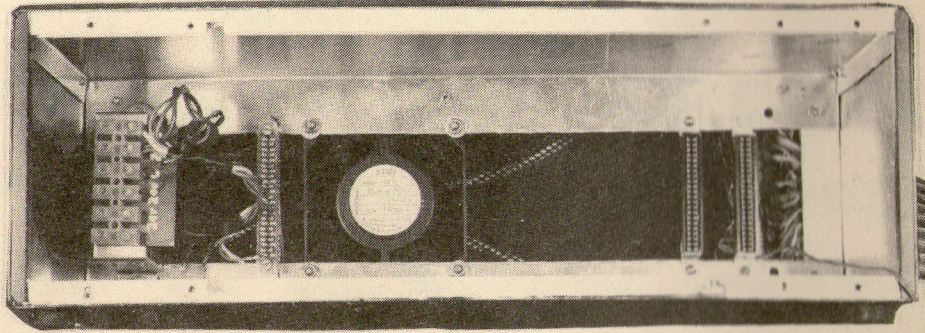
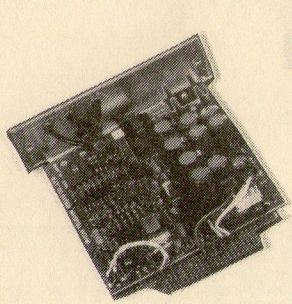
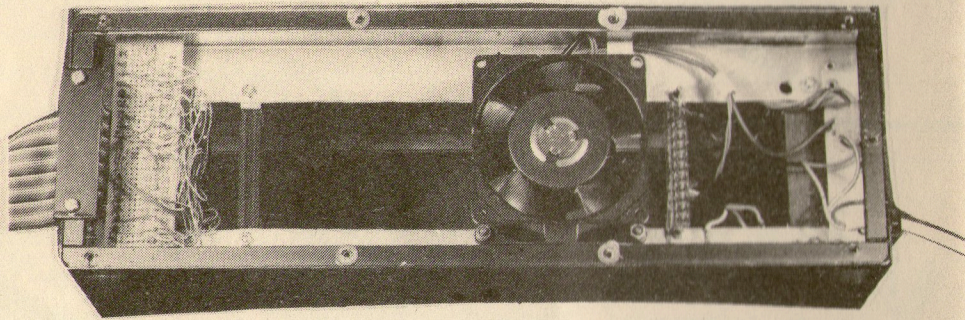


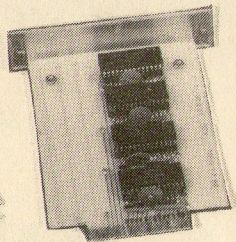
DIY EXPANSION SYSTEM FRONT



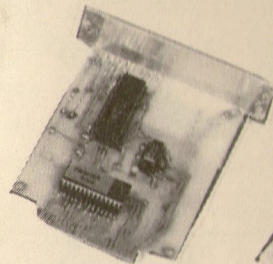
REAR



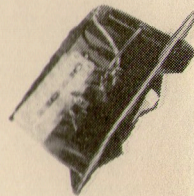
A POWER



B 32K RAM



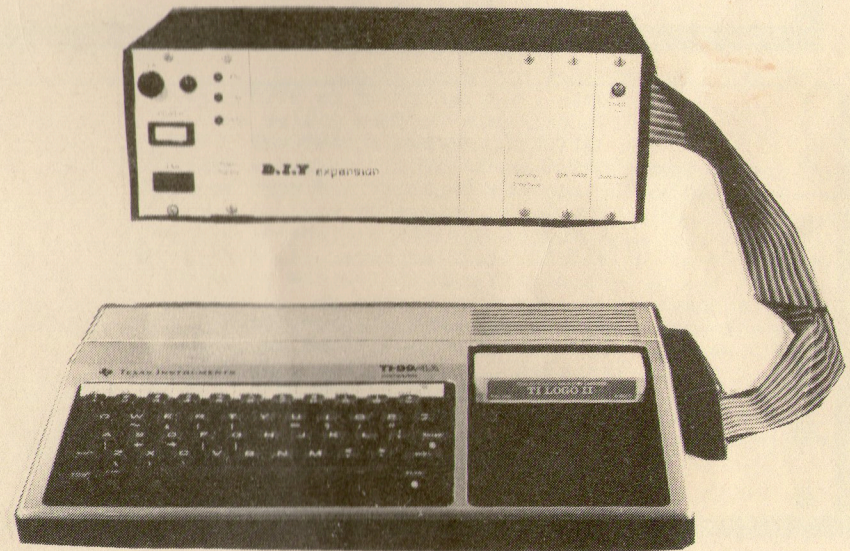
C RS232



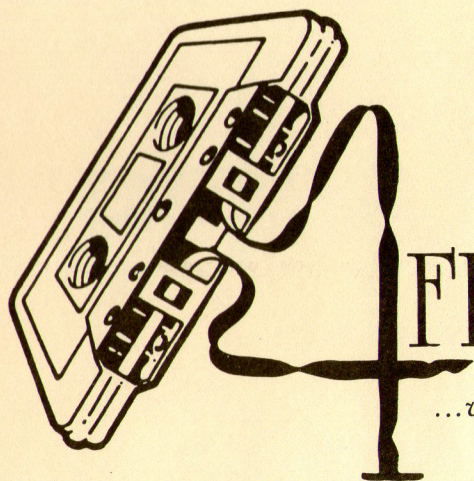
D POWER CONTROL

SUMMER ISSUE NUMBER >13

TI*MES



DIY EXPANSION
TO BUILD
YOURSELF



new

FRONT

...very impressive...
-S. Shaw

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Welcome _____ to TI99/4a EXCHANGE

TI*ES TI*ES TI*ES TI*ES TI*ES TI*ES TI*ES TI*ES TI*ES TI*ES
SUMMER ISSUE NUMBER THIRTEEN

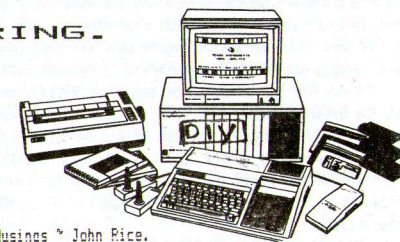
40, Barrhill, Patcham, BRIGHTON, East Sussex, BN18UF. Tel: 0273 503968 (evenings)

EXPANSION ON A SHOESTRING.

IN THIS EDITION.....

BUMPER PROGRAM ISSUE.

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- ‡ .5 Rambles * Stephen Shaw.
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The well attended Leeds show in May was living proof that our TI99/4a still has very much to offer us whether you have expansion or not. Those of you who found your way into the side User Group rooms will have met Mike Goddard, the author of our cover feature DIY peripheral expansion box and seen it up and running. Phillip Marsden, Stephen Shaw, Dave Hewitt and Peter Brooks, along with their various assistants, demonstrated the value of our computer. The major dealer support of Arcade, NewDay and Parco had a great selection to offer and many bargains were snapped up by those making the journey to Yorkshire. A surprise visitor from Canadian TI Users group in Ottawa (of Disc Manager 1000 fame) was their newsletter editor, Marg O'Connor with her husband.

Last issue of TI*ES I told you we would be represented at the Personal Computer World Show in September. The date for your diary will be Saturday 6th September when at 2.30pm I shall be at the ACC stand. TI EXCHANGE has arranged a table and power point at the Show for any one of the TI user groups in the UK registered with ACC. I do hope groups will take advantage of this offer by contacting ACC direct. I will look forward to seeing some of you there.

Happy 99ing,

Clive Scally.

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LEEDS TI USERS GROUP

This article is written in the aftermath of the Leeds show, from which I hope that those who attended have fully recovered. I'll make a few observations about the show at this point, and then leave it to other people to dissect the show elsewhere. I cannot comment on the situation outside the side rooms as I rarely got outside the "user group" rooms, but I do hope that the situation was satisfactory for those that did wander round the main hall.

I realise that perhaps the siderooms were not signposted to indicate that there was any activities going on there, but quite a few people wandered through anyway, so obviously it wasn't too difficult for people to find the rooms. The important word in the last sentence was "wandered", as I got the impression that this was what many people were doing. The distinct impression that I got was that the people who did find their way into the siderooms just took one look at the systems on view, and wandered off again, perhaps thinking that what they saw was nothing to do with them. This is a shame, as all the people in the user group rooms were there to assist people with any problems, so please, if you haven't already been put off, ask any questions you like, as most people who own the computers will readily talk about them.

I'll just say a few words about my little stand, just by way of explanation, as I had both a 4a and a non-Texas computer on it. The other computer is a CP/M - based computer made by a now defunct company called Iotec, and was there for several reasons. Firstly, and the one use it was not given, was to demonstrate to Peter Brooks that the CP/M operating system is not as bad as he has said in his magazine, but unfortunately Peter and I did not get together properly at the show.

The second reason for having the Iotec at the show was to act as an output device for the 4a RS232 port. The reason for this was to demonstrate the use of Small-C in talking to the RS232 port directly. I will give the reasons for this later on in the article.

The third reason for the CP/M machine being there was to demonstrate something that I have been saying for some time now, that I do not think that the 4a is suitable for business type work. I felt that a direct comparison of a 40 column screen against an 80 column screen would show quite conclusively that it is easier to use an 80 column screen for word-processing applications rather than the "windowing" of the TI-Writer. On this theme, it is easier to get good layouts on an 80 column screen than the 40 column screen, or even worse the 32 column screen.

I had some demonstration programs written in Small-C (Version 1, version 2 coming soon, contact Steven Shaw. It sounds very good.), which I hope demonstrated to those interested that the C language is rather powerful, and in this case quite easy to interface to machine language, thus making possible physical interaction with the system peripheral devices, or any that the user cares to attach. I had on show a disk sector access program, very crude, but it showed how to access the disk, and how to interface with assembly language. The other program I had was a rom dumper which sent the rom contents of any peripheral to an eeprom programmer, which was simulated by the Iotec computer. More about this later.

I spoke to many people, or at least it seemed that way, and it is obvious that we have a broad spread of knowledge and abilities, not only in the computer field, but in amateur radio, and electronics. If these people could be persuaded to write about their knowledge, and how they use their computers in their other hobbies, it would be a great contribution to the group (see later comments).

As mentioned earlier, many people did not want to stop and ask questions about the stand, perhaps through embarrassment at lack of knowledge, but this should not prevent anyone from asking questions, as we are all absolute beginners at some stage, I just happen to be a more advanced beginner. This is not false modesty, as I have seen the works of some clever people, and I know that I am well down in the "expert" stakes.

Before I finish the show discussion, I feel that I ought to mention another stand in the same room, that of Mike Goddard, who brought his self-built expansion box, along with his own joysticks, and other self-built equipment. I think that Mike ought to be given praise for the way in which he has built up this system with very little information in the way of circuit diagrams. Mike is, I believe, writing an article on his system for this issue, and people wishing to expand, but not able to afford or find the official system should consider contacting Mike for details.

Show discussion over, and on to other matters. Earlier I passed some perhaps adverse comments about the 4a, and if I see to criticize the 4a, then I must point out that I hold the opinion that we must give people advice which fits their circumstances, even if this conflicts with our personal opinion of the 4a. Several times at the show I was asked the question "should I expand my system, what will it cost, and what will be the end result?". Bearing in mind that should one be able to get the peripheral expansion box (I believe that it is quite hard to get hold of) then the cost of building up a full system at new prices will be £500+, and secondhand prices a little lower, I feel that I have a responsibility to tell people the facts, and let them decide for themselves, rather than wax lyrical about the virtues of the machine and forget the drawbacks.

The facts as I see them are as follows: the 4a is a nice machine which has always been overpriced. It was designed as a home computer and functions as such (TI make business computers for business uses, and they are also very good. Has anyone seen the graphics on the Professional? The drawing of the Porsche car that I saw was absolutely fantastic!). It can be made to do things which perhaps TI had envisaged it should do, but were unwilling to implement. There is a lot of potential left in the machine, but the majority of this depends on the use of new and different hardware such as the Braacracker board, and on the use of machine language. There is a built-in, but non-publicized facility of expanding the command words, or running complete programs (in rom) from the command line without a disk drive in sight. These facilities do not come cheap in money or time, and need considerable expertise to implement them.

Against this background, I feel that a person who is non-technical, and without the ability and facilities to implement the above improvements will have to pay a lot of money to get them. The end result will be a powerful computer, but at a price far above that of more modern machines which will still, in my opinion, be of more use to the average user, and in a more compact form. An example is the Atari 520BT, which has now come down in price to about £450-£500 complete with disk drive, large amounts of memory, and several languages. Whilst I do not think that it is the perfect machine by any means, I think that for the layout of money it is more practical than our own machine, especially as the processor within it will have more programs written for it

in the future than our own 9900.

I feel that our machine has now, simply because it is now out of production, gone the way of all such things and become an enthusiast's machine, which is simply a nice way of saying that only people who are interested in the machine for the machine itself, rather than for what it can do, will stick with the machine. It is like saying that the MG sports car is an enthusiast's car - many other cars are better at doing what the MG can do (except perhaps raising the adrenalin), but the MG enthusiast likes the machine for its own sake, and will spend any amount of time and money to keep it going.

This feeling of enthusiasm should not allow us to give wrong advice to our fellow users, by saying that they should expand the TI, when their needs would be better served by purchasing another system. We would be better to keep the interest of those people who want to use the machine as it was intended to be used, as a home computer, and have a section for those of us who are interested in the machine as an intellectual exercise. I feel that there are enough people in both fields to support the relevant activities, and perhaps we should have a special interest group, as do other user groups. This would allow those people such as myself, who have no particular use for the computer other than as an intellectual exercise, to have a specific group of contacts with whom we can discuss our ideas, not to mention problems. Should any other people have the same feelings, please let everyone know through the pages of the magazine.

To start the ball rolling, let me state my interest in the computer. I do not have a particular use for it as a computer, as I can do most things another way. I enjoy using the 9900 processor, and having spent some time recently doing some work on the Z80 processor, I find it refreshing to come back to a processor with a decent instruction set and a reasonable number of registers. I enjoy tinkering about in the system, trying to find out how it ticks and, where-ever possible, modifying it to suit my purposes. I also own a Cortex computer, which is also TI-based, using the 9995 processor, and this is rather more flexible than the 4a, as the operating system is in ram, and can thus be modified. The only fault is that it is 40 column only (but this can be overcome more easily than on the 4a), otherwise I would say that it is what the 4a should have been like: very fast, very powerful Basic, with easy interface to machine-code, with a built in line-by-line assembler, and the ability to load in any other language or operating system (such as UCSD p-system) and have it run just as fast as the built-in systems.

Now, from the general comments on to the more technical side of the article, but please, if you have any comments on the above points, especially if you disagree with every word I've written, please put your thoughts into printed words, and let's see if we can get a public debate going. This will at least give Clive something to publish, and we will get some idea of what the membership wants out of the group.

I mentioned earlier that I had the Iotec on the stand to demonstrate a rom dumper program. The background to this is that I am endeavouring to alter the disk roms to cope with 80 track drives, and to see if the standalone disk controller can be converted to double-side working. To do this I need to place the rom contents in eeprom. For some strange reason the eeprom programmer that I have access to will not read the TI roms, insisting that they are upside down! (Before anyone says that it must be cheap rubbish, let me point out that it cost over £10,000, so any failure is probably mine in not looking into the problem deeply enough). I therefore decided to dump the roms directly from the 4a to the programmer via the serial port. Unfortunately the programmer requires the data to be sent in a specific format (one of about 50 actually) and again, the 4a format is not one of them. I found that simply opening the RS232 as a file and sending the data in proper format did not work, as at the end of each record, an end of record marker was sent which upset the programmer, so I was left with talking directly to the UART on the RS232 card. (I'll call it a UART, which is a more general term than the ACC that TI call it).

The method of communication chosen was to use the Small-C language for the parts which required manipulation possible by a high-level language, with interfacing to assembly language which would do the physical hardware interface work.

There are several small utilities written in assembly code which can be called from Small-C, such as the hexadecimal print converter, the CRU on/off switch, the disk sector access routine. These are accessed simply by inserting the name of the routine required, such as CRUSM, for CRU switch, with any parameters required. To turn on a specific CRU bit, for example, would involve the following:

CRUSM(4352,ON)

where 4352 is the decimal address of the disk rom,
and ON would set the bit to 1.
OFF would of course, set the bit to 0.

The accompanying listing is fully commented and should guide any interested people through. One point to note is: for the assembly language routines "included" in the C program to be able to pass parameters back and forth, the parameter variables should be declared globally; that is, before the main function. This makes the compiler reserve space in the memory specifically for that variable, otherwise the variable space is held on the stack, and is lost whenever the function using the variable is finished.

Phillip Marsden

ED Listing is SIX pages in length, if you would like a photostat please send large SAE and 50p. c99 example is shown in Manchester Musings.

RAMBLES RAMBLES RAMBLES

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Hello and welcome to the Summer issue of Rambles - actually written in late Spring due to copy-dates and my holidays running together....

Remember: The contents of Rambles are guided by YOUR questions (and complaints and compliments) so keep on writing in! Address above.

THE ORPHAN CHRONICLES is a book published by Millers Graphics which records the history of the TI99/4 and /4A in the USA - there is no coverage of the UK - or even Canada.

Would you be interested in a record of UK proceedings? In the absence of a publisher distribution would have to be on disk. Perhaps you could write to tell me i) if you'd be interested and ii) tell me of your experiences with your TI, especially any dealings directly with TI, any minor software supplier, or with dealers.

Submissions on paper or disk - if you'd like the disk back please send return postage: funds are less than low here right now! And please understand it will not be possible to respond directly to such submissions (at least for some months!).

My own documentation goes back to August 1979, and having a quick leaf through it all has brought a few chuckles (and a few sighs: prices have dropped somewhat since those early days....). Back in early 1982 for instance, while the TI99/4 sold for £325, you could buy an Atari 400 for £345! The launch price of the 16k Spectrum was £125. Even the Atari 800 can now be bought for under £50. And that 16k Spectrum...

MAY 3RD 1986 is memorable as an especially BAD day. It took us just 75 minutes to get home, but helped by the appalling signposting and strange road layouts, it took us over three hours to get to the Faire... and all three were VERY frazzled by then. I think only George (Age 2) really recovered!

It was nice to see a few owners making the most of the low low prices of new modules, and staggering out with huge boxes full of them, but strange to see so many left... and I missed seeing peripherals. Good to meet a few of you, sorry if I wasn't quite all there....

(LEEDS is now on my black list of cities never to visit....)

Reported from Ottawa group that the MYARC new computer was shown at their APRIL faire, and impressed everyone. A video of the demo is available, but in NTSC format...

Did you pick up a copy of 4FRONT in Leeds? This new TI magazine (on tape OR disk) from New Day Computing is really worth having [I've sent off my sub!]. The first issue on disk contained one of the best machine code guides I have seen, all based on bit map graphics. Together with the machine code utility on the disk, you should be able to write something in machine code after reading this even if you have never written anything in machine code before.

And there is nothing like actually doing something to fire up your enthusiasms.

The cassette version does not have the bit map material but instead has a short article on enhanced (PRK) basic and two TI Basic games.

The first issue also contained a very playable XB game, POWERBALL, somewhat related to Q*Bert but quite different... and a Wumpus program.

And as with all good magazines, some text to read - introduction, small ads, jokes(?) and so on. In this issue output was ONLY to screen, but most purchasers should be able to direct the DATA to a printer with only minimal rewriting.

New Day is also offering an exchange service for TI peripherals and so on.

4FRONT is quarterly, and is recommended to you.

PILDT 99:

Unfortunately, the author of this new language for our TI, has died, age 22. Please do not therefore write to the address given in the documentation supplied with the program. The program is in the FAIRWARE category, and you are requested to send donations for its use to the CYSTIC FIBROSIS RESEARCH TRUST.

The UK address is:
Alexandra House, 5 Lythe Road,
BROMLEY, Kent.

Want a P-Code card, software, hard to get TI peripherals?

Try:

1. Small ads in this mag!
2. New Day Computing, Honiton
3. Pete Brooks, Oxford
4. Triton Products Company,
P O Box 8123 SAN FRANCISCO CA USA 94128

Stand alone parallel printer interface, no PEB required... try Dave Hewitt, Oxford - tel 0865 863565

Pete Brooks (also Oxford) publishes TI-LINES, and can also supply you with a printed FORTH manual or the TECHNICAL DATA MANUAL. Tel 0865 50822 AFTER 7pm

Did you see the Thorne EMI games at Leeds? Howard was selling the three games on disk for £35.00 - Computer War, River Rescue and Submarine Commander.

Computer War is FAST and requires quicker reactions than I have! while Submarine Commander is a complex game of strategy which can last some time provided that you avoid the depth charges!

My favorite is RIVER RESCUE with really smooth horizontal scrolling. Strange to relate I get higher scores on the higher skill level than on the lower level..

A set of programs which well demonstrate what the TI99/4A is capable of, with screen graphics and action up to the highest standard. Recommended.

C99: C Compiler. Version 2.0 coming soon.

DM1000 Vn 3.1 is now available, with a few changes to presentation, a few new twists added to make life easier and the dreaded bug which sometimes corrupted files on Copy or Move File banished.

Did you ever tell the program to Copy files to an already used disk, and then discover that there wasn't room for the last file - oh, you could add up all the sectors used on the files you were copying... now the program totals them up for you! A most useful addition to an already fine program.

And as promised, also now available, added SOURCE CODE for DM1000, still on TWO disks.

The Disk Library remains available on the same terms, send a disk and the copying fee of £1.00, plus £1.00 per order post and handling charge OR send £3.00 per disk plus £1.00 per order post and handling charge.

The library now has well over 100 disks for your enjoyment - for a full listing please send a blank disk and return postage (or if you prefer, two pounds for disk post packing).

WANTED:
New programs are welcomed! Any language. SHARE what you are doing with your TI!!

NEW TI ARTIST SUPPORT:
From TEXAMENTS, ARTISTS COMPANION #2, two disks with 13 new fonts, 60 instances and a program to load an Instance in TI Basic. Also Display Master, which enables you to use TI Artist graphics in a graphics display - rather like a slide show but more sophisticated.

Artists Companion is US\$10 for two disks.
Display Master is US\$15.

PLUS post and packing - say \$3 for one package or \$5 for both.

TEXAMENTS:
53 Center Street, Patchogue, New York, USA, 11772.

And by the time you read this I will have in the Disk Library a program which reads a small Artist instance, puts it on screen, and then dumps it to disk in a format that TI Writer Formatter can use. I am also working on some TI Artist fonts for the disk library.

REPEAT REQUEST - previous requests having gone unanswered...

DO YOU HAVE A GRAPHICS PROGRAM?
DO YOU EVER USE IT?

CAN I SEE WHAT YOU HAVE PRODUCED?
I welcome graphics (or fonts, clipart, instances and so on) produced by:

TI ARTIST, DRAW A BIT 1, DRAW A BIT 2, DRAW N PLOT, GRAPHX, and CSSD.

Come on... someone must be using these programs!

OOOPS...
DEBUG.. PASCAL: ISSUE 12, PAGE 50

The program listings which appear in RAMBLES all have to make a pass through the TI Writer Formatter, which does odd things to things like & and ** - no problem spotting these in languages you are familiar with...

But I am not familiar with P Code, and the listing on Page 50 had a couple of strange lines - apart from which Stan Dixon tells me the code works very well!

Corrections:
4th line up, second column, page 50
5th line down, first column, page 51:

Instead of:
.....buffer,5120,blkbase*)

please read:
.....buffer,5120,blkbase*10);

Stanley also suggests that instead of using while, you could have shorter code by using REPEAT.... UNTIL...IN []

AS AN EXAMPLE:
REPEAT
write('do you want to? y/n');
readln(ch);
UNTIL ch IN ['y','Y','n','N']

MAGAZINE AND NEWSLETTER REVIEWS...

The Ottawa TI99/4A Users Group NEWSLETTER
P O Box 2144, Station D, Ottawa, Ontario, CANADA,
K1P 5W3

March 1986 issue:
Problems with TexComp selling the Fairware DM1000 - and with the Fairware message deleted from the title screen.

A hint on sorting out your vast collection of disk files with a classification scheme.

How TI Basic programs are stored in VDP ram.

SUPER 99 MONTHLY:

From April 1986 renamed THE SMART PROGRAMMER.

From April 86 increased from 12 to 16 pages!

And - higher subs...

Seamail US\$20.00 Air Mail:US\$32.00

From:

Bytemaster Computer Services,
171 Mustang Street, Sulphur, LA, USA, 70663

BACK ISSUES up to March 1986: US\$1.50 each,seamail.

JANUARY 1986 issue:

Discussion and program on Databases. Machine code for starters.

FEBRUARY 1986 issue:

Just two articles: A report on the LA show and a long Forth article on string utilities- Insert, Match, Delete. And numerous amendments to January listings (more than 2 pages of corrections!).

////////////////////////////////////

Topics. LA99ers Computer Group Newsletter.

P O Box 3547 Gardena Ca USA 90247-7247

March 1986 issue:

Report on LA Faire. Reminder about using POS. A tiny piece of machine code to augment c99 Vn 1. The first part of a c99 tutorial (not for complete novices), April 1986 issue:

Report that Home Computer Magazine software has been seen in "remaindered" sales. News of a MULTIPLAN math bug: Try SQRT(.01) or .01 .5 for a real shock! and try not to use Multiplan for SQRT decimals! You can improve matters by using .01 .4999999 ... but that still won't be as accurate as Basic!

Multi programmed basic (see TI#MES 11), and a comparison of BA WRITER (from Italy) with FUNLWRITER (from Australia). Although stated to be a review of Vn 3.1 of Funlwriter, at least one statement is fundamentally wrong, and two statements have been negated by further improvements in Vn 3.2

May 1986 issue:

Revisions of Tom Freemans programs to print double columns and sideways, a comparison between Forth and Pascal, C tutorial continued, articles on Pascal Logo and Pilot.

MICROPENDIUM

P O Box 1343 Round Rock Tx USA 78680

Airmail US\$37 Seamail US\$23.50

February 1986 issue:

Overview of available languages by Ron Albright, Assembler tutorial on Sound by Mack McCormick, several reviews, and a really interesting XB program which allows you to RUN a TI Basic program in XB (eg faster!) even though the TI Basic program uses character sets 15 and 16 (Myrcs new XB-2 does the same!)- this program from John Behnke of the Chicago Group.

Micropendium... continued...

March 1986 issue:

Letter from Tony McGovern re Funlwriter Vn 3.0, an Assembly tutorial on DSRs, based on page 303 of the Ed/As manual, news of an IBM keyboard interface from Millers Graphics - which would for instance allow you to use one of those cute cable-less IBM keyboards! (They work like tv remote controls). Interestingly, the Myarc computer will also interface with an IBM keyboard, in its initial format of a PEB card anyway. The card from Miller will carry a huge ram buffer, allowing you to have for the first time a keyboard buffer, and of course you can choose your IBM keyboard to have a separate numeric keypad, function keys and so on - the Miller product will enable you to use the function keys to call up "macros".

Several reviews as usual - including a US\$25 program from Navarone that can copy a disk for you "quickly". eg a double sided single density disk copied using two drives in under five minutes, including formatting time. Anyone heard of DM1000... or DM99 ... or many other such less costly programs that do the same thing! Navarone have moved again - back to California - and have indicated some unhappiness with User Group support (often the sign of a declining business). At last clarification: the software held by the IUG in Bethany IS Public Domain. This includes the "Master 99" series. And a useful machine code program to read joystick/keyboard using CALL LINK("STICK"...). A bumper issue! Have YOU taken out a subscription yet!

APRIL 1986 Issue

The issue starts with an apology that a program in the March issue, to enable TIB programs to run in XB will only work with a CorComp Disk Controller attached, demonstrating the Editors lack of knowledge of the TI System: the program works perfectly with an all TI system. I enclose a listing for YOU to try! There is a long letter from Asgard regarding the existence of two software packages with the same name - and throwing light on my problems in buying from them: Chris Bobbitt said that orders were coming in five times faster than he could make them! Chris also makes a snide remark about his competitors documentation not being as classy as his; but at least theirs is a full and mistake-less documentation, unlike yours Chris!

A BASIC tutorial, an ad by some English firm in Manchester... (hmm, name looks familiar... full page add too... hope he does well...), and news that the release by TexComp of unreleased TI TENNIS is "authored" - but I am pretty sure that "Munch Man-Original" on the same disk has NOT been authorised by TI.

A nice long review of PR BASE- available from your Disk Library! A program for owners of CorComps Triple Tech card, and lots of news and views.

+++++

RADIX REVIEWS:

At Leeds I was handed some software published by Radix in Germany, to review.

I do not have confirmation that the software is to be offered in the UK but the following words MAY be helpful...

"Radix Tubilaus Cassette 1985" on Cassette. No instructions supplied, and I couldn't get it to do anything, so I have to recommend that you avoid it!

"DER SCHWARZE KRISTALL" a cassette in XB.

LOTS of on-screen instructions in German - but you don't really need them! A neat collection of sprite-avoiding screens to manipulate your man through. Instead of putting the ten screens into one long program, they are presented as ten short programs - apparently giving a faster pre-scan and a faster response.

As you complete each screen you are given a code to go on to the next.

In Screen One you move along four levels of floor jumping over moving sprites- very similar to TREASURE HUNT which Timeless Software used to sell. Another screen has you shooting arrows through moving sprites at a target on the other side of the screen - you must avoid hitting the sprites.

A very interesting collection of screens, which you will find relatively difficult. No price known, but as Timeless sold two Treasure Hunt programs for a Tenner, this is worth up to that amount. A reasonable addition to an XB game collection, and better than many.

THE MINE. Marked price:55DM. Machine code game on Disk.

No instructions supplied at all, but hardly needed - except perhaps to tell you HOW to get off Screen !!!! Screen One seems similar to... you guessed it.. Miner 49er! Go over all the floor, getting the nasties - and not getting got ... before the timer runs out. I got all the nasties, covered all the floor... and nothing happened.

55DM for a non-functioning program seems a bit heavy. Even if it works correctly, 55DM is STILL a great deal of money, even for a machine code game. IF it can be supplied in working form it is probably worth at top fifteen pounds.

FREDDY. Machine code on Disk. Requires Ed/As and 32k ram.

No price quoted but probably as THE MINE. Brief on-screen instructions in German. The playing area is a cross section of a many layered catacomb in which you must wander, collecting treasures before you find the exit to the next level.

Impeding you in your travels are a varied selection of creatures, from rats and scorpions, against which your only defence is avoiding them! - to ghosts, bats, and mummies. The ghosts can change direction if you shoot at them, and several shots at a Mummy tend to make it dissipate! Five screens in all (I think!). MORE--> Movement up and down is by way of rope ladders - sometimes you can travel up (or down) these for some

time, to discover a dead end! The screen scrolls in all four directions, and the exit is UP somewhere... This one is a pleasant game, and one treasure, a certain computer, is really quite...cute? If you can buy this for under fifteen pounds, go for it. Under twelve and its a bargain. Nice programming. NB: For goodness sake, do not remove the write protect tab on this disk - it destroys itself if you do!!!

Stephen Shaw. May 1986.

WHAT NEXT????

Our membership has a wide range of systems, from bare console to fully expanded system. What are the best buys? What follows is a very personal view!

MODULES:

What a lot there are too! EXTENDED BASIC must be the first choice of module! It really does make a significant difference to your programming, and as your system expands, Extended Basic will help you make the most of that expansion.

If you CAN afford it, the PEB plus Myarc's 128k card (or 512k card!) plus their new XB is the 'best' choice, but costs rather a lot. The Myarc XB is a considerable expansion on TI XB, and runs faster too.

On the GAMES side, my favorites are perhaps the FUNWARE modules (St Nick, Ambulance, Hen House, and Driving Demon) but they are almost impossible to obtain - watch out for them.

Munchmobile is one you don't hear much of, but it really is quite cute, and playable - the description IS odd: it guide a car safely along a winding (scrolling) road, and reach out with your arm to collect fuel and valuables, avoiding litter bins, rocks, and so on. TI Invaders is long in the tooth, but possibly the best Invaders program on any home computer, extremely well written.

Car Wars is also a faithful implementation of a similar arcade game, in which your car covers the dots on the track while avoiding other cars travelling in the opposite direction, and intent on collision! Munch Man was good enough for Atari to insist on a rewrite, but the end result is if anything better than PacMan. It is certainly a fast game, and will really tax your joystick.

Super Demon Attack will keep you on your toes, with some quick action needed, and interesting multi-coloured sprites.

Jawbreaker is quite difficult, but the humour is superb. A very playable game I rather like!

Treasure Island is one of the last modules and consequently almost unheard of, but very good to play - I bought a copy at the Birmingham show.

Of the ATARI modules, some of them are quite disappointing - PacMan for instance - while others are really very good! Defender is possibly the most faithful to the arcade game... Dig Duq is quite interesting.

The PARKER BROS modules are very faithful implementations of the arcade games and all are worth having: Popeye, Q*Bert and Frogger.

The Tigervision modules (Miner 49 and Espial) use the right hand port, and TI have warned of possible damage in using them. If you have an unexpanded system, you should be OK plugging Miner 49 in and leave it there. It gets quite difficult rather quickly...

If you can find a cheap EXCELTEC module, Midnite Mason is very playable.

Anything not worth paying postage for? Once more, my personal views, but you you may wish not to buy Football, Chisholm Trail, ANY of the Milton Bradley modules!, Congo Bongo, Protector 2. PERIPHERALS...

There is a wide choice (even if you have to buy second hand, or import yourself) so you need to think how long you will keep your console, and how much you can afford.

If you can find and afford a PEB, get one! Certainly if you want some of the new peripherals, such as Millers IBM keyboard connector! you need a PEB.

I would personally consider a disk system essential, and to use a disk drive you need either the PEB or one of the equally expensive mini-peripheral systems from Myarc/CorComp.

If you really don't want a disk system, you CAN find stand alone printer interfaces and memory expansion.

What comes first?

IF it is worth while to you, the PEB plus disk controller plus at least one disk drive.

Otherwise, the 32k ram, then a printer interface and printer.

Speech Synthesiser is fun, and will really bring out the MBX modules or some of the TI games / educational modules.

The MBX Unit is a bit of a dead end at present, although the advent of the GramKracker may help owners get inside the unit to learn how to interface to it with their own machine code programs. An expensive novelty at present.

SuperSketch is also a fun novelty - sufficiently in demand to warrant an interface for TI Artist! and super sketch also provides the means of driving TI Artist with a Tandy Mouse.

GramKracker is fun if you want to rewrite the operating system or a module. It can also be used to save/load modules to disk OR CASSETTE.

A RAM CARD (eg over 32k, instead of the 32k TI card...) will make life easier, and is essential if you wish to use the new XB from Myarc. Faster access will make use of disk based data bases more usable.

IS IT WORTH IT? What alternatives are there... you CAN buy an Amstrad for about the same sum as a full (2nd hand) expansion, BUT is there the same range of CHEAP quality software? And does it do EVERYTHING the TI does? (or is capable of!). If you have ONLY the console you have to think very carefully of what you really need your computer for! Would a fully expanded TI system cost less than a new system - with NEW software prices! And how long do you expect to be using your computer? CONTINUED----->

I've had my full TI system for five years now, and expect to be using it for at least another five. There are so many new languages to learn, so many new programs. Only a complete lack of funds keeps me from new peripherals (a small peripheral in the family is proving expensive enough to maintain!).

However - servicing may be a problem, so if you have not yet done it, safeguard your investment with AT LEAST a stand by console: you only need pay around thirty pounds for one.

I have tried to value the software which I have collected over the years - impossible! To buy a new computer with all the facilities and software I now have would be well outside any amount I could dream of! Stay with us... there is still some distance to travel...

PECULIARITIES

'PAUSES'

When a program is RUNNING, from time to time your computer will appear to stop operating for a very short period. This pause is especially noticeable when using the PRINT AT routine to be found later in this book, or when using Sprites with Extended Basic.

The reason for the pause is called 'garbage collection'.

When you amend a program line by re-entering it or by using the Edit mode, there is a pause before the cursor reappears, which becomes longer the longer your program is.

During this pause the computer is deleting the previous version of the line, moving all the following lines up in memory and adding the new version of the line to the bottom of the program memory: in short, doing a great deal of work.

When a program is running, and variables are defined, the values of the variables are stored in memory. When a new value is allocated to a variable, to avoid frequent delays to your program, the computer retains the old value in its memory, even though it will use the new value.

As time progresses, the memory will become full of these old variable values. When memory becomes full, the computer discards the redundant values: this is called garbage collection. It is more efficient to only do this when memory becomes full than every time a variable is redefined, but a very small pause is caused.

These pauses will be more frequent if your program is a long one, as there will be less memory to fill up with dead variable values.

REDUNDANT CHARACTER DEFINITIONS

When you switch the console on, some characters are undefined. If you define these characters in one program, the computer will retain that definition even if you use NEW and load a new program. Only by using BYE or QUIT will the definition be erased. Therefore never assume a character is undefined: you may run a different program first which defines that character!

Example: Type in:

```
100 CALL CLEAR
110 A$="FFB1B1B1B1B1B1B1B1B1"
120 B$="0000FF0000FF0000"
130 CALL HCHAR(12,1,140,128)
140 GOSUB 210
150 CALL CHAR(140,A$)
160 GOSUB 200
170 CALL VCHAR(1,12,140,120)
180 CALL CHAR(140,B$)
190 GOSUB 210
200 STOP 210 FOR T=1 TO 1000
220 NEXT T
230 RETURN
240 END
```

RUN this program. When it ends, type in:
PRINT CHR\$(140) (ENTER)

Notice that the definition is still there.

If you wish, RUN the program again and note the difference at the beginning, as the character is no longer undefined.

Now type in:
NEW (ENTER)
and repeat:
PRINT CHR\$(140) (ENTER)

The definition is still there. If a new program is loaded, which uses this character and assumes the character is undefined, the character will not be printed as a blank but as the character we have defined with the above short program.

EXTRACTED FROM:
BETTING STARTED WITH THE TI99/4A
BY STEPHEN SHAW
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TI WRITER FOR NOVICES

Now that we have FUNLWRITER (in the Disk Library) there are a few more copies of TI Writer around than there are TI Writer manuals... and the manuals are not merely Copyright, but also costly to copy...

So, this article is for you if you have TI WRITER and no manual...

The menu choice is:

1. EDITOR
2. FORMATTER
3. UTILITY

Option 3 is a LOADER for MACHINE CODE PROGRAMS in memory image format - shown as PROGRAM on disk directories. The TI Writer loader creates a unique environment, and is intended to be used for utility programs specially written for the module (none were written) but in practice you may find you can load many machine code programs with this option ; if the console locks up or does strange things, it is probably because the program requires a specific part of the Editor/Assembler environment which is missing.

Got that option out of the way quickly! The other two will take longer...

First, OPTION 1. This creates a full screen editor, on which you create your text. The screen "paper" is 80 columns wide, and is shown to you 40 columns at a time. You do not have a full single character horizontal scroll - the screen is split into three columns of 40 characters: the leftmost screen display is the first 40 columns. Then if you move the cursor to the right, you will trigger a switch to display columns 21 to 60, and finally 41 to 80.

When you select EDITOR you will note the cursor appears at the top of the screen, on what is called the COMMAND LINE. The use of this line is described in the section below on TEXT EDITOR COMMANDS.

First, lets create some words! See at the top of the screen some words, with some letters in CAPITALS? For instance Edit... the capital E means that if you ENTER an E on this line you go into EDIT mode... so ENTER a letter E.

Did you hold shift down or have ALPHA LOCK on? No need to when in this area: even with ALPHA LOCK off, capital letters will be entered. Entering E causes the COMMAND line to leave the screen and you are presented with the start of your paper, on which you can type your letter.

To return to COMMAND line, you press the keys FCTN and 9 ("BACK").

First though, lets look at all the instructions you can give to the computer while staying in the Edit mode...

SHIFT and ALPHA LOCK have their usual uses! And you have an auto-repeat on the keys. If you need to auto repeat a character using the SHIFT key, you can release the SHIFT key when auto repeat has started and just hold the main key down - SHIFT will be assumed to continue until you release the key.

ENTER will place an odd character on the screen, which looks like a small C over a small R - this is the Carriage Return symbol, and is NOT printed. It is important when REFORMATTING - more later!

When you come to the end of a line and keep typing, WORD WRAP will move you to a new line automatically, and also ensure that you do not have a word cut in half in the process.

Unfortunately, word wrap takes a finite time, and many even moderate typists will find that it pays to check the first word at the start of the wrapped line for missing letters - our console lacks a keyboard buffer, and any keys pressed while word wrap is in progress are ignored.

To end a paragraph, press ENTER and you will move to a new line, and a CR will be inserted at the end of the previous text.

Before we move on... TI WRITER is key-compatible with Wordstar, should you use that program on another computer! However, in this article I shall not deal with the Wordstar keys, but rather with the more convenient use of the TI Function keys.

As space is limited, each Edit mode command can only be described briefly here, but the following should help you make progress:

The Arrow keys: FCTN E S D and X move the cursor one space in the appropriate direction.

CTRL L moves the cursor to the top Left of the screen, but keeps the screen display the same.

CTRL 6 moves the cursor to the first word in the paragraph it is in the middle of, AND moves it to the top left of the screen - therefore moving the text on screen, usually upwards!

PARAGRAPHS are collections of words between CR symbols. That is, each CR marks the end of a paragraph.

CTRL 8 is New Paragraph- it has the same effect as ENTER, it adds a CR to the end of the current line and moves the cursor to the next line.

CTRL V moves the cursor to the start of its current line.

CTRL 9 is New Page- it inserts not only a CR but also a PA, which is also not printed- the PA symbol will cause your printer to move to a New Page.

CTRL 4 is a tricky one- NEXT PARAGRAPH. When you type CTRL and 4, e text moves up off the screen and the cursor moves to top left. However, the line of text that your cursor was on does NOT have a CR added to it! FCTN 5 is Next Window and enables you to quickly flick through the three columns of page. It is cyclic - from far right you go back to far left.

FCTN 4 is Roll Down - the cursor moves down 24 lines (having the appearance of moving the text up 24 lines- the cursor keeps its position on screen!). If there are not 24 lines below the cursor, it moves to the end. FCTN 6 is Roll Up and moves the cursor up 24 lines.

FCTN 7 is TAB (more later) and moves the cursor to the next tab setting on the right, while CTRL T moves the cursor to the next tab position to the LEFT.

CTRL 7 is interesting - it is the Word Tab. If there is no text after the cursor, the cursor will move one space right, otherwise it will move to the start of the next word.

All those commands move the cursor around - and for speed, remember that you have an auto-repeat function on the keys!

Other keys you may use in Edit mode are:

FCTN 9 (or FCTN +) to go back to the COMMAND LINE.

CTRL 1 is your OOPS key... in the commands below, if you press the keys in error you can recover by immediately pressing CTRL 1. NOTE that word IMMEDIATELY - I dont mean quickly! but rather that pressing any key between the commands listed below and Oops, will stop Oops working!

FCTN 1 - deletes character cursor is sat on

CTRL K - deletes all text to the right of the cursor

FCTN 3 - Not only deletes text but deletes the actual line!

CTRL 5 - really useful this one, it duplicates the line above! - HOWEVER it will also delete the line the cursor is on, so dont use it if the cursor is sitting on text you wish to keep!

Thats the end of the commands Oops can reverse. Now for some more... FCTN 0 is a toggle which enables you to display or not display the line numbers on the left side of the page - they are not printed anyway.

FCTN 2 is INSERT CHARACTER. Under normal circumstances, it opens up a line for text to be typed in. When done, remembering to end with a space! - press CTRL 2, which is REFORMAT.

FCTN 8 is INSERT LINE, and works by moving the line the cursor is on DOWN, leaving the cursor on a blank line.

CTRL 3 changes the screen colour combinations - not very many choices but better than none!

CTRL 0 (zero) toggles WORD WRAP... when you switch on, the cursor is a solid block, and control keys work as above. If you toggle word wrap, the cursor becomes an open box... and...

With WORD WRAP off, we are in FIXED MODE and the following key commands alter:

INSERT CHAR (Fctn 2) will merely push the text to the right as you enter the inserted material - very like using INS when entering a Basic program. And when the text is pushed to the right hand side of the screen, it starts getting deleted, so careful!

REFORMAT (Ctrl 2) is used to terminate insert mode, also terminated by use of the other cursor movement keys.

New Paragraph, Last Paragraph, and Next Paragraph do not function in fixed mode.

Those are the directly active keys. You can also insert commands to your printer into the text, using CONTROL MODE.

CONTROL MODE makes available from the keyboard, ASCII characters 0 to 31, so that you can send those codes to the printer: they are NOT printed, unless that is a part of your printer instruction set: see your printer manual for details.

You enter control mode by pressing CTRL U, which causes the cursor to become an UNDERLINE (Notice the cursor shape always tells you which mode you are in: Word Wrap, Fixed, or Control).

With the UNDERLINE cursor, you have access to the lower ASCII codes by pressing the following key combinations: ASCII 1 to ASCII 26 are simple SHIFTED A to Z - thats easy to remember!

ASCII 0 (zero) is a SHIFTED ZERO - thats easy to remember!

Then you'll need to write these down:

ASCII 27 is FCTN R

ASCII 28 is FCTN Z

ASCII 29 is FCTN T

ASCII 30 is SHIFT 6

ASCII 31 is FCTN U

As you enter these low codes, odd characters will appear on the screen - they will not be printed! - you will get used to their appearance in time. They are based on the HEXADECIMAL equivalent of the codes.

Remember to switch OUT of control code to use ordinary keys- toggle with CTRL U.

Your printer may for instance require a character 15 to switch to condensed print mode. To insert a character 15 in your text, you need to key:

CTRL U then SHIFT 0 then CTRL U again.

ESC is short for ESCAPE and is the ASCII value 27, or FCTN R

Consult your printer manual for details of the codes your printer needs.

Note that TI Writer and your printer may have similar codes: it is easy to be confused with the TAB settings on TI Writer and those of your printer: but they are different things! It is usually easier to use TI Writer TABS but for some difficult jobs it may be better to ignore TIW TABS and set and use TABS on your printer - see your printer manual!



TI-99/4(A) Disk Format

This article was received from Steven J. Royce, of the Western New York 99'ers Users Group. Thanks Steve!!

The following is a complete and, to the best of my knowledge, accurate description of the Disk Directory format and file storage allocation used by the TI-99/4(A) Earl Hall CompuServe ID - 72746,3244

SECTOR 0 - Volume Information Block

Table with 2 columns: ADDRESS and CONTENTS. It lists disk parameters such as disk name, total number of sectors, sectors per track, disk backup protection, tracks per side, and sides/density.

(> MEANS HEX)

NOTE on 0038-end: This is a sector-by-sector bit map of sector use; 1=sector used, 0=sector available. The first byte is for sectors 0 through 7, the second for sectors 8 through 15, and so on.

SECTOR 1 - Directory Link

Each 16-bit word lists the sector number of the File Descriptor Record for an allocated file, in alphabetical order of the file names. The list is terminated by a word containing 0000;

SECTOR 2 TO >21 - File Descriptor Records

Table with 2 columns: ADDRESS and CONTENTS. It lists file descriptor records including file names, file types, and deletion protection flags.

THE FOLLOWING WORDS HAVE APPEARED FROM AN ELECTRONIC CONVERSATION HELD BETWEEN X and Y in ASU?:

There have been recent messages about using control codes to the printer and then printing with the TI-Writer Formatter -- How do you right justify?

The program counts the control characters and the right margin comes up short.

Method mentioned by Barry T. (I think) was to print to disk, go to the editor and insert spaces (in Fixed Mode!) where needed. Here is a method to avoid that most of the time.

Use .TL command to transliterate a SINGLE unused character to the whole sequence of control codes, and ADD a 32 to put the missing space back in, e.g. .TL 123:27,32,32 will transliterate the left brace to the code for Italic print (ESC 4).

Margins will now line up, with the following exceptions: if the code is sent attached to the beginning of a word that winds up at the left margin, or at the end of one that is at the right margin, then they still won't line up.

must still use Barry's method. By the way, if you need ALL of the ASCII characters, you can still transliterate unused codes under 32 (most of the ones from 21 to 31 are ok except for 27) but this requires using CTRL U first, which slows up the typing.

That's essentially what I do Tom, except I .TL the codes from 2 to 6, as those (I think the #'s are right) are the ones my printer doesn't use.

Thanks for the helpful note. I've got another TI-Writer puzzle for you to solve.

A major bug in TI-Writer is that the Formatter puts only one space instead of two spaces after an exclamation point, a colon, or a question mark. I tried to solve the problem by putting this at the beginning at my text:

.TL 33:33,32 (add space after exclamation point)
.TL 58:58,32 (add space after colon)

.TL 63:63,32 (add space after question mark)

The attempted solution partly works, i.e., your text does end up with the right number of spaces after exclamation points, colons, and question marks, BUT the formatting is thrown off because the formatter apparently does its calculating of characters without bothering to check out the transliterate commands.

(For example you may end up with an overflow of a single character to the next line.)

[Memo from Stephen: try adding a BACKSPACE to the transliterate code: its a character code # 8]



One example of compatible but different commands is the UNDERLINE: the keyboard has an underline as FCTN U - but my printer has an underline function available by using ESC - 1 and ESC - 0. If I use both, the printer prints a continuous underline, with a broken underline one pixel above it!

PAGE START: When you switch your printer on, wherever the platten is - and the paper held by it - is marked in printer memory as the start of the page. The printer then keeps count of the number of lines printed. If your printer has a default page length of 66 lines, and after 40 lines to send a PA symbol, or the standard page feed character, ASCII 12, then the printer will move the paper up 66-40=26 lines.

This article looks as though it could take over TI*MES! So a break here.

However, to print out your text, go back to the command line, enter PF (Print File) and then the printer name (eg PIO) and off it goes. To save text to disk, enter SF (Save File) and then DSK1.FILENAME or whatever.

FREEMWARE....
B A Mutton, California.
Extracted from TopIcs, the magazine of the LA Users Group.

Is there anyone among us not aware that we have a sizeable investment in an obsolete computer and no one outside our own community is writing programs to support it?

Within this group of 99/4A owners there are some very brilliant minds, and many outstanding programs have been produced.

I would venture to suggest that most of us are using at least one of these and probably many more, since they are distributed under the "Freeware" concept and are available to all.

I would further suggest many users have NOT sent anything to the authors.

THE AUTHORS *ARE* COMPLAINING AND SLOWLY FADING AWAY.

If we are to assure ourselves of a continuous flow of good programming we MUST support good programmers and encourage new ones.

Unfortunately the present concept of "Freeware" does not allow for the more seamy side of human nature.

Note on file storage: Files are placed on the disk in first-come / first-served manner. The first file written will start at sector 0022, and each subsequent file will be placed after it. If the first file is deleted, a newer file will be written in the space it occupied.

If this space isn't big enough, the file will be 'fractured', and the remainder will be placed in the next available block of sectors. The block link map keeps track of this fracturing. Each block link is 3 bytes long. The value of the 2nd digit of the second byte followed by the 2 digits of the first byte is the address of the first sector of this extent. The value of the 3rd byte followed by the 1st digit of the 2nd byte is the number of additional sectors within this extent.

Sectors 2 through 21 are reserved for File Descriptor Records and are allocated for file data only if no other available sectors exist. If more than 32 files are stored on a disk, additional File than 32 files are stored on a disk, additional File Descriptor Records will be allocated as needed, one sector at a time, from the general available sector pool.

[71505,137] GOTO.4TH 30-Jan-85 1470 Keywords: FORTH TI 994A

This is an example definition of creating a GOTO function in TI FORTH.

```
: GOTO ( pfa --- ) CFA R> DROP EXECUTE ;
```

The following definition is based on a message that Barry Boland left from an article in the Jan. 85 Dr. Dobb's Journal.

This is a method for creating a "GOTO" word in TI FORTH. In addition to the definition an example, I have included an explanation of the various parts of the definition.

```
: GOTO ( pfa --- ) CFA R> DROP EXECUTE ;
```

The word expects the PARAMETER FIELD ADDRESS of the WORD you wish to GOTO. This is easily obtained by using the ' (TICK) word.

This word leaves the PARAMETER FIELD ADDRESS on the STACK the CFA word translates the PFA to a CONTROL FIELD ADDRESS leaves it on the STACK.

Due to shortage of space and time, development of a Forth program has been omitted from this issue. Sorry - too many goodies!

Due to shortage of space and time, I regret it has not been possible to produce the promised Index to TI+MES Issues 1 to 12. Hopefully available for next issue.

I am not sure what the function of the next word (R) is, but it removes the TOP value from the RETURN STACK places it on the STACK.

The next word removes the top value from the STACK. The EXECUTE word will execute the word defined by the CFA on the top of the STACK.

If you do not include the R) DROP in the definition, then it will just execute the word at the CFA then continue processing.

The following is an example of the coding for using GOTO.

```
: W5 5 0 DD CR 1 . LOOP ;
: W4 CR 75 EMIT ;
: W3 IF ' W4 GOTO ELSE CR 80 EMIT ENDIF ;
: W2 ." Press a 1 to execute the GOTO or any other key
to bypass " KEY 49 = ;
: W1 ." This is a test of GOTO " CR ;
```

END=====

Please remember that RAMBLES is based upon your feedback. Tell me what equipment you have, what you want in Rambles, what you do not want in Rambles. The more detailed you are the better I can meet your needs...

And questions are welcome on the following subjects: Basic, Extended Basic, Marketed modules, Forth, C, Pilot, Logo, Books.

Various services may be available for money... PLEASE send a stamped self addressed envelope if a direct reply is required, and be patient!

Stephen Shaw
10 Alstone Road, STOCKPORT,
Cheshire, SK4 5AH
In an emergency, ring
061 432 6097 between 8pm and 9pm only!

The program used to produce RAMBLES:

```
1 REM 2 COL TEXT
2 REM PREPARE TEXT WITH TIW
  WITH TOP LINE:
3 !
  .LM 0;RM 54;FI;AD;PL 200

  NB: text UNDER 200 lines!
4 REM AND END THAT LINE WITH
  A CARRIAGE RETURN!
5 REM ADD .PL 1 to bottom of
  your text.
6 REM Save using SF then
  use FORMATTER and output
  to DISK (File text/2)
7 REM
8 REM Reload text/2 with
  EDITOR and remove surplus
  LFs at top & bottom then
  resave as Text/2
9 REM using PF!!!! to Disk.
10 REM
11 ! Then run this program..
  ....
12 REM
13 REM by tom freeman
14 REM from Topics
15 REM LA 99 User Group
16 REM
17 REM
18 REM
19 REM
100 CALL CLEAR :: DIM A$(200
),C(200):: CR$=CHR$(13):: LF
$=CHR$(10):: FF$=CHR$(12)::
T$=CHR$(9):: LT$=CR&T$ :: R
T$=LT&T$
105 PG=1
110 DISPLAY AT(9,1):"INPUT F
ILE?":"DSK": "PRINTER NAME?
":"PIO" :: ACCEPT AT(10,4)SI
ZE(12)BEEP:F$ :: OPEN #1:"DS
K"&F$,INPUT
112 ACCEPT AT(13,1)SIZE(-28)
BEEP:P$
120 OPEN #2:P$&"CR"
130 DISPLAY AT(6,1)ERASE ALL
:"NB: 2*Width+L Margin+": "sp
ace between must not": "excee
d 130!"
140 DISPLAY AT(12,1):"Left M
argin: 5": "Spaces between
columns: 8": "Column Width:
55": "Lines per page: 55"
150 ACCEPT AT(12,14)SIZE(-2)
BEEP:LEFT :: ACCEPT AT(14,25
)SIZE(-2)BEEP:BETW :: ACCEPT
AT(16,15)SIZE(-2)BEEP:WIDTH

152 ACCEPT AT(18,17)SIZE(-2)
BEEP:CL
160 LEFT=LEFT+1 :: RIGHT=LEF
T+BETW+WIDTH
170 PRINT #2:CHR$(15);CHR$(2
7);"D";CHR$(LEFT);CHR$(RIGHT
);CHR$(0)
180 IF EOF(1)THEN CLOSE #1 :
: CLOSE #2 :: STOP ELSE X,Y,
X1=0
190 X=X+1 :: LINPUT #1:A$(X)
:: B=POS(A$(X),LF$,1):: IF B
THEN A$(X)=SEG$(A$(X),1,B-1
):: Y=Y+1 :: C(X)=0 ELSE C(X
)=1
200 PRINT X;Y
210 IF X1 THEN 230
220 IF Y=CL THEN X1=X
230 IF Y<2*CL AND EOF(1)=0 T
HEN 190
240 IF Y<2*CL THEN CLOSE #1
:: GOTO 260
250 GOSUB 300 :: GOTO 180
255 CALL CLEAR :: PG=PG+1 ::
  DISPLAY AT(20,1):"PAGE:" P
G :: GOTO 180
260 A$(X+1)=" :: EX=0 :: FO
R Z=1 TO X :: EX=EX+C(Z):: I
F Z-EX=INT((Y+1)/2)THEN X1=Z
:: GOTO 280
270 NEXT Z
280 GOSUB 300
290 CLOSE #2 :: STOP
300 X=0 :: Y=X1
310 X=X+1 :: PRINT #2:T$;A$(
X):: IF C(X)THEN PRINT #2:CR
$ :: GOTO 310
320 Y=Y+1 :: PRINT #2:T$;A$(
Y):: IF C(Y)THEN PRINT #2:LT
$ :: GOTO 320
330 PRINT #2:LF$ :: IF X<X1
THEN 310 ELSE PRINT #2:FF$ :
: RETURN
340 END
350 END
360 REM FROM Topics
370 REM LA 99ers COMPUTER
  GROUP NEWSLETTER
380 REM written by
390 REM Tom Freeman
400 REM
410 REM
420 REM TopIcs Vol 4 No 7
  July 1985
430 REM
440 REM LA 99ers Computer
  Group
450 REM AMENDED in
460 REM TopIcs Vol 5 No 5
470 REM MAY 1986
```

continued----->
next column----->

LOGICAL.

game in TI BASIC. NO extras required!

ry similar to the deductive game MASTERMIND (tm) - guess the colour
quence as quickly as you can from the clues given.

```

10 REM LOGICAL
20 REM MACBRIDE 1983
30 CALL SCREEN(16)
40 CALL CLEAR
50 PRINT TAB(10);"LOGICAL":
:
60 PRINT " I WILL THINK OF 4
DIFFERENT":;"COLOURS.":
70 PRINT " YOU MUST TRY TO
GUESS WHAT":;"THEY ARE.":
80 PRINT " I'LL TELL YOU HOW
MANY ARE":;"IN THE RIGHT PL
ACE-(P) AND":;"HOW MANY ARE
RIGHT COLOURS":
90 PRINT "BUT IN THE WRONG P
LACE (C).":
100 PRINT " ONE MOMENT PLEA
SE.":
110 FOR N=96 TO 136 STEP 8
120 CALL CHAR(N,"0")
130 NEXT N
140 CALL CHAR(144,"102404001
0100010")
150 FOR N=9 TO 15
160 READ B
170 CALL COLOR(N,2,B)
180 NEXT N
190 DATA 5,0,3,14,9,12,16
200 OPTION BASE 1
210 DIM P$(4)
220 DIM C$(4)
230 DIM L$(6)
240 FOR N=1 TO 6
250 READ L$(N)
260 NEXT N
270 DATA B,C,6,M,R,Y
280 PRINT " PRESS ANY KEY TO
BEGIN.":
290 CALL SOUND(500,500,1)
300 CALL KEY(3,K,S)
310 IF S=0 THEN 300
320 CALL CLEAR
325 MYGO=0
330 PRINT TAB(2);CHR$(144);"
";CHR$(144);" ";CHR$(144);"
";CHR$(144);" P C COLOUR
R CODE"
340 PRINT ::TAB(17);CHR$(96)
:
: " BLUE....B":
350 PRINT TAB(17);CHR$(104);
: " CYAN....C":
360 PRINT TAB(17);CHR$(112);
: " GREEN...G":
370 PRINT TAB(17);CHR$(120);
: " MAGENTA.M":
380 PRINT TAB(17);CHR$(128);
: " RED....R":
390 PRINT TAB(17);CHR$(136);
: " YELLOW..Y":
400 PRINT TAB(2);"PICK 4 DIF
FERENT COLOURS":
410 FOR N=1 TO 4
420 X=INT(RND*6)+1
430 IF N=1 THEN 470
440 FOR T=1 TO N-1
450 IF L$(X)=C$(T)THEN 420
460 NEXT T
470 C$(N)=L$(X)
480 NEXT N
490 PR=4
500 RP=0
510 RC=0
520 FOR N=1 TO 4
530 W$="COLOUR "&STR$(N)
540 R=22
550 C=3
560 GOSUB 6000
570 CALL SOUND(500,500,1)
580 CALL KEY(3,K,S)
590 IF S=0 THEN 580
600 CALL HCHAR(24,1,32,32)
610 FOR T=1 TO 6
620 IF K<>ASC(L$(T))THEN 640
630 GOTO 700
640 NEXT T
650 W$="PLEASE PRESS INITIAL
LETTER"
660 R=24
670 C=1
680 GOSUB 6000
690 GOTO 570
700 IF N=1 THEN 800
710 FOR T=1 TO N-1
720 IF CHR$(K)=P$(T)THEN 750
730 NEXT T
740 GOTO 800
750 W$="DIFFERENT COLOURS PL
EASE"
760 R=24
770 C=2
780 GOSUB 6000
790 GOTO 570
800 P$(N)=CHR$(K)
810 FOR T=1 TO 6
820 IF P$(N)<>L$(T)THEN 840
830 CN=T*8+88
840 NEXT T
850 CALL HCHAR(PR,N*2+2,CN)
860 NEXT N
870 IF MYGO THEN 2020
900 FOR T=1 TO 4
910 FOR N=1 TO 4
920 IF P$(T)=C$(N)THEN 950
930 IF P$(T)=C$(N)THEN 970
940 GOTO 990
950 RP=RP+1
960 GOTO 1000
970 RC=RC+1
980 GOTO 1000
990 NEXT N
1000 NEXT T
1010 W$=STR$(RP)
1020 R=PR
1030 C=12
1040 GOSUB 6000
1050 W$=STR$(RC)
1060 C=14
1070 GOSUB 6000
1080 PR=PR+2
1090 IF PR>18 THEN 1200
1100 IF RP=4 THEN 1400
1110 GOTO 500
1200 W$="ENOUGH !!IT WAS "
1210 FOR N=1 TO 4
1220 W$=W$&C$(N)
1230 W$=W$&" "
1240 NEXT N
1250 R=22
1260 C=3
1270 GOSUB 6000
1280 GOTO 1600
1400 W$="RIGHT IN "&STR$(PR
-4)/2)

```

```

1410 W$=W$&" GOES."
1420 R=22
1430 C=3
1440 CALL SOUND(1000,500,1)
1450 GOSUB 6000
1460 GOTO 1600
1600 W$="CAN I HAVE A GO ?(Y
/N) "
1610 R=24
1620 C=5
1630 GOSUB 6000
1640 CALL SOUND(1000,500,1)
1650 CALL KEY(3,K,S)
1660 IF S=0 THEN 1650
1670 IF K=89 THEN 1850
1680 IF K=78 THEN 1700
1690 GOTO 1640
1700 W$="DO YOU WANT ANOTHER
GO?(Y/N) "
1710 R=24
1720 C=2
1730 GOSUB 6000
1740 CALL SOUND(500,500,1)
1750 CALL KEY(3,K,S)
1760 IF S=0 THEN 1750
1770 IF K=89 THEN 320
1780 IF K=78 THEN 1800
1790 GOTO 1740
1800 STOP
1850 FOR N=2 TO 18 STEP 2
1860 CALL HCHAR(N,4,32,12)
1870 NEXT N
1880 CR=4
1890 CC=4
1900 CALL HCHAR(19,1,32,192)
1910 W$="PLEASE TELL ME YOUR
COLOURS"
1920 R=19
1930 C=2
1940 GOSUB 6000
1950 W$="I PROMISE NOT TO RE
MEMBER!"
1960 R=20
1970 GOSUB 6000
1980 CALL SOUND(500,500,1)
1990 MYGO=1
2000 PR=2
2010 GOTO 520
2020 CALL HCHAR(19,1,32,192)
2030 W$="I CANNOT GUESS PLAC
ES."
2040 R=20
2050 C=3
2060 GOSUB 6000
2070 G$="BCGM"
2080 GOSUB 5000
2090 ON K GOTO 2100,2150,250
0,3000
2100 GOSUB 3500
2110 GOTO 2090
2150 G$="BCRY"
2160 GOSUB 5000
2170 ON K GOTO 2180,2200,225
0,3000
2180 GOSUB 3500
2190 GOTO 2170
2200 G$="BGRY"
2210 GOSUB 5000
2220 ON K GOTO 2230,2230,223
0,3000
2230 GOSUB 3500
2240 GOTO 2220
2250 G$="BGRY"
2260 GOSUB 5000
2270 ON K GOTO 2280,2300,235
0,3000
2280 GOSUB 3500
2290 GOTO 2270
2300 G$="CHRY"
2310 GOSUB 5000
2320 ON K GOTO 2330,2330,233
0,3000
2330 GOSUB 3500
2340 GOTO 2320
2350 G$="BMY"
2360 GOSUB 5000
2370 ON K GOTO 2380,2400,238
0,3000
2380 GOSUB 3500
2390 GOTO 2370
2400 G$="CGRY"
2410 GOSUB 5000
2420 ON K GOTO 2430,2430,243
0,3000
2430 GOSUB 3500
2440 GOTO 2420
2450 G$="CGMR"
2460 GOSUB 5000
2470 ON K GOTO 2480,2480,248
0,3000
2480 GOSUB 3500
2490 GOTO 2470
2500 W$="HOW'S THAT THEN?"
3010 R=22
3020 C=5
3030 GOSUB 6000
3040 GOTO 1700
3500 W$="PLEASE CHECK THAT!"
3510 R=23
3520 C=3
3530 GOSUB 6000
3540 CALL SOUND(500,500,1)
3550 CG=CG-1
3560 GOSUB 5100
3570 RETURN
5000 FOR N=1 TO 4
5010 FOR T=1 TO 6
5020 IF SEG$(G$,N,1)<>L$(T)T
HEN 5060
5030 CN=T*8+88
5040 CALL HCHAR(CR,CC,CN)
5050 CC=CC+2
5060 NEXT T
5070 NEXT N
5080 CR=CR+2
5090 CC=4
5100 W$="HOW MANY RIGHT COLO
URS?"
5110 R=24
5120 C=2
5130 GOSUB 6000
5140 CALL SOUND(500,500,1)
5150 CALL KEY(3,K,S)
5160 IF S=0 THEN 5150
5170 IF (K<49)+(K>52)THEN 51
40
5180 CALL HCHAR(24,26,K)
5190 K=K-48
5200 CG=CG+1
5210 CALL HCHAR(23,1,32,64)
5220 RETURN
6000 FOR Q=1 TO LEN(W$)
6010 X=ASC(SEG$(W$,Q,1))
6020 CALL HCHAR(R,Q,C,X)
6030 NEXT Q
6040 RETURN

```


TED FROM A PROVEN RUNNING PROGRAM!
case of difficulty, CHECK those DIGITS!

```
1 ! VDP UTILITY 2 by
  John Behnke, Chicago, USA
2 ! Enables you to RUN a
  TI BASIC program in XB
  even if Char Sets 15 & 16
  have been used.
3 ! To use:
  1. SELECT XB
  2. IF REQUIRED, use
     CALL FILES(1) and
     NEW
4 ! 3.LOAD TI BASIC PROGRAM
  4.MERGE THIS PROGRAM
  INTO IT.
  5.off you go... all the
  CALL LOADS take a little
  5 ! while to work!
  6 ! THIS NEXT LINE IS VITAL:
  7 CALL VDPUTIL2

8 ! TI BASIC PROGRAM FITS IN
  HERE:
9 ! .....
10 ! .....
```

```
32714 SUB VDPUTIL2
32715 CALL CLEAR :: CALL INI
T :: CALL LOAD(8196,63,232)
32716 CALL LOAD(16360,80,79,
75,69,82,32,38,12,80,79,75,6
9,86,32,37,164,80,69,75,86,3
2,37,36)
32717 CALL LOAD(9491,100)
32718 CALL LOAD(9508,2,224,3
7,20,3,0,0,0,2,0,0,100,200,0
,37,18,4,192,2,1,0,1,4,3,2,3
2,12,4,32)
32719 CALL LOAD(9536,32,24,1
8,184,192,32,131,74,2,1,37,0
,208,160,131,18,9,130,2,34,2
55,255,4,32,32,44)
32720 CALL LOAD(9562,4,197,2
09,34,36,255,9,132,19,21,4,1
95,60,224,37,18,200,5,131,76
,200,5,131,78,200,5)
32721 CALL LOAD(9588,131,80,
2,5,64,0,161,68,2,131,0,1,17
,6,2,5,65,0,161,67,6,196,200
,4,131,76)
32722 CALL LOAD(9614,200,5,1
31,74,4,192,192,66,5,129,4,3
7,254)
```

----> continued in next
column----->

```
32723 CALL LOAD(9636,2,224,3
7,20,3,0,0,0,4,192,2,1,0,1,2
00,1,37,18,4,32,32,12,4,32,3
2,24,18,184)
32724 CALL LOAD(9664,200,32,
131,74,37,0,184,32,131,18,37
,19,2,3,0,2)
32725 CALL LOAD(9680,4,192,1
92,67,4,32,32,12,4,32,32,24,
18,184,216,224,131,75,37,0,5
,131,136,3)
32726 CALL LOAD(9704,37,18,2
2,242,192,32,37,0,2,1,37,2,1
92,131,2,34,255,254,4,32,32,
36)
32727 CALL LOAD(9726,4,192,2
16,0,131,124,2,224,131,224,4
,96,0,112)
32728 CALL LOAD(9740,3,0,0,0
,4,192,2,1,0,1,4,32,32,12,20
0,32,131,74,37,18,2,1,0,2,4,
32,32,12,4,32)
32729 CALL LOAD(9770,32,24,1
8,184,192,32,131,74,208,32,3
7,19,4,32,32,48,4,91)
32730 CALL LOAD(8194,39,104)
32731 SUBEND

32732 SUB CHAR(A,A#):: L=LEN
(A#)
32733 A#=A#&RPT$("0",16-L)
32734 FOR I=1 TO 16 STEP 2
32735 A1#=SEG$(A#,I,1)
32736 A2#=SEG$(A#,I+1,1)
32737 IF A1#<" " THEN A1=VAL
(A1#)*16 ELSE A1=(ASC(A1#)-5
5)*16
32738 IF A2#<" " THEN A1=A1+
VAL(A2#)ELSE A1=A1+ASC(A2#)-
55
32739 CALL LINK("POKEV",767+
8*A#+(I+1)/2,A1)
32740 NEXT I
32741 SUBEND

32742 SUB COLOR(A,B,C)
32743 CALL LINK("POKEV",2063
+A,(B-1)*16+C-1)
32744 SUBEND
32745 END
```

Listed with COLIST
A Tony McGovern Program

CORRECT NUMERATION . Jim Peterson.

```
100 CALL CLEAR
110 PRINT TAB(7);"NUMBER SPE
AKER": : "by Jim Peterson":
"      of Tigercub Software"
: :
120 PRINT " This program wil
l print any": " number of les
s than 67": "digits in number
s and in"
130 PRINT "words, and will s
peak the": "words.": : " R
equires Terminal Emulator": "
II and Speech Synthesizer.":
: :
140 CALL CHAR(39,"0000000000
301020")
150 OPEN #1:"SPEECH",OUTPUT
160 DIM HIGH$(21),NN$(23)
170 DATA ONE,TWO,THREE,FOUR,
FIVE,SIX,SEVEN,EIGHT,NINE
180 DATA TEN,ELEVEN,TWELVE,T
HIRTEEN,FOURTEEN,FIFTEEN,SIX
TEEN,SEVENTEEN,EIGHTEEN,NINE
TEEN
190 DATA TWENTY,THIRTY,FORTY
,FIFTY,SIXTY,SEVENTY,EIGHTY,
NINETY
200 DATA THOUSAND,MILLION,BI
LLION,TRILLION,QUADRILLION,Q
UINTILLION,SEXTILLION,SEPTIL
LION,OCTILLION,NONILLION
210 DATA DECILLION,UNDECILLI
ON,DUODECILLION,TREDECILLION
,QUATTORDECILLION,QUINDECIL
LION,SEXTEDECILLION
220 DATA SEPTENDECILLION,OCT
ODECILLION,NOVEMDECILLION,VI
GINTILLION
230 FOR J=1 TO 9
240 READ ONE$(J)
250 NEXT J
260 FOR J=1 TO 10
270 READ TEEN$(J)
280 NEXT J
290 FOR J=1 TO 8
300 READ TEN$(J)
310 NEXT J
320 FOR J=1 TO 21
330 READ HIGH$(J)
340 NEXT J
350 PRINT : :
360 PRINT #1:"NUMBER"
370 INPUT "NUMBER? ":N#
380 L=LEN(N#)
390 FOR J=1 TO L
400 IF POS("0123456789",SEG$
(N#,J,1),1)=0 THEN 360
410 NEXT J
      continued.....
```

EXPLANATION OF PROGRAM LINES

Note how the ":" is used to get 3 lines of text into one PRINT statement.

In line 140, character ASCII 39, the apostrophe, is redefined as a comma because a true comma could not be used in the string P\$ in line 610.

Line 150 activates the Speech Synthesizer. The variable names HIGH\$ and NN\$ will contain more than 11 subscripts, so they must be dimensioned in advance.

Lines 230-250 define ONE\$(1) through ONE\$(21) as being the words ONE through NINE from the DATA statement in line 170.

Similarly, The words in DATA statement 180 are read into TEEN\$, those in DATA statement 190 into TEN\$, and those in DATA statement 200-220 into HIGH\$.

Line 360 speaks the word "NUMBER" and line 370 requests INPUT of the user's number in the form of a string rather than a numeric value so that a large number will not print out in exponential notation. However, if any non-numeric characters are mistakenly entered in N\$, taking the VAL of it in line 420 would cause the program to crash. So, lines 380-410 check through N\$ character by character. If a character is not found in the string "0123456789", the value of POS is 0 and the program requests another number.

Line 420 edits for an invalid negative number or a number containing a decimal, and line 430 edits for a number more than 66 digits long.

If N\$ is input as 0, or a string of 0's, lines 470-500 print and speak "ZERO" and go back for another. Otherwise, line 510 checks whether N\$ can be evenly divided into sets of 3 digits; if not, 520-530 add a 0 in front of it and go back to measure its length again - and again, if necessary. In 540, X is the number of sets of 3 digits in N\$.

The loop 550-610 goes through the length of N\$ in steps of 3, using JJ as a counter to assign each 3-digit segment to a subscript of NN\$. At the same time, the string P\$ is built up as a representation of the number having each 3-digit set of numerals, except the first set, preceded by a comma (as redefined in line 140), as large numbers are usually written. It is then printed by line 630.

Now, the loop 640-1210 goes through the 3-digit sets in sequence, each time go-


```

420 IF (VAL(N$)<1)+(VAL(N$)<
>INT(VAL(N$)))THEN 360
430 IF L<67 THEN 470
440 PRINT "HEY! I CAN ONLY C
OUNT TO A":VIGINTILLION!":
:
450 PRINT #1:"HAY I CAN ONLY
COUNT TO A VIGINTILLION"
460 GOTO 360
470 IF VAL(N$)>0 THEN 510
480 PRINT : "ZERO": :
490 PRINT #1:"ZERO"
500 GOTO 360
510 IF L/3=INT(L/3)THEN 540
520 N$="0"&N$
530 GOTO 380
540 X=L/3
550 FOR J=1 TO L STEP 3
560 JJ=JJ+1
570 NN$(JJ)=SEG$(N$,J,3)
580 IF J>1 THEN 610
590 P$=STR$(VAL(NN$(JJ)))
600 GOTO 620
610 P$=P$&" "&NN$(JJ)
620 NEXT J
630 PRINT : : :P$ : :
640 FOR J=1 TO X
650 GOSUB 670
660 GOTO 1150
670 IF VAL(NN$(J))<>0 THEN 7
10
680 A$=""
690 FLAG=1
700 GOTO 1140
710 FLAG=0
720 H=VAL(SEG$(NN$(J),1,1))
730 T=VAL(SEG$(NN$(J),2,2))
740 TT=VAL(SEG$(NN$(J),2,1))
-1
750 VV=VAL(SEG$(NN$(J),3,1))
760 IF T=0 THEN 1000
770 IF T>9 THEN 810
780 A$=ONE$(T)
790 SP$=A$
800 GOTO 1000
810 IF T>19 THEN 880
820 A$=TEEN$(T-9)
830 IF T<>19 THEN 860
840 SP$="NINE TEEN"
850 GOTO 1000
860 SP$=A$
870 GOTO 1000
880 IF VV<>0 THEN 950
890 A$=TEN$(TT)
900 IF TT<>8 THEN 930
910 SP$="NINE TEE"
920 GOTO 1000
930 SP$=A$
940 GOTO 1000
950 A$=TEN$(TT)&"-"&ONE$(VV)
960 IF TT<>8 THEN 990
continued.....

```

ing to the subroutine 670-1140 to compute what should be printed and spoken, then jumping to 1150 to do so. A\$ is the word to be printed, SP\$ is the word to be spoken.

In line 670, if the set consists of all 0's the program drops through to 680, A\$ will be a blank, a flag is set to 1 and we jump to 1140 which returns us to 660 and thence to 1150 where a blank is printed and the FLAG value of 1 causes us to jump over the speech routine and the printing/speaking of HIGH\$.

But if the value of the set is more than 0, line 670 goes to 710 which makes sure that the FLAG is reset to 0, and then determines the values of the numerals in the set. H is the 1st numeral, T is the 2nd-3rd numerals, TT is the 2nd numeral and VV is the 3rd.

In line 760, if T (2nd-3rd numerals) is 00 the set must be an even hundred so we can skip over the checking of TEEN\$ and TEN\$ to line 1000 (which will drop us through to 1010 because we have already determined in 670 that all 3 digits are not 0).

In line 770, if T is more than 9 we can skip over the ONE\$; otherwise, the value of T will pick out the correct subscript of ONE\$ (from 170 and 230-250) to be printed and, in line 790, to be spoken. In 810, from 770, if T is more than 19 we can similarly skip over TEEN\$; otherwise, the value of T picks out the proper subscript of TEEN\$ (see 180 and 260-280).

In most cases SP\$, the word to be spoken, can be defined as the same as A\$, the word to be printed, but the words NINETEEN and NINETY would be mispronounced (that E in the middle confuses the computer!) so we must define them separately.

In line 880, from 810, if VV (the 3rd digit) is 0 we don't need ONE\$, so in 890 the value of TT (the 2nd digit) gives us the correct subscript of TEN\$ (lines 190 and 290-310); else, 880 takes us to 950 where TT again picks out the right word for TEN\$, a dash (-) is added after it, and then the value of VV picks out the correct word for ONE\$.

In all cases, the program jumps to line 1000. If H (the 1st digit of the set) is 0, we do not need the word HUNDRED so we skip to 1080. If T in 760 was 0 we need only the HUNDRED, so go to 1050. Else, H gives us the subscript of ONE\$ to be placed in front of the

```

970 SP$="NINE TEE"&ONE$(VV)
980 GOTO 1000
990 SP$=A$
1000 IF H=0 THEN 1080
1010 IF T=0 THEN 1050
1020 A$=ONE$(H)&" HUNDRED &
"&A$
1030 SP$=ONE$(H)&" HUNDRED &
"&SP$
1040 GOTO 1140
1050 A$=ONE$(H)&" HUNDRED"
1060 SP$=A$
1070 GOTO 1140
1080 IF (J<X)+(T=0)+(VAL(N$)
<100)THEN 1140
1090 A$=" & "&A$
1100 IF (TT<>8)*(T<>19)THEN
1130
1110 SP$=" & "&SP$
1120 GOTO 1140
1130 SP$=A$
1140 RETURN
1150 PRINT A$
1160 IF FLAG=1 THEN 1200
1170 PRINT #1:SP$
1180 PRINT HIGH$(X-J)
1190 PRINT #1:HIGH$(X-J)
1200 GOSUB 670
1210 NEXT J
1230 A$=""
1240 JJ=0
1260 P$=""
1270 FOR D=1 TO 500
1280 NEXT D
1290 GOTO 350

```

word HUNDRED in lines 1020-1030 and both of these words are placed in front of whatever A\$ and SP\$ already consist of from 780, 820 or 950.

Line 1080, from 1000, checks to see if we are on the last set of 3. If so, and if T was more than 0 and N\$ was more than 99, line 1090 places the symbol & before the printed number; SP\$ in 1110 pronounces & as "AND".

In all cases, the routine goes to 1140 which returns it to 660 and thence to 1150, which prints out the words. We have already described what line 1160 does. Line 1170 speaks the words that were just printed.

Line 1180 finds the correct subscript for HIGH\$ by subtracting the current value of J (the 550-1210 loop we are in) from the value of X (the total number of loops to be made), and then prints and speaks the correct subscript of HIGH\$ (from 200-220 and 320-340).

After the first pass through the loop we enter the 670-1140 subroutine from 1200 instead of from 650.

When the loop has been completed, and the entire number has been spoken and and printed, we must cancel out the values of A\$, JJ and P\$, which were formed by adding onto themselves, before we pause briefly and then go back to ask for the next number.

FUNLWRITER Vn 3.3 NOW IN!!!

This latest version requires TWO disks, as with added utilities and documentation it occupies no less than 671 sectors!

Included in the package are:

Amended DM1000 Vn 3.1 program files - you still need the separate DM1000 package for the documentation
 Amended C99 Rel 2 program files - you still need the separate C99Rel2 pack for documentation, libraries and utilities
 Amended Editor, Formatter and Assembler files - you will still need the Ma for TI Writer and Editor/Assembler which are still available from TI.

FUNLWRITER can now be loaded using:

Extended Basic, Mini Memory, TI Writer, Editor Assembler.

Full functions are however only obtained by using XB for which the package designed.

[[I am still waiting for the C99Rel2 package so can't say how many disks will require]]

TI WRITER FOR NOVICES again.

This time a close look at the COMMAND LINE commands...

When the cursor is flashing in the COMMAND section of screen, regardless of the prompt displayed you can go back to the initial command prompt by using FCTN 9, enabling you to quickly exit a function entered in error.

Printing can be halted by using FCTN 4.

E for Edit we have seen puts the cursor onto the text screen.

PF for PRINT FILE enables you to print your text, and is followed by the printer name: ENTER PF, and then when prompted, ENTER printer name.

PF can also be used:

To print PART of a text file by using line numbers in conjunction with the printer name:

1 16 PIO will print lines 1 to 16 to PIO

24 E PIO will print from 24 to the end to PIO

To print text to a disk:

Using PF instead of SF, you do NOT save the TAB settings to disk: important if you are using TI Writer to create a file which will be used as input for another program, such as Pilot 99, C-99 etc.

Using disk or printer, you can add not only line numbers but also control letters in front of the printer name, for instance:

L 1 16 PIO will print the first 16 lines of text to PIO WITH THE LINE NUMBERS... but the printed line will be shortened to 80 characters INCLUDING the space the line numbers use, so text is liable to be lost!

Adding a C will strip out control characters (eg 1 to 31) from the text, while F sends text as FIXED 80 instead of the usual VARIABLE 80.

NOTE: TI Writer can load and save both FIXED 80 AND VARIABLE 80 files! They must however be DISPLAY type.

SF (Save File) is used to save text to disk in the normal manner, and TAB settings will form the last data item in the file.

Use two line numbers (or E) to save PART of a file to disk. E stands for the end of the text presently in the console.

LF (Load File) is used to load a DISPLAY 80 file from disk, and the file may be variable or fixed. If you precede the disk filename with line numbers you may:

Load part of a file: FIRSTL LASTL FILENAME

Add disk file to existing text:

AFTERL FILENAME will load the disk file to commence after line AFTERL.

Add part of disk file to existing text:

AFTERL FIRSTL LASTL FILENAME

Note that if you add text, it is added after the line

number specified, and any existing text after that line number is simply destroyed, irrevocably.

If you wish to move chunks of text around, use MOVE - M. The computer prompts for FIRSTL LASTL TOL - the first and last line numbers of the chunk to be moved, and the line AFTER which it is to be INSERTED. MOVE does not write over existing text: it moves text down to make room.

C for COPY is similar to MOVE but does not delete the copied portion, merely replicates it. Copy also takes care not to delete text when in operation.

P for Purge clears out the text in the text buffer - you will be given an opportunity to reconsider! If you even then change your mind, if you immediately type RE (recover edit) in the command line, you MAY recover your text - all bar the top line!

Q for Quit exits the program, and you are given a choice of actions- E for Exit, S to save text and P to purge.

FS for FIND STRING will move the cursor to the first occurrence of the quoted string AFTER its present position - so move it to the start of your text to search the whole document! The text to be searched for is bracketed NOT with quotes but with diagonals like this /find me/

RS is Replace String. A word of warning: If you are in Word Wrap mode, using RS will reformat your ENTIRE text. If you do not wish the text reformatted, go to fixed mode before using RS! That is because RS uses INSERT and REFORMAT commands! To use it you bracket the text as before, like this: /oldtext/newtext/ and then select the options Yes, No, All and Stop. If you select All then ALL instances are changed - and this can take a long time in a long document. Once ALL has been selected you cannot escape until it has finished!!!

S for Show is rather like Basic's GOTO - you input a text line number and the cursor will jump to it!

SD for Show Directory enables you to see what is on your disk. Remember to leave the directory by pressing ENTER.

and finally, T for TABS. After pressing T, the tab line will appear. The first character the computer looks for is a L for left margin. You may also have an I for indent - used for new paragraphs.

Indeed you can be very clever and OUTSENT by putting the I in front of the L on the Tab line! Then each tab is marked by a T (you can put full stops

OR spaces where you dont want a tab stop). And fix the right margin with an R.

to edit text which is to the left of the left margin! (You can change tabs several times in a document). There is a left margin release to enable you to move the cursor past the left margin: CTRL Y followed by good use of FCTN S will do the trick.

There is NO right margin release - you have to change the tab!

Note that use of REFORMAT (CTRL 2) or using RS (Replace String) when in word wrap mode, will reformat your text in accordance with the tab settings AT THAT TIME. Remember REFORMAT will work on all text in the current paragraph, FROM the current cursor position.

Well, thats another load of text.... Formatter next time....

This could be a long tutorial...

Stephen Shaw

Written in TI Basic - will NOT run if a disk system is attached.

DUNGEON GOLD. P Dickinson.
Originally published by Stainless Software
Now donated to Public Domain

Find the gold! and escape! using the small clue the program will give you of how far away the gold is.

Explore the 10 x 10 Maze and please:
do avoid the monsters. Their touch is deadly.

100 CALL CLEAR
110 PRINT : " DUNGEON
GOLD"
120 PRINT " -----
---"
130 PRINT : " MANY A BRAV
E AND TRUE FIGHTER HAS
ENTERED"
140 PRINT "THE DUNGEON TO SE
EK FAME AND"
150 PRINT "FORTUNE -- FEW HA
VE RETURNED"
160 PRINT : " DARE YOU F
OLLOW THEM ?"
170 PRINT " ~~~~~
~~~~~"  
180 PRINT : " by p.w.d  
ickinson 1984"  
190 GOLD=0  
200 EP=0  
210 CASH=0  
220 SW=0  
230 PDT=0  
240 SP=0  
250 RESTORE  
260 RANDOMIZE  
270 DIM RR(10,10),YM(50),XM(  
50),HPM(50),MT(50)  
280 N=10  
290 IF RND(.5) THEN 300 ELSE  
310  
300 RESTORE 400  
310 FOR Y=1 TO 10  
320 FOR X=1 TO 10  
330 READ RR(X,Y)  
340 NEXT X  
350 NEXT Y  
360 DATA 9,13,9,11,16,13,14,  
9,10,13,4,5,15,6,4,2,15,7,13  
,4,2,7,12,4,5,10,13,1,2,3  
370 DATA 9,3,8,6,2,13,5,10,1  
3,14,2,13,9,7,13,5,15,12,2,6  
,8,7,3,4,2,7,13,9,10,6  
380 DATA 9,6,9,15,13,4,5,3,9  
,3,4,2,3,14,2,3,5,10,7,13,5,  
11,13,5,13,9,7,13,2,6,2,3,2  
390 DATA 3,2,3,2,5,10,3  
400 DATA 9,13,14,9,16,13,9,1  
1,11,13,2,6,5,7,15,7,6,2,7,3  
,8,7,6,2,11,3,2,11,15,13  
410 DATA 9,3,2,11,15,13,9,15  
,13,1,4,14,9,15,13,5,6,14,2,  
13,2,7,15,13,5,6,2,7,12,1  
420 DATA 9,3,9,7,3,2,13,2,11  
,12,5,13,5,6,9,10,15,13,2,13  
,5,7,3,5,7,11,13,5,11,6  
430 DATA 2,15,10,3,2,3,2,3,2  
,3  
440 CALL CHAR(130,"FFFFFFFF  
FFFFFFFF")  
450 CALL CHAR(131,"0000000000  
00F1F3F")  
460 CALL CHAR(132,"1F1F1302  
0604040")  
470 CALL CHAR(133,"00203C2C3  
0F0F8FC")  
480 CALL CHAR(134,"F0F0D0100  
00C0404")  
490 CALL CHAR(140,"")  
500 CALL CHAR(141,"101010101  
0101010")  
510 CALL CHAR(142,"000000000  
000FF00")  
520 CALL CHAR(143,"001020E7E  
07E7070")  
530 CALL CHAR(144,"0000001C0  
913274F")  
540 CALL CHAR(145,"F0FFFFF9E  
9E0C000")  
550 CALL CHAR(146,"4F4F4F5F7  
F3F1F03")  
560 CALL CHAR(147,"C0E0E0C0B  
00CF0CF")  
570 CALL CHAR(150,"4C4C4C5F5  
F5FFFFF")  
580 CALL CHAR(151,"1E1C1C141  
4143600")  
590 CALL CHAR(152,"7C7C40404  
07C1C1C")  
600 CALL CHAR(153,"1C1C14342  
4640000")  
610 CALL CHAR(155,"00143C7E5  
6595955")  
620 CALL CHAR(156,"000001019  
9B0A5B0")

CARE!  
COUNT  
THE  
COMMAS!  
↓



```

630 CALL CHAR(157,"FF3C3C3C3
C3C3C3C")
640 CALL CHAR(158,"3C3C24242
424E7")
650 CALL CHAR(159,"000000101
8387EFF")
660 REM INIT MAN POSN
670 HP=10+HPX
680 Y=1
690 X=5
700 K=9
710 S=1
720 REM MONSTERS
730 IF N>50 THEN 740 ELSE 76
0
740 N=50
750 XMM=(N-50)/100
760 FOR I=1 TO N
770 XM(I)=INT(RND*9)+1
780 YM(I)=INT(RND*9)+1
790 G=RND*(EP/10000)+XMM
800 IF G<.5 THEN 810 ELSE 84
0
810 MT(I)=1
820 HPM(I)=INT(RND*4)+1
830 GOTO 990
840 IF G<.95 THEN 850 ELSE 8
80
850 MT(I)=2
860 HPM(I)=INT(RND*8)+1
870 GOTO 990
880 IF G<1.5 THEN 890 ELSE 9
20
890 MT(I)=3
900 HPM(I)=INT(RND*8)+5
910 GOTO 990
920 IF (G<2.5) THEN 930 ELSE
960
930 MT(I)=4
940 HPM(I)=INT(RND*10)+10
950 GOTO 990
960 MT(I)=5
970 HPM(I)=INT(RND*20)+25
980 ND=ND+1
990 NEXT I
1000 REM GOLD
1010 XG=INT(RND*9)+1
1020 YG=INT(RND*9)+1
1030 GOLC=50*INT(SQR((X-XG)^
2+(Y-YG)^2))
1040 CALL CLEAR
1050 GOTO 1240
1060 REM MAIN LOOP
1070 CALL SCREEN(Y+2)
1080 CALL KEY(0,K,S)
1090 IF S<>0 THEN 1300
1100 Z=INT(SQR((X-XG)^2+(Y-Y
G)^2))
1110 YMES=22
1120 M$="GOLD AT : H.P. : E.
P.:"
1130 GOSUB 3810
1140 YMES=23
1150 M$=STR$(Z)
1160 GOSUB 3810
1170 XMES=14
1180 M$=STR$(HP)
1190 GOSUB 3830
1200 XMES=22
1210 M$=STR$(EP)
1220 GOSUB 3830
1230 CALL KEY(0,K,S)
1240 IF S=0 THEN 1230
1250 IF K=70 THEN 1260 ELSE
1300
1260 M$="DON'T FIGHT SHADOWS
!"
1270 YMES=22
1280 GOSUB 3810
1290 EP=EP-50
1300 IF (K=80)*(POT>0) THEN 1
310 ELSE 1350
1310 HP=HP+INT(RND*5000)/100
0+1
1320 POT=POT-1
1330 XMES=14
1340 GOTO 1180
1350 IF K=69 THEN 1360 ELSE
1430
1360 CALL GCHAR(2,15,G)
1370 IF G=140 THEN 1380 ELSE
1400
1380 Y=Y-1
1390 GOTO 1630
1400 IF G=142 THEN 1750
1410 IF G=130 THEN 4140 ELSE
1420
1420 GOTO 1630
1430 IF K=83 THEN 1440 ELSE
1500
1440 CALL GCHAR(11,5,G)
1450 IF G=140 THEN 1460 ELSE
1480
1460 X=X-1

```

```

1470 GOTO 1630
1480 IF G=130 THEN 4140 ELSE
1490
1490 GOTO 1630
1500 IF K=68 THEN 1510 ELSE
1570
1510 CALL GCHAR(11,27,G)
1520 IF G=140 THEN 1530 ELSE
1550
1530 X=X+1
1540 GOTO 1630
1550 IF G=130 THEN 4140 ELSE
1560
1560 GOTO 1630
1570 IF K<>88 THEN 1630
1580 CALL GCHAR(20,15,G)
1590 IF G=140 THEN 1600 ELSE
1620
1600 Y=Y+1
1610 GOTO 1630
1620 IF G=130 THEN 4140 ELSE
1630
1630 GOSUB 3000
1640 RYF=11
1650 RXF=15
1660 CALL HCHAR(RYF-1,RXF,15
0)
1670 CALL HCHAR(RYF,RXF,151)
1680 REM MONSTER CHECK
1690 FOR I=1 TO N
1700 IF (Y=YM(I))*(X=XM(I)) T
HEN 2070
1710 NEXT I
1720 REM GOLD CHECK
1730 IF (Y=YG)*(X=XG) THEN 28
40
1740 GOTO 1060
1750 REM EXIT
1760 N=N+1
1770 IF GOLD=1 THEN 1890
1780 CALL CLEAR
1790 PRINT "!!" YOUR MISSIO
N WAS TO FIND GOLD"
1800 PRINT "!!" YOU FAILED "
1810 PRINT "!!" RE-ENTER THE
DUNGEON (PRESS X)"
1820 PRINT "!!" OR DIE !"
1830 N=N+2
1840 EP=EP/2
1850 CALL KEY(0,K,S)
1860 IF S=0 THEN 1850

```

```

1870 IF K<>88 THEN 3930 ELSE
1880
1880 GOTO 680
1890 REM SUCCESS
1900 CALL CLEAR
1910 GOLD=0
1920 CASH=CASH+GOLC
1930 EP=EP+1000
1940 N=N+2
1950 PRINT "!!" WELL DONE"
1960 PRINT "!!" YOU MAY BUY S
PELLS AND WEAPONS"
1970 PRINT "!!" TO THE VALUE 0
F";CASH;"G.P.:"
1980 GOSUB 4470
1990 PRINT "!!" RE-ENTER (PRESS
X) FOR MORE FAME ETC.:"
2000 HP=10+INT(EP/1000)
2010 PRINT "!!" YOUR H.P.=";HP;
" E.P.=";EP
2020 PRINT "!!" YOU HAVE";POT;
POTIONS AND";SP;"SPELLS"
2030 CALL KEY(0,K,S)
2040 IF S=0 THEN 2030
2050 IF K<>88 THEN 2030
2060 GOTO 680
2070 REM FIGHT
2080 CALL SOUND(-100,190,0)
2090 RYM=INT(RND*12)+5
2100 RXM=INT(RND*10)+7
2110 IF MT(I)=1 THEN 2120 EL
SE 2140
2120 CALL HCHAR(RYM,RXM,155)
2130 GOTO 2340
2140 IF MT(I)=2 THEN 2150 EL
SE 2180
2150 CALL HCHAR(RYM-1,RXM,15
2)
2160 CALL HCHAR(RYM,RXM,153)
2170 GOTO 2340
2180 IF MT(I)=3 THEN 2190 EL
SE 2230
2190 CALL HCHAR(RYM-1,RXM,15
6)
2200 CALL HCHAR(RYM,RXM,157)
2210 CALL HCHAR(RYM+1,RXM,15
8)
2220 GOTO 2340
2230 IF MT(I)=4 THEN 2240 EL
SE 2290
2240 CALL HCHAR(RYM-1,RXM-1,
131)

```

```

2250 CALL HCHAR(RYM,RXM-1,13
2)
2260 CALL HCHAR(RYM-1,RXM,13
3)
2270 CALL HCHAR(RYM,RXM,134)
2280 GOTO 2340
2290 CALL HCHAR(RYM-2,RXM,14
3)
2300 CALL HCHAR(RYM-1,RXM-1,
144)
2310 CALL HCHAR(RYM-1,RXM,14
5)
2320 CALL HCHAR(RYM,RXM-1,14
6)
2330 CALL HCHAR(RYM,RXM,147)
2340 CALL KEY(0,K,S)
2350 IF (K=83)*(SP>0) THEN 23
60 ELSE 2400
2360 GOSUB 4790
2370 H=25
2380 SP=SP-1
2390 GOTO 2420
2400 IF K=70 THEN 2410 ELSE
2500
2410 H=RND*8+2*(SM+1)
2420 HPM(I)=HPM(I)-H
2430 CALL VCHAR(RYF-1,RXF,32
,3)
2440 CALL VCHAR(RYF-1,RXF-1,
32,3)
2450 RYF=RYM-1
2460 RXF=RXM+1
2470 CALL HCHAR(RYF,RXF,151)
2480 CALL HCHAR(RYF-1,RXF,15
0)
2490 IF HPM(I)<0 THEN 2630
2500 CALL VCHAR(RYM-1,RXM-1,
32,3)
2510 CALL VCHAR(RYM-1,RXM,32
,3)
2520 RYM=RYF
2530 RXM=RXF+2
2540 IF (RND<.25)*(MT(I)=5) T
HEN 2550 ELSE 2580
2550 GOSUB 4790
2560 MH=15
2570 GOTO 2590
2580 MH=(RND*2.5+5)*MT(I)
2590 HP=HP-MH
2600 HP=INT(HP*1000)/1000
2610 IF HP<0 THEN 3930
2620 GOTO 2110
2630 YMES=22
2640 M$="ONE DEAD "

```

```

2650 GOSUB 3810
2660 XMES=14
2670 ON MT(I) GOSUB 2740,2760
,2780,2800,2820
2680 GOSUB 3830
2690 XM(I)=0
2700 EP=EP+MT(I)*150+SGN(MT(
I)-3)*100
2710 FOR T=1 TO 100
2720 NEXT T
2730 GOTO 1720
2740 M$="SPIDER"
2750 RETURN
2760 M$="GOBLIN"
2770 RETURN
2780 M$="OGRE"
2790 RETURN
2800 M$="HELL HOUND"
2810 RETURN
2820 M$="DRAGON !!"
2830 RETURN
2840 REM GOLD FIND
2850 IF (GOLD=1) THEN 2960
2860 CALL SOUND(100,200,0)
2870 CALL SOUND(500,1500,0)
2880 CALL HCHAR(11,14,159)
2890 M$="GOLD !!! -YOU PICK
IT UP"
2900 YMES=22
2910 GOSUB 3810
2920 FOR T=1 TO 100
2930 NEXT T
2940 GOLD=1
2950 GOTO 1060
2960 M$="YOU'VE ALREADY GOT
THE GOLD"
2970 YMES=22
2980 GOSUB 3810
2990 GOTO 1060
3000 REM ROOMS
3010 R=RR(X,Y)
3020 CALL CLEAR
3030 CALL HCHAR(2,5,130,23)
3040 CALL HCHAR(20,5,130,23)
3050 CALL VCHAR(2,5,130,18)
3060 CALL VCHAR(2,27,130,18)
3070 ON R GOSUB 3090,3120,31
60,3200,3240,3290,3340,3400,
3430,3470,3510,3560,3590,363
0
3080 RETURN

```



```

3090 REM 1 | 3530 CALL VCHAR(11,27,140,2) | 3950 NEXT T
3100 CALL HCHAR(2,15,140,2) | 3540 CALL HCHAR(20,15,140,2) | 3960 CALL CLEAR
3110 RETURN | 3550 RETURN | 3970 PRINT " YOU SUFFER THE
| | | FATE OF THE "
3120 REM 2 | 3560 REM 12 | 3980 PRINT "REST.YOUR BANK B
3130 CALL HCHAR(2,15,140,2) | 3570 CALL VCHAR(11,5,140,2) | ALANCE WAS";CASH;"G.P. YOU G
3140 CALL VCHAR(11,27,140,2) | 3580 RETURN | AINED ";EP;"EXPERIANCE"
3150 RETURN | | 3990 PRINT "YOUR FINAL (DEAD
| | | ) STATUS IS"
3160 REM 3 | 3600 CALL VCHAR(11,5,140,2) | 4000 EX=INT(EP/2000)
3170 CALL HCHAR(2,15,140,2) | 3610 CALL HCHAR(20,15,140,2) | 4010 IF EX<1 THEN 4020 ELSE
3180 CALL VCHAR(11,5,140,2) | 3620 RETURN | 4040
3190 RETURN | | 4020 PRINT "SCUM"
| | | 4030 GOTO 4080
3200 REM 4 | 3630 REM 14 | 4040 IF EX>13 THEN 4050 ELSE
3210 CALL HCHAR(2,15,140,2) | 3640 CALL HCHAR(20,15,140,2) | 4070
3220 CALL HCHAR(20,15,140,2) | 3650 RETURN | 4050 PRINT "GOD !"
3230 RETURN | | 4060 GOTO 4080
| | | 4070 ON EX GOSUB 4210,4230,4
3240 REM 5 | 3660 REM 15 | 250,4270,4290,4310,4330,4350
3250 CALL HCHAR(2,15,140,2) | 3670 CALL VCHAR(11,5,140,2) | ,4370,4390,4410,4430,4450
3260 CALL HCHAR(20,15,140,2) | 3680 CALL VCHAR(11,27,140,2) | 4080 PRINT ":"DO YOU WANT AN
3270 CALL VCHAR(11,27,140,2) | 3690 CALL HCHAR(2,15,140,2) | OTHER GO ?"
3280 RETURN | 3700 RETURN | 4090 CALL KEY(0,K,S)
| | | 4100 IF S=0 THEN 4090
3290 REM 6 | 3710 REM 16E | 4110 IF K=09 THEN 100
3300 CALL HCHAR(2,15,140,2) | 3720 CALL VCHAR(11,5,140,2) | 4120 IF K<>78 THEN 4090
3310 CALL HCHAR(20,15,140,2) | 3730 CALL VCHAR(11,27,140,2) | 4130 END
3320 CALL VCHAR(11,5,140,2) | 3740 CALL HCHAR(20,15,140,2) | |
3330 RETURN | 3750 CALL VCHAR(2,14,141,3) | |
| | | 4140 REM WALL HIT
3340 REM 7 | 3760 CALL VCHAR(2,17,141,3) | 4150 MS="OUCH! YOU JUST HIT
3350 CALL HCHAR(2,15,140,2) | 3770 CALL HCHAR(2,15,142,2) | A WALL"
3360 CALL HCHAR(20,15,140,2) | 3780 CALL HCHAR(3,15,142,2) | 4160 YMES=22
3370 CALL VCHAR(11,5,140,2) | 3790 CALL HCHAR(4,15,142,2) | 4170 GOSUB 3810
3380 CALL VCHAR(11,27,140,2) | 3800 RETURN | 4180 FOR T=1 TO 250
3390 RETURN | | 4190 NEXT T
| | | 4200 GOTO 1100
3400 REM 8 | 3810 REM MESSAGE | 4210 PRINT "VETERAN"
3410 CALL VCHAR(11,27,140,2) | 3820 CALL HCHAR(YMES,2,32,30) | 4220 RETURN
3420 RETURN | | 4230 PRINT "WARRIOR"
| | | 4240 RETURN
3430 REM 9 | 3830 L=LEN(M$) | 4250 PRINT "SWORDSMAN"
3440 CALL VCHAR(11,27,140,2) | 3840 IF XMES=0 THEN 3850 ELS | 4260 RETURN
3450 CALL HCHAR(20,15,140,2) | E 3860 | 4270 PRINT "HERO"
3460 RETURN | 3850 XMES=5 | 4280 RETURN
| | | 4290 PRINT "SMASHBUCKLER"
3470 REM 10 | 3860 REM | 4300 RETURN
3480 CALL VCHAR(11,5,140,2) | 3870 FOR C=1 TO L | 4310 PRINT "MYRMIDON"
3490 CALL VCHAR(11,27,140,2) | 3880 CHAR=ASC(SEG$(M$,C,1)) | 4320 RETURN
3500 RETURN | 3890 CALL HCHAR(YMES,XMES+C, | 4330 PRINT "CHAMPION"
| | | CHAR) | 4340 RETURN
| | | 4350 PRINT "SUPERHERO"
3510 REM 11 | 3900 NEXT C | 4360 RETURN
3520 CALL VCHAR(11,5,140,2) | 3910 XMES=0 | 4370 PRINT "LORD"
| | | 4390 FOR T=1000 TO 190 STEP
| | | -10
| | | 3940 CALL SOUND(10,T,0)

```

```

4380 RETURN | 4530 PRINT "IF YOU WISH TO B | 4730 CASH=CASH-100
4390 PRINT "RANGER" | UY NOTHING ENTER 0" | 4740 POT=POT+1
4400 RETURN | 4540 INPUT B | 4750 GOTO 4480
4410 PRINT "RANGER KNIGHT" | 4550 IF B=0 THEN 1990 | 4760 PRINT " NOT ENOUGH CASH
4420 RETURN | 4560 IF B>1 THEN 4610 | "
4430 PRINT "RANGER LORD" | 4570 IF CASH<100 THEN 4760 | 4770 PRINT "YOU ARE FORCIBL
4440 RETURN | 4580 CASH=CASH-100 | Y REMOVED FROM THE SHOP !"
4450 PRINT "PALADIN" | 4590 SP=SP+1 | 4780 GOTO 1990
4460 RETURN | 4600 GOTO 4480 | 4790 CALL SCREEN(16)
| | | 4800 FOR BB=1 TO 15
4470 REM SHOP | 4610 IF B>2 THEN 4660 | 4810 CALL SOUND(100,-7,0)
4480 PRINT ":"SHOP --- YOUR | 4620 IF CASH<400 THEN 4760 | 4820 NEXT BB
CREDIT =";CASH;"G.P." | 4630 CASH=CASH-400 | 4830 CALL SCREEN(2)
4490 PRINT "1 THUNDERBOLT | 4640 SW=1 | 4840 CALL SCREEN(Y+2)
100 G.P." | 4650 GOTO 4480 | 4850 RETURN
4500 PRINT "2 +1 MAGIC SWOR | 4660 IF B>3 THEN 4710 |
D 400 G.P." | 4670 IF CASH<600 THEN 4760 |
4510 PRINT "3 +2 MAGIC SWOR | 4680 CASH=CASH-800 |
D 800 G.P." | 4690 SW=2 |
4520 PRINT "4 HEALING POTIO | 4700 GOTO 4480 |
N 100 G.P." | 4710 IF B<>4 THEN 4480 |
| 4720 IF CASH<100 THEN 4760 |

```

GOLD AT: shows DISTANCE to gold.  
When you have some gold, exit to buy spells and potions!

If a monster appears, QUICKLY press key F, or if you have spells, press key S - and hold the key down until one of you is vanquished! Press the key down QUICKLY!

When your Hit Points fall below 1, you are dead - so if they become low, head for the exit or if you have a potion press P to partly recover.

## HOW TO GET THERE . . .

### By rail

Olympia, London, has its own BR and Underground station. New direct rail services from the Midlands, Northwest and the South Coast make the exhibition centre even easier to reach. From other mainline stations travel to Earls Court by Underground and take the special PCW Show service to Olympia.

### By road

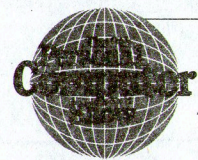
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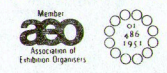
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U54\*PROGRAMMING c99 ON THE TI99/4

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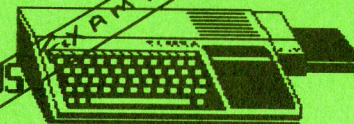
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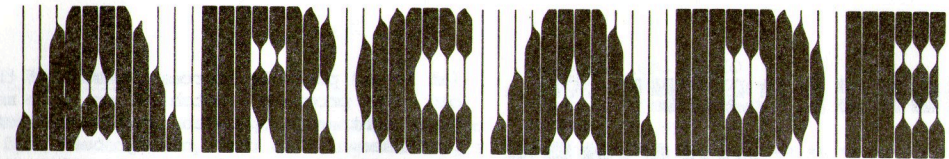
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## Musings

### BACK-ISSUES OF THE NATIONAL NINETY-NINER

At last (about a year after ordering) a reprint of Volume I (11/83 to 12/84) has arrived. Was it worth the wait - and the price (\$10 plus \$6 surface or \$12 air mail)? If you're interested in assembly language, then it's certainly worth it for John Phillips' articles alone. There's some good material on FORTH, mainly by Jim Vincent, and Jim Peterson's TIPS from the Tigercub 10-16. Those of you with an interest in history will delight in the record of the ups and downs of the various third party hardware and software suppliers. There are some interesting interviews with key figures in the US TI user community. But how times have changed! Vol.1 No.1 (November 5, 1983) records a first sighting of Atari's "Donkey Kong" for the TI99/4A at \$37.48 - a far cry from the "5 for £10" seen at the TI Users Show at Leeds in May this year. The volume is loose-leaf, with a pair of covers for do-it-yourself binding.

### WHEN IS A PROGRAM ANOTHER PROGRAM?

After 18 months the former TIHOME Software Collection has now emerged under the banner of Peter Brooks' OXON TI USERS - except that just as the catalogue's been printed, OXON TI USERS has become the International TI User Group - definitely a move up-market! I got my copy of the TIHOME Software Collection Catalogue from Peter at the Leeds show and ordered his entire "religious section" - one Bible quiz program. When it arrived, I loaded it and, somehow, it looked familiar. A quick shuffle amongst my disks and cassettes revealed the reason - it was identical to a program I bought a couple of years ago from the old International User Group (IUG) library. TIHOME catalogue in one hand and IUG catalogue in the other, I then spent an interesting hour identifying about 40 programs which were common to both. The key to identification appears to be that if the Old TIHOME Software Collection number began with a "Z", then the program's almost certainly in the IUG collection too. All this is perfectly legal - people just donated their programs to both libraries. Now, Amnion supplied the IUG library and, following the IUG's demise, their software became public domain and is available on disk from Stephen Shaw. So there are two

(at least) possible sources for some of the old IUG programs - watch out or, like me, you might end up with some duplicate purchases. All that having been said - Peter, Stephen and, of course, Clive and Audrey are doing an excellent job in making ready-to-run programs available to TI users.

### AND NOT B4TIME!

Talking of ready-to-run programs, I've found the ideal answer for those of us whose fingers just move too slowly over the keyboard to get all but the smallest program typed in. 4FRONT is a new quarterly magazine on cassette (£3.50 per copy) or disk (£4.50) - with a year's subscription giving 4 for the price of 3 - from Harry Pridmore (ex-Parco) of New Day Computing, Jerrard Close, Honiton, Devon, EX14 8EF. I bought a copy of the first edition at the Leeds Show and was MOST IMPRESSED. Compared with professionally produced magazines for other computers, like the late, lamented "MSX Tape Computing", which cost considerably more, it has less spelling mistakes, better layout and contains an excellent range of material. I bought the disk version, which assumes (reasonably) that you own Extended BASIC (EB) (and that you might also own the Editor/Assembler). There are some good contributors too (Neil Lawson, Ian Martin and Graham Marshall appear amongst others - and the next issue promises Stephen Shaw as well), and there's a nice balance between reviews (Mechatronics EB 2+), adventures (19 clues for Scott Adams fans), editorial (introductions to the contents of the cassette or disk), advertisements (including TI99/4a Exchange!) and programs. The cassette version has a nice split of three programs for console BASIC (not on the disk copy), 3 for EB and one for EB plus 32K RAM expansion (the latter 4 programs also appear on the disk copy). One of the EB games, POWERBALL, is by the author of Lantern's Crazy Caver, and is a cross between Parsec and Qbert - if you can imagine it! On disk there's a chance to explore bit-map graphics with a set of assembler routines from Graham Marshall. However, maybe it's a bit over-ambitious to try and produce different versions of the magazine on cassette and disk? If the quality can be kept up, 4FRONT deserves to be a success, so send off your cheque or a postal order now - I'm sure you'll not be disappointed, whatever system you own! A venture like this deserves the support of the whole TI user community.

### C FOR YOURSELF

Clint Pulley has done a great service to the TI community by creating "c99", a version of Small C. There aren't a lot of Small C programs published, but quite a lot in C, and I rooted out Bell Laboratory's Computer Science Technical Report 31 on "The C Programming Language" (October 1975) which contains Dennis Ritchie's "C Reference Manual" and Brian Kernighan's "C Tutorial". It contains the following good news for Small C programmers bemoaning the lack of "for" and "switch" statements and the "?:" conditional expression. They are really just glosses on the basic language and have Small C equivalents as the following examples show.

1. for  
for (i=0; (t[i]=s[i])!=0; i++) w++;  
is equivalent to:  
i=0;  
while ( (t[i]=s[i]) != 0 )  
{ w++;  
i++; }
2. switch  
switch(c) {  
case 'a': aflag++; break;  
case 'b': bflag++; break;  
case 'c': cflag++; break;  
default: puts("Not a, b or c");  
break;  
}  
is equivalent to:  
if (c=='a') aflag++;  
else if (c=='b') bflag++;  
else if (c=='c') cflag++;  
else puts("Not a, b or c");
3. conditional expression  
x=(a<b ? a : b);  
is equivalent to:  
if (a<b) x=a; else x=b;  
(Note the semicolon after x=a).

At work we've recently obtained all 800 public domain disks for the IBM PC for our computer users. Some of these disks have C programs on them and, I believe, some are in Small C. I hope to sift through this material and extract items of interest for the TI community - unfortunately pressure of work and illness have prevented me so far - although I have found a Small C compiler in Small C, which may be of interest, and I've converted a program which illustrates the solution to the "Towers of Hanoi" problem quite nicely. Perhaps if there's any interest I could include that next time? Just for interest, here's a Small C program to count the words in a TI-Writer file quickly.

```
#include DSK1.STDIO
#define MAXLINE 81
#define APOSTROPHE 39
#define FALSE 0
#define TRUE 1
char fn[20];
main()
{ int inp;
  while(inp = getfn("Input", "r"))
  { puts("\nThe file "); puts(fn);
    puts(" contains\nabout ");
    printf(count(inp)); puts(" words\n");
    fclose(inp);
  }
}
/***** count words in file f *****/
count(f) int f;
{ int words, inword, i;
  char c, inbuf[MAXLINE];
  words = 0;
  while (fgets(inbuf, MAXLINE, f))
  { if (*inbuf != '\n')
    { inword = FALSE;
      i = 1;
      while (c = inbuf[i++])
      { if (isan(c)) inword = TRUE;
        else if (inword)
          { words++; inword = FALSE; }
      }
      if (inword) words++;
    }
  }
  return(words);
}
/***** is c letter, digit or ' *****/
isan(c) char c;
{ c = c & 127;
  return((c >= 'A' & c <= 'Z') |
         (c >= 'a' & c <= 'z') |
         (c >= '0' & c <= '9') |
         (c == APOSTROPHE));
}
/***** print +ve decimal number ***/
printf(n) int n;
{ int a;
  if (a = n / 10) printf(a);
  putchar(n % 10 + '0');
}
/**** get file name and open file *****/
getfn(text,m) char *text,*m;
{ /* text distributed with 'c99' ****/ }
```

### CLOSING TIME

Whatever happened to the TI Home Computer User Club? I've still not received the promised (and paid for) Autumn 1985 issue of Club News - did anyone? A little bird tells me the whole thing quietly folded take-over organisation and all! Long may TI99/4a Exchange continue!

John Rice

7 Lincoln Road, SWINTON, Manchester M27 3JH



## SHOULD YOU EXPAND YOUR TI??

At periodic intervals, like everytime TI\*MES arrives, I have thought that I should write an article, but that is as far as I have previously got. Not that I have any particular gems of wisdom to impart, nor am I a high powered expert programmer, nor an electronics wizard with marvellous hardware mods, but as a regular user of the 99/4A (my wife would use the term "addict", she being resigned to being a computer widow - although she says that at least she knows where I am) I have built up quite a lot of everyday useage experience, which I feel might be of interest to others.

Firstly by way of introduction, I am one of the older generation of members having written my first programs, including a pure machine code utility, some 22 years ago. Being a Chartered Engineer (civil/structural), I have rubbed shoulders with computers for many years, although my direct exposure has been relatively limited for this field.

However I did find that I had an aptitude for using computers, bordering on the addictive (yes, I admit it), and was therefore both thrilled and immediately at home when I was able to obtain my own home computer, the 99/4A, now almost 4 years ago. How different things were then. I chose the 99/4A essentially because of its Texas pedigree, and the expectation that there would be continuity (!). Looking back, it has certainly performed well, other than the reliability of the cartridge slot, it still looks smart, unlike others I have seen. The continuity has been worrying, but thanks to the very active user groups, and faithful suppliers, this question has been deferred. Indeed the tight closeknit very personal user community is almost a good reason on its own for staying with the 99/4A.

I soon found that deciding which machine was the easy part, finding one was another matter. Advertised everywhere, but "expected in". At last I found one (the only one in stock) and offered with a free Invaders module. The only trouble was that these were out of stock, further supplies unknown, but he had two others - Household Budget Management and Beginning Grammar - not quite the same as an action game. However I took the first and bought the second, the former has never really been used - I soon found that it didn't do what I wanted it to do and I preferred to write my own. The latter was used quite a lot initially by my children, but then they grew out of it. In fact I have had great difficulty getting them to use educational modules (let alone any programming), although they love pure games.

I took it home, and, as the whole family waited expectantly, unpacked and connected it up. Nothing. I tried everything umpteen times without success. Back to the dealer, he was not perturbed - quite usual - replacement would be in next week. At last I got it home, it worked, but what next? I wanted a good game, the dealer had none (after all I had cleaned him out!), searched magazines in vain, writing something myself would (a) be pathetic (b) take a long time. Fortunately the next month C&VG had "Laser", I rushed home crunched it in, you can guess - it didn't work. So I took it apart, worked out some of the logic, failed to comprehend others, even found what as far I could see were some redundant lines. But at last managed to get it to work satisfactorily. The next step was to link up a cassette

recorder, that is another long story, but eventually it worked. How things have changed, now I have more material that I know w to do with, in those days I was so desperatate I started to translate from other machines.

I soon joined TIHOME, which opened the vista up, and made one feel less isolated. It was through a review in this that I made my first contact with a firm called Arcade Hardware and bought their special joystick. This is still performing well, and I still prefer it to their next one (which the children prefer). Typical of Howard Greenberg, when I ordered my second (because as will follow I had bought a second console, and being so satisfied with the first joystick had decided to obtain another ) I had a very anxious note back "why a second?" had something gone wrong with the first? Such concern with the durability of his wares. Needless to say I was pleased to repl that there was nothing amiss, the second order was because of full satisfaction with the first. As I say typical of Howard, have bought a number of products from him over the years and I have always found him to be helpful, very honest, and reliable. As my wife said after ordering something one Christmas: "you feel he cares".

My first year of ownership was rather frustrating, so much else to do and little time to spare for computing. Invaders and Parsec were obtained amongst others, and gave much satisfaction. During this period I found out the hard way how slow cassette handling of data is - painful. After a year, I was posted to Norway, hence the second console - one in the UK, one in Norway and found more time for computing. I also crossed my first higher hardware threshold (from the basic of console and cassette recorder) with the purchase from Arcade (of course) of an Alphacom printer. It had been so frustrating not being able to obtain hard copy, but the cost of upgrading to a printer was prohibitive. Consequently the Alphacom opened up new horizons and I churned through thermal paper. It has continued to perform satisfactorily (I hope the devil does not hear and I suffer one failure after another after this article!), I had some connector problems at the start, but after some anxious moments it worked after trying and trying again. I did find that it would not work with a Speech Synthesizer (I didn't try removing the flap as suggested by another member) but this didn't worry me as most of my useage didn't require one.

Another threshold was crossed last year, when I decided to upgrade. I had often dreamed of doing so, but quickly dismissed the idea when I thought of the cost. However a year ago I realised that I had outgrown the basic console and cassette storage, plus my continuance overseas allowed me the means to do something. Expand or change system? Was it wise to sink a lot of capital into a possibly dying breed. After much agonising I decided to upgrade, OK it was going to be expensive but if I changed system (a) I would not get much for my existing equipment (b) I would have to discard all my own written programs and accumulated data (I had laboured to build up quite an extensive data base of Norwegian vocabulary, and the thought of recompiling this was soul destroying). I wonder how many people have calculated the total "as-purchased" cost of their system, I think they would be shattered if they did. The next stage was to decide what upgrade. At this stage I was thinking mainly of disk



drives and 32K, but decided that if one was doing this then it was folly not to also have a printer capability. After more agonising, talking to Howard (honest and helpful), Parco, and useful insider information from Peter Brooks. I decided to go for a Myarc MPES from Arcade, this having as standard 32K, printer and disk drive interfaces. To this Howard added twin DSDD drives. This resulted in a very nice package, yes it seemed a lot of money, but one can easily spend a lot in dribs and drabs. The alternative from Parco would have been a standard TI PEB with a SSSD drive.

With hindsight I feel that I made the best choice at the time, although a possibly better alternative might have been (if it had been available) a TI PEB with one of the new disk controllers and DSDD drives - I cannot add the new generation of cards to my box, and Myarc don't seem to be developing expansion capabilities for their MPES (I gather from the Orphan Chronicles that, as good as it was, the MPES was not a success for Myarc because there was still a good supply of TI PEB's in the States). One point on which I certainly don't have any second thoughts is the decision to opt for twin DSDD drives. Firstly a second drive is not essential, but I cannot imagine getting by without one. The thought of copying disks with only one drive is exhausting. Having two allows one to readily back up as one goes. I have had a rare failure of reading a TI-WRITER file from one disk, switch to and read from the second reinstate on the first, so easy. Again more than SSSD is not essential, but it makes life so much easier. Instead of having of having a program and a data disk, they can be combined into a single composite disk. Generally I tend only to go up to SSSD, because access times come to be rather long on a full DSDD disk, but the capability is exceedingly useful, especially if access time is not too important or where archive back-ups are being made.

Despite what I might have implied earlier, I have been very satisfied with my MPES, it has behaved impeccably, it tucks neatly away and is relatively quiet. Although I have mentioned the new generation of cards, one must also ask "do I need them?". I read the other day an article which said that many who want to trade up/change machine, don't really know why they need to. One should ask oneself "what will I really gain?", "what will I be able to do that I cannot do now?". I have to admit that my current set-up satisfies all my needs. Even the lamented lack of speed is not really troublesome. With my expanded system, many new horizons have opened up, only a few of which I have so far explored. The immediate gains have been (i) much faster handling of programs and data (ii) word processing capabilities.

In summary, if you don't have a printer, you should endeavour to get one. If you can stretch to expansion, you won't regret it, even if it does mean using up your next few years computing budget all at once.



John Bingham.

Furstlia 35,  
1335 Snarøya,  
Norway.

## YOUR LETTERS & NEWSLETTERS

>IVAN NIBUR Telephoned us from the USA :- HOME COMPUTER MAGAZINE (or 99er) have folded, in case some of you took out renewals you will find that the last issue was in APRIL 1986. However the new "replacement" is a \$25 issue called Home Computer Journal. Yes \$25 dollars a single copy.

>TERRIE MASTERS President of LA 99ERS writes:- A long time ago a friendship disintegrated based on a negative review I wrote about HOME COMPUTER MAGAZINE (was 99er). I am one of the lucky ones, I did not renew my subscription. I listened to Dave Brader (Editor) for an extended period of time while Gary Kaplan (Publisher) lurked pacing back and forth behind him during a Computer Show in Las Vegas a couple of years ago. He reiterated their HONESTY and GOOD INTENT, and of course blamed negative press in newsletters from user Groups for their situation. Well I read the letter advising the cessation of HCW and the BIRTH of HC JOURNAL.

I have seen Vol 1. and it is volume one period for \$25.00. the next issue will be Vol 2. for Another 25 bucks. The issue as the trusting subscribers will verify, is a PAMPHLET style, encompassing as usual several computers and a single sided single density diskette of slightly over 200 sectors. If you want a bargain you can order all 4 volumes for \$75, if you trust them that is. By the way, if you really believe this is a NEW venture you may be interested to know the editor is Dave Brader and lo and behold another name there is Gary Kaplan !!! UGH. Postal fraud it ain't, personal and moral fraud it is. By the way no matter how many issues you thought you had to the end of your year's subscription, Volume 1 is ALL you get.

> STAN DIXON informs us of the following address as a possible source of P-code card and software. TRITON Products Company, PO Box 8123, San Francisco, CA 94128. (800)227-6900.

> PETER BROOKS writes in his TI-LINES newsletter June issue:- The names of the group newsletter are changing, both to indicate the strong international flavour and try and escape the rather parochial tag which had (unfairly) become attached to OTIU. In many instances, OTIU was referred to as the OXFORD TI USER GROUP or even as TI-LINES, and although OTIU was both national and international, another group kept advertising itself as the "sole national UK Group", making OTIU seem restrictive and restricted -unfair and untrue.

However, trade description Act aside, the International TI User Group is now OTIU's banner TI-LINES..... (ED This is an extract from Peter Brooks "BALDIES BURBLE" I wish Peter luck with his desire to become known as an International.)

> WILLIAM KIELY writes :- I have found, when making a M/C subroutine, a difference in values for XMLLINK when converting an integer to floating point number. In the catalogue which comes with the Minimem it gives the value >2300(hex) whereas in "Initiation into TI ass.Language" by Didi it gives the value >7200. I tried out the two values and the program worked with the value >7200.

WRITING TO ANY OTHER MEMBER OR A CONTRIBUTOR TO THE MAGAZINE TO INCLUDE A STAMPED ADDRESSED ENVELOPE FOR YOUR REPLY. WITHOUT THIS A REPLY WILL NOT BE



# MORE ON PRESTEL



by Peter Walker

## CORRIGENDUM

Unfortunately the TI Writer Formatter managed to mangle my last article. All the Prestel page numbers had the asterisk and first two digits erased since they were interpreted as embedded Alternate Input commands. These are the proper page numbers:

|                             |                         |
|-----------------------------|-------------------------|
| Change password             | * 920#                  |
| Resend current screen       | * 00#                   |
| Send a mailbox message      | * 77#                   |
| Directory of MBXs           | * 486#                  |
| Register yourself           | * 48644#                |
| Details of codes            | * 777768 and 190600160# |
| Details of codes (Micronet) | 3237# and * 32371#      |
| Micronet Gallery            | * 323#                  |
| Foreign pages               | * 2582201#              |
| Access codes                | * 3331#                 |
| Go back a page              | * #                     |
| Leave Prestel               | * 90#                   |

## WHATS ON PRESTEL?

Many people ask this. However the sheer size of the information provided makes it impossible to go into any detail. Try flipping through the Prestel Directory or better still just browse on the system itself.

Prestel is mainly a one way system of information provision, but many times larger than say Teletext systems (eg Ceefax or Oracle) which transmit their limited pages serially/continuously. With Prestel you tell the computer what you want and it is sent down the line to you. A wide range of organisations provide information on Prestel. Some are in closed user groups where you must separately pay to join to get access. Micronet 800 for computer enthusiasts is one such Closed User Group.

I note that my local district council provides information on page 288091: perhaps your's does too. I used the British Rail pages to look up the times and fares to get me to the Leeds Show. My own company, British Telecom, has its information starting on page 383. Since Prestel is a separate business from mainstream BT (short for BRITISH TELECOM in case our International readers of TI\*MES did not know), BT has to pay Prestel for these pages as would any other Information Provider.

The interesting thing about Prestel is that being two way it does allow interactive services and communications. Last time I explained how to send a mailbox message to other users. I now know of 7 TI users on Prestel and hardly a week goes by without a few messages from others. The communications facilities on Prestel also allow you to send and receive Telexes, while on Micronet you can chat to other users almost in realtime using the varied Chatlines available (Normal, QuickChat and TurboChat). I have to comment however that the standard of conversation on these channels is somewhat trivial. There are, however, specialist Chatlines for particular interests which you might find interesting.

The best example of the way Prestel can act as a fully interactive system is the emergence of TeleShopping. Items can be ordered at home and delivered to you. The big name mail order companies are to the fore here: Littlewoods, Empire and Great Universal. In parts of London Telecard Supershop will even deliver your food. Then of course there's Telebroking for buying shares and Telebanking, though the big banks seem to be slow off the mark here.

## GALLERY

Full marks to NEVILLE BOSWORTH who has a page on Micronet Gallery at present and which lets TI users know that they are not alone. See it on page \* 32300161 #

## TI99/4A PAGE ON PRESTEL

Great to see that TI99/4A EXCHANGE U.K.TI User Group's PRESTEL program is exclusively registered on page \* 3332325 # We can only hope that this will expand the number of TI99/4a Users. If nothing else it shows others that the TI is not dead.

## MORE ON ESCAPE CODES

I mentioned Escape codes in the last article briefly. When sending a mailbox message or using other interactive pages, you can get your text in colour or use your own graphics in place of text. Here is a list of codes you will find useful with the TI:

| COLOUR         | TEXT    | GRAPHIC  |                                     |
|----------------|---------|----------|-------------------------------------|
| Red            | Esc A   | Esc Q    | Esc=Control fullstop on the TI99/4A |
| Green          | Esc B   | Esc R    |                                     |
| Yellow         | Esc C   | Esc S    | CTRL.                               |
| Blue           | Esc D   | Esc T    |                                     |
| Magenta        | Esc E   | Esc U    |                                     |
| Cyan           | Esc F   | Esc V    |                                     |
| White          | Esc G   | Esc W    |                                     |
| MODE           | TURN ON | TURN OFF |                                     |
| New background | Esc J   | Esc \    |                                     |
| Double Height  | Esc M   | Esc L    |                                     |
| Separated mode | Esc Z   | Esc Y    |                                     |

## Some examples

|                                          |                   |
|------------------------------------------|-------------------|
| Change text to Red                       | Esc A             |
| Change background to Red with White text | Esc A Esc J Esc G |
| Change to Double Height                  | Esc M             |
| Change to Red Graphics                   | Esc Q             |

By way of further explanation, Esc J causes both foreground and background to be set to the current foreground colour, so you must set a new foreground colour immediately afterwards if text is to be seen. Esc \ resets the background to Black while leaving the current foreground colour.

The graphics characters use ASCII characters 16 to 63 and 96 to 127 to provide different graphic characters which are divided into two columns of three pixels high. (Known as Sixels as six elements are used). You need careful planning to get the design you want. The separated graphics mode, accessed by ESC Z, makes the pixels in the character non-contiguous. (This is easier to see than explain!!). See page 190600160 or 32371 for details of graphics codes.



NB All characteristics set by Escape codes are cancelled at the end of each line of your Mailbox message.

#### A SPECIAL NOTE ABOUT THE # SIGN

The # sign, often known as the number sign, square, hatch or hash is usually ASCII character 35 and doubles up as the pound sterling sign in the UK version of ASCII. The special Prestel # sign, used to terminate input fields, is ASCII 95, the same as our underline (FCTN U). However the TI Prestel access program is arranged to send Character 95 when the number sign # is pressed. This has two important consequences:

1 You can't directly send Character 35, which in Prestel is the pound sterling sign. You can send it however through a dodge involving the Graphics Mode. In Graphics Mode, Characters 64 to 94 become characters 32 to 62. Thus to get a pound sign you type ESC G C ESC W. Character 95 should also be avoided in graphics mode as it still acts as Hash.

2 You can't use the fourth graphics character in Prestel, since this is set by the # sign once in graphics mode and causes termination of your mailbox message or whatever.

#### EXCESSIVE LINE NOISE

You get used to occasional line noise causing spurious characters to appear on the screen. I have noticed however that when the screen goes berserk with a long string of garbage appearing on the screen, this is probably caused by someone picking up another telephone extension in the house!

#### REDUCING THE COST OF PRESTEL

Remember that there are no time based charges on Prestel after 6pm Mon-Fri, 1pm Sat and all day Sunday. Telephone call charges are also at the cheap rate during these times.

#### IS OUR PROGRAM BUGGED?

Have you noticed that:

1 On the welcome page after password entry the character "4" appears in the Prestel logo twice where a "T" should be?

2 On page 258 the text "&2/.4 0!%" appears instead of "FRONT PAGE"?

3 On the Microcomputing main index page the text for Route 9 (Double Height) is overwritten by a subsequent line (which only has a single letter)?

Those who have understood what I said above about graphics mode will soon realise that faults 1 and 2 are the result of our program interpreting the text while still in graphics mode. I have no idea what causes the 3rd problem. ED: The TI PRESTEL program is written in Bit Map mode and because of the TI functions there will remain some quirks. However contact is being made with the originator.

#### FINALE

Well that wraps it up for another article. Hope to hear from as many of you as possible, preferably via Prestel Mailbox 707873778.

Peter Walker

## TI USERS PERTH AUSTRALIA

```
#####
#                                     #
#           Program No.1             #
#                                     #
# Try out this demonstration        #
# program written by Norman        #
# Bernhardt, (13 years), one       #
# of our younger programmer        #
# members. It shows just          #
# what can be done with your      #
# computer with a little          #
# thought and effort. Good        #
# work Norman, keep it up.        #
#                                     #
#           Requires X-BASIC        #
#                                     #
#####
460 PRINT "                               AND"
470 PRINT
480 PRINT "                               NORMAN BERN
HARDT"
490 PRINT
500 PRINT "                               PROUDLY PR
ESENT"
510 PRINT
520 PRINT "                               A TI 99/4A HOM
E COMPUTER"
530 PRINT
540 PRINT "                               DEMONSTRA
TION"
550 FOR I=1 TO 6 :: READ DUR
,NOTE
560 CALL SOUND(DUR,NOTE,0)
570 NEXT I
580 RESTORE 2590
590 REM # START DEMO #
600 CALL CLEAR
610 PRINT "                               HI, MY NAME
IS T.I.M. (TEXAS INSTRUMENT
MANIAC)."
620 PRINT
630 PRINT "                               I'M A TI99/4
A HOME COMPUTER(JUST IN
CASE YOU DIDN'T KNOW)."
640 PRINT
650 PRINT "                               I'VE BEEN AS
SIGNED BY NORMAN BERNHARDT
THE NICEST PERSON IN THE WOR
LD TO SHOW YOU JUST WHAT I C
AN DO WITH 16K MEMORY."
660 PRINT
670 PRINT "FIRST OF ALL TYPE
IN HI TIM."
680 INPUT N$
690 IF N$="HI TIM" THEN 720
700 PRINT "HI TIM OR ELSE."
710 GOTO 680
720 PRINT "                               YOU CALL ME T
IM WHAT DO I CALL YOU."
730 PRINT
740 INPUT "PLEASE TYPE IN YO
UR NAME ? ";M$
750 PRINT
760 PRINT "G'DAY ";M$;" HOW
YA GOIN." :: FOR H=1 TO 300
:: NEXT H
770 PRINT
780 PRINT "USING YOUR NAME I
CAN DO MANY THINGS WITH
IT."
790 FOR I=1 TO 300 :: NEXT I
:: PRINT
800 PRINT "I CAN CENTRE IT."
810 PRINT
820 FOR K=1 TO 1
830 PRINT "                               ";M$;"
" :: FOR H=1 TO 500 :: NEXT
H
840 NEXT K
850 PRINT
Continued next page>>>>
```



```

Listing continued.
860 PRINT "I CAN LEFT IT"
870 PRINT
880 PRINT M$
890 PRINT :: FOR K=1 TO 500
:: NEXT K
900 PRINT "LET ME SHOW YOU W
HAT ELSE I CAN DO."
910 PRINT
920 INPUT "GIVE A SENTENCE W
ITH ABOUT 5 WORDS IN IT E.G
. THIS COMPUTER IS BEST ? ":
L$
930 PRINT
940 PRINT " NOW I'LL WRITE Y
OU A LETTER WITH IT."
950 PRINT
960 PRINT
970 PRINT " DEAR ";M$;","
980 PRINT
990 PRINT " I'M J
UST WRITING THIS LETTER TO T
ELL YOU THAT ";L$;". "
1000 PRINT
1010 PRINT "
FROM TIM"
1020 FOR H=1 TO 1000 :: NEXT
H
1030 REM
1040 PRINT "I CAN ALSO PLAY
GAMES." :: PRINT :: PRINT "I
'LL SHOW YOU"
1050 FOR I=1 TO 350
1060 NEXT I
1070 FOR I=1 TO 150
1080 NEXT I :: CALL SCREEN(2
)
1090 CALL CLEAR :: FOR D=1 T
O 10
1100 CALL COLOR(D,16,1)
1110 NEXT D
1120 FOR I=1 TO 20
1130 PRINT
1140 NEXT I
1150 PRINT "ppppppppppppppppp
ppppppppppppppppppppppppppp
ppppppppppppppppppppppppppp
ppppppppppppppppppppppppppp
ppppppppppppppppppppppppppp
1160 CALL MAGNIFY(2)
1170 CALL CHAR(128,"FF007E00
3C001800")
1180 CALL CHAR(129,"C0603C7E
7E3C60C0"):: CALL CHAR(130,"
B124991818992481"):: CALL CH
AR(131,"000000FF000000")
1190 CALL SPRITE(#1,128,16,1
2,176,30,0)
1200 CALL SPRITE(#2,129,7,16
0,24,-30,0)
1210 FOR I=1 TO 140
1220 NEXT I
1230 FOR I=1 TO 2
1240 CALL MOTION(#I,0,0)

```

```

1250 NEXT I
1260 CALL SPRITE(#3,131,7,85
,35,0,30)
1270 FOR I=1 TO 300
1280 NEXT I
1290 CALL DELSPRITE(#1,#3)
1300 CALL SOUND(1000,-6,0)
1310 CALL SPRITE(#3,130,16,8
5,176,1,1)
1320 FOR I=1 TO 400
1330 NEXT I
1340 CALL SCREEN(16)
1350 FOR D=1 TO 10
1360 CALL COLOR(D,5,1)
1370 NEXT D
1380 CALL DELSPRITE(ALL)
1390 CALL CLEAR
1400 PRINT " PRETTY GOOD HO
W THE JIMSHIP BLEW UP
THE GOLNITE."
1410 FOR H=1 TO 500 :: NEXT
H
1420 PRINT
1430 PRINT " I ALSO HAVE A
GREAT RANGE OF SOUNDS, I'LL
SHOW YOU ."
1440 FOR H=1 TO 500 :: NEXT
H
1450 FOR H=1 TO 500 :: NEXT
H :: FOR V=110 TO 1760 STEP
40
1460 CALL SOUND(-1000,V,0)
1470 NEXT V
1480 PRINT
1490 PRINT " I AM ALSO GOO
D IN DOING GRAPHS FOR ALL S
ORTS OF SUBJECTS."
1500 FOR H=1 TO 1000 :: NEXT
H
1510 CALL CLEAR :: PRINT " H
!"
1520 PRINT " E ! ppppp"
1530 PRINT " I ! ppppp ppppp
"
1540 PRINT " G ! ppppp ppppp
"
1550 PRINT " H ! ppppp ppppp
ppppp ppppp"
1560 PRINT " T ! ppppp ppppp
ppppp ppppp"
1570 PRINT " ! ppppp ppppp
ppppp ppppp"
1580 PRINT " C ! ppppp ppppp
ppppp ppppp"
1590 PRINT " M ! ppppp ppppp
ppppp ppppp"
1600 PRINT " S ! ppppp ppppp
ppppp ppppp"
1610 PRINT "
-----"
1620 PRINT " 56-60 61-65
66-70 71-99"

```

Continued next page>>>>

```

Listing continued
1630 PRINT " WEIGH
T(KGS)"
1640 PRINT
1650 PRINT
1660 PRINT
1670 PRINT
1680 PRINT "I CAN ALSO DO HO
RIZONTIL GRAPHS."
1690 FOR H=1 TO 500
1700 NEXT H
1710 CALL CLEAR
1720 PRINT " H ! ppppppppppp
pppppppppppp"
1730 PRINT " E ! ppppppppppp
pppppppppppp"
1740 PRINT " I ! ppppppppppp
pppppppppppp"
1750 PRINT " G ! ppppppppppp
pppp"
1760 PRINT " H ! ppppppppppp"
1770 PRINT " T ! ppppppppppp
ppp"
1780 PRINT " -----"
"
1790 PRINT " WIDTH(ME
TRES)"
1800 PRINT
1810 FOR I=1 TO 500 :: NEXT
I :: CALL CLEAR
1820 PRINT " PERSONALLY
I THINK YOU SHOULD BUY ONE O
F MY BROTHERS OR SIST
ERS."
1830 PRINT
1840 PRINT " IF YOU DO B
UY A TI99/4A YOU COUL
D PROBABLY IMPROVE ME BY GE
TTING LOTS AND LOTS OF SOFT
WARE AND HARDWARE."
1850 PRINT
1860 PRINT " THE THINGS
YOU COULD BUY ARE CASSETTE
RECORDERS TO LOAD AND SAVE
PROGRAMS ONTO ."
1870 PRINT
1880 PRINT " YOU COULD A
LSD BUY A MODEM WHICH IS A
N OBJECT THAT LETS YOU PL
UG INTO OTHER COMPUTERS
OR VIATEL THROUGH A TELEPH
ONE SOCKET."
1890 PRINT :: PRINT "PRESS A
NY KEY TO CONTINUE"
1900 CALL KEY(0,K,S):: IF S=
0 THEN 1900 :: IF S<>0 THEN
1910
1910 PRINT " A WIDE RANG
E OF BOOKS AND MAGAZINES AR
E AVAILABLE FOR THE COMPUTER
, IF YOU DON'T LIKE LOADI
NG PROGRAMS YOU COULD PURCHA
SE MODULES."

```

```

1920 PRINT "MODULES CAN COME
IN ALL SORTS OF SUBJECTS. I
F YOU WANT TO LEARN A BIT MO
RE THERE ARE EDUCATIONAL
PROGRAMS."
1930 PRINT " IF FOR INSTA
NCE YOU ARE A BUSINESS MAN Y
OU COULD GET RECORD KEEPING
MODULES, IF YOU ARE A GAMES
PERSON THERE IS A GREAT R
ANGE OF GAMES."
1940 PRINT "PRESS ANY KEY TO
CONTINUE"
1950 CALL KEY(0,K,S)
1960 IF S=0 THEN 1950
1970 IF S<>0 THEN 1980
1980 PRINT " IF AND WHEN
YOU GET REALLY RAPPED IN THE
COMPUTER YOU MIGHT WANT T
O START WRITING YOUR OWN
PROGRAMS."
1990 PRINT
2000 PRINT " THERE ARE FI
VE LANGUAGES FOR THE TI FOR
YOU TO LEARN:"
2010 PRINT
2020 PRINT "TI LOGO"
2030 PRINT "TI EXTENDED BASI
C"
2040 PRINT "EDITER/ASSEMBLER
"
2050 PRINT "MINI MEMORY"
2060 PRINT "UCSD PASCAL"
2070 PRINT
2080 PRINT " BUT BEST OF
ALL IF YOU WANT TO GET TO K
NOW YOUR COMPUTER BETTER
THEN JOIN A USER'S GROUP."
2090 PRINT "PRESS ANY KEY TO
CONTINUE"
2100 CALL KEY(0,K,S)
2110 IF S=0 THEN 2100
2120 IF S<>0 THEN 2130
2130 CALL CLEAR
2140 FOR I=1 TO 5
2150 READ TIME,PITC
2160 CALL SOUND(TIME,PITC,0)
2170 NEXT I
2180 RESTORE 2600
2190 CALL CLEAR
2200 PRINT
2210 PRINT
2220 PRINT " I HOPE YOU HAVE
LEARNT ENOUGH FROM THIS DEM
ONSTRATION TO GO OUT NOW AN
D BUY ONE OF ME."
2230 PRINT
2240 PRINT " IF I'M LUCKY YO
U WILL SEE ME AGAIN FAREWEL
L";M$;
2250 PRINT "PLEASE TYPE IN B
Y TIM"
2260 INPUT N$

```

Continued next page>>>>



```

2270 IF N#="BY TIM" THEN 230
0
2280 PRINT "MANNERS PLEASE"
2290 GOTO 2260
2300 PRINT " JUST FOR THAT I
WILL GIVE YOU AN OPTION OF
PLAYING A GAME."
2310 PRINT "YES OR NO "
2320 INPUT L$
2330 IF L#="N" THEN 2590
2340 REM # GAME #
2350 CALL SCREEN(2):: ON BRE
AK STOP
2360 FOR D=1 TO 10
2370 CALL COLOR(D,16,1)
2380 NEXT D
2390 CALL CLEAR :: PRINT "I
HAVE THOUGHT OF A NUMBER BE
TWEEN 1 AND 100, YOU HAVE 8
GUESSES TO FIND THE NUMBER."
2400 C=0
2410 SEC=INT(RND*100)+1
2420 PRINT "WHAT IS THE NUMB
ER"
2430 INPUT P
2440 IF P=SEC THEN 2570
2450 IF P>SEC THEN 2480
2460 IF P<SEC THEN 2500
2470 GOTO 2510
2480 C=C+1 :: PRINT "LOWER"
2490 GOTO 2510
2500 C=C+1 :: PRINT "HIGHER"
2510 IF C<8 THEN 2430
2520 IF C=8 THEN 2440
2530 PRINT "THE NUMBER WAS "
930 PRINT
;SEC; ". WOULD YOU LIKE ANOTH
ER GO (Y/N)"
2540 INPUT J$
2550 IF J#="Y" THEN 2390
2560 GOTO 2590
2570 PRINT "YOU GUESSED THE
NUMBER IN ONLY";C;"GUESSES."
::
2580 GOTO 2410
2590 DATA -6,440,-6,440,-6,1
10,-6,600,110,440,300,300
2600 DATA 100,600,100,800,50
,700,50,500,100,110

```

```

#####
#                               #
#   Program No.2                #
#                               #
# So you think your a tenpin  #
# bowling whizz. Try this    #
# short program to see just  #
# how good you really are.   #
#                               #
#   Requires X-BASIC          #
#                               #

```

```

100 !e//////////e!
110 !e Bowling Champ e!
120 !e Version 1.2 e!
130 !e X-BASIC 3.4 K e!
140 !e//////////e!
150 !eAuthor Unknowne!
160 CALL CLEAR :: CALL CHAR(
127,"000000FFFF00000000000000
CFE0C0B"):: CALL CHAR(136,"F
FFFFFFFFFFFFFFFFF7BDAS5A5BDE
7FF3C7EFFFFFFFFF7E3C")
170 CALL COLOR(14,12,2)
180 RANDOMIZE :: CALL CHAR(1
39,"FFFFFF9F0F9FFFFFFFFF9F0F
9FFFFFFFF"):: DISPLAY AT(8,8)
:"Bowling Champ!"
190 CALL CHAR(141,"E0E0E0E0E
0E0E0E0000FFFFFFFFFFFFFFFF
FFFFFFFF0000")
200 DISPLAY AT(22,1):"Use ar
row keys to steer ball"
210 DISPLAY AT(13,2):"How ma
ny bowlers? (1-4): 1" :: ACC
EPT AT(13,27)VALIDATE("1234"
)BEEP SIZE(-1):B :: FOR A=1
TO B
220 DISPLAY AT(15+A,3):"Bowl
er ";STR$(A);"'s name:"
230 ACCEPT AT(15+A,20)BEEP S
IZE(7):A$ :: B$(A-1)=A$ :: N
EXT A :: CALL CLEAR :: DISPL
AY AT(1,9):"1 2 3 4 5 6 7 8
9 10"
240 FOR C=2 TO 10 STEP 2 ::
CALL HCHAR(C,11,129,22):: NE
XT C
250 FOR A=1 TO B :: DISPLAY
AT(2*A+1,1):B$(A-1):: NEXT A
:: FOR A=11 TO 13 STEP 2 ::
DISPLAY AT(A,1):B$(A-1),B$
(A-10):: NEXT A
260 CALL HCHAR(10,1,129,32):
: CALL HCHAR(14,1,129,32)
270 CALL HCHAR(24,1,129,32):
: FOR A=0 TO B-1 :: D(A)=1 :
: NEXT A :: CALL HCHAR(15,1,
136,288)
280 CALL HCHAR(16,6,140):: C
ALL HCHAR(22,6,140):: CALL H
CHAR(17,6,139):: CALL HCHAR(
21,6,139):: CALL HCHAR(18,7,
140):: CALL HCHAR(20,7,140)
290 CALL HCHAR(19,7,139):: F
OR E=1 TO 10 :: FOR F=0 TO B
-1 :: CALL VCHAR(1,2,32,9)::
CALL HCHAR(F*2+3,2,130):: G
OSUB 720
300 G=0 :: GOSUB 390 :: IF H
<>10 THEN G=1 :: GOSUB 400

```

Continued next page>>>>

Listing continued.

```

310 IF E=10 THEN ON I GOTO 3
20,340,340,320,360
320 NEXT F :: NEXT E :: DISP
LAY AT(12,4):"PLAY AGAIN? (Y
OR N) Y" :: ACCEPT AT(12,25
)VALIDATE("YN")BEEP SIZE(-1
):C$
330 IF C#="Y" THEN RUN ELSE
END
340 DISPLAY AT(12,5):"TAKE T
WO MORE BALLS!" :: FOR A=1 T
O 300 :: NEXT A :: DISPLAY A
T(12,1):"" :: D(F)=I-1 :: G=
1 :: GOSUB 390
350 IF C<>10 THEN 380 ELSE 3
70
360 DISPLAY AT(12,6):"TAKE O
NE MORE BALL" :: FOR A=1 TO
300 :: NEXT A :: DISPLAY AT(
12,1):""
370 D(F)=1 :: G=2 :: GOSUB 3
90 :: GOTO 320
380 D(F)=1 :: G=2 :: GOSUB 4
00 :: GOTO 320
390 FOR J=1 TO 10 :: READ K,
L :: CALL SOUND(20,-3,0):: C
ALL HCHAR(K,L,137):: NEXT J
:: RESTORE :: M=-1 :: H=0 ::
GOTO 410
400 M=0
410 GOSUB 430 :: N=0(F):: I=
D(F):: N=N+C :: ON D(F)GOSUB
610,630,650,670,690
420 D(F)=N :: D(F)=I :: DISP
LAY AT(13+(F<2)*2,26+(F/2=IN
T(F/2))*17)SIZE(3):USING "##
#":0(F):: RETURN
430 P=1 :: Q=23 :: R=-1 :: C
ALL SPRITE(#1,138,2,Q*8-7,8)
440 FOR II=113 TO 185 STEP R
ND*6+4 :: CALL KEY(0,S,T)::
CALL LOCATE(#1,II,8)
450 IF T<>0 THEN 470
460 NEXT II :: GOTO 440
470 HOOK=0
480 CALL SOUND(-4200,150,20,
-7,20)
930 PRINT
490 FOR P=B TO 192 STEP 4 ::
CALL LOCATE(#1,II,P)
500 IF HOOK=0 THEN CALL KEY(
0,KEY,ST):: IF KEY=69 THEN H
OOK=-.25-RND/2 ELSE IF KEY=8
8 THEN HOOK=.25+RND/2
510 IF II>112 AND II<186 THE
N II=II+HOOK
520 NEXT P
530 P=25 :: C=0 :: CALL POSI
TION(#1,ROW,COL):: Q=(ROW+7)
/8
540 CALL GCHAR(Q,P,U):: IF U
=137 THEN CALL HCHAR(Q,P,136

```

```

):: C=C+1 ELSE 580
550 CALL SOUND(-40,-6,0):: F
OR R=-1 TO 1 STEP 2 :: V=Q :
: W=P
560 V=V+R :: W=W+1 :: CALL G
CHAR(V,W,U):: IF U=137 AND R
ND<.9 THEN CALL HCHAR(V,W,13
6):: C=C+1 :: CALL SOUND(-40
,-6,0):: GOTO 560
570 NEXT R
580 CALL LOCATE(#1,Q*8-7,P*8
-7):: P=P+1 :: IF P<32 THEN
540
590 H=H+C :: X=C+48 :: IF H=
10 THEN IF M THEN X=88 ELSE
X=47
600 CALL HCHAR(2*F+3,7+2*E+G
+2,X):: FOR J=248 TO 8 STEP
-4 :: CALL LOCATE(#1,185,J):
: NEXT J :: RETURN
610 IF H=10 THEN IF M THEN I
=2 ELSE I=5
620 RETURN
630 N=N+C :: IF C=10 THEN I=
3 ELSE I=4
640 RETURN
650 N=N+C*2 :: IF C<>10 THEN
I=4
660 RETURN
670 N=N+C :: IF H=10 THEN I=
5 ELSE I=1
680 RETURN
690 N=N+C :: IF C=10 THEN I=
2 ELSE I=1
700 RETURN
710 DATA 16,31,18,31,20,31,2
2,31,17,30,19,30,21,30,18,29
,30,29,19,28
720 CALL VCHAR(15,27,141,9)
730 CALL HCHAR(15,28,142,5)
740 CALL HCHAR(23,28,143,5)
750 FOR A=27 TO 32
760 CALL VCHAR(15,A-1,169,9)
:: CALL VCHAR(15,A,141,9)
770 FOR II=1 TO 20 :: NEXT I
I
780 CALL SOUND(40,-7,5)
790 NEXT A
800 CALL VCHAR(15,32,136,9):
: RETURN

```



# DIY HARDWARE P.E.BOX.

## D.I.Y. HARDWARE P.E.BOX FOR THE TI99/4A.

By Mike Goddard.

I thought it would be a good idea to expand the capabilities of my TI99/4a but after looking at what was available the enormous (in size and expense) TI P.E.BOX or a string of add-ons plugged into the user port, which are prone to damage or loose connections, I had the idea of combining the two: that is the box into which third party hardware could be fitted preferably with its own power supply.

The matchbox 32k RAM and Dave Hewitt's parallel interface seemed good projects for a start so the initial plug-in card design centred around them. Next came the choice of a suitable case. After looking at several commercial designs I considered it cheaper and not too difficult to construct a suitable box from aluminium using hand tools. Then thought had to be given whether to use a fully buffered system as TI or not. After looking at Dave Hewitt's interface and other designs I decided not, as they did appear an unnecessary complication.

So the final design was a box 14 1/2" x 8" x 4 3/4" with its own power supply and sockets to plug in 5 1/2" x 4" circuit cards. (there is space for approx. 10 cards.) with a direct connection to the 99/4a BUS but omitting connections 1, 2 and 44, 44 (a set of data sheets giving all necessary dimensions and circuit board layouts are available.)

The next stage was a suitable power supply. Whilst looking in my nearest Tandy store I came across a ready built unit which gave +5, -5, +12 volts from a single 18 volt AC supply and at £4.95 was considerably cheaper than building one. All that was necessary was to provide a suitable edge connector although it could be permanently wired in as only 6 connections are involved. A cooling fan was also provided for the power supply. A 40 way ribbon cable and chip select lines are brought to a piece of plain VERD board fitted with double sided pins. These are then wired to the 1" sockets which gives greater flexibility to the circuit layout as the connections don't have to coincide exactly to the TI layout, although this does mean that the cards are not interchangeable. This was not thought a significant drawback.

The other end of the 40 way cable is fitted with a 22 way connector housed in a small plastic box. The chip select lines were brought to a 15 way D connector mounted on the back of the console and a suitable plug fitted to a multiway cable leading to the box.

The total cost of the box and power supply is about £35 although in my case it was considerably less as I had several parts in stock. A full parts list and breakdown of cost is available with the data sheets.

The only thing I would stress is that when undertaking a project of this type testing is very important. There is no need for expensive equipment, a multimeter is all that is necessary or failing that a simple continuity tester can be used for 90% of testing and can at least eliminate faulty connections and short circuits. A circuit of simple continuity tester is described in the data sheets.

Although I am willing to help and assist anybody who wishes to carry out this project I cannot accept responsibility for any damage or faults which may occur to your equipment as a consequence of carrying out these modifications.

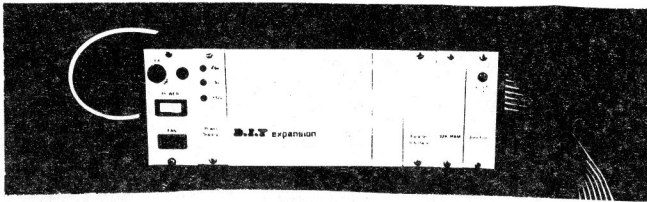
The instructions for wiring the chip select lines etc are covered in the instructions for the matchbox RAM and should be followed. Also Viv Comley's article on the fitting of a reset switch should be followed for dismantling the console. Why not fit a reset switch while you're at it. I did!

Finally thanks to all those who assisted me with various problems, especially Phillip Marsden and Dave Hewitt, without whose assistance I would have found things much more difficult.

Mike Goddard.  
0678 520737.

| BOX AND POWER SUPPLY |                 |             |             |
|----------------------|-----------------|-------------|-------------|
| PART                 | SUPPLIER        | CAT. NO     | PRICE       |
| Case aluminium       | Various         |             | 5.00        |
| Switches             | Maplins         |             | .76         |
| Fan                  | Nu cross elect. | Manchester  | 3.50        |
| Transformer          | Various         |             | 5.00        |
| Power supply         | Tandy           | 277 1016    | 4.95        |
| Fuse holder          | Maplin          | RX97F       | 1.98        |
| Cable 40 way         | Maplin          | PA43W       | 1.60        |
| Cable 15 way         | Maplin          | XR28F       | 1.15        |
| LEDs                 | Maplin          | WL32K etc   | .48         |
| Veroboard            | Various         |             | 1.00        |
| Sockets              | Maplin          | F622X       | 5.85        |
|                      |                 |             | TOTAL 29.67 |
| 32k RAM CARD.        |                 |             |             |
| 4XH6264 LP15 chips   | Rapid Elec.     |             | 12.80       |
| 15 way plug/skt      | Rapid           |             | 1.70        |
| Capacitors           | Maplin          | YR75S WW68Y | .63         |
| Circuit board        | Various         |             | .50         |
| Sockets              | Rapid           |             | .60         |
|                      |                 |             | TOTAL 16.23 |





BASE.

The construction of the case shouldn't present any difficulty to anyone fairly competent with ordinary hand tools although an electric drill will ease the burden.

The easiest way of bending metal is to clamp it between two pieces of wood in a vice.

The case can be fixed together by any convenient means, nuts and bolts, self tapping screws etc. My prototype is assembled with pop rivets which give a neat firm hold.

All cables are taken through grommets and clamped except the ribbon cable which is clamped to the back edge of the case with a piece of aluminium angle.

The back of the case on the prototype is made from a piece of wire mesh and anything similar will do. It is easier to cut it to fit AFTER the case is assembled. The fan should be mounted on anti vibration blocks to avoid vibration noise.

#### CIRCUIT BOARDS AND WIRING.

The circuit boards are fairly standard except the method of mounting components. I used sockets for all IC connections. They do save damage to chips. All pin connections marked surface connections are bent out at a ninety degree angle and soldered to the pad onto which they fit. They might have to be bent sideways slightly, the same goes for the capacitor leads. This removes the need for close spaced tracks and makes it easier for the hand production of printed circuit boards. All tracks are shown thinner for clarity and should be at least 1mm wide in practice.

The sockets to accept the cards should be wired as the connections are shown on the edge connectors on sheets 3 and 4 etc. It is a good idea to stick some strips of tape to the vero board connector and number the pins for reference.

The printer socket is connected to the board with a short length of ribbon cable soldered to the PCB pads.

#### FUTURE.

Any future developments or modifications will be passed on as they become available. Also any suggestions for circuits or modifications will be welcomed and if practical developed for the system.

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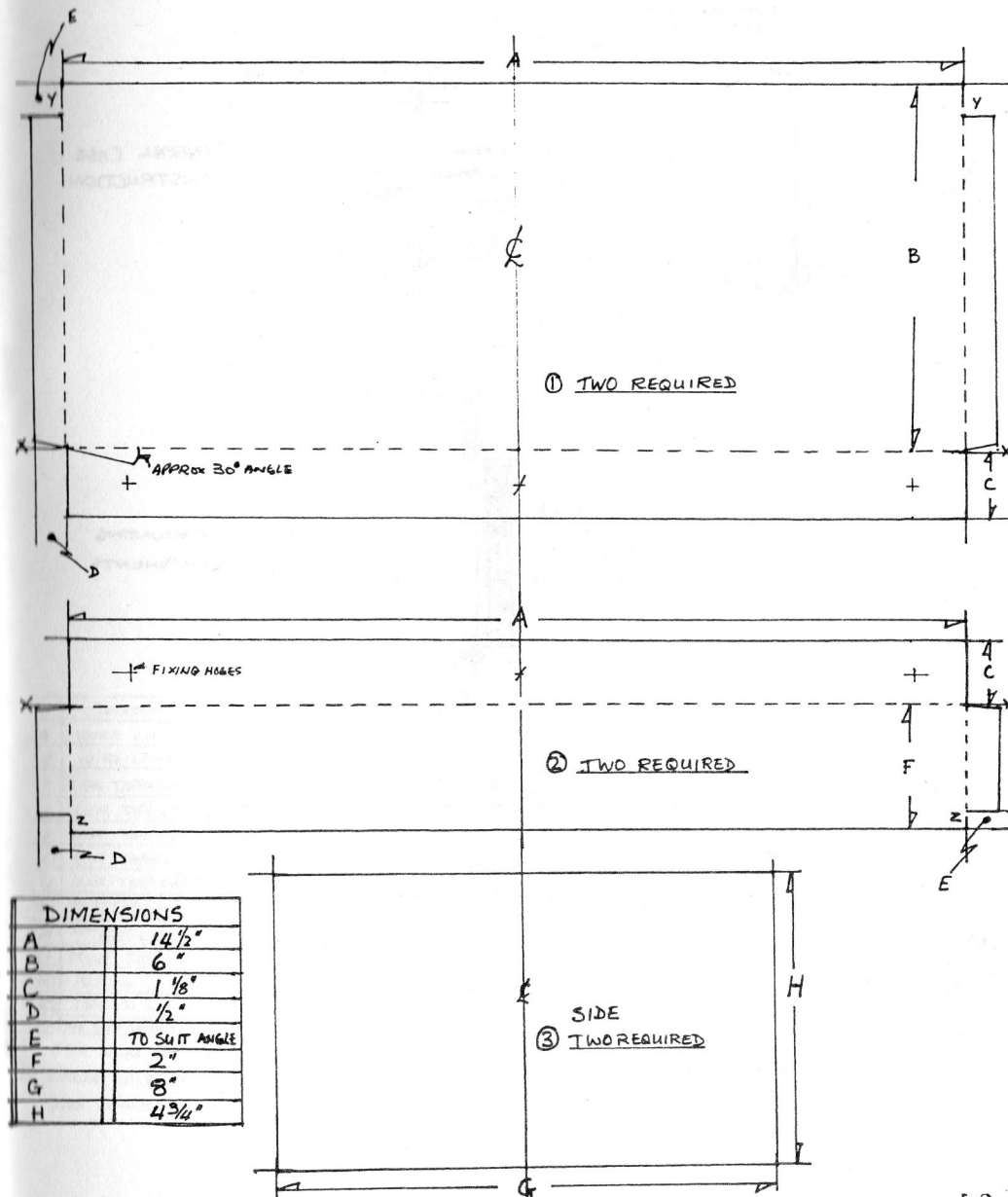
Mike

TI-99/4A D.I.Y. EXPANSION SYSTEM

DATA SHEET 02

M.R.G : 5:86

CONSTRUCTION NOTES



ALL DOTTED LINES BENT 90° IN SAME DIRECTION

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TI-99/4A D.I.Y. EXPANSION SYSTEM DATA SHEET 1

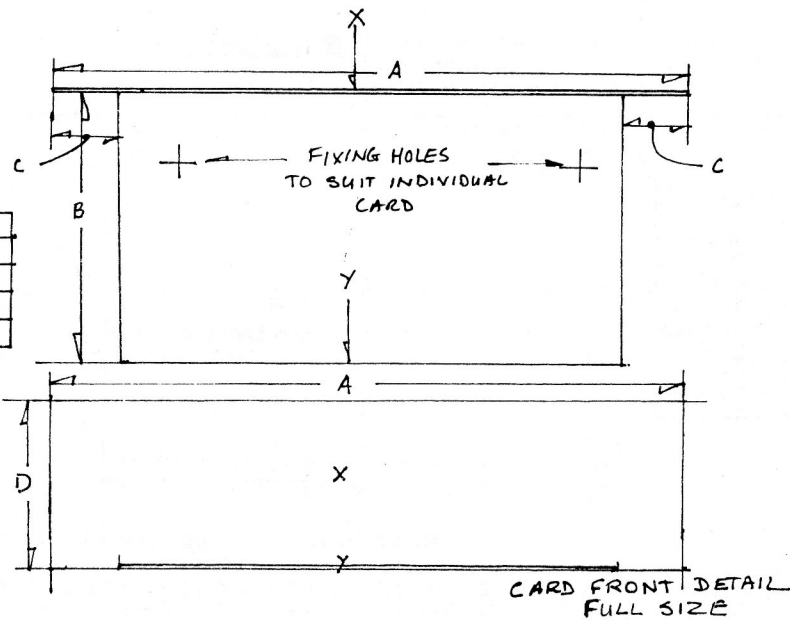
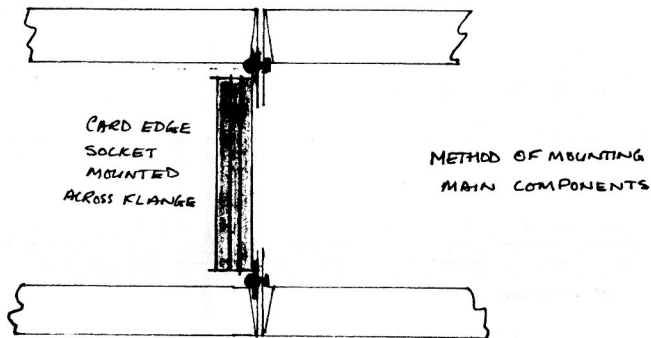
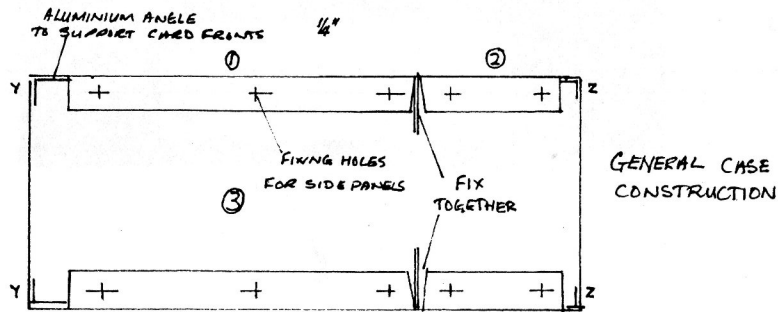
DRAWN BY M.R.G: 5:86

CASE DETAIL ①

NOT TO SCALE

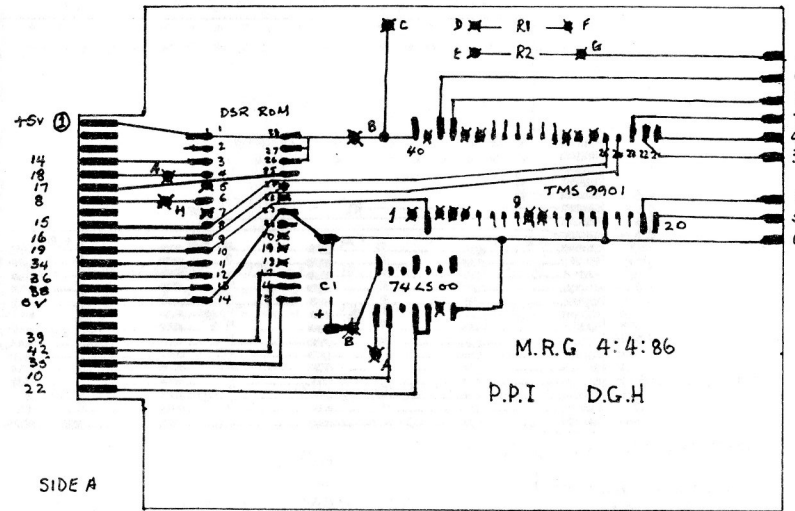
DESIGNED BY M.R.G





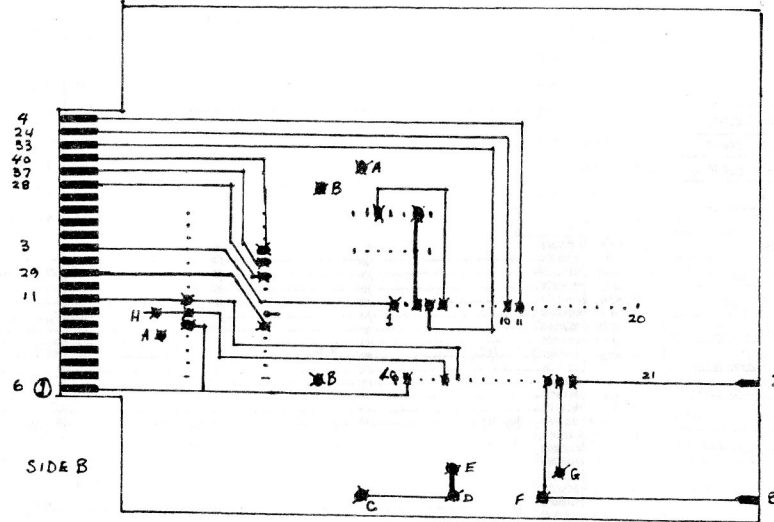
| DIMENSIONS |        |
|------------|--------|
| A          | 4 3/4" |
| B          | 2"     |
| C          | 1/2"   |
| D          | 1 1/4" |

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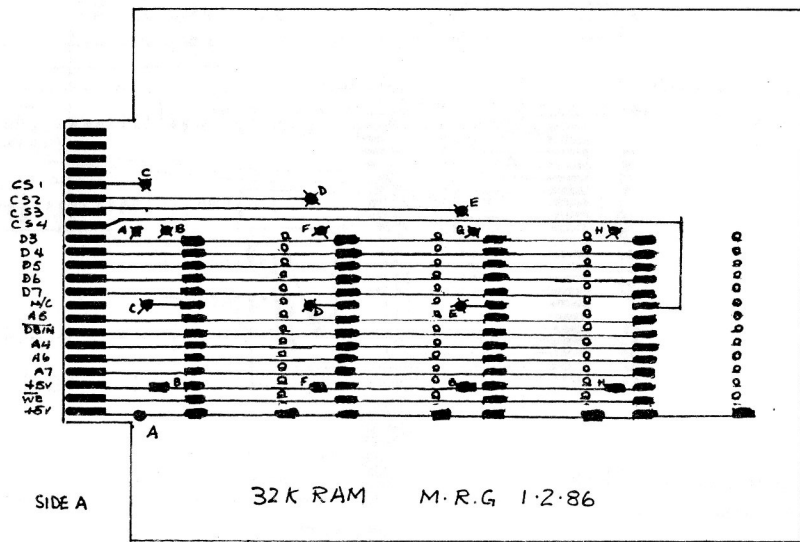
| CONNECTIONS |                    |
|-------------|--------------------|
| A           | WIRE LINK          |
| B           | WIRE LINK          |
| C           | LINK THROUGH       |
| D           | LINK THROUGH       |
| E           | LINK THROUGH       |
| F           | LINK THROUGH       |
| G           | LINK THROUGH       |
| ■           | SURFACE CONNECTION |
| ■           | THROUGH CONNECTION |
| C1          | 100NF TANT         |
| R1          | 10K Ω              |
| R2          | 10K Ω              |
| ○           | NO CONNECTION      |

DSR ROM AVAILABLE FROM DAVE HEWITT SEE TIMES

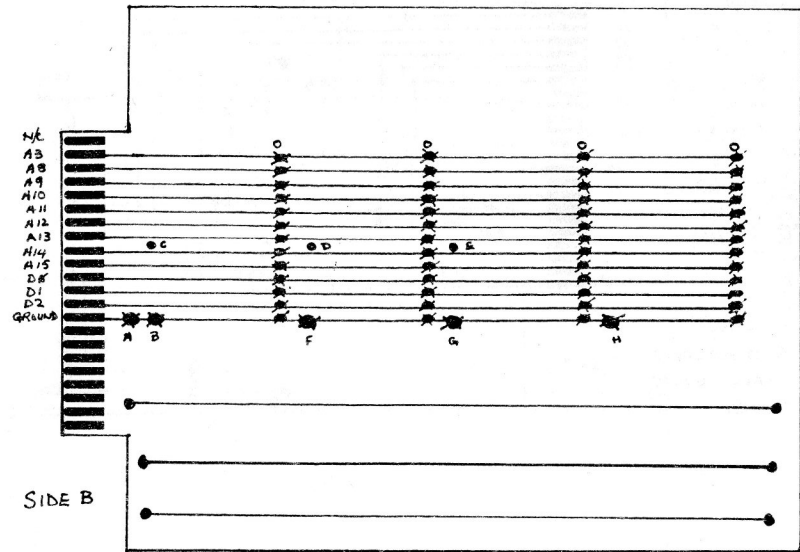


54

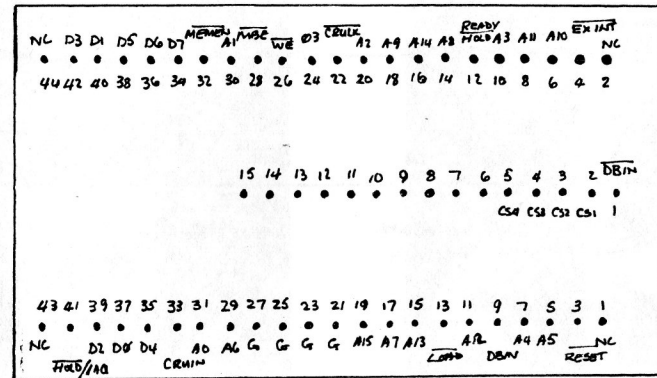




| CONNECTIONS |                    |
|-------------|--------------------|
| A           | 22µF TANT          |
| B           | 1µF CAP            |
| C           | LINK               |
| D           | LINK               |
| E           | LINK               |
| F           | 1µF CAP            |
| G           | 1µF CAP            |
| H           | 1µF CAP            |
| ■           | SURFACE CONNECTION |
| ✱           | THROUGH CONNECTION |
| ○           | HOLE               |
| N/C         | NO CONNECTION      |



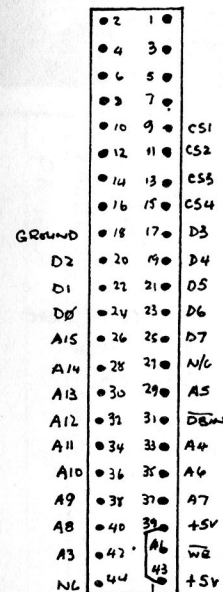
THE THREE SEPARATE LINES ON SIDE B ARE FOR FUTURE USE



VEROBOARD CONNECTIONS ON RIBBON CABLE TERMINATION.

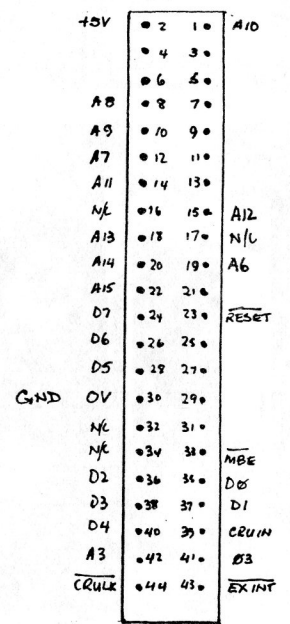
PINS 21, 23, 25, 27 SHOULD BE LINKED

32K RAM CONNECTIONS



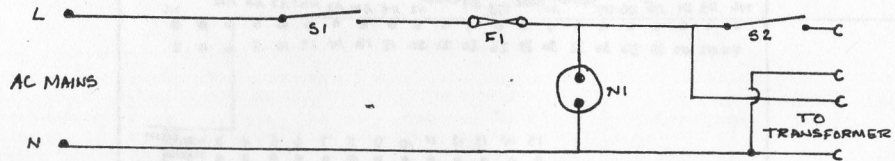
VIEW AT REAR OF CONNECTOR

PARALLEL INTERFACE CONNECTIONS



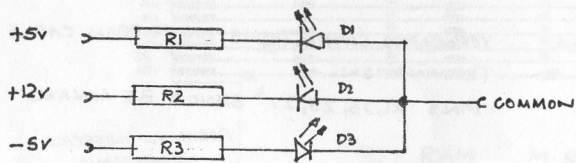
VIEW AT REAR OF CONNECTOR





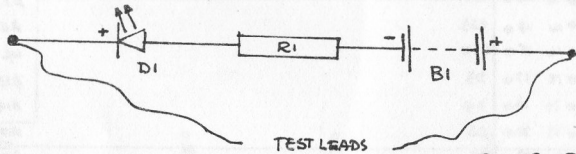
S1 MAIN ON/OFF SWITCH  
 S2 FAN ON/OFF SWITCH  
 NI 240V AC NEON INDICATOR  
 F1 3 AMP FUSE

MAINS PANEL WIRING



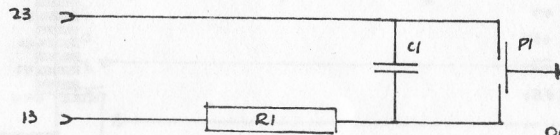
R1 + R3 1k $\Omega$   
 R2 1.5k $\Omega$   
 D1-3 LED'S

LOW VOLTAGE INDICATORS



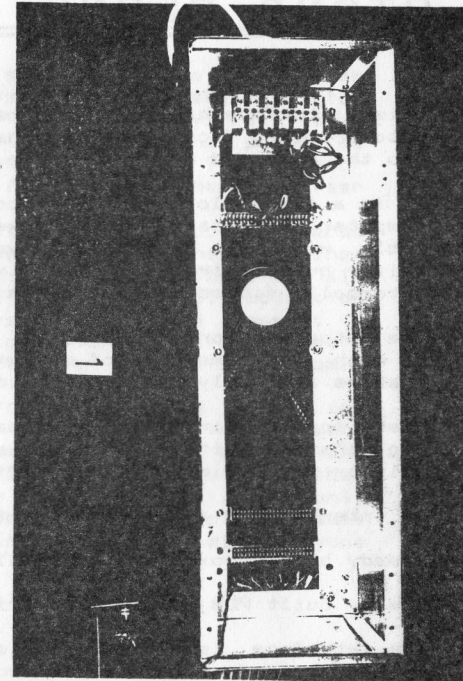
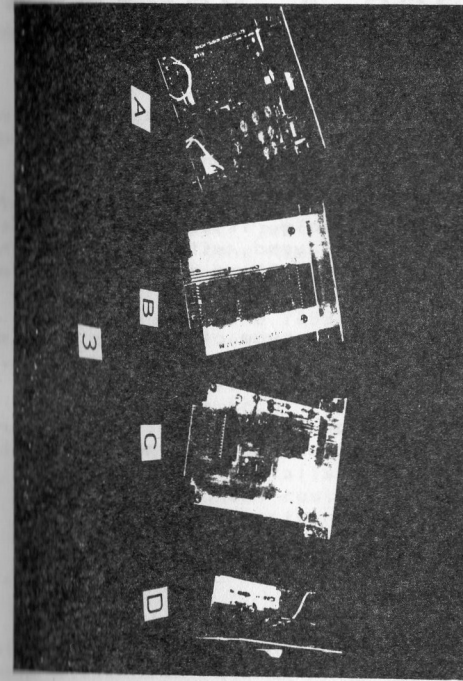
B1 9v PP3 etc  
 R1 1.5k $\Omega$   
 D1 LED.

CONTINUITY TESTER

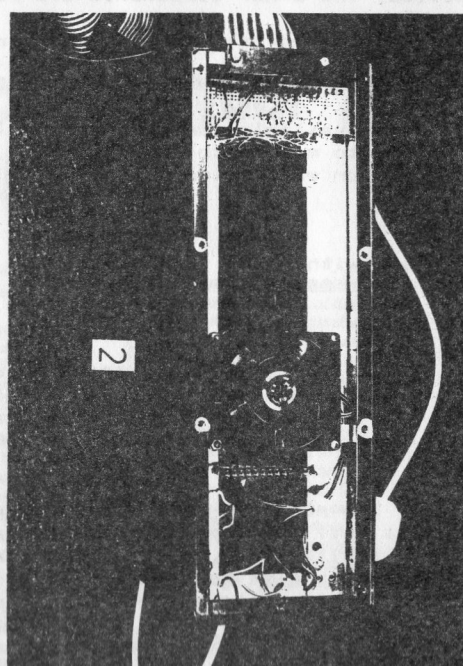


PI PUSH TO MAKE PUSH BUTTON  
 C1 0.1 $\mu$ F  
 R1 100 $\Omega$

LOAD INTERRUPT SWITCH



| KEY |                                                                                                   |
|-----|---------------------------------------------------------------------------------------------------|
| 1   | FRONT OF CASE : LEFT TRANSFORMER RIGHT CARD CONNECTORS                                            |
| 2   | REAR OF CASE : LEFT VERO BOARD CONNECTOR, CENTRE/RIGHT FAN, FAR LEFT RIBBON CABLE CLAMP           |
| 3   | A: POWER SUPPLY BOARD. B: 'MATCHBOX' 32K RAM BOARD. C: PARALLEL INTERFACE. D: POWER CONTROL PANEL |





# STAND ALONE RS 232 & MONITOR

60

This interface has been designed to enable the console only user to gain access to printing facilities to enhance the uses of the TI99 but without having to go to the bulk and expense of the peripheral expansion system.

It is a stand alone unit that connects directly into the expansion port of the computer and takes its power from the console. It is therefore not compatible with the expansion system. It can be used with the speech synthesizer but requires a simple wire link to be fitted. It is also compatible with internally fitted memory expansion.

The output is for a Centronics compatible Parallel type of printer and is fitted with the same type of socket at the BBC micro's parallel printer port. This enables a readily available interface lead to be used for most printers.

Uses for the interface include listing BASIC programs to printer or for printing data from within a program e.g. for word processing. Also modules that have printer facilities will work with this interface.

The interface is available in 3 forms as follows.

A ready built, boxed unit size 112\*62\*31mm. Price #55.

A ready built PCB but unboxed price #45.

The interface is also available for home construction. Not a kit as such and only intended for experienced constructors. Only the main items are supplied, the other components are readily available.

Double Sided printed circuit board with layout details. Price #10.

Pre programmed EPROM containing DSR software + circuit diagram. Price #10.

Also available is a printer cable. This is one metre of ribbon cable with a connector to mate with the interface and a standard 36 pin centronics connector on the other end. Price #10.

## Terms.

Cash with order. Cheques etc to D.G.Hewitt. All items made to order hence allow up to 28 days for delivery.

5A Lower Whitley Rd  
Farmoor,  
Oxford,  
OX2 9NU.

tel (0865)863565

The next project I am working on is a DIY expansion box that will be compatible with cards used in the TI box but will be smaller and silent!. So far I have a disk drive and am seeking a disk controller card before I can continue. If anyone has one for sale then let me know.

Lastly as part of this project I am intending to develop the 32K matchbox RAM expansion so that it does not require the 5 internal connections. This will enable a completely stand alone unit or a card for the PEB to be built.

I will publish details of both the latter two projects when completed.

59

I have found a simple solution to the old problem of improving the display quality. Usually you use the modulator supplied via the RF input of your TV but this always results in a degraded quality. There have been modifications presented before to obtain a composite video output from the TI modulator but many people do not wish to modify their equipment for fear of damaging it.

I have just purchased a quantity of video output boards used in the Memotech MTX 500 series computers. These machines use the same video display processor as the TI99. Therefore all you need to do is connect a lead from the 6 pin modulator socket on the TI99 to one of these boards and connect a composite video monitor to the output and you have a vastly improved colour display. Even the 12V power for the board comes from the TI modulator socket.

If anybody else wishes to perform this very simple and well worthwhile modification I can sell them a tested board (measures about 55 X 75 mm) complete with circuit diagram and connection details to the TI99 for £5.00. This is far less than the component cost if you tried to make your own!. The only other components needed are a six pin DIN plug, a plug to suit the video input on your monitor and connecting wire. Anyone interested should contact me.

*D Hewitt*

Dave Hewitt

# Data protection includes your home computer

IT WAS originally believed by many that the need to register under the Data Protection Act was confined to large concerns holding on its computers masses of personal information on its employees and customers.

However, it should be stressed that a business using any kind of computer be it a small business machine, a word processor or even a home computer to keep any personal data is covered by the Act and must register with the Data Protection Registrar.

The term "personal data" includes the age, marital status, punctuality records and any opinion of an individual be it an employee or customer.

If the sole use of the computer is to keep a payroll or accounting systems then there is exemption from registration. The Act only applies to data kept on machines and not information

kept manually. There is also an exemption for the preparation of letters or reports even though these may contain personal information on individuals.

From November, 1987, those individuals about whom information is stored on a machine will have the right to access to the information kept and if the data is kept by a business employer he will have to supply the information if a request is made in writing to him and a fee paid. Information stored must not be given to other persons except in limited circumstances. For example, information can be given for actuarial purposes in connection with the setting up of a pension scheme.

Accounts data can be given about a person's financial affairs with his consent, as can information be given for occupational health — again with the person's approval.

There are also responsibilities thrust upon the keepers of data.

First, it must be obtained lawfully; then it must be accurate and kept up to date. It must not be retained for longer than is necessary and it must be adequate and relevant.

The individual on whom data is kept will have the right to have any data corrected or erased.

A failure to register could lead to a prosecution and individuals can seek compensation through the courts for any damage done to him because personal data has been wrongly transmitted to third parties.

If you are in doubt as to whether you are obliged to register, write to the Data Protection Registrar, Springfield House, Water Lane, Wilmslow, Cheshire.



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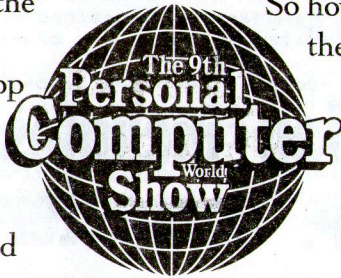
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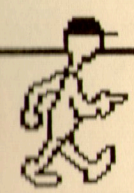
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