is the block number and n is the number of bytes to be dumped. The display is similar to that of DISK FIXER.

To change data in the sector buffer, DISK FIXER uses the ALTER DATA command with the syntax "A oooo" where oooo is the address as displayed by the D command. New hexadecimal data is typed in. A command INSPECT/CHANGE with the syntax "M oooo" can be used to change any memory location including VDP memory. This command has the same syntax as the M command in the TI-DEBUGGER.

FORTH uses one of two store commands to alter memory. For complete 16-bit words of data the syntax "n addr. !" will store the data word n at address addr. For bytes of data, the syntax "n addr C!" will store a byte n at address addr. In addition, the FORTH command EXPECT can be used to read characters directly from the keyboard to memory. Of course, for text it is easier to use one of the editors described above.

The last command that DISK FIXER has is the PRINT SECTOR command with the syntax "sss,d,n" where n is the number of sectors to print. The format of the output is similar to that of the display command except that it is twice as wide as the screen output. Note that multiple sectors are read from the diskette and printed automatically to any TI99 supported device.

FORTH uses a variation of the DUMP command to accomplish the above, making use of the SWCH command to switch display output to the printer. The syntax is "SWCH b BLOCK n DUMP UNSWCH". Note that if n is 1024 the complete block of four sectors will be printed. If greater than 1024 you will start printing other memory locations outside your block. Note also that the FORTH TRIADS command will print any number of blocks directly from diskette but only for blocks that are ASCII displayable.

DISK FIXER also has a FIND STRING command. While FORTH does not, a FIND command procedure to do such is easily written.

In summary, I am an advocate of FORTH which has extended my interests further into the power of the TI99/4A. While the DISK FIXER module is all it is advertised to be, I put my money into FORTH and its more powerful features.

ADDING A NUMERIC KEYPAD TO THE TI99/4A

by Norman Riger  
from the MSP 99 NEWSLETTER

Proficiency with a numeric keypad is a valuable skill. Employment ads in the newspaper often mention requirements of ten thousand keystrokes per hour for keypad operators. Considerable time and practice is required to achieve such speed and the necessary accuracy. Your home computer can provide you with the opportunity to learn this valuable skill. This article shows how to connect a numeric keypad to the TI99/4A. This method will not work with the TI99/4, which is wired differently and has a different keyboard.

My procedure involves selecting a surplus keypad that has ten separate spring type switches, each with two terminals. Both terminals of each switch must be accessible and not permanently connected to the terminals of a different switch. There are four rows of switches on the standard keypad. The top row (left to right) has keys for seven, eight and nine. Below are keys for four, five and six. The third row has keys for one, two and three. The bottom row has a single key (at the left) for zero. There is no ground connection on the keyboard of the TI99/4A and there should be no ground on the keypad selected for this project. Only these ten keys are required and any others are not needed and may be ignored as long as they aren't connected to the required keys.

Turn the computer upside down and remove the seven recessed Phillips screws used to fasten the bottom. Carefully pull out the on/off switch until it comes off and then remove the bottom. A fifteen conductor ribbon cable connected the keyboard to the processor printed circuit board (covered by a metal shield). Only seven wires are needed to connect the keypad and there are several methods possible.

A clamp type connector can be attached to the ribbon cable (use an ohm-meter to make sure that adjacent conductors don't become shorted together). It is possible to disconnect the ribbon cable connector from the processor printed circuit board and place an additional connector between them which contains the seven wires required. These methods have the advantage of requiring no solder connections on either the keyboard or the processor printed circuit board. Another possible method is to scrape some of the insulation off of the required conductors in the ribbon cable and solder directly to them.

My method is to solder the seven wires directly to the printed circuit board in order to save the cost and trouble of finding additional connectors or run the risk of damaging the ribbon cable. The end of the ribbon cable closest to the joystick connector is pin one and the end closest to the I/O port connector is pin fifteen. My method involves soldering each wire and running it through one of the ventilation slots in the bottom of the computer. Bread ties may be used to provide strain relief for the wires.

Pin two of the keyboard connector should be connected to one terminal of



the switches on the keypad for the 6, 7, 8, 9 and 0 keys. Pin seven should be connected to one terminal of the switches for the 1, 2, 3, 4 and 5 keys. At this point, each of the ten switches on the keypad should have a connection to one terminal with the second terminal still unconnected.

Pin eight on the keyboard connector should be connected to the one and zero keys on the keypad. Pin nine is connected to the five and six keys. Pin 13 is wired to the 2 and 9 keys. Pin 14 goes to the 3 and 8 keys. The last connection is from pin 15 to the 4 and 7 keys. Check the keypad to be sure that all twenty terminals are connected correctly.

Be careful to avoid cold solder joints and solder bridges between adjacent connectors. A grounded (three wire cord) soldering iron is recommended for the protection of the sensitive computer chips. Replace the bottom of the computer along with the screws and the on/off switch. If it's necessary to remind you that the computer should be turned off and unplugged during the modification procedure, it's recommended that you have the job done by a qualified electronic technician. The modification described in this article has been performed successfully and requires no additional hardware or software of any type.

DEBUGGING THE SUPER-BUGGER

By Dick Dunbar

As you may know by now if you acquired TI's Super-Bugger from the MSP 99 Program Library, the Super-Bugger has a bug. Perhaps more than one, but for now we'll concentrate on a specific bug.

If you try to assign dump or disassembly output to a disk file, it results in all of the available space on the disk specified being assigned to the file, but no recoverable data is written to it. This is caused by the PAB being destroyed when the file is assigned to disk. There is a solution to this problem. It involves modifying the object program file using the Editor/Assembler. The fix given below applies to uncompressed object files only.

As it happens, Navarone Industries is also distributing a version of this same debugger under the name Bug Fixer, and this version has the same bug. So we will provide the fix for both of these packages at the same time. The data to be changed is the same in both cases, but the address where it occurs differs between the two products.

To make this modification, you will have to enter the Editor and load your object file, then make the changes shown below. To do this, you must find the line containing the specified address (leftmost two columns below) and locate the specific data to be changed. Each line which we are concerned with begins with an "A" followed by a 4-digit hexadecimal address. Each data field starts with a "B" followed by 4 hexadecimal digits of data.

You must find the highest numbered line whose "A" address is equal to or lower than the address to be changed. Then count across the "B" fields in that line (remember to count in hexadecimal, and to count 2 for each "B" field) until you reach the specified address. You can double check that the field contains the specified original value as shown in the third column below. Then change the hexadecimal digits following the "B" to the value shown in the fourth column below.

In some cases, more than one "B" field may need to be changed on the same line. When you have changed all the "B" fields on a line, locate the check field at the end of the line. It will immediately follow the last "B" field on the line, and will contain a "7" followed by 4 hexadecimal digits. Change the "7" to an "8".

When you have made all the indicated changes, save the object file under a DIFFERENT NAME from the original, so that you have a backup in case you made a mistake. Here are the changes to be made:

| Location |      | Original<br>Contents | Change<br>To |
|----------|------|----------------------|--------------|
| SBUG     | BFIX |                      |              |
| 015A     | 015A | 3F20                 | 1020         |
| 12DE     | 12DC | 7F00                 | 5000         |
| 12F2     | 12F0 | 3F09                 | 1009         |
| 132A     | 1328 | 7F20                 | 5020         |
| 1342     | 1340 | 7F05                 | 5005         |
| 1356     | 1354 | 7F00                 | 5000         |
| 1366     | 1364 | 3F09                 | 1009         |
| 137A     | 1378 | 7F00                 | 5000         |
| 1382     | 1380 | 3F09                 | 1009         |

A version of this correction was published originally in the MICROpendium. This is a modified version with the Navarone Bug Fixer correction added as well.

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C O N T A C T S  
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ERNST NOWAK                    6138 N 4th Street, Philadelphia PA 19120, U.S.A.

IAN JAMES                      36 Harrison Crescent, BEDWORTH, Warks, CV12 8SL

ROGER MACEY                    343 Kettering Road, Spinney Hill, NORTHAMPTON, NN3 1LW

FRANCIS X. GASTON              407-2010 22nd Street W., Saskatoon, SASK., S7M 0V1  
Tel: 978 0182 (needs prefixing with International Code)  
Francis' group, STICC, of which he is President, runs  
its own BBS.

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C L O S E F I L E  
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INFORMATION WANTED  
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OTIUser IAN JAMES wrote to me recently with a couple of enquiries, neither of which I am competent to answer, so I thought I would throw them both to you, the readers, for possible solutions.

Firstly, Ian has an ALPHACOM 42 printer which he keeps connected to his console together with his Speech Synthesizer. Apparently, so Ian tells me, you are not supposed to be able to have the two together; this is however a mechanical rather than electrical problem, as the Alphacom female edge connector does not extend out enough to permit secure connection with the Synthesizer. Ian found a solution to the problem by removing the sliding cover from the Synthesizer, and this simple modification enables him to connect the Alphacom in line.

Although the printer works with the PRK module, Ian has been unable to make it work with MUSIC MAKER - can anyone offer any advice ?

Now, Ian has bought the parts necessary to construct the LOAD INTERRUPT SWITCH, but he wonders how it will affect his Alphacom if he fits it to the Synthesizer; I'm afraid that my knowledge of electronics is limited to recognising a circuit board when I see one - can anyone tell him one way or the other ?

Secondly, it sounds as though he may have a wonky cassette; he has asked if the Load Interrupt Switch can be used to help load an "unloadable" program from cassette. What he may need is a machine language program to read the program in from the cassette so that it can be examined to see where the fault lies. I know that such cassette loaders exist, but have no knowledge about how to set about writing one. Is there anyone with either the ready-written loader, the necessary knowledge to write one, or someone willing to offer any service which will assist Ian in the retrieval of his software ?

If anyone has anything constructive to offer I would be pleased to hear from them - don't forget to make a note of my new details! Incidentally, although in the past I have restricted my availability on the phone to fixed hours in the evening, this has largely been because the phone was not my own. I now have sole access to my own phone, so it won't bother anyone if you ring at 2 am - unless, of course, I have decided to have an early night!

I am also hoping to obtain an Answering system so that folks can leave a message if I am not available to answer the phone directly (i.e., being esconced in the Houses of Parliament, wrestling with the cooker, or actually out at work. Or possibly all three...).

I have made a New (subscription) Year Resolution to try and get TI-LINES out on time; I will be making ritual sacrifices (cooking) to The Gods in order to try and enlist their aid in this endeavour. You will soon know if I have any success!

Good Programming

Peter Brooks