# TI*MES

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T.I.-  /4A

Still cool in summer 1994.

Issue no. 45

## TI-99/4A User's Group (U.K.) Head Honcho's!!!

CHAIRMAN:
Trevor Stevens. Tel: 0623 793077
249 Southwell Road East, Rainworth, Notts. NG21 OBN

VICE CHAIRMAN, CASSETTE LIBRARIAN, PROGRAMMING:
Mark Wills. Tel: 0743 350588
20 Cokayne Green, Harlescott Grange, Shrewsbury, SY1 3QS

GENERAL SECRETARY, AND ALSO PROGRAMMING!
Richard Twyning. Tel: 0623 27670
24 Peel Road, Mansfield, Notts. NG19 6HB

MEMBERSHIP SECRETARY, BACK ISSUES:
Alasdair Bryce. Tel: 0389 65903
51 Dumbuie Ave., Silverton, Dumbarton, Scotland. G82 2JH

TREASURER:
Alan Rutherford. Tel: 0625 524642
13 The Circuit, Wilmslow, Cheshire. SK9 6DA

TI*MES EDITOR, and the odd bit of hardware!
Gary Smith. Tel: 0636 706767
55 Boundary Road, Newark, Notts. NG24 4AJ

HARDWARE:
Mike Goddard. Tel: 0978 843547
"Sarnia", Cemetary Road, Rhos, Wrexham, Clwyd. LL14 2BY

DISK LIBRARIAN, JOURNAL EXCHANGE:
Stephen Shaw.
10 Alstone Road, Stockport, Cheshire. SK4 5AH

PUBLICATIONS:
Mike Curtis. Tel: 0209 219051
21 Treliske Road, Roseland Gardens, Redruth, Cornwall. TR15 1QE

MODULE LIBRARIAN:
Francesco Lama. Tel: 0865 721582
14 Granville Court, Cheney Lane, Oxford. OX3 0HJ

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### Next Copy Date

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## Contents.

## FROM THE CHAIRMANS CHAIR

By T.STEVENS (c) 1994

By the time you get to read this the AGM will have come and gone and you will have in this issue the present list of committee members. At the end of this months artical I will tell how it went. As I started writing this before the event I will go on to other things first.

I hope you all enjoyed the program I put into the magazine last issue. I know there are folks out there who love to type things into the TI which are from listings. I hav'nt as yet decided which one I am going to put into the mag but it will be a bit of fun, with a bit of luck.

I know before the AGM that Mike GODDARD is giving up the Hardware post on the committee. So I would like to say to him a very big thankyou for all he has done in the past years for the group. However you are not being left out in the cold. The group will have hardware support. This will be filled by me. I will offer TI stuff for sale when I get hold of it. So I might as well start as I mean to go on. We have for sale TI Consoles at £10.00 a unit. I have a full expansion box with two DSSD drives, 32K card, RS232 card, Disk Controller card and TI interface. This is for sale at £170.00 plus post and packing if required. I also have some spare power packs and other odds and ends in stock. Also available is a EPSON MX 80 printer with lead at £75.00. In stock is the Mini writer cartridge which has a PIO output all of its own. This will go for £20.00. I have also obtained some fresh games modules which I will be passing onto the module library at the AGM. So look out for the new list on items for sale. Please note that these items are being sold on behalf of the group so you gain from the sales. I will of course be open to sensible offers in respect to the above prices, so if you are interested ring me on the my telephone number, which is in the magazine. As for the repair of the TI we now have the full workshop manual and repair system. So we will, pending certain items, subject to availability, be able to repair your faithfull friend.

The 80 coloumn project is coming on nicely. I am in fact writing this articlal on an 80 col system attached to my TI. The program is the 80 Col TI Writer. WHAT A DIFFERENCE!!!! It is an absolute dream to write with. BETTER than any old fashioned IBM. If you came to the AGM you will have seen this being demonstrated along with YAPP, XHI and Multiplan 80 Column Programs.

**********

Well the AGM has now happened and what a do. We had many faces turn up at the show, infact it was one of the largest AGM'S attended in recent years. I do not know the exact numbers but it must have been in the 40's or there abouts. There were many demo's going on, and people had fun metting talking and in some cases nearly breathing TI.

At the meeting we discussed many things. It was brought up

that many of our users would like to have a interim news letter which was soley set aside to type in programs and also give away disks included. It has been voted in so in the near future you will get something drop through your door. If you want to contribute to this news letter please write to Mark WILLS, who will be sorting it out. We also discussed having a BBS for the group. Many people were very interested. So as a result of popular demand we have purchased a VERY FAST modem which is the state of the art for the group. This will be run from my house hopefully on a 24hr basis when up and running on an independent telephone line (incoming calls only). However the board has to be set up and line installed. So more on that soon.

It was also expressed that there were programs in our library which know one knew about and even when they did, did not know how to run or operate them. Stephen SHAW our disk librarian has been contacted and he is willing to do some more reviews on programs available to you on disk. Those of you still on cassette contact Mark WILLS. He has some very nice programs that will help you in many fields.

This month I am not going to do any program features as I have been very busy with my house and setting up the BBS which has had to be reprogramed in places. However next quarter it will be back to normal. However until that issue arrives I thought you might like to see a program that is from the Ottawa TI User Group. Its called HYDRO and was written by J. Deconchat and vamped up by Mr L. Dorais.

So here goes.....

```
50 REM TOP SCORE 15
100 CALL PEEK(-28672,Z)
110 REM **HYDRO**
120 CALL CLEAR :: CALL SCREE
N(4):: RANDOMIZE :: DIM A(10
)
130 A$=RPT$("F",16):: CALL C
HAR(104,A$,112,A$):: CALL CO
LOR(10,14,1,11,11,1):: L
$="  "&RPT$("h",25)
140 GOTO 150 :: I,K,N,N,R,S,
T,X :: CALL HCHAR :: CALL SO
UND :: CALL KEY :: CALL
SAY :: CALL PEEK !@-
150 DISPLAY AT(6,1):L$:L$:L$
:L$:L$:"  hhhOh1h2h3h4h5h6h7
h8h9hhhh":L$
160 DISPLAY AT(17,1):" RANDO
M THINGS HAPPEN WHEN  YOU S
WITCH THE LIGHTS.."
170 DISPLAY AT(20,1):" PRESS
 A SWITCH NUMBER TO":" PUT L
IGHTS OFF OR ON, UNTIL":
" ALL LIGHTS ARE OFF..."
180 DISPLAY AT(24,4):"(PRESS
 ""G"" TO GIVE UP)" :: M=0
190 T=0 :: FOR I=1 TO 10 ::
T=T+A(I):: CALL HCHAR(8,2*I+
S+5,104)
200 IF A(I)THEN 210 ELSE CAL
L HCHAR(8,2*I+6,112)
210 NEXT I :: IF T=10 THEN 3
00
220 CALL SOUND(100,-1,0)
230 CALL KEY(5,K,S):: IF S=0
 THEN 230 :: IF K=71 THEN A$
="  YOU GAVE UP..." :: G
OTO 300
240 IF K<48 OR K>57 THEN 230
 ELSE CALL SOUND(40,800,0)::
 DISPLAY AT(13,4):""
250 N=K-47 :: M=M+1 :: CALL
HCHAR(13,2*(N+3),94)
260 IF A(N)=1 THEN A(N)=0 ::
 GOTO 270 ELSE A(N)=1
270 R=TAN(RND+N/RND-N)-SIN(R
ND/N)+336*SIN(8*N):: N=INT(1
0*(R-INT(R)))
280 IF N=0 THEN N=INT(RND*10
+1)
290 IF A(N)=1 THEN A(N)=0 ::
 GOTO 270 ELSE A(N)=1 :: GOT
O 190
300 DISPLAY AT(19,1):"":":"
":TAB(5);"FOUND IN";M;"MOVES
":"":TAB(7);"PLAY AGAIN?
 Y"
310 IF Z=96 THEN CALL SAY("P
LAY+AGAIN")
320 ACCEPT AT(24,19)SIZE(-1)
VALIDATE("YN")BEEP:A$ :: IF
A$="N" THEN 330 ELSE 170
330 IF Z=96 THEN CALL SAY("G
OODBYE SEE+YOU+AGAIN+SOME+TI
ME"):: CALL CLEAR :: END
340 DISPLAY AT(13,4):"" :: F
OR I=1 TO 10 :: A(I)=0 :: NE
XT I :: GOTO 170
```

## A QUICK TIP FOR GENEVE USERS.

One problem which has appeared time and time again with the Geneve is the speed it operates. If GPL speed five is selected then all the programs operate at a very fast pace. If GPL speed one is selected then it will operate at the standard 99/4A speed.

For a long while I thought it would be nice to be able to change this speed from XBasic without the need to enter the GPL menu screen. For example, AXELF on GPL speed five sets up the screen in a matter of seconds but the music plays far too fast whereas on GPL speed one it seems to take for ever to set up the screen but the music plays at the correct speed.

This can be overcome with a few small routines in machine code. The design of the Geneve means that CRU addresses hold some of the system parameters. I think these are all hidden away in the gate array somewhere.

The two CRU locations of interest are addresses **002E** and **1EFE**. The first location tell the system whether to add wait states to video accesses and the second address tell the system if wait states to memory should be added.

If either of these locations hold a logic one then no wait states are added. Obviously, if they contain logic zeros then one wait state will be added. This only gives a maximum of four different delays possible whereas the GPL menu has five. This leads me to believe that either I have missed a CRU location somewhere or the GPL emulation software has the capability to slow the system down on top of the wait states.

This idea has been tested out using Minimemory and works very well but as of this copy date my machine code routines are not fully functional. I intend to release a small program which will allow Basic or Extended Basic to Link and cause either of these four speeds from a command line.

The machine code will be something like:-

```
LI R12,0
SBO >002E
```

to set the video to zero wait states using the CRU.


# Dear TI'ers,

How is 1994 going for you? For me, it's been the strangest year of my life. It's the first time I've lived away from home, and it's probably the most historic year in TI-99/4A history. On the mountainous trail of computer technology, we have a firm foothold. In the beginning we had to contend with machines such as the Spectrum, Commodore VIC 20, Commodore 64, BBC, etc. They were all starting the climb, and getting in our way. A few feet from the bottom though, it got a bit windy, and they were swept away. The Commodore 64 sheltered in a dark cave (Tandy) near the bottom, where it can still be seen today. You can still buy plenty of rope for it, but with no strong metal pegs or a hammer, it'll stay in its cave, until it starves to death, or gets hypothermia!

In the beginning we didn't have much rope (software!), but we'd got a load of metal pegs, and a right powerful hammer (Device Independence!).

As we climbed higher up, we steadily found more rope, and then a few ladders! The biggest ladder we had was the GENEVE, and then the Myarc Hard Disk Controller. This turned out to be a bit rusty though (which is now being cured by Cecure Electronics), and we were slightly overtaken. Now though, the biggest ladder we have ever had (the SCSI card) has appeared, and it leads all the way to the top of the mountain! We might climb even higher mountains in the future, but for now, we have reached the top of this one, and we've done it far better than the PC world.

A direct quote from Bud Mills: "If PC's can do it, we thought why not, but we'll do it better."

We started out with a disk capacity of 90K for a single sided, single density drive, but now, we've got the largest floppy disk capacity of all. With the routine that allows us to format 2.88 Meg floppies to 3.5Megs, I think we've put PC's in their place! When we were discussing building a TMS34020 card with 16.7Million colours, Mark's friend, Dave said, there'd be no point, because we haven't got the disk capacity to store the amount of data that is required to store images of that detail!

I think he should rethink that statement! We've got the

possibility of more disk capacity than his sad Amiga 4000 could handle. (The Amiga 5000 is now coming out with 4Meg drives, but I'm unsure of their formatted capacity. It's definitely not as cost effective, or easy to use as our system, and you can lose a hell of alot of viruses in 3.5 Megs!!) No offence to Dave though. He knows when he should get down on his knees, pray to the ground, and say, "I'm not worthy!"

Mark told him the 4A was the best thing ever produced, but he didn't agree at first. That was until he read the TI Technical Data Manual. He was looking at the 4A console schematic diagram and scratching his head, and he said, "Mark, did you know this outputs YUV?" He couldn't believe it! YUV is the standard professional output for TV studio equipment, such as the big cameras that you see them wheeling around the studio floors.

In his infinite wisdom with the 99/4A design, Don Bynum thought that, on top of all the innovations, and powerful features of the 4A, he would also put YUV graphics output!

Device Independance which I went into in my previous article is what's mainly kept us going all these years. We can easily keep up with technology with an operating system like ours. With a PC, if you add a new piece of hardware, you have to load a device driver, which normally means including another line (or lines!) in your config.sys file. The PC that I'm using at work runs through about five pages of crap when it boots up. It's all completely *****! (meaningless information).

Look at the following example:

```
LH C:\DOS\KEYB.UK,,C:\DOS\KEYBOARD.SYS
```

The LH means load high, which means load the following files into high memory. All PC's, even Pentiums, will only access 640K of memory, because this is limited by Messy DOS. The extra memory has to be accessed through drivers, which have to be loaded by the config.sys file! These drivers also take up some of the "base" memory though! On the GENEVE, if we stick another Meg of RAM in the box, we don't have to fart with our AUTOEXEC. It's all done already by MDOS. The stupid line above is actually a "device driver" for the keyboard, which messes up the position of the keys. It puts a pound sign on the Hash key, and moves the Hash down on a key near the right SHIFT! The good lord, and his chief designer (Don Bynum) intended the Hash to be on SHIFT-3, so this is where it should be!

Every bit of hardware that's added to a PC has to have drivers loaded, and these have to be called by the config.sys file, which means that every peripheral includes a disk which has to be "installed". It makes me laugh when everything comes with installation disks, and has to be "installed". I know that some TI programs have to be installed (the newer ones like First Draft etc. which just means they are copied to a certain path, and the path from which they load is included somewhere in the path from where they are called.) but PC's and Amigas take it beyond a joke. So little thought has been put into their operating systems, that you have to put little meaningless files in so many places before anything will run, you end up tied in knots. If you ever want to remove anything, then you have to make sure you've moved all the stupid little files that belong to it, or you get weird, crap

little files, lost on your system, taking up valuable space. Software has also got larger, because no one programs in assembly language, because there are too many instructions on the intel chips, and it's tied in knotts. Most PC software won't run at all without a hard disk. It comes in a massive box of disks, and has to be uncompressed! (Un-Archived)

On PC's, certain applications even fart with autoexec.bat and "config.sys" when you install them! Autoexec should be used to setup the system, NOT applications, and the use of a config.sys as well, is completely wasteful of space, time, and energy. The only time that system setup affects an application on the GENEVE, is if you want to use GPL (the Graphics Programming Language interpreter (TI-MODE)). Before using GPL, your AUTOEXEC file must have TI-MODE as its first instruction. This has been given proper thought in Myarc DOS. By preceding a batch file name with "&" (ampersand), MDOS treats the file as an AUTOEXEC, even though it's not called AUTOEXEC! This type of thing is regularly needed on PC's, because different applications require more "base" memory, and others require additional "drivers!", but there is no "ampersand" feature, or anything like it in Messy DOS. You have to physically keep renaming your files, changing different ones to "autoexec.bat", and then rebooting the machine! Now, does that sound sensible. You name something, and we've found a way around it, or TI found a way around it in 1978 when they designed the 99/4 and 4A. The worlds most talented programmers and hardware designers are in the TI-community. And that's a fact.

Returning to the subject of TI history! It is an historic year, not just for us, but computing in general. The problem is though, that "computing" in general will not recognize the fact. We have proved that our machine is a much more worthy educational machine than the BBC micro or Archimedies ever were, and is more flexible than ANY other personal computer EVER produced. The historical point is, that no other computer has been out of production so long, and still had so much new hardware coming out for it.

When people were buying 4A's just before the drastic TI-pullout, they were left confused over what to do next. Would they sell out what they had just bought in favour of something more popular, but much less powerful, or would they stick with the very educated and intelligent purchase they had just made.

As we now know, the largest majority of users did stick with the 4A, and trust their initial decision. This was a considerable point of discussion for Dr. Ronald Albright in his amazing book, "The Orphan Chronicles".

Now, 11 years after TI pulled out of the home computing industry, our hardware capability has taken a MASSIVE leap with just one card. The SCSI card. For me, the position I am at now, I should have been at three or four years ago when I got the Myarc Hard and Floppy Disk Controller. When buying the HFDCC I thought it would sort my life out. All my data would be in one place, and I would have no worries about losing any files. The opposite seems to have happened though. Due to ALOT of bugs in Myarc Disk Manager 5, I was copying data onto the 40Meg hard disk, and when it became full, it just continued writing and writing, and some areas have

been corrupted. I've still got backups in a box of 720K disks, but I am unable to read these, because the GENEVE will not look at floppies that are connected to the MYARC HFDCC.

Theoretically this has been corrected in the 1.5H version of MDOS, which Gary has ordered. The problem I am having now though, is that my 80 Meg drives have never worked correctly, one of them refuses to format at all, and the other one is only formatted to 40Megs, and contains a complete backup of my 40Meg drive. Before I formatted it to 40Megs, I did manage to format it up to 60Megs. This was when I was still regularly using the 4A. For some reason though, it was unstable, and appeared to lose the format. I can't explain why the 60Meg format was lost, but it seems O.K. formatted at 40Megs, and I even power it up now and again, to locate certain areas that are corrupted on the 40Meg drive.

I had my life all planned out. I would have both 80Meg drives formatted up, and one of them would be a total copy of the other. My life's collection of data should just fit into 80 Megs, and I would backup my main drive onto drive 2 at the end of every month. The 40Meg drive would just be something to play with, Temporary storage, and the odd ten megs for the bulletin board!

Myarc's advertising said that it would use drives with a capacity of up to 134 Megabytes, but this requires a modification to be made to the card, and Louigi also never included the full 32K cache that he was supposed to, the card was supplied with an 8K cache.

I don't know if anyone is sure about the maximum capacity of the card. I think Gary has got the data sheet on the actual controller chip, and the specifications state that it will go up to 64K per sector. I covered this in a previous article, which was possibly about two years ago. If you can find a drive that supports 64K per sector, also with 15 heads, and 2048 cylinders, then you would have a drive on your hands that had a capacity of 2013265920 bytes, which is 2.013 Gigabytes! 15 heads is the maximum that the Myarc HFDCC will support, but if you had a drive with double the number of cylinders, then you would double the capacity, and you would be in the league of the SCSI card, but you wouldn't have the speed, and drive reliability of the newer SCSI drives. If you did find a drive, as large as that, then it might also be physically large. As I said to Gary once, when we were first starting up with the Myarc HFDCC, "Imagine running one of those big removable disk machines that you see connected to mainframes!" His teacher was giving one away! Nowadays you could fit a drive with a capacity of a few Gigs in the expansion box, and an optical floppy drive too if you like! I'll discuss this again later on.

It's a strange year, because everything is finally happening. At the time of writing (28th March 1994) I'm currently researching prices of hard disks, and have also decided to splash out on an optical disk. I was interested in a 128Meg floppy drive, but I was pleased to hear that it's being phased out! It's being replaced by a 230Meg model! How's that for progress. If I manage to run all the hard disks that I bought for my Myarc HFDCC, then I would have 200Megs. Now, with an optical drive, I will be able to get 230Megs onto a 3.5 inch optical floppy! Because it's optical, it will also be safe from drop outs etc. (Optical floppies have a

30-year shelf life!). I'll be able to back up my 1 Gig drive onto just five floppies! That's when I've managed to fill such an amount of space! With our efficient filing system, and VERY compact programs and files, I dare say that it will keep me going for the next 34 years! 34 Years? Yes! The drive I'm looking at is a 3.5 inch Fujitsu M2694ESA, which has a Mean Time Before Failure of 300000 hours. This means, once it's switched on, if you never switch it off, it will last for three hundred thousand hours, which, when divided down, works out as 34 years!

While I was doing my pricing, I also thought about a CD-ROM drive, and decided that I would get my Gig hard disk, and 230Meg Floptical, and then see how my funds were, before ordering a CD drive. Bud recommended an NEC, and I found a cheap one for £150, but there was no telling that this would be compatible.

I phoned Bud to ask some questions about the specification of the SCSI card, to make sure the hard disk I would get had the right format of SCSI-2 interface. While I was on the line, I asked him about the exact model of NEC CD-ROM drive that they had used when writing the DSR. Not only did he tell me the model number, he also told me the price! I was amazed, and said I would order one straight away! Bud has done a deal with a drive wholesaler, and he's doing them for $100 each, and $10 shipping.

If you haven't got a CD player, and want to buy music CD's, then it will also play audio CD's! It's got an output that can be taken to your HI-FI, or into the Audio-In line of the TI bus. Bud has informed me that besides being able to catalog a ROM disk, it will also catalog an audio disk, and allow us to select and play different tracks from BASIC or Extended BASIC, or whatever other software we choose.

It's all mind blowing stuff! This time last year, I would have never dreamed that I'd be designing an icon for a CD ROM drive! When I wrote Workspace, I created icons for 3.5 inch disks, 5.25 inch disks, RAM Disks, and hard disks. There was no way at that time of accessing a CD ROM drive, but I suppose, when the Macintosh came out and it gave me the idea of creating an icon based system for the 4A, there was no way of accessing high resolution graphics, or a mouse from Extended BASIC! Thanks to our operating system though, it's all possible.

Yes, I know the GENEVE has the 9938 as standard, but it is the excellent design and operating system of the 4A that also gives the GENEVE its power. Being totally device independant, designed for expansion, and having a Video Display Processor, means that any piece of our software can be made to talk to any piece of hardware. Our graphics resolution is not dependant on our architecture. Our graphics are only accessed through a few bytes of memory, whether you're talking about the 9918A, 9929, 9938, 9958, 9978, or TMS320C80!!! So, the power of the 4A means that Extended BASIC, or any other language on the 4A will allow access to 80 columns, or high res graphics, and the power of the 4A also means that the GENEVE can do the same thing. Without this underlying power, it would not be possible, unless you crowded up the memory, and slowed down the machine with drivers, and drivers, and drivers.

[2022 Note- ahh such optimism. I have CD and DVD disks which have not made a TWO year shelf life. There is a lot that can go wrong, with the foil layer, the lamination, pollution, heat.... ss]

This is the reason that PC's are so **** (not very good). The original PC that set the crap standard, was so POOR, and was not designed for expansion. That's why you need six pages of crap, just to look for SCSI interfaces, CD-ROM drives, mice, and graphics cards! Yes, PC's even need drivers for graphics cards! The original PC only had monochrome graphics, which was all handled by the CPU, and video data is stored in CPU RAM! When you want to improve the graphics, you have to allocate more CPU RAM to hold the data for screen images.

The 99/4A and GENEVE just have a few bytes of CPU RAM for graphics, where it tells the VDP chip what to do. The VDP chip has its own RAM, which can be any size, depending on the chip's capabilities. It's up to individual packages just to send a few bytes to the VDP chip to change video modes etc. We don't need sad drivers taking up K's and K's of RAM! Here's a sad example for you. The microsoft mouse driver for Windows takes a minimum of 17K! There is also one that takes 55K!!! Our mouse is directly connected to the Video chip. The 9938 reads it itself, and stores the current cursor location in two video registers. All we need to do is read the two registers. This will only take a few bytes of TMS9900 machine code! If you've plugged a 9938 into a 4A, then you have this capability, and the 4A was designed long before the IBM PC. And, the 9938 is Microsoft mouse compatible!

In a friendly "argument" with Harvey, who is also from our University, and on placement at Mitsubishi, he said, PC's need a mouse driver because, and I quote!: "PC's were designed before mice were available!"

The discussion ended with him telling me I live in a dreamworld. I do, and I'm proud of it. A dreamworld, with infinite expandability, no stack, no virusses, and the worlds friendliest, and most helpful set of users. When I bought my console, I dreamt of voice recognition. When I'd got the MBX expansion, with voice recognition, I dreamt of disk drives. When I'd got my disk drives, I dreamt of higher resolution graphics, and 256 colours available from 1980 TI-Extended BASIC! I dreamt of disk drives with a higher capacity. Then I dreamt of hard disks, to speed up the time taken to find software, because I've got more packages and individual programs than any PC owner could hope to collect. When I'd got the Myarc Hard Disk Controller, I dreamt of SCSI interfaces, and access to larger, more reliable drives, and the greater security offered from Read/Write optical disks! Since I am forced to use one of the earliest home computers that began design in 1978, and is now "obsolete", I suppose I will have to continue to live in my dreamworld. In dreams, anything is possible!

Here are some words for you to look at:

CAN'T
WON'T
DOESN'T
IMPOSSIBLE
VIRUS
STACK

You should make a note of them, in case you need to know how to

spell them when writing about PC's, since they are not part of our vocabulary.

Our placement tutor likes to insult the 4A (he also insults my car! "Little Nellie"), along with everyone else, but it shows how educated I am, compared to the rest of the students on my course. The great majority of them have no outside interest in computers. They are just there, using the University for a quick degree. Outside of University they couldn't care less. They do what assignments they are told to, and that's it. Alot of them only recently got computers. They bought them because they have to do University assignments on them! If they haven't even got a computer, they shouldn't have started the degree in the first place! I thought the idea of a degree is to think for yourself, make your own conclusions etc. I seem to be discriminated against for doing just that, recognizing, and using a much more powerful architecture, and not blindly following "big brothers" teachings!

The world is too stupid too see it. Profit, and not power is the general opinion. Gary recently tested his GENEVE against his Vesa, Local-Bus 80486. The 486 managed to get over thirty thousand characters a second, to the screen. The GENEVE managed 106. One hundred and six THOUSAND that is! The TMS9995 only has an 8-bit data bus, and was running at 16MHz, with 1 Wait-State memory. Gary's thinking of clocking it up to 20MHz. Imagine that with ZERO Wait-State RAM, faster version 2.0 MDOS, and also the PAL chip that doubles video access speeds! Also consider if the GENEVE was based around the 9996! The 9995 was out in 1980, a year before IBM (clearly with no microcomputer expertise, or common sense) chose the SAD intel architecture for its electronic breeze-block!

Now that I'm looking around at hard disk prices again, as I was when I bought the Myarc Hard and Floppy Disk Controller, I get the stupid phrase "you can't run hard disks on a home computer"! Everyone expects you to be like the rest of the fools out there, with some shed like a Spectrum or BBC. My poor old 1978 Texas Home Computer will run well over 20Gig's of hard disk space. The SCSI interface itself will run five 4.064Gig drives, plus a CD-ROM drive, and a floppy card. This means the 4A will (currently!) run three floppy cards at once! I've currently got seven, working, floppy drives. This year, I'll finally have them all running. I've already got two 1.44Meg drives, and I'm just contemplating buying a 2.88Meg drive! There's only one dealer advertising in Personal Computer World that sells 2.88Meg drives! That shows how advanced the average PC is. Most PC's will probably need a "driver" "loading" before you can use one!

Do that on a BBC micro, the so-called educationally recommended machine!

"You may have been to college, or you may have been to school, but if you ain't got a Texas, you're an educated fool."

As you know, I add to articles when I find time, and when I feel the inspiration. Today's date is the 11th of April 1994, and the time is 9:02am. I'm sat at my desk in Landun, typing this article on Protext 4, in a Messy DOS window!

My dad is phoning Bud Mills today, to find out the progress on the SCSI card. He's going to ask if he could send my CD-ROM drive seperately, so I've at least got something to play with. Since I've bought a ROM drive from Bud, I won't have the satisfaction of calling a dealer and putting them straight when they say "you can't run CD-ROM drives on a home computer!" If it's designed properly you can! Device independence, thank's to TI's DX-10 mainframe, from which our hardware control and operating system is inherited.

When TI and IBM designed their microcomputers, they didn't know where to start.

TI thought the sensible thing to do would be to copy the design from their mainframe computers, especially since they were using their own chip, which was instruction set compatible with their mainframes. What they ended up with, in terms of hardware control, operating system and instruction set, was a desktop mainframe!

IBM didn't have a chip that was compatible with its mainframes. They didn't even make their own chips. They threw the machine together with an intel chip which wasn't an educated decision. It was a decision made on cost, and popularity. As I often say though, you don't see many Lambourgini Diablo's on the road!

When intel began to release later chips (I won't say more powerful, because they aren't), costs soon turned. They soon far exceeded the cost of the TMS9900 series, but as we have proven on numerous occasions, the 1980 TMS9995 in the GENEVE, still far outperforms intel chips. The 286 chip was 12MHz, but a 12MHz GENEVE leaves 286 PC's for dead, and as I have already written, Gary has wiped the floor with a Local Bus 486! Our disk access is also better, because our programs are well written in a decent instruction set, and are much more compact. They load in a fraction of the time it takes for PC's to load anything. Most of our software is in Memory-Image format, which means usually, three 8K modules if we're running in 4A mode! At work people call 2Megs, "not alot of memory"! I'd call less than 2K not alot!

Where was I? Back to Bud Mills. I was considering a Fujitsu 1.08Gig drive, but I am still unsure of the specification of the SCSI card. It shows how fast technology moves. It's now obsolete! It was half height, which seems to be no longer acceptible! They've got to go for 1inch high drives! Fujitsu have therefore withdrawn it and are either working on, or are about to release, a 1inch version. Depending on the rise in cost of this, considering the rise in cost of their new 230Meg optical floppy drive, I'll probably have to go for an IBM Spitfire, which costs £25 more than the Fujitsu, and is only 1.05 Gigs, but what difference will 30Megs mean to me when I've got over a thousand to play with! It is more reliable, and gives 800000 hours (94 years!), compared to 300000 of the Fujitsu, since it only uses three plates. Two of the plates are for data storage, and the remaining plate is used for drive management. Theoretically, since the remaining plate has the same capacity, this is an extra half gigabyte, and also, theoretically, when bad areas are detected on the main plates, some of this will be freed up by the on-board computer!

Bud says that the design team were working on the final

problems in the DSR EPROM over the Easter weekend. We should have one available for demonstration at the AGM. Of course, you will already know this by the time you are reading it!

I can report that my dad did phone Bud, and he's hoping to get the SCSI cards, and my CD-ROM drive, away before the end of this week. That's before April 15th. That currently leaves only a month until the AGM. Todays date is the 14th of April. Gary informed me that the Spring newsletters have finally arrived back from the publishers yesterday. I get my copy tomorrow, because Gary and Trevor are coming down to collect some equipment. Alan Bailey's wife is giving away all of Alan's TI equipment, in return for a donation to cancer research, and Gary and Trevor are collecting it tomorrow afternoon, and then coming to see me. We're going to see Dave, (mentioned earlier) because Gary's got some questions about Genlock, Super-Impose, and Digitize, for the 80-column card. They're sleeping on my floor tomorrow night, and then giving me a lift back to civilization on Saturday. On the way, we're calling to pick up the equipment that Peter Walker is selling to the group. This is the real reason that we've organized the weekend.

I've got no startling news on the progress of my CAD program. I'm steadily sticking routines together, and need to sort out a filing routine that simplifies the mountains of options that C99 presents. Deciding on a file-type to use will be the next thing! Since we've got over 1000, TRUE, file types, and don't use crummy extensions, it'll be a difficult decision. With WORKSPACE I decided to use D/V 80 files, so they would all be viewable and editable. Speed suffers fractionally by doing this, but with WORKSPACE, it's more of an advantage being able to edit the files, because they contain CHAR codes that can be entered manually.

Since the CAD program will run on the 4A as well as the GENEVE, I think speed, and efficiency will have to win. A few issues ago, we had an issue that describes what files are best for what, and it says D/V 80 files are wasteful of space, compared to D/F 128 files. I don't think the data I'm creating will take up a record length that long, so I'll have to store more than one CAD object in each record. If this works out, it will mean we've got a maximum image size of about 8.3 Megabytes! If you've only got SS/SD 90K disks, it will also work, so don't worry! It just means your CAD files are "limited" to 90K. It's limiting in relation to 8 Megabytes, but a 90K image is still massive. This size will give you an image of at least 350 individual objects. Hard Disk owners, and possibly RAM Disk owners (if they've got the odd 8.3 Megs spare), can have an image of 32766 objects. The 32767th record will contain a link filename which points to a secondary file, so that one object can be made up of two object files. The second file can only have 32766 objects, because the 32767th record will contain a link filename which points to a third filename, so that one object can be made up of three object files.

And on, and on.....

On the subject of being usable on the 4A, the only thing that worries me is the speed of the line routine that comes with C99. The FORTRAN 4A line routine is much faster, but this is

sluggish when compared to drawing programs such as Picasso, and especially GRAPHX. GRAPHX is a fine example of how to write a proper zoom routine! It wipes the floor with TI-Artist, and TI-Artist Plus. If you Zoom In with GRAPHX, and you blink, then you've missed it! That's the sort of thing I'm aiming for, so I'll have to delve into the mysteries of GPL floating point routines, so I can write a much faster line routine. The line routine for C99 is so slow, because it tries to clip the line to the screen after drawing every pixel. What he should have done was clip the lines before attempting to display them. I need to clip the lines to an area smaller than the screen, because of the left-hand menu bar, and the top title bar. I also need to clip to the full screen size when I use the screen as a buffer for printing. I've got the theory of this already worked out. It will be compatible with the high density mode of standard EPSON printers, which gives 1920 pixels across, and also with Hex density, 24-pin printing, which gives 360 * 360 dots per inch. If you draw a circle, and give it a radius of 32000 pixels, it will appear entirely on the screen if you do a zoom to the extents of the image. It is divided down to 222 pixels across (256-34 for left menu panel). When it is printed, if you've got Hex density, then it is divided down to 2880 pixels. The image will have to be scaled to the screen, and printed in sections.

I'm also going to write my screen setup routines directly in 9900 and will be utilizing VMBW (Video Multiple Byte Write), the merits of which, spoke for themselves earlier in the article!

News just in! It's April 18th, at 8:24am, and I'm at work again, typing with Protext 4, running in MessySoft Windows. The weekend went very successfully. We visited Dave on Friday night, and Gary discussed the 80-column card, and 9938/58 digitize with him. He's pointed us in the direction of a chip that will combine two video signals, and handles phase differences between two synchronizations. One for the 9958, and the other for the video signal being super-imposed, or digitized.

Dave also told us about THE chip which TI are working on. This is the worlds fastest chip. We knew that TI wouldn't let DEC overtake them with the Alpha if there wasn't a very good reason, and TI were being very quiet.

We had rumours before, of something BIG that they were working on which was a replacement for the TMS34010 and TMS34020 graphics chips. While it was in development, it was given the codename of 340i, which indicated that it was a progression from the TMS340#0 series of chips.

Dave has given us an article on it, and TI have now released small sample quantities. The chip is in fact a continuation of the Digital Signal Processing series, and is called the TMS320C80, which is also the next level up from the C40. The new chip is a combination of the two product lines, and contains two on-board video controllers, which completely wipe the floor with the TMS34020.

According to Gary, DEC have been working on a 900MHz version of the Alpha, which will do 400MIPS. They have been having a lot of trouble with it though, because of radio interference, and it is clocked at such a high frequency, that it is starting to emit microwaves, so it's slightly dangerous!!!!

The TMS320C80 peaks at 2BIPS! Two thousand MIPS! Most

companies only quote the peak value, and chips, in fact, turn out to be much lower in performance. The C80, however, has a sustained performance (GUARANTEED) of over 1000 MIPS.

That's 100MFLOPS (Million Floating Point Operations Per Second), running at 50MHz!!!! If you clocked it up to 900MHz, it would have a sustained speed of 18 thousand MIPS.

Dave is currently using about 16 processors in parallel to handle video compression, and it's giving about a thousandth of the power that a single C80 is capable of.

Loughborough Sound Images is the only company that's got a board at the moment. There is one technical problem with the chip. Conventional memory is not fast enough for certain features of the chip! The current revision of the chip has a very short bug list, but samples are in short supply. When the chip is released, it will cost £400, which undercuts the ripoff, bodge job Pentium by £200!! At the moment, if you want a sample of the C80, it will cost you around £180000. The chips' transfer rate is 4.2 Gigabytes per second, and it has four on-board Digital Signal Processing units, besides the main RISC processor, and two video controllers!!

That's enough of the C80 for now.

Alan Bailey's collection was a bit of a Treasure trove! You name it, he'd done it. He did have the Editors box for some time, until Gary had to take over. He had a complete disk unit, which included a power supply, and three floppy drives. He had everything that anyone could need to build an 80 column card! A load of tools, including a PCB drill, wire cutters, chip sockets, EPROMS, connectors etc. He had a load of old ice cream and margarine tubs that contained various things from different projects he was working on. One issue of TI*MES contained something about building a plotter, and one of his margarine tubs was labelled "PLOTTERS"!!! When we opened it, we found that it contained four stepper motors, solenoids for lifting and lowering pens, and it even actually had the pens as well!

He'd just not got around to starting the project. There were piles of Manuals, and a folder full of Micropendiums! The find, also included a complete GPL manual. The same one that I've got on disk.

On Saturday, when we visited Peter Walker, he gave us a complete demo of the 80-column card, and the system he was selling, which included two 248K Horizon RAM Disks! I couldn't pass up the offer, and bought one of these yesterday, along with a 4A console that has a DC adapter! Yep, the DC circuit is not in the console. The rectification, smoothing, and regulation of AC to DC, is done entirely in the mains adapter!

That's three RAM Disks I've got now! The GENEVE's own RAM Disk, an Horizon 90K, and now an Horizon 248K! To get ONE running on a PC is bad enough. To get three running, you would need a massive set of drivers, and wasteful commands, and it would be almost impossible. For the Horizons, we just plug in and go. For the GENEVE RAM Disk, we just include the RAMDISK command in our AUTOEXEC. The RAMDISK command is followed by a number, that defines the size of the RAMDISK in Kbytes. On a PC this would be a massive line of crap, which includes RAMDRIVE.SYS, which is a sad

"device driver" that controls the RAM Disk!

The PC can't handle three at once, and they wouldn't be battery backed, as the Horizons are!

When we got back on Saturday, Trevor dropped me off at my place, and I picked up a few 80-column items and went back over to Trev's later on and we had a look at the new toy!

The Mechatronic mouse routine that was supplied with my copy of YAPP, didn't seem to be too impressed with the Mechatronic mouse (5-5-94, I have now discovered that the MM:DSR file on the YAPP disk, is not a Mechatronic Mouse routine, but is the MYARC Mouse routine). When we moved the mouse around, the cursor appeared to move slightly, but at first, the only thing we got working was the joystick. We copied the Mechatronic DSR to Trev's TI-Artist Plus disk, and that worked first time, but we were still confused over the DSR supplied with YAPP, not appearing to work.

In the end we found a Mechatronic DSR on a disk, in the box of many that Peter gave us. The disk was labelled "TI-mouse", and the driver seemed to be for TI-Artist, because it did allow the mouse to work in YAPP, but it would only give mouse movement in the area of 256 * 192, which means G6 screens (512 pixels across), or interlaced screens (424 pixels down), will require the source code to be modified, and recompiled.

Trevor seems to think that this version of YAPP is slightly unhappy running on the 4A. I suppose it is really written for the GENEVE, but there shouldn't be any incompatibility. I'd put this down to wierdness on the Mechatronic card. The strangest thing about it is that if you select TI-BASIC, it hangs, and won't go into TI-BASIC until you've pressed a button on the Mechatronic card! As soon as you've pressed the button, the TI-BASIC prompt appears.

On Monday (18th April) I phoned Bud for a progress report. They're still working on the SCSI's! It's getting slightly worrying, since the AGM is only three Saturdays away. Bud estimates a week, or week and a half for completion, but he knows the date of the AGM, and I'm sure he won't want to miss out on the opportunity of having the card demonstrated at the show. He's promised to send it over by express airmail, and he has also said he will send my CD-ROM drive immediately, so I've got something to play with. This will give me the opportunity of sorting out the power, since it's an external drive, and will probably be rated for 110volts, and not 240 volts!

I can confirm that the card uses a 50-pin edge connector version of SCSI-2, which means that I'll have to find some way of converting this to an external cable connector. I will probably have to solder three external sockets together onto the ribbon that comes out of the SCSI card. I can then plug external screened cables into these. One for the Gig hard disk, one for the CD-ROM, and one for the optical drive.

I'm slightly confused about the Fujitsu optical drive. One company has already advertised the 230Meg version in Personal

Continued on Page 18 ---->

MICRO-REVIEWS

# PC99 is close to perfect but works best with fast PC

By CHARLES GOOD

There is nothing very "micro" about this month's column. I am devoting the entire review to a single piece of very important software. If you want your important software reviewed, send it to me at P.O. Box 647, Venedocia OH 45894. My evening phone is 419-667-3131 and my internet address is now cgood@lima.ohio-state.edu.

Let's be honest with ourselves. The TI community no longer exists in its own isolated little world. Many TI computer users also use other types of computers. In particular, many TI users also have a DOS (IBM-compatible) computer at home. In addition to myself, TI users who own a home DOS computer include Berry Traver, Tony McGovern, Bruce Harrison, Bill Gaskill and the vast majority of TI user group officers attending the most recent Lima MUG Conference.

Let us also recognize the fact that many previous TI users have sold their TIs and replaced them with DOS computers. Well, it is now possible to have your cake and eat it too. At least two software products exist which allow you to run 99/4A software on DOS computers. I am reviewing one this month and hope to review the other in the near future.

These TI emulators represent a whole new category of software only dreamed of a few years ago. A DOS computer can now be made to behave exactly like a 99/4A. Why would one want to do this? The answer is that some TI software is really good or offers unique features, such as the Funnelweb word processor whose multilingual capabilities are unknown to me in any DOS word processor. Like policemen, you can't always find an expanded TI system when and where you need one. These days DOS systems are much more common than 99/4A systems.

I feel that emulators will enhance, rather than decrease, interest in the 99/4A. My father-in-law, for example, learned computing on a 99/4A but left the TI community 7 years ago when he got his first 8088 DOS computer. He now has a 486 something or other on which he occasionally plays his favorite TI games and uses label printing software written in TI Extended BASIC. Due to an emulator, my father in law has returned this year to the TI community.

## PC99 by CaDD Electronics

This commercial 99/4A emulator is technically very close to perfect. Minimum recommended requirements are a 386 computer with VGA graphics, 640K memory, and a hard drive. You can also special order a version that will run on a 286 DOS computer with the above configuration. Almost all features of a 99/4A system are emulated and all 99/4A software and modules, apparently without exception, will run correctly. The emulated system includes three DSSD "drives," PIO, RS232, joystick(s), and 1 channel sound through the PC speaker. If you don't have joysticks on your DOS computer, joystick movement can be simulated from the keyboard. Speech is not emulated. Applications programmed for speech or more than one sound channel run normally but without speaking or enhanced sound. I am reviewing PC99 release 2A. Full 3 channel TI sound emulation with a DOS sound card is being worked on for a future release.

The PC99 package includes the emulator itself, the Extended BASIC, Editor/Assembler and Tombstone City modules, 99/4A <—> PC transfer software, and an amazingly complete set of utilities. You can purchase at a modest extra cost DOS files to emulate any module TI ever made for the 99/4A, as well as files to make PC99 emulate a 99/4 (without the "A"). TI is paid a royalty on each console operating system and module sold.

Software allows you to transfer whole TI disks to PC99 format either using a TI system directly cabled to the DOS machine, or indirectly without cabling by using PC Transfer. PC Transfer (not included when you purchase PC99) is software that runs on a TI system with a double-sided disk controller and allows you to move TI files from one TI drive to a 360K DOS disk you put in a second TI drive. You then take the DOS disk from the TI, put it in your DOS computer, and convert the files on this disk to PC99 format. I have done so successfully and find the procedure lengthy and confusing, requiring lots of user intervention. Using a cable to link the two computer systems makes the procedure much easier.

Transferring a DSSD disk between cabled computers takes just a few minutes and requires almost no user intervention once the transfer starts. In addition to whole TI disks, you can also transfer GRAM files to PC99 to run as emulated modules. To do this you need a GRAM device to make GRAM files of your TI module collection. If you don't have a GRAM device, such as GRAM Kracker, or a particular module, module files runnable from PC99 can be purchased from CaDD. File transfers can go in both directions. Any TI software created on PC99 can be sent over to a real TI system, either cabled or not cabled.

PC99 emulates whole TI disks, not individual TI disk files. You have 3 "drives" on line when running the PC99, each with either a SSSD or DSSD TI disk represented by a single DOS file. The large size of these DOS files that emulate TI disks makes it difficult to fit PC99 onto one 3.5-inch disk and run it directly from the disk, but this can be done if you include only one module on the disk and leave out the docs and PC99's configuration utility. Normally you would install PC99 onto a hard disk. OLD, SAVE, and other disk operations from within PC99 just modify these TI "disk" PC files. Because these files exactly emulate TI disks, emulated TI software correctly reads TI "disk" directories. A large assortment of DOS utilities are provided to manipulate the emulated TI disks. You can get a TI type directory

# MICRO-REVIEWS—

**Continued**

from DOS, extract modify and reinsert single TI files to and from the emulated disks, etc. The method PC99 uses to emulate TI disks works very well.

All 40-column 99/4A software and transferred modules I have tried work perfectly running under PC99 release 2A. I know of no exceptions, except for the lack of speech and full TI sound. Because only 16K of VDP is emulated you can't run 80-column or Geneve specific software from PC99.

There is, unfortunately, one potentially very big problem with PC99's software emulation. Execution speed of TI software running from PC99 is extremely slow. I guess this the price to be paid for "perfect" emulation. On my 386DX/40 TI software running under PC99 seems to just crawl along. When running the Funnelweb v5.01 editor, maximum typing speed is about 60 characters (not words) per minute. As with a real 99/4A there is no keyboard buffer, so you can't type faster than the speed your letters appear on screen. Using a TI word processor running from PC99 just isn't practical on my DOS machine, at least not yet. I have been given a beta version of release 2B to play with and it is perhaps 20 percent faster than 2A because of speeded up CPU operations. This speed increase still isn't enough to allow me to use Funnelweb's word processor on my 386.

The speed of PC99 is in part determined by the DOS computer's central processor, and I am told that on a 486DX2/66 PC99 release 2A will drive the Funnelweb word processor at acceptable speed. I can't personally verify this. If you have a fast 486 or Pentium DOS computer, then PC99 release 2A's speed may not now be a problem. From what I have seen, future releases of PC99 will certainly be faster than 2A.

The only advantage of PC99's slow speed is with games. Because I can react quickly and the game can't, I get fantastic scores. I have no trouble leaving the Tombstone City town and killing all the ad guys with PC99. On a real TI I always get zapped soon after I try to leave town.

PC99 has an excellent assembly language memory debugger. Any kind of 99/4A memory manipulation is possible. Because the PC99 debugger doesn't occupy any part of the memory reserved for the TI, the debugger can do tricks that are not possible with any debugger operating from a real 99/4A. An even more enhanced debugger screen display is in the works for a future PC99 release.

An appropriate feature of any professional software product for which you pay a professional price is a comprehensive (on disk) manual backed up by technical support. You get this support with PC99, either by phone or U.S. mail. Registered owners can phone (not a toll free number) CaDD evenings and weekends and speak to one of the PC99 authors. If the phone line is not attended you can leave a message on the answering machine and your call will be returned. You might need this sort of help the first time you try transferring your TI software to PC99, particularly if you are using computers that aren't cabled together. CaDD also offers to convert TI software to PC99 format for you if cabling a DOS and 99/4A computer is not practical. You send them your TI disks and you get your software back in the mail in PC99 format. There is a nominal charge for conversion, starting at $1 for a single disk. The more disks you send the cheaper per disk it gets.

The most important question that should be asked by those considering purchasing PC99 is, "Will 99/4A software emulation be too slow on my particular DOS computer?"

The most important question that should be asked by those considering purchasing PC99 is, "Will 99/4A software emulation be too slow on MY particular DOS computer?" You need to be able to test drive PC99 on your computer to answer this question, and hopefully you will soon be able to do so for free. At my suggestion CaDD is asking TI for permission to distribute a free crippled version of PC99 for evaluation purposes on a "you send CaDD a high density 3.5 inch disk and a postage paid return mailer" basis. They would then return your disk with a full speed but limited feature "cripple ware" version of PC99 and some 99/4A software in PC99 format for you to speed check on your machine. By the time you read this review this trial version may be available. Write CaDD for details. PC99 release 2A costs.$147 to new purchasers. If you have already purchased an earlier release, the cost to upgrade is the difference between what you originally paid and the current price. It costs $7 to upgrade from release 2 to release 2A. CaDD's address is at NH 03077.

**ADDITIONAL COMMENTS ABOUT EMULATORS**

Get a TI-DOS serial cable! Without the ability to transfer your own important TI software to a DOS computer 99/4A emulators are little more than expensive toys that allow you to play around with the few pieces of TI software that come with the emulator. File transfers via cable are easy. You can't just run out to Wal-Mart and buy a serial cable. You have to make one or have somebody make one for you. That's because the TI RS232 port is wired a bit differently than everybody else's RS232, and there are two different sized connectors for COM ports on DOS computers. The PC99 documentation gives pin in/out data for the needed cable. I had a cable made to my specification (specified cable length and DOS COM port) and tested on an emulator by L.L. Conner Enterprise, 1521 Ferry St., Lafayette IN 47904. You can phone voice at 317-742-8146 for a price quote.

The question of distribution of copyrighted TI products needs to be discussed. The PC99 people have a license from TI to sell the code of the 99/4A operating system and all official TI 99/4A modules. TI is paid a royalty on such sales. Such a license is probably not difficult to get these days, since O.P.A. (Gary Bowser) also has licensed the 99/4A operating system. As of this writing (mid July) the other TI emulator some of you have heard about does not have a license from TI to distribute code contained within 99/4A consoles or cartridges. TI complained about such distribution, and the other emulator has been temporarily withdrawn from the marketplace.

2022 note: The final release of PC99 for DOS was version 6

Computer World for £520, but I've contacted another company, in Eastcote of all places!, about the drive.

Someone there knows someone who works for Fujitsu, and they asked him, and all of their dealers about the drive. They said, no one expects the drive to appear in the U.K. for another 8 weeks. The company that has already advertised it has imported the drive themselves. I'm not too worried about waiting 8 weeks. The SCSI card is delayed, so it would be no use ordering a drive now.

Since I have discovered that the SCSI card refers to devices as WDS1 to WDS7, the CD-ROM drive will immediately appear as WDS6. The SCSI card has gone back to using WDS (which was dropped by Myarc after a bit of legal trouble!), because the Myarc Hard and Floppy Disk Controller now officially uses HDS1. Therefore, DSK's are floppy disks, HDS's are Myarc (ST506/412 interface) hard disks, and WDS's are SCSI devices.

On the GENEVE, the same is true, but instead of loading 2.0 MDOS, we load 2.0S MDOS, which is modified for the SCSI card. Loading MDOS requires just one file to be present on a disk. I have to laugh when PC'ers say they're formatting a "system disk"!!!

We just have to copy the SYSTEM/SYS file onto a disk, and then the GENEVE's EPROM will search for this file, and execute it. When MDOS is loaded, it will execute the AUTOEXEC file, which will set the system up. This will normally include TI-MODE, to setup the Gate-Array to perform GRAM emulation for GPL, and setting the MDOS prompt, and assigning which letter in MDOS refers to which true hardware device name. Only our machine seems to have true device names, so the ASSIGN command is used to say, for example, that A: in MDOS refers to DSK1., or G: refers to WDS1. etc.

Eg.

```
ASSIGN A=DSK1:   < 180K 5.25" Floppy
ASSIGN B=DSK2:   < 720K 5.25" Floppy
ASSIGN C=DSK3:   < 1.44Meg 3.5" Floppy
ASSIGN D=DSK4:   < 3.5Meg 3.5" Floppy! (Using a 2.88Meg drive!)
ASSIGN E=DSK5:   < GENEVE RAM Disk, created by MDOS
ASSIGN F=DSK6:   < Horizon RAM Disk!
ASSIGN G=DSK7:   < Horizon RAM Disk!
ASSIGN H=HDS1:   < MYARC HFDCC ST-506/412 hard disk
ASSIGN I=HDS2:   <   "      "         "     hard disk
ASSIGN J=HDS3:   <   "      "         "     hard disk
ASSIGN K=WDS1:   < SCSI - Gigwod hard disk!
ASSIGN L=WDS2:   < SCSI - Fujitsu M2512, 230Meg re-writable optical
ASSIGN M=WDS6:   < SCSI - NEC CDR, CD-ROM Drive!
```

How's that for a list of devices! Do that on a PC! You'd be tied in knots before you'd got half way! The ST506/412 controller and SCSI card would probably clash with each other immediately!

Captains log. STARDATE 290494.15!

On Wednesday, I got my dad to phone Bud. Unfortunately, he was at work, but his wife said Don had also phoned (because Bud phoned Don for a progress report) with some good news. My dad phoned again yesterday, and he managed to catch Bud. Apparently, they have also got an important show coming up, and are trying to get the card finished in time for that. The good news from Don was that they have tracked the problem down to a single fault, so they are hopefully working on that. Bud has promised to Express-Airmail both SCSI cards, and my CD-ROM drive, in time for the AGM. Fingers crossed! Then I'll have to hope that Fujitsu hurry up with the optical floppy drive. I'm tempted to buy it from C&T immediately. They offer the best price so far, but our so-called expert (the one who chatted with the rep. from Power Mark) says £520 is expensive.

By the time I've sorted out my SCSI cables, it will have been officially imported by Fujitsu U.K., and I'll be able to undercut that price. If I did order one in time for the AGM, it would be doubtful that I'd be able to get it running at the show. I need to find some way of converting from a 25 Way external cable to 50 Way ribbon cable! This will probably mean wiring up 25 Way plugs to ribbons, which will be messy! Every odd pin on the SCSI bus is an earth return, which is how you can condense a 50 pin bus down to 25 pins!

Today is 3rd of May, 1994, and just two more weeks to go until the AGM. This weekend was quite eventful. I returned to civilization for the weekend and had a well earned break on Friday night. On Saturday, things were delayed by shopping trips etc., so it was after dinner when I finally went up to the Computer Deck to sort myself out!

Two weeks ago when I was home I bought one of the Horizon 248K RAM Disks, but wasn't able to stick it in the box and sort everything out. It was so long ago that I'd set up my 90K RAM Disk, that I'd forgotten completely how I set up which drive it would be accessed as, and the CONFIG program won't run on the GENEVE! I put the card in the box, and immediately realized, that it had not been fully address decoded! The AMA, AMB, and AMC lines were left to float, because the 4A doesn't normally use them. All TI original cards fully decode these lines, so that their own hardware won't clash with future add-ons. Horizon and Corcomp didn't bother! Nowadays though, since Western Horizon Technology and Bud Mills have taken over, the newer Horizon RAM Disks are fully decoded. It's only the early ones that use 6264 8K*8 RAMs that need the modification, along with any Corcomp cards.

This modification is mainly for GENEVE users, but I think it will also be essential for anyone thinking about a 4A MEMEX card. The GENEVE MEMEX uses AMA, AMB, AMC, so it's almost certain that the 4A MEMEX will also.

The MEMEX card does have some very clever circuits though, that causes it to halt memory accesses if it detects something else trying to detect the same address. I thought, oh, it will be alright for the moment. I checked that the card was working. As soon as I plugged it in, I ran a program called "CFG" which checks all CRU addresses and finds what devices are located their.

My existing RAM Disk is at CRU 1400, and the new card came up at 1700. The program even told me how much memory each card has! I tried accessing the card from MDOS, and from DM-1000, but kept getting device error.

After phoning Trevor, he explained that it's because of the first drive needing to point to the second drive, and the second drive needing to point back again. They need to be configured together. I went over to Trevors, and he configured them as drive 7 for the 90K card, and drive 8 for the 250K card, and he made them point to each other.

I returned from Trevors at about 1am, so I had to wait until Sunday before trying the RAM Disks out. Strangely, the 90K card still appears as drive 6 when cataloged with the GENEVE, so there is still some confusion somewhere. I might need a different version of the DSR to run them with the GENEVE. I need to check with Bud, but I don't want to bother him again. I will wait until the SCSI card has arrived, because I don't need to do anything until next weekend, and my computer is back in civilization, and I'm stuck in this filthy hole!!!

I'll be taking them both to the AGM, hopefully with a solution. If I need another DSR, then Gary and I can download it from Toledo on the Friday night via MODEM! I'm taking my big box of electronic tricks to the AGM and I'll spend a couple of hours re-wiring the address decoding!

Instant update! Being a TI-User, we've always got someone to talk to. I just realized that I haven't yet put together an agenda, so I have just called Trevor to see what input he would like to add to the agenda. Besides his valuable input, he has also informed me that I do need a new DSR for the RAM Disks. The RAM Operating System that we currently have is 7.3, but I need ROS 8 to allow two to be used on the GENEVE.

I suppose it makes more sense to catch Bud before he sends the SCSI's, so he can also include the new RAM DSR!

Done! I've just phoned him! The GENEVE needs the Horizon's to be set at CRU's 1400 and 1600 (unless it's been told otherwise), and 7.3 ROS definitely won't work, and neither will version 8 according to Bud. We need a program called "Form", written by Jim Schroeder, which Bud is going to stick in with our order! (Form will also run on the GENEVE, so that's another problem solved!)

My slight panic with the CD-ROM drive is also averted, it's an external, but it's got a seperate AC adapter, and 12 Volt input. Therefore, it'll be easier to change the transformer in the AC adapter to handle 240 Volts instead of 110 Volts, or I can just feed the 12 Volt input from my 10 Amp Monster Hard Disk Power Supply!

Bud has promised again to get our order here in time for the show, and I can confirm that the problem had something to do with a flag not being set properly while copying files.

On discussion at the AGM will be my startling new idea! While I was on the phone to Trevor discussing the agenda, we talked about our decreasing numbers, and he said that we need some publicity. This lead very nicely to my idea. It was rumoured that the Science Museum had a TI-99/4A on display, but a few weeks ago I had a visit to the museum in South Kensington. Getting there was a

bit hectic. London's transport system is about as organized as an intel research department. I went past BBC Television Center three times before working out where I was going!

The District and Circle lines combine into one line, so you might think you are on the right train, but suddenly it will go completely the wrong way!

I finally reached the museum and worked my way around to the computing exhibit. It's called "Then And Now"! Naturally, this starts off with Charles Babbage's Analytical Engine, and includes early disk drives, Core Memories, Bubble Memories etc.

The most embarassing thing is that it contains a ZX80, an Acorn Atom, and a BBC Micro etc. The case that contains the Acorn Atom is the most interesting. The Acorn is at the back of the case, while, taking pride of place at the front, is a Texas Instruments Speak & Math.

The machines had no detailed information displayed with them and there was no TI-99/4A to be found.

That's when I had my fit of inspiration! Why not donate a 4A to the museum, and write our own information to display with it?!?!?!? This would fit perfectly with the title of the exhibit.

Something like:

"The Texas Instruments TI-99/4A.
Probably the greatest personal computer ever designed, and years ahead of its time.

The 99/4A's CPU, the TMS9900, deserves a full commentry of its own. The first 16-bit microprocessor, released in 1975, but not accepted because it was so far ahead of its time. The view was that, since it was 16-bit it would be far more difficult to program than an 8-bit microprocessor, but because of this, the opposite is true. The TMS9900 is unique for the fact that it uses an area of memory as registers, which it calls a "Workspace". Many sets of registers can be maintained in memory, with the currently active one being pointed to by the "Workspace Pointer".

On regular machines, when jumping to a subroutine, the processors' registers have to be saved to stack before new data can be loaded. The TMS9900 avoids this wasteful bottleneck by using an entirely new set of registers, and simply changing the Workspace Pointer to point to the new set. The existing registers are untouched, and can be instantly returned to.

The machine has a unique architecture which compares to only a few systems available today. If you were to buy a machine with a comparable architecture, then it would cost you tens of thousands of pounds!

The machine actually has a Device Independant Operating System, which means any piece of hardware can be seamlessly integrated, and without the need for "driver" software to be loaded into CPU RAM, as with IBM PC compatibles. Only 8K of CPU RAM is taken up for hardware control, no matter how many devices are connected.

The machine will run many floppy disk controllers,

hard disk controllers, and 16 Megabyte RAM Disks. Floppy disk capacities range from 90K to 3.5Megabytes (Using a 2.88Megabyte drive), and hard disk capacities can go up to 4.064Gigabytes.

1994 sees the release of a SCSI (Small Computer Systems Interface) card that now gives the TI-99/4A user a maximum hard disk capacity of over 20.3 Gigabytes (five, 4 Gig drives), and also leaves a free channel for a CD-ROM drive.

The machine is still used extensively around the world, and is supported by hundreds of dedicated users groups."

How does that sound? A machine from "then", working much more efficiently than the machines from "now"!!!

O.K. So what's next?

In my Winter article, I think I promised some things for later articles that I haven't yet done! I did promise Screenwriter, which I, 99.9% completed, and included in my Spring article. I did say 99.9%, because I've still not found the right address for the base of the color table in VDP RAM. The program is complete, and does actually write the color table, but I took the reference for the color table from Ralph Molesworth's Intro to 9900, but when this didn't seem to work, I contacted Mark Wills, and he suggested another value, which also doesn't seem to work. The data loads, but I haven't got a clue where to. Mark and I were certain that this was the right address. Mark will hopefully check this out for me, and I'll be able to include the solution later in this article. Other things that I might have promised have sadly been put back, due to my work placement. I have also had some other ideas, which include more for the "console only". One of these is a new game which, I hope will be available in several versions. My console-only version will probably require Extended BASIC, and will be limited to a fixed screen area. When the player reaches the edge of a particular screen, the new screen will be redrawn entirely over the existing one, whereas on the version for expanded systems, I'm hoping to make the entire screen scroll around! Manipulating the XB screen table is simple in TMS9900 with the use of VMBW and VMBR etc.

Simple he says! Yes, which brings me on to my next subject. There have been alot of machine code tutorials already, and many of you will wonder if there is a need for another one?!?!? I think there is, because alot of people seem to still have difficulty with it. I was considering writing a TMS9900 tutorial, but I have now made up my mind that I definitely will, after a phone call on Friday night (6-May-94). It was Bill Moran, who said that before my articles, he'd not read so much information about the TI that was as easy to understand! I'm flattered! I said I was going to write an easy to understand machine code tutorial, and it seemed that he'd not followed the tutorials that have gone before, so it

seems that there definitely is a need for another one!

---

IMPORTANT UPDATE: 12:50pm 10th May 1994.

The bad news, and the good news about the SCSI cards!

The bad news is that Bud won't be able to have them ready for the AGM. The problem of the flag on the DSR when copying files, has resulted in Mike Maksimik re-writing two pages of assembly. Unlike Microsoft, Mike will NOT release code, until he knows it's entirely bug free. It would have possibly worked in its original state, but would have fallen over sooner or later.

The cards, and my CD drive, "will" be mailed out sometime next week though, so, hopefully, not too much longer to wait now.

They're working on a CALL FORMAT command, so we can format floppies by entering a command from TI BASIC, or TI Extended BASIC!

This will work on the 4A as soon as you switch on, because they are in the card's DSR, so there are no SAD "drivers" to load. They will also work on the GENEVE after loading the Extended BASIC cartridge from disk! There is also a command that allows file copying, but it will only work from the new GK Extended BASIC.

---

Back to the TMS9900 tutorial. For some reason, alot of tutorials start off by explaining how to do addition and subtraction in binary and hexadecimal. I can't say that this is a skill that is definitely required from an assembly language programmer, and really it just confuses the beginner. Having an understanding how binary and Hexadecimal work is important, if not essential, but I don't think there will be any call for you to actually do any calculations yourselves in these number bases.

The difficult thing about assembly language is that it takes alot more instructions to do jobs that you would consider simple in Extended BASIC. When the beginner reads a bit of TMS9900, or the lesser quality assembly languages, it looks confusing because they are reading single instructions at a time, and don't consider that a PRINT statement in Extended BASIC might take up to ten lines of assembly language.

Whereas normal tutorials will start with addition and subtraction in binary and hex, mine will not. I'm going to grab the ****** by the ****! and head straight for the REF/DEF table!

If you pick up and read a bit of 9900, you will see things such as VMBW, STRREF, KSCAN, VSBR etc.

TI in their infinite wisdom, built into the 99/4A's ROM and GROM, some routines which simplify certain things that the user might want to do in machine code programs. These are dominated by graphics routines (VMBW, VSBW, VMBR, VSBR, VWTR), but also include

a keyboard scanning routine, and routines for transferring data between machine code, and TI-BASIC or Extended BASIC programs.

When you want to use these routines, how does the 4A's operating system know where they are? Simple, there's an area of memory, called the REF/DEF table where their locations are stored. The names of the routines are stored, along with the address where they can be found. When a "label" is encountered in a machine code program, it is checked against its entry in the REF/DEF table. When the correct one is found, the 4A knows the correct address to jump to. The 4A REFerences the address, from the REF/DEF table, for the required routine.

So what if the user wants to write his/her own routine, and make it accessible to other programs?

It can be DEFined in the REF/DEF table. When a TMS9900 program is assembled, the REF directive tells the assembler to generate instructions which will put the labels, and their addresses, in the REF/DEF table. The assembler finds the addresses after the rest of the program has been assembled, because it can't possibly know the addresses of each routine until they have been assembled. It has to work through the assembly process, so that it knows what routines, will be at what addresses. That's why, when you look at an assembled program (DIS/FIX 80 format), the labels always seem to appear at the end of the file! Marvellous, isn't it!

Once a routine has been DEF'ed, and its address is in the REF/DEF table, it can be used by other programs, as long as they REFerence the routine.

So there you go! A description of the REF/DEF table. Was that easy to understand? Just write to me if not, and it will be included in **Consoletation Zone** in the next issue.

```
REF VMBW,VMBR       * This means, I would like to use these
                    * routines in my program.

DEF SETUP,REDRAW,LINE     * This means, I would like to make
                          * these routines accessible to
                          * other programs.
```

You might be wondering what a couple of things mean. A label is just a name (like a variable name I suppose) that refers to an area of memory. Don't let that confuse you, I will try and explain it more clearly in a moment.

A Directive is something that you include in an assembly language program. They look like machine code instructions, but they aren't. They are commands that tell the assembler what to do. REF, and DEF are directives. The other most used directives are BSS, BYTE, and DATA. I suppose you could think of these as being used for defining variables.

In assembly language programs, you haven't really got variables. There are only memory locations.

The BSS, BYTE, and DATA directives, reserve areas of memory and assign a label to point to the defined area. Consider the following line:

```
VALUE  DATA >0000
```

The DATA directive reserves a full word (16-bits) of memory, which will neatly fit into one of our registers. Labels that are being assigned to something, always appear on the very first character of the line, and they can be six characters long (Only the first six are significant, so using more would be pointless).

The line above causes VALUE to refer to some memory address that contains zero. You could consider this as being a variable name, which isn't strictly true, but it is acceptable on our advanced architecture.

What I mean is that, on an unprofessional machine, using an intel chip, or worse, you would load a value that was stored in memory, by using its label, into a register, or accumulator if you are really sad!

Then you would have to perform the calculations using the processors registers, and store the result back to memory when you have finished.

The reason that it is acceptable to consider these as variable names on our system, is because of our memory-to-memory architecture. Now the non-assembly programmers are confused!

It's simple. Memory-to-memory architecture means we don't have to fart with ourselves! We can perform operations directly between two memory locations, and don't have to load it into registers first. We get this benefit, because our processor is optimized for memory access, due to our unique Workspace idea.

Consider the following instruction:

```
    A   @VALUE1,@VALUE2
```

This will add VALUE1, to VALUE2, and store the result in VALUE2.

So why the @'s? These mean "the contents of the address that is pointed to by the label". As I have said previously, labels point to memory addresses, whether they contain data, or instructions. In the following line:

```
START  LWPI MYWS
```

START is a label which "points" to the address of the LWPI instruction. When I say, "points", it doesn't actually point to the address. The assembler, when assembling, allows the user to use labels instead of having to remember memory addresses. During compilation, when a label is defined, it is entered into a table (a Label Table!) that allows the assembler to find the address to which a particular label refers. When the assembler encounters a line of source code that refers to a label that has been defined previously, it checks in the table to find the address that the label refers to. When the actual object code is written to disk, it's the address that's written, and not the label. The only label names that are actually included in an object file are ones that have been REF'ed or DEF'ed.

The MYWS is not preceeded by an at sign (@) because the Workspace Pointer should be loaded with the address of the start of the Workspace, and not the contents of that address.

Imagine that the MYWS label has been, or will be (during the assembly process) made equal to the address >7400, which is halfway through the second 4K of the 8K Supercart, and halfway through the 4K of the Mini-Memory Cartridge. By loading the Workspace Pointer with the actual address (using LPWI), the Workspace Pointer points to the start of the Workspace.

If @MYWS was used, the Workspace Pointer would be loaded with the contents of the address that was pointed to by MYWS. If the value at address >7400 was zero, then, the Workspace Pointer would be zero, and the current workspace would be at address zero, which would be right at the top of memory! In fact, the assembler would throw you out immediately when it tried to assemble LWPI @MYWS, because you can't have symbolic (which means the address is referred to by a symbol (label)) addressing with an "immediate instruction".

An immediate instruction means that the data being operated on immediately follows the instruction (in the next memory location). By doing a LWPI MYWS the assembler (when it writes the object code) will output the opcode for LWPI, followed by >7400, which it will have found by doing a lookup on the "Label Table"!!!

I used the LWPI instruction as an example, but a similar thing, when used with normal Workspace Registers, can be a great advantage.

Using the example above, with the labels VALUE1 and VALUE2, they could be added in an entirely different way, but still to give the same result.

The labels, VALUE1 and VALUE2 could be defined in the following way:

```
VALUE1 DATA 0
VALUE2 DATA 0
```

Data means, define 16-bits, so this will entirely clear two bytes of memory (i.e. set the entire word to zero). BYTE 0 would only clear one byte, and will only let you count as far as 255!

The values can be added the same as before, by using:

```
A  @VALUE1,@VALUE2
```

Or they can be added by loading their addresses into Workspace Registers. This is slightly long-winded, but does have its advantages, as will be made clear.

```
LI R1,VALUE1    * Load address of VALUE1 into R1
LI R2,VALUE2    * Load address of VALUE2 into R2
A  *R1,*R2      * Add the numbers.
```

"I'm confused", you're saying! "He said it would be easy to understand! Why've we got asterisks in front of register numbers?!?!?"

This is what's called "Workspace Register indirect addressing" The asterisks mean "the data to be worked on is actually found in the location which is pointed to by the register."

If VALUE1 referred to >7400, and VALUE2 referred to >7402,

then R1 would contain >7400, and R2 would contain >7402.

The three instructions above, perform the same function as doing an:

```
A @VALUE1,@VALUE2
```

It is just an example to explain the use of using @'s with labels, so you can feel more at home with good old TMS9900, and consider them as variable names!

So, what's the advantage of loading the addresses into registers and accessing them with *R1 etc.
Well, imagine that VALUE1 and VALUE2 didn't point to one location, but where the starting addresses of alot of values!

Two entire lists of numbers could be added with just a few instructions:

```
VALUE1 DATA 0,0,0,0,0,0,0,0,0,0  * Define ten, 16-bit words
VALUE2 DATA 0,0,0,0,0,0,0,0,0,0  * Define another ten, 16-bit words
```

The lines above, define 20 bytes each, because a word is two bytes. The assembler knows that the DATA directive defines a word, so by dividing the zeros up with commas, it knows that each zero is a different 16-bit number.

Imagine that some other part of the program has loaded data into each of these values, and we now want to add the VALUE1 list of numbers to the VALUE2 list of numbers, and store the list of values under VALUE2.

```
ADDVAL LI   R1,VALUE1   * Load starting addresses of
       LI   R2,VALUE2   * lists of numbers.
       CLR  R0          * Use R0 to count numbers.
LOOP   A    *R1+,*R2+   * Add numbers, and increment addresses.
       INC  R0          * Increment number count
       CI   R0,10       * compare R0, against (immediate value) 10
       JEQ  DONE        * if ten numbers added(R0=10)then GOTO DONE
       JMP  LOOP      * GOTO LOOP(i.e.loop back again and add next)
```

So far, you should know about, the REF/DEF Table, Symbolic Addressing, Workspace Register Indirect Address, Labels etc.

You will notice that the JMP instruction refers to a label. As I have put in the comment for that instruction, you can treat this as a "GOTO". The label, LOOP, represents an address that will contain the A (Add) instruction when the program is assembled. In the final object code, the opcode for the JMP instruction will be followed by the Hexadecimal address value of the memory location that contains the A (Add) instruction.

Having a decent processor means we can take this idea one stage further and do some VERY advanced things. Hold on to your hats!

The JMP instruction has a fixed address when the program is compiled. If we like we can write programs that are more flexible, and use Workspace Registers as jump locations. This has the advantage that the jump location could be changed, just by changing the register value.

The location can be loaded into a register, such as R6, with

the following instruction:

```
LI  R1,LOOP
```

You will notice there is no @ sign in front of it, which was discussed earlier. After this instruction is executed, the actual address of the Add instruction is contained in R6. To jump to that location, it is possible to use the following instruction:

```
B   *R6
```

This instruction is Branch, which is slightly different from JMP, but works the same if its extra feature is ignored. The advantage of the B instruction is that you can use a Workspace Register as the location to branch to. The * means that the instruction branches to the instruction which is pointed to by the address which is contained in the register.

That's all the TMS9900 space and time will allow in this issue. (That sounds like one of Einstein's theories doesn't it!)

---

Next in my article is the report on our 1994 AGM.

To quote and rearrange the words of Bruce Forsyth:
"It was so much better than last year!"

We had an excellent turn out, with the exception of our disk librarian, the reason for which, I am still yet to deduce. Gary and I travelled across in "Little Nellie" and arrived at around 9:50am. The doors were already wide open, the chairs and tables were arranged, and Mr. Chairman was already demonstrating!

The day still seems a bit of a blur. It all seems to happen so fast. I made a couple of very worthwhile investments. A Mini-Memory from Mark, and some cassette leads and COMPUTE!'s Beginer's Guide to Assembly Language on the TI-99/4A by Peter M.L. Lottrup. I got the cassette leads and Assembly book from Mike Goddard for £2!!!! Mark swears by the COMPUTE book, and it was on his recommendation that I bought it. Gary and I picked Mark up from the station at 11:09am. He did say 11:11, but we arrived at 11:09 and he was already standing outside! Just before picking Mark up, I single-handedly put up a line of posters on trees leading to trinity street in both directions! This did attract someone off of the street, but they turned up during our actual meeting, and they never returned! Perhaps, we lost a potential new member!

Francesco brought the entire module library from Oxford in a massive box and set all the modules out on a table in the middle of the room. Unfortunately he forgot the Mechatronic Extended BASIC cartridge, but luckily, John Murphy had one, so I was able to save his cartridge to disk with C-SAVE! There were sceptics who didn't believe it would work, but it did, and displayed all the ROM's and GROM's that were in the Mechatronic cartridge. It's a strange cartridge (similar to Triton's SUPER XB), and doesn't like widgets! I had to load Funnelweb from Mechatronic XB, and load the PROGRAM (Option 5) loader, and load CS (C-SAVE) from that. Then it was a simple matter of typing the file name that I would like it to be called on disk. Trevor was in a hurry, and I left it running on his machine while I tried to sort out my screenwriter program for

John, on his machine. When I returned to Trevors machine, he had taken the disk out and was already packing his system up, and I lost track of the disk. I tried the one which I thought it was, but it appeared to be blank. Because I was travelling back down to London just after dinner time on Sunday, I didn't have time to properly search my disk box to make sure I'd got the C-SAVE of the Mechatronic XB. If not, I can always C-SAVE it again.

Derek Hayward turned up to the AGM with his system as promised, but unfortunately, I didn't seem to have time to have a look at it again. He did remove his new Horizon RAM Disk for us to have a look at. It's an amazing design, and puts my old models to shame. One thing that was slightly worrying for Derek is that the circuit space on the board has been increased by putting the batteries on an extra bit of board that hangs out of the back of the Expansion Box. Derek has built his 99/4A console circuit, Rave 99 keyboard adapter, and Zeno board, on the back of his PEB, so this could have been disastrous, but I think it's worked O.K. for him. Towards the back of the board are a load of 14 or 16 pin chips, which are possibly for controlling the power switching from box to batteries, or a required for managing the extra RAM that the new boards can handle. Somewhere I can remember reading (I think it was in TI- LINES) that the RAM Operating System (ROS) can handle up to 64 Megabyte RAM disks! They said though, that a RAM Disk of this size would be 4 feet wide! Nowadays, with the higher capacity RAM chips, such a memory size would be considerably less than 4 feet wide! Unfortunately, I was unable to give Derek a copy of FORM, since our SCSI cards did not arrive (and have still not arrived, 21-05-94 ).

O.K. That's enough dragging on for now. Let's have the minutes of the meeting.

**Item 1. Reports from officers.**

**Mr. Chairman** - It's been quiet. Both this year and last year we haven't had a workshop. This will be rectified later this year though. We are aiming to have on in Cheshire, in the Sandbach area. This will give easy access to the M6, and Crew station is nearby. Mike suggested Jodrell Bank who have rooms to hire hire out, but he's unsure of prices.

**Mr. Vice Chairman** - The cassette library has been quiet, complicated by the fact that Mark's address has been incorrectly printed in TI*MES for the last two issues! Humble apologies from Mr. Editor! He has not been able to look at the letters he has received due to moving house. When asked "have you had any orders?" he says that he hasn't had any orders for specific software but has had requests such as, "have you got anything sort of like this?!?!?"

Mark is about 75% through producing a complete listing of the cassette library, which he is doing on TI-BASE. Hopefully, an entire cassette library listing should be included in this issue.

**Mr. Editor** - "It's been busy trying to keep up with

Mark's changes of address really!" Gary already received a few things for inclusion in the magazine from Steven Shaw. The next issue (Summer 94) will be edited by ME (Mr. Secretary), due to Gary's exams.

**Mr. General Secretary** - It has been a quiet year apart from the SCSI card (even though that is making itself quiet!!). We should have had one to demonstrate at the show, but they're ironing out the last couple of problems, and Mike Maksimik has had to re-write two pages of code for the DSR. If we have a show, sometime between October and December, then we should have a SCSI card, 230Meg Optical drive, and CD-ROM to demonstrate! Apart from that, I've been keeping up with my one-man publicity, and have had some T- Shirts printed with "TI inside" logo's, witty information, and the groups name, and my phone number on the back! In the words of Trevor, I'm "our one man publicity stunt!"

**Mr. Treasurer** - The figure for TI*MES expenditure has changed from the value that was given in the magazine after last years AGM. The accounts printed in that issue were incorrect. The figures printed below are correct up to 1st April. Since then there have been expenses paid to Alasdair Bryce, we have bought an expanded system from Peter Walker, and I have purchased a console and 248K RAM Disk from the group. Things are steadily ticking over, and the balance stays roughly the same. The main expenditure is the production of TI*MES, so if membership drops, the number of issues to be printed will drop, so this will level itself out. Membership now seems to be rising though!!! £40 has been given towards the support of the disk library.

Income and Expenditure Statement up to 1st April 1994

Income

| | 1993 | 1994 |
|---|---|---|
| Subscriptions | £1465.80 | £1164.50 |
| Interest | £36.01 | £15.61 |
| Sales | £136.60 | £0.00 |
| Total | £1638.41 | £1180.11 |

Expenditure

| | | |
|---|---|---|
| TI*MES | £1072.44 | £999.45 |
| Room Hire | £70.00 | £40.00 |
| Expenses | £57.74 | £8.66 |
| Equipment | £150.00 | £105.50 |
| Disk Library | £0.00 | £40.00 |
| Total | £1350.18 | £1193.61 |
| Balance | £4267.48 | £4253.98 |

**Mr. Membership Secretary** - Alasdair Bryce was unable to attend, and sent his apologies. He had already bought football tickets before he knew the date of the AGM!!! The membership report was therefore read by Trevor.
There has been a decrease in membership from 118 members in May 1993, to 96 members at the present time.

Of those 96 people, 89 are subscribing members, two are honorary members, two are exchange copies, and three are outstanding renewals after issue 43 of times.

In addition there are thirty members who are still to renew their subscriptions with issue 44 of TI*MES. The reduction has come about due to 26 members leaving the group, and selling their souls to the devil with the use of less powerful machines!

Three members have sadly died this year. Roy Douglas, Jim Ballinger, and Jim Peterson. They have gone to the great Consumer Product Division in the sky, but their contribution to TI computing will always be remembered.

On a positive note, additionally, we have had seven new people joining the group (plus possibly two others).

It appears that the majority of those that remain, possess at least partially expanded systems, so perhaps there is less chance now that people will leave the group in the near future.

Membership subscriptions have raised £1274 this year, of which £59.50 is a donation towards various software libraries.

Back issues sales have been non-existant, but there is a large stock available for those members who wish to add to their TI*MES libraries. With the comments from increasing numbers of members when they re-subscribe, many have have complained about the apparent "Gagging" of Stephen Shaw who recently seem to have reduced his input. There have been requests for more reviews for hardware, and software, including prices and supply details, for those who wish to expand their systems. Some users have even requested that TI*MES becomes a bi-monthly publication! (more on this later)

Trevor had a full membership list available for anyone wishing to read it. If you would like a copy of this, please contact Alasdair, but PLEASE send him something to cover postage, or a STAMPED ADDRESSED ENVELOPE.
Hopefully, membership will steady out, and will be helped by people acquiring expanded systems. Once people have spent alot of money on expanding, they are reluctant to give them up.

**Disk Librarian** - Stephen Shaw sent his apologies for not being able to attend. Trevor spoke with him on the phone before the AGM. The disk library is almost non-existant, with regards to people sending money and disks for orders from the library. He has only had four orders in the last year! Stephen is quite happy to stand for re- election, however. Really, we should make his job more difficult by

ordering more software from the library! We are all guilty of this, myself included. I think most people are reluctant to order, because they have to send disks just to get a copy of the full disk library before they can make an actual order. To try and speed things up, and bypass this stage, to encourage more people to order from the library, we have decided to print the entire disk library. This will either be in TI*MES, or in one of our bi-monthly leaflets! What's a bi-monthly leaflet?!?!? This is one of the things we have decided to do. Since some people would like a bi- monthly TI*MES, (which would be very time consuming and almost impossible for one person to do) we have decided to compromise and intersperse regular TI*MES issue dates with small information leaflets, which will also contain games to type in!

There will be more information on this later too.

**Module Librarian** - The general situation this year has been reasonably quiet. Francesco has only been the module librarian for a year, so has no previous idea of the movements in the module library over an average year. He has had a number of purchases, and sales, which has more or less balanced incoming and outgoing expenses. He seems to be shuffling aroung the same cartridges. Some people buy them from the module library, and sell them back shortly after. This enables Francesco to pass them onto other members, who may not have the cartridge, or who may not have the cartridge saved on disk, for use with GRAM Kracker, or GENEVE, or in option 5 format, with GROM Dump etc.

There were no questions from the members who were present, to the committee officers, so we went onto the next item on the Agenda.

Item 2 - Re-elections, and, do we need a publicity officer! Christine Bennet made the point that she used to be publicity officer once, but didn't seem to get much response from the places she wrote to. She wrote to Teletext to have an advert for our group included in the computing pages. She also sent them the date of the last AGM that her and Ross attended. She had no response back from them, but Mike Goddard says he did see our group on Teletext until they packed up the service of displaying information for user groups.

The same thing goes for Personal Computer World magazine. They used to have regular user group listings (and Bulletin Board listings) but they haven't done that for ages.

Christine did say that she managed to get a small comment in a magazine, but didn't mention which one.

Trevor says we must think of places to aim our adverts at the right people. There are alot of people out there that don't realize what sort of group we are, or are not even aware that we exist. Some users are turning back

to using the 4A after an absense from using the machine, and in most cases they think the user group has disbanded!

There are people who have actually joined the group, the majority of which have bought consoles from car boot sales, and for ridiculous sums! When they have read the documentation that accompanies them, they find information about our group, which is how they find us.

Mark found out about the group in the back of a computer magazine!

Mike suggested leaving the discussion open and not actually appointing an officer, but if anyone has any ideas, or favourite magazine they might want to write to, they could check it with Trevor or myself, so we can coordinate the effort, and make sure there is no duplication.

This is an example I like to give. We are all in different parts of the country, and can reach a wider area. If we leave it up to a publicity officer, then he/she is sat in one place, and cannot cover as much area, in as short a time, as will be covered if we all try to come up with ideas, and cover our own area.

This goes for new members of the group too! Think how relieved you were to find that an outpost of decent computing existed, in this nuclear wasteland of IBM-compatible domination. Think up some ideas too, and we'll rescue other people from the radioactive fallout known as Microsoft applications.

This brought me onto my idea of donating a console to the Science Museum, and including our own information and history of the 4A. The 99/4A exhibit would be unique, because it's the only machine of its era that's still in use.

The other devices on display can't be classed as computers. A computer is a flexible machine that can be used for many different tasks, depending on the software that is loaded, but ZX80's, ZX81's, Spectrums, Acorn Atoms etc., are nothing more than crap little childrens toys.

The BBC Micro, while being recommended by government for schools, is also a sad little toy when compared to the 4A. The world would undoubtedly be a better place if 4A's were recommended for schools from day one.

Seymour Papert (the man who wrote LOGO) has an interesting analogy. The English language can be used by primary school children, or can be used by Scientists to express complex ideas. Logo can be used by primary school children for drawing pictures and shapes, or can be used by Computer Scientists for List Processing, and complex mathematical ideas.

Thanks to TI, the 99/4A has this flexibility. The beginner can load software from audio tape with a cassette recorder, or the experienced user can load software from a 4 Gigabyte multi-drive array (if he could afford one that is! 4 Gig drive arrays cost

about £3000!)

Our poor old 99/4A can only run five of 'em at once!

Carried away again! Back to the subject!

Where was I?

Derek Hayward made an excellent point. If someone buys a console from a car boot sale, or from some other source, and then manages to find the group, we should ask them exactly where they found our details, so we can target our publicity more accurately in future. Micromart have apparently stopped doing free adverts for groups, but a majority of the free advertisement newspapers have a computers section. So, if you've got one in your area with free adverts, then put one in for the group!

On a more serious note, however, we do need suggestions of where we could target our publicity. If you have any ideas at all, however trivial, then we want to hear them. You can send me any ideas, or telephone me. You are guaranteed to reach me on my London number (081 530 8038) on Weekdays, from 6pm to 9pm. This number will not be valid after August 25th, as this is when I finish my work placement, and permanently return to civilization!

After discussing publicity, Ross Bennet said, "what about a Bulletin Board?"

A Bulletin Board System (BBS), for those who don't know, or are unsure, is a program which controls the MODEM, and allows people to phone in and send and receive messages, or transfer files.

Trevor used to run a Bulletin Board on Monday nights from 6pm to 9pm. This was called, "The MOBB" (Mansfield On-line Bulletin Board). This was run on a very simple Bulletin Board program called SMALLTALK, which runs from Option 5 I think. Despite its simplicity, it is easy to maintain, and all of the data for downloading could be archived, and Trevor estimated that when the data was unarchived it would fill five Megabytes, because he's got three floppy drives and a 480K RAM Disk on his Myarc 512K card. The only people who seemed to use the board were Gary, Mark, and myself. Trevor stopped running the Bulletin Board due to a lack of support, but the project never really died. I managed to obtain a copy of After Hours, and attempted to recompile it for a higher speed, but I got strange errors when I tried to assemble it.

However, we are going to obtain some new BBS software.

Mark has been in continuous contact with Jim Cavanagh, who runs the North West TI Users Group in New York State. Jim has TEN expanded 99/4A systems, and has recently acquired a GENEVE.

Jim runs his own Bulletin Board, and has links with other groups across the States. Jim's Board is called the "Am-Can Friends", because he's quite close to the Canadian border, and has Canadian members and callers. I forget the name of the Bulletin

Board software, but it's written by Tom Wills. Mark received a long letter from Jim, not long before the AGM, and Jim's going to be sending across the BBS software, so we're going to be officially setting up one OR MORE Bulletin Boards!

Ross suggested making the necessary communications software (TELCO) available to every member. Without waiting for them to order it from the library, we should give it away. There are no worries with TELCO, because it's shareware.
Mike suggested sending TELCO to everyone, because it might encourage the poeple who haven't got a MODEM to go out and buy one. MODEMs are not expensive these days.

In Ross's opinion, the group is not short of funds, and therefore, we should be using those funds to perpetuate what we've got. We have suffered decreasing membershp, and are possibly not going to pick up many more new members. Our funds should therefore be used to encourage our remaining members to stay with the group, and their excellent machine.

John Murphy asked the price of a MODEM, and they normally start around £40, but some do start cheaper. Ross managed to get 2400bps for £40, which is more than adequate for most of our purposes. A majority of the MODEMs you will be able to obtain for this price possibly will be 1200bps.

Ross's and Marks' two suggestions were: "The person who runs the Bulletin Board should have the best specification MODEM!" This was closely followed by: "If we're gonna do it, is it worth buying a MODEM with group funds?"

Ross: "If we can get everyone talking to each other, and put some interest back into it, then they're not going to leave."

The problem is that, alot of people haven't got the time to get a MODEM, get the software, and then spend time on getting it working. This task is even more difficult for the less technically minded.

To prove a point, even Ross is having difficulty himself, getting TELCO to talk to his new MODEM. I know the feeling! My new MODEM refused to talk to TELCO at first. So what's my new MODEM? Well, it's identical to the groups' MODEM! Yes! The plan is under way to set up a new Bulletin Board. The day after the AGM, my dad was driving me back down to London. That week, I had received the latest issue of Personal Computer World, which seemed to quite strangely contain an extensive MODEM review! To coincide with this, several MODEM manufacturers had taken out full page adverts. I was in a bit of a "Bulletin Board/MODEM" type mood, so I thought I would apply my "SCSI Hard Disk/Optical Drive" pricing skills, and turn them to getting the optimum price for a MODEM.

I pick a certain MODEM (or whatever target item!) and assess its features. Then I look at every dealer who stocks that particular item, and find the one with the cheapest price. If, however, I find a device with more features for just a few pounds more, then I remember where I got to with the previous device, and do a search on the new device! If I find the new device for alot

less, then I discard the old one. All the time, though, I'm still on the lookout for higher specifications.

For a few minutes, the US Robotics Sportster was at the top of the list, with a retail price of around £179 (excl.VAT) and a top speed of 14400bps. THEN, there was a Multi Tech full page advert for the ZDX Multi-Modem.

It's top speed was 19200bps, but it had a retail price of £399 (excl.VAT)!!! I was undaunted though! I continued to search, and found a "several page" advert from Technomatic (where I bought my Miracom WS3000, 2400bps). They had the Multi-Modem for £169ish (excl.VAT). I had to check the specifications, to make sure there was nothing missing. No, it was identical, but nearly half the price!

They were dispatched with next day delivery, and arrived before dinner on the Wednesday, four days after the AGM.

So what will they do? 300, 1200, 2400, 4800, 9600, 12800, 14400, 16800, and 19200!!!!

They also have V.42 which is LAP-M, or MNP 4 & 5 data compression. This means that it's got its own sort of built-in Archiver! You can set your terminal speed up to 115200bps! The top transfer rate you can get out of it is 76800bps, which, on a good day (and a good line!) should get you about 6K per second. In actual transfer time, this would mean you could upload an entire TI, 720 sector disk, in 30 seconds. You still need to add the time it takes to save each 8K block to disk! To make this speed worthwhile, you need to be saving your downloads to something as quick as an Horizon RAM Disk, or faster! (Theoretically SCSI card owners can save to floppy disk faster than Horizon owners can save

to RAM Disk, because the 8K block from TELCO would be instantly transferred to the SCSI card's 32K Cache!)

The ZDX's also handle Fax at 4800, 9600, and 14400, so you will soon have to expect some 4A software that will fax TI-Artist images to any fax machine, and fax receiver software that generates Picasso Publisher images! Gary's done fax transmission at university, and I have decoded the Picasso image format.

Should we have any problems with them, they also have a ten year warranty!

I left the groups MODEM with Gary so we could do a test, but when I got home and plugged mine in, I got nothing at all! I typed AT, but got nothing, even the lights didn't flash! I called Gary, and he plugged the other one into his PC. He typed AT and got an immediate OK. Mmmm, I thought! He suggested borrowing his patch box so I could try different wiring variations. I took my MODEM, and he tested it on the PC, and it worked. That confirmed there was something wrong on my cable (although, it works 100% with my Miracom). When I got back and tested out the patch box, it didn't want to work the first time. I put it in between the MODEM cable and the MODEM, and patched in the wiring, but still nothing happened. I did think about giving up for the moment, but for some reason I decided to rethink things, and I completely pulled out all the patches and replaced them. This time, however, I put the patch box between the Y-cable and the MODEM cable. The patching seemed to be identical, but this time it worked! I typed AT, and it came back with OK, so the next thing was to have a browse through the MODEM's on-screen menus!

This must the the problem that Ross was having with his new MODEM. It even had me puzzled for a few minutes. I still don't know what I've really done, until I can pull everything apart and check my cable. I'm going to make an entirely new cable, and discard the Y cable entirely. I'm going to wire a very short cable directly onto the plug for the MODEM on port one, and then have a longer lead with a female connector for RS232/2 so I can still plug the AMIGA in, or I could plug the Miracom in to port two, so I can use them interchangeably (because the ZDX doesn't to 12/75, 75/12 [V23]).

I called Gary and told him the news that I'd got it working, and he said "how's about a test?!?!?", so I set up my desired parameters on the MODEM, and made sure I'd saved them to the non-volatile memory!

We had tried the group's MODEM out at Gary's place and dialled a few bulleting boards. The MODEMs negotiate the speed themselves when you've got V.42, and they give you the highest speed that the line will handle, and depending what terminal speed you've got.

The highest connection speed we had from the Bulletin Boards was 14400, which was MacTel in Nottingham (0602 455444) which is for Macintosh's, but has GIF's and sound files.

When we connected to each other, however, we broke the speed record. Gary's terminal was set to 19200, and because of noise on my Y-cable (only made from ribbon wire) I was running at 9600 on Telco. When I dialled him, the MODEMs played with each other, until I got a CONNECT 16800!!! Maybe not V.FAST, but VERY fast!!!

The group doesn't own one MODEM though! I have managed to obtain three MODEM's from work which they were throwing out! I have given Gary a Miracle (now Miracom) WS3000, which is more or less identical to my existing Miracom. This is in 100% working order, as we tried it out the night before the AGM by dialling MacTel at 2400bps! We also had it at the AGM, and gave it a quick test from Trev's system. I had to wire up a cable while I was there. My standard wiring, which I have memorized is:

| | | |
|---|---|---|
| Pin 2 | to | Pin 3 |
| Pin 3 | to | Pin 2 |
| Pin 7 | to | Pin 7 |
| Pin 20 | to | Pin 6 |
| Pin 6 | to | Pin 20 |

This is the way I've got my Miracom wired up, but the ZDX didn't seem to like it. I also use this setup for connecting my AMIGA, however the AMIGA is crap, and the fools have internally crossed pins 2 and 3, so these don't need to be crossed on the cable, but you get the general idea!

The other MODEM is a CASE, 2400bps, which is theoretically in working order, but Gary needs to rig up a 13.5V A/C power supply, or bypass the transformer stage internally and use an external A/C supply. This will most likely go to Mark. I need to be able to transfer software and files to Mark at the best possible speed when the need arises.

The final MODEM is an actual Hayes Smartmodem 1200, which I replaced for a bimbo in Mitsubishi's Economic Research Department!!! She tried to tell me the sound was wrong when I dialled out. I said "No! The sound is perfect. That's just a 1200 baud carrier without the data! I have been using MODEMs for ten years!"

The problem is that its carrier seems to not come on. When you dial somewhere, the other system generates a 600 baud carrier (yes it is 600, for 1200 and 2400, and the higher speeds too!), but it won't turn on its own carrier and respond. I made sure I arrived at work early one day, and did two photocopies of most of the important parts of the operations manual (which includes a circuit diagram), so Gary should be able to get it working.

Once this MODEM is fixed, it will go straight to the group. My intention is to hire it out, with either a TE II or Asgard's faster terminal cartridge (which will do up to 4800 I think), and some sort of stand-alone RS232 card which we'll have to try and build (Ross has sent me an excellent letter, including a circuit diagram for a PEB RS232 card, so converting it to a standalone shouldn't be too difficult.)

The reason I wanted a faster MODEM was so I could run a Bulletin Board in parallel to the main one. We would keep the data identical, and users can use the same passwords on both, but I will hopefully be able to provide nearly 2000 Megs of data to download which will HOPEFULLY be contained on my 1 Gig (or more) hard disk, 230Meg optical floppy, and CD-ROM drive. I've got a CD of clip art, which contains thousands of GIF images!

I have a lot of ideas for the board. I want everyone to benefit from it. I want to get TE II graphics and sound sorted out so we can have an entire section of pages devoted to TE II. And I also want support for ANSI graphics characters. I have written a drawing program for Extended BASIC which allows you to create screens of ANSI data which can be uploaded, or included in the Bulletin Board. Naturally, it will only do 32 columns, so when the actual board is running I'll have to write a Missink Link, 64 column, version, and also a full 80 column version for the GENEVE and 80 Column card, using X80 (XHI) from Extended BASIC.

We could have an Art Gallery, and have a competition to win some disks from the disk library for the best picture uploaded!!!! It's not the only images I want support for. I want to be able to let people view images while they are on-line, and then save them to disk if they like them. Surely we need some software to do that!?!?!?? Yes. We need OMEGA. I bet there are alot of people out there who have not heard of OMEGA. It's a terminal program that East Anglia used to put out, but had a short reign, due to the release of TELCO. OMEGA will let you view RLE's on-line! This might seem wasteful, but sometimes you might be in a downloading mood. You might see a list of filenames coming up and think, "Oh I must download that, and that, and that."

They might sound interesting to you at the time, but when you are off line and finally run MAX-RLE to view them, you might be disappointed! Imagine also, that in your greedy downloading spree you ran out of disk space and wasted valuable seconds searching for a blank disk, and imagine if you hadn't got one formatted! Since you've still got to download the data anyway, OMEGA gives you the advantage of testing images whilst on line. In one way, it can be more efficient that TELCO! If you view an RLE on-line, it will be loaded directly to your screen, rather than to disk in 8K blocks. If you choose to save the image, then it will be instantly saved to disk in one go, which eliminates the problems with 8K saves that TELCO has.

When the boards are up and running, they will hopefully all contain archived copies of all of the currently known terminal programs to download, so you can try them all and decide for youselves. There is soon to be a new terminal program for the GENEVE which will do up to around 54000bps. The Multi-Tech's will handle this by using MNP 5 data compression. Hopefully, besides Jim Cavanagh's board, we can link up with a U.S. group that has a GENEVE, and an MNP 5 MODEM which can handle 9600 or higher, and we can then do silly things like downloading shareware in BIG blocks by combining them in massive archive files which can be saved straight to Trev's RAM Disk, or to my SCSWod for anything bigger than 500K!!! All we need now is our SCSI's and floppy cards, my CD-ROM drive, AND the software from Tom Wills!!

Ross believes that we should be telling people what software they need, giving it to them, and telling them how to use it. With my idea of hiring out one, or maybe two MODEMs, with a standalone RS232, we will even be able to get console-only people involved with it.

Mark stated that, at the very least, if not many U.K. members use the board, then it will go Global! We are intending to link up with the U.S.A. Bulletin Boards, and maybe Australia and Europe too. On a regular basis we could call the U.S. and download the latest shareware etc. and make it available for downloading.

Mark made an excellent point of using a MODEM. If he phones Jim Cavanagh by voice, with a subject in mind, they always drift off of the subject, and what would take five minutes to discuss, turns into 40 minutes!

With a MODEM, all the messages can be prepared, or read, while off-line.

Trevor made the point that if the group was going to be buying a MODEM, then we were looking for at least 9600bps, especially for connecting globally.

Mark also said, "if we're gonna do it, then we've got to do it properly, and we want a MODEM that will handle the specifications of the people's MODEM's that we want to talk to."

That's enough on MODEMs for now. There will be more next issue. Trevor has reported to me that a member has purchased a 2400bps MODEM, and should have been contacting me at the weekend about it. I received no call, but I can promise that the board will be up and running soon (maybe on SMALLTALK until we get the improved software), and if anyone wishes to call me with any questions on MODEMs, then I don't mind at all.

Next we discussed the wishes of some members to change the distribution of TI*MES from quarterly, to bi-monthly.

A bi-monthly magazine would be very time consuming to produce, and it would be a struggle to produce articles. When producing a copy of TI*MES, sheets have to be sorted out, pages condensed, and covers fitted in etc. The number of pages have to be correctly divisible, so that the centre pages work out correctly, and the back cover really does appear on the back!

Changing to a bi-monthly would also considerably raise costs. In Ross's view though, the cost shouldn't matter. It's no good if our group dies in two years with £4000 in the bank. It's much better if we spend the funds, in order to keep all of our members, or generate new members. We need to keep some backup funds in the bank, but we need to get members to interact with each other more.

I think all of us will agree with these points.

In the end, we have decided to keep TI*MES as a quarterly magazine, but have stapled A4 leaflets which will be sent out between TI*MES issues, so we can give users more up to date information.

We have also had a complaint that there is a lack of "typies" (programs to type in) lately in TI*MES. TI*MES has become all information, with nothing for the user to do and get involved in. The magazine involves nothing but sitting in bed and reading it! It's become an "armchair newsletter". Mark is going to be trying to get a program in every issue, which aren't in the cassette library, and all unexpanded. It has been noted that programs printed in TI*MES can be a pain to type in, because the magazine is awkward to handle. For this reason, we will probably be putting the "Typies" on our A4 leaflets.

We also discussed if it is worth having a group disk? We of course have our unexpanded members to think about. Someone suggested we borrow East Anglia Region 99'ers idea, and let members specify that they want to receive disks when they subscribe.

The disk could contain Terminal Software or other shareware, and then be filled up with games, or more utilities.

Members have expressed a wish to see more reviews in TI*MES of both hardware and software. I found it unbelievable at the AGM that some people had not heard of Sound FX, and GIF Mania, or even Archiver, so there is a definite gap in our coverage somewhere that we will have to rectify.

Trevor gave a demo of The Missing Link at the AGM. A public domain demonstration is available of this that shows off all of its TRULY INCREDIBLE features. This demonstration is fully working, but has had the actual Missing Link commands locked into it, so it's unusable without the full package.

A quick explanation of Archiver I think. The creation of Archiver was the result of a competition which was run by an American user group. They were also running a Bulletin Board, and wanted users to be able to transfer files much quicker, so they set the competition for someone to produce a program to compress files to make them much smaller, and therefore, be quicker to transmit over the phone. When running Archiver, you have to give it an archive filename. This file (in DIS/FIX 128 format) will be created by Archiver, and will contain the files that you wish to compress. You can select every file on a disk, and they will all be compressed, and combined into one DIS/FIX 128 file which is much smaller. Archiver will allow you to swap disks, so it's just as good for the single disk user. I'm unsure if there is a hard disk version as yet, but I think Barry Boone was reported to be working on one, but had some setbacks (no doubt because of problems with the Myarc Hard and Floppy Disk Controller!).

John Murphy reported at the AGM that Bruce Harrison has written a new word processor, which is called "Harrison's Word Processor".

Item 2 With all this discussion, we seemed to get carried away, and completely lost track of the Agenda! We more or less covered the entire Agenda and overlooked item 2, which was re-elections of committee members. All committee members have agreed to continue for the forthcoming year, so there are no changes to worry about.

One point that arose during our discussion was that users might be out there, and might be worried that they will be stuck if their consoles, expansion boxes, or other peripherals develop a fault. We may have even lost some members who have given up when their consoles have died.

This should not happen. We have the facilities, should people wish, to have consoles repaired, and there is even an option for the more confident to handle their own repairs or maintenance.

Ross said "let's make it possible for people to fix their own stuff". Little did he realize that the group possessed a document for this very purpose.

Amongst the collection of documents and manuals, obtained by the group, from Peter Walker, was a guide to self repair of the 99/4A console.

John Murphy suggested another way of getting people interested again. Dortig had obtained a 4A emulator for the IBM PC, which needs a VERY fast PC in order to handle sprites. I would consider this for the novelty value, or a convenient way of running Funnelweb on a PC, but it's not a very safe solution. The PC hardware is not nearly as adaptive as our hardware, and on a PC, TI files would lose their 100% immunity and would be open to attack by virusses!

Any console-only users thinking of selling up and buying a PC would be much better advised waiting until Gary has come up with a mini-peripheral expansion, and then buying a SCSI card. I know that Bud has had alot of delays with the SCSI card, and it seems like it will never arrive, but throughout its production there have been the "Yes I know we said the DSR will be ready last July too" statements, but you sit down, design a SCSI interface, and then write the software that will allow the use of up to 4.064 Gigabyte drives, 3.5Meg floppies, and a CD-ROM drive.

Bud is just as worried as everyone else. The delay is not doing him much good either. The good news at the time of writing (20:47, 15-06-95) is that that latest evolution of the DSR is due for delivery. Bud gave me the news that Mike Maksimik was about to send some code either today or tomorrow.

If any of you are thinking about jumping from the TI life-raft into the cold ocean of IBM compatibility, sharks, and pond life (Bill Gates), then give us until the show in the Sandbach area later this year, and I know you will be pleasantly amazed.

By this time in our meeting, we had totally lost track of the agenda, and item 7 should have been a "General Discussion", which we had already covered I think!!!

If I have not already mentioned it, we decided that the membership fees should be kept same, with extra being paid by those members who volutarily wish to contribute something to the disk library. You will have noticed in Alan Rutherford's report that £40 pounds has been given to Stephen Shaw to help support the disk library.

And... That's more or less it as far as the meeting goes. We hope to see a better turn out at our workshop later this year. I will welcome anyone who wants to come to me with MODEM questions. As Ross says, "let's get everyone talking to each other."

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**I've dragged on quite a bit in this article, but I must close with this quarter's step back into the fourth dimension!!!!**

***Somewhere in TI*MES. Summer 1984.***

The front cover contained a glorious picture of a 4A console and speech synthesizer, together with a monitor which displayed the 4A Title Screen. This was surrounded by a list of our available software formats, and application areas, DISKETTE, SOLID STATE CARTRIDGE, CASSETTE, TI-Extended BASIC, HOME MANAGEMENT, EDUCATION, and ENTERTAINMENT.

The inside cover (Page 2) contained am opening section of information about the group. First, there was an apology that the telephone hotline was closed for two weeks in June 1984, due to annual holidays. This led to a question to ask if any members were willing to allow their names and numbers to be printed, so they could be used as area contacts, in case any group member has a problem while the help line is closed. You will see an idea which relates to this in a letter submitted by Walter Allum. I'm just left wondering, how do we manage now, without a telephone "hot-line".

There were plans of a National TI Meeting in October 1984, and also reassurances of future software availability. There was a report of exciting modules coming from the States, and also Thorn EMI's modules were supposedly going to be produced in the U.K. under licence, which we know now was never officially released on cartridge, but the actual programs managed to escape somehow.

1984 was also the year that the MBX was released, with its revolutionary Voice Recognition, and accompanying set of excellent cartridges.

There was a comment that, new members joining the group might not know how much power is under their fingertips. In many cases, this is still true today. New members that are just joining now have been members previously, but have left the group due to other commitments. Now they have more time, they are rejoining, but are unaware of developments that have been made during their absence.

Also, in our publicity, we need to make it clear just what our group is about. Other `toys' haven't got the expandability that the 4A has, and neither do they have the operating system or support, via utility software, to cope with the advanced things that the 4A can handle. Our role as a group is much different from, for example, a Sinclair Spectrum user group. I doubt even that such a group exists. Because we were orphaned so early, our worldwide network of contacts and mail order companies is much stronger. Spectrums had support from retail outlets until much later, so a user would walk into the high street and buy some item of software. When this dried up, with no mail order contacts, the Spectrum user would be stuck. There is also no way that a Spectrum can be infinitely expanded. They have no `expansion box' and devices are memory-mapped, so, not many things can be plugged in at once, and if you use up your available memory for devices, then that's it!!!

Page 2 concluded with an advert for the Disk Library, and the editors Disclaimer.

Mr. Tudor-Williams of Gosmore, Hitchen:

He thanked the group for his Spring 84 issue of TI*MES, with which he was most pleased. He hoped the group flourished, but also hoped that not to many other people followed by starting their own group. Otherwise, support for the machine would be diluted, and a problem solved by one group, might not reach another, and so, not reach a wide number of users.

Mr. Tudor-Williams' exact words were: "I fear nevertheless that too many people will try to follow in your footsteps, diluting the support just when you will most be needing it. This will be a pity, as we must have all the support we can get if we are to keep this excellent piece of apparatus viable for any length of time."

Here we are, ten years later, and still nowhere near about to give up!

Mukund Rajpara of Moseley, Birmingham:

He had just come across a brilliant printer that plugged into the 4A directly, which was the Alphacom 42 - costing £99. I think this was a 40 column printer. He gave the name of the company that was distributing them, but they had ran out of stock of the 99/4A interfaces, which I think, went into the CRU connector, so readers were recommended to go to Howard Greenberg, at Arcade Hardware, instead.

John Pearce of Barrow-in-Furness:

He worked as a telephonist with the Electricity Board and had been performing administration tasks using an ICL DRS20 terminal, which had been installed on his desk. He was learning to use CP/M, a process which was greatly helped by the use of his 4A at home. He had a 4A program accepted for publication by a software company, and had also submitted a Sound Effects program to the disk library.

Willie Smith of Midlothian:

He wrote to praise subscribers of TI*MES, and 99/4A enthusiasts, and hoped that the Software and Hardware ventures for the 4A in the future would be well supported.

With a bit of luck, he hoped to be able to buy his children three items, and at the time of writing, PARCO had them all in stock. This included: Parsec, the Speech Synthesizer, and most importantly, Extended BASIC.

The editor, also recommended adding Buck Rogers to this list!

Mr. Johnson of London!:

He subscribed to two other TI user groups, which were TI-HOME in Maidenhead, and TI-USER GALAXY VIDEO SHOP, in Maidstone. He wrote to describe how they compared to TI*MES.

He said he received the Winter edition of TI- HOME in April, and had still not received the Spring issue! TI- HOME usually was a 16 page newsletter, of which four pages were adverts, and the remainder was mostly letters.

He had also just received the Summer issue of TI-USER GALAXY VIDEO SHOP newsletter. This cost 6£ to subscribe to, and all he got was 14 photocopied sheets, with some statements that were published in TI*MES months earlier.

He was in no doubt which newsletter he would renew his

subscription for.

**Page 4 CURSOR. By Dot Matrix?!?!?**

An article about the falling price of home computers, buying a 4A, learning to use it, using it for household budget management, using it to store recipes!, and using it to run a business! At the bottom of page 4: John McCauley's mum scored 2,441,700 on Parsec in three hours... And, someone was wanted to write the ARCADE PAGE, a feature about games, and simple programming for the under 18's.

**Page 5 SCENE USA**

This was the year that Los Angeles hosted the Olympic Games, and the group began an association with the Los Angeles 99er User Group. The LA99'ers were welcoming any members from the U.K. that might have been travelling to L.A. to see the Olympics. The thing about L.A.99'ers is that they have a large membership within a reasonable area, hold monthly meetings, have workshops, and live demonstrations, which is what we should be doing. I assume they are still active. We are still going, and we are a much smaller group than they are.

The LA users were very keen to ensure that TI users didn't suffer as a result of the TI shutdown on 4A production. Terri Masters the FEMALE! president of LA99'ers offered to export hardware direct to the U.K. for our groups members.

**Pages 6 to 9** was a "big" article from Howard Greenberg of Arcade Hardware. Amongst other things, he reported on purchasing Microsoft Multiplan, and finding it to be slightly slow at performing recalculations on larger sheets. There is a way around this though. Recalc can be turned off whilst the data is entered, and the sheet can be calculated in one go by using the RECALC function key.

He also reported on purchasing an MBX, and found the voice recognition to be almost perfect, considering that it only has to be trained on each word twice. Mine has always been great fun. I would never let my MBX go. It's too much of a collectors item! I've still got the original box in MINT condition. (I would probably swap it for all of the 1 pound coins in the Royal mint!)

Howard Congratulated Stephen Shaw and his wife Cathy on the birth of their son, George Martin Shaw. George Martin will now be ten years old!!! My 4A was a 12th Birthday present, and as I am typing this, it's my 24th Birthday! (18th June).

Howard also, VERY COINCIDENTALLY, acquired a MODEM! He used it to call the Computer Answers Bulletin Board. He went into the technicalities of what you need to run a MODEM, and how to set it up, but I won't cover this, because this will be in my next article, under the title, everything you wanted to know about MODEMs, but were afraid to ask!!!

**Pages 10 to 13** was **Points from Preston** by Paul K. Dunderdale.

This included programming tips on how to save memory when defining alot of graphics using CALL CHAR.

Page 11 was an hexadecimal to decimal convertor:

```
10 A$="0123456789ABCDEF"
20 CALL CLEAR
30 PRINT :::"1. HEX TO DECIM
AL"::"2. DECIMAL TO HEX":::
40 CALL KEY(5,A,B)
50 IF B<1 THEN 40
60 IF A=50 THEN 140
70 IF A<>49 THEN 40
80 INPUT "INPUT HEX ":B$
90 IF LEN(B$)<>2 THEN 20
100 A=POS(A$,SEG$(B$,1,1),1
)-1)* 16+POS(A$,SEG$(B$,2,1),
1)-1
110 IF (A<0)+(A>255) THEN 20
120 PRINT :B$;" HEX =";A;"DE
CIMAL"
130 GOTO 80
140 INPUT "INPUT DEC ":A
150 IF (A<0)+(A>255) THEN 20
160 PRINT :STR$(A);" DEC = "
;SEG$(A$,INT(A/16)+1,1);SEG$
;" HEX"::
170 GOTO 140
```

**Page 12**, and a few lines of page 13 was a Bingo Calling routine!!!! The rest of page 13 was a few tips on the use of PRINT statements, and at the bottom of page 13 was an advert for PikaDee Software which was owned by Paul K. Dunderdale.

**Pages 14 to 16** were another selection of programming tips, this time, submitted by Graham Baldwin. This time they were to help games programmers to produce better title screens, instruction screens, selection screens, and to help add sound to games.

**Page 17** was an article (also from Graham Baldwin) about the coverage devoted to the 99/4A in mainstream magazines, and how the coverage had changed after TI's withdrawal from the market. One magazine even complained about the 4A's on/off switch, when the `toy' home computers (ZX80's etc.) didn't even have switches! There was also a magazine that said the only add-on that would work without the box was the Speech Synthesizer, and there was no mention of Extended BASIC, Mini Memory, or MBX! Graham wrote that he had had a conversation with a non-TI owner. After admitting he owned a 4A, he was told "the TI is rubbish!" The idiot making this claim had never seen a 99/4A in operation, let alone used one. He had picked up his opinions from magazines. Graham says he's sure it was a familiar story to all TI owners. It's familiar to me. I was told my 4A was rubbish while I was at school. I had a `friend' with a VIC 20, and a cousin who had a Spectrum, and they all said they were better than the 4A. I knew two brothers who went through about three faulty BBCraps, and a decade later, I've still got my

original console, and it's NEVER had a single fault.
At the bottom of Page 17, Graham reviewed his Alphacom printer which he obtained from Arcade Hardware.

**Pages 17 to 19** was more from Graham Baldwin.
He discussed the change in the style of coverage offered to the 99/4A in various computer magazines. The change was quite significant after the 4A had ceased production, and it was almost given the recognition it deserved.

Graham mentioned to someone that he had got a TI, and he was told "The TI is rubbish!". This was from someone who had not seen a TI running, let alone actually used one. I had the same comments at school. Everyone at school who called the TI, had Vic 20's, Spectrums, BBC's etc. Today they're nowhere, and my TI is still here, and all the software I had then cannot be superceded by anything better, and I'm now awaiting a SCSI card!

I'm afraid, time has beaten me to it in this issue. It's now 5:20pm, and I'm due at Trevors place between 7 and 7:30pm! It's my birthday today (18-06-94) and I've got some beers to take over for the evening. Mansfield Bitter. What else!!!

All three of us are going to attempt making light work of the editing of this newsletter! Now you are reading this, you will see the results of our efforts. I won't say, the results of our labour, because, hopefully it won't be too laborious, because we want to spend time playing with the BBS. Trevor has completely sector edited the After Hours disks to bring all the text screens up to date. We are also going to be trying it for the first time with the group's new MODEM.

Last night I spent an hour on the phone to Buffalo, New York, to Jim Cavanaugh, which is 20 miles from Niagra Falls, and the American/Canadian border.

My last minute news includes Bud Mills has hopefully been sent some completed code from Mike Maksimik, which has been backed up by an article in Micropendium. The May issue of Micropendium also includes a complete Pin Out of the 50 Way SCSI bus, and confirms that the Horizon SCSI card is a Single-Ended standard of the bus.

Other news in Micropendium. Don Waldren of Cecure Electronics is apparently working on a way to interface IDE hard disks, and DM1000 is now out in version 6.1.

And... Apparantly, J.P.Hoddie is working for Bill Gates!!! Who's J.P.Hoddie, and what did he write? Nothing much, "only" the EXCELLENT MacFlix program that lets the 4A load Apple Macintosh images!! He also wrote GRAM Packer, that allows multiple Option five Editor/Assembler programs to be stored in GRAM space, and Graphics Expander, and XB Bug, and he also released his own Horizon RAM Disk EPROM, and he also has his own software outlet, called J.P.Software, which published Picture Transfer for MDOS for the GENEVE!

I must close now. I've got alot to do this evening. I've

got to make a copy of OMEGA to take to Trevor's place!!

Bluesman over and out

I'LL BE BACK! And next quarter's article will be "smaller" than ever!

# SYSTEM FOR SALE

*While writing, members my be interested in some TI equipment that was up for sale a few months ago. Last October I contacted Mr Beveridge up in Ayshire. He sent me a list of all the parts he has for sale. I understand, he would prefer to sell the lot complete, if anybody is interested then they can contact Alistair direct. You may not always find him at home as he spends a lot of his time in the U.S.A. The list is copied below:-*

*PERIPHERAL EXPANSION BOX WITH DISC CONTROLLER CARD + 32K CARD + RS323 PRINTER CARD + FLEX CIRCUIT AND DISC DRIVE UNIT*

*TI99/4A MODEM (STAND-ALONG)*

*SEVERAL PAIRS JOY-STICKS*

*HOUSEHOLD MONEY MANAGER*

*TI EXTENDED BASIC*

*VIDEO CHESS*

*AMAZEING*

*TOMSTONE CITY*

*CONNECT*

*PARSEC*

*MUCHMAN*

*MULTIPLICATION 1*

*PHYSICAL FITNESS*

*MOON PATROL*

*TI INVADERS*

*TEACH YOURSELF BASIC (CASSETTE)*

*EDITOR ASSEMBLER*

*PERSONAL REPORT GENERATOR*

*PERSONAL RECORD KEEPER*

*TERMINAL EMULATOR 2*

*CHISHOLM TRAIL*

*THE ATTACK*

*ALPINER*

*FATHOM*

*BUCK ROGERS*

*METOR MULTIPLICATION*

*BEGINNING GRAMMAR*

*SOCCER*

*DEFENDER*

*VIDEO CHESS*

*PIRATE ADVENTURS (CASSETTE)*

*BOOKS-TI EXTENDED BASIC-TI BASIC-TI GAMES-GETTING THE MOST FROM YOUR TI99*

# MODULE LIBRARY

| TITLE | QTY in STOCK | PRICE |
|---|---|---|
| ADDITION AND SUBTRACTION 1 | 2 | 3.00 |
| ADVENTURE COMPLETE WITH PIRATE TAPE | 3 | 5.00 |
| ADVENTURE MODULE | 3 | 3.50 |
| ALPINER | 1 | 3.50 |
| A-MAZING | 10 | 2.50 |
| BEGINNING GRAMMAR | 7 | 3.00 |
| BLACKJACK AND POKER | 0 | 3.00 |
| BUCK ROGERS | 1 | 4.50 |
| CONNECT FOUR | 3 | 3.50 |
| DISK MANAGER* | 3 | 2.00 |
| DISK MANAGER 2* | 1 | 3.50 |
| DEFENDER (NOT FOR MARK II CONSOLES) | 2 | 4.50 |
| DONKEY KONG (NOT FOR MARK II CONSOLES) | 1 | 4.00 |
| EARLY READING | 1 | 3.00 |
| EDITOR ASSEMBLER | 1 | 20.00 |
| EXTENDED BASIC II PLUS (MECHATRONIC)+MANUAL | 1 | 50.00 |
| EXTENDED BASIC INC MANUAL | 2 | 22.50 |
| EXTENDED BASIC MODULE | 4 | 15.00 |
| HOUSEHOLD BUDGET MANAGEMENT | 2 | 3.50 |
| HUSTLE | 1 | 3.00 |
| INDOOR SOCCER | 2 | 4.00 |
| JUNGLE HUNT (NOT FOR MARK II CONSOLES) | 1 | 3.50 |
| MICROSURGEON | 1 | 4.00 |
| MINI MEMORY + LINE ASSEMBLER + MANUAL | 3 | 15.00 |
| MULTIPLICATION 1 | 1 | 3.00 |
| MUNCH MAN | 2 | 3.50 |
| NUMBER MAGIC | 2 | 3.50 |
| NUMERATION 1 | 1 | 3.00 |
| NUMERATION 2 | 1 | 3.00 |
| PAC MAN (NOT FOR MARK II CONSOLES) | 1 | 3.50 |
| PARSEC | 3 | 4.00 |
| PERSONAL RECORD KEEPING | 1 | 3.50 |
| PROTECTOR (NOT FOR MARK II CONSOLES) | 3 | 4.50 |
| SHAMUS (NOT FOR MARK II CONSOLES) | 1 | 3.50 |
| STAR TRECK | 1 | 4.50 |
| STATISTICS | 1 | 4.00 |
| TERMINAL EMULATOR II | 3 | 5.00 |
| TI INVADERS | 1 | 4.00 |
| TI LOGO + ORIG. FOLDER WITH MANUAL* | 1 | 15.00 |
| TI LOGO II + ORIG. FOLDER WITH MANUAL* | 1 | 25.00 |
| THE ATTACK | 1 | 4.00 |
| TOMBSTONE CITY | 1 | 3.50 |
| TUNNELS OF DOOM | 1 | 3.50 |
| VIDEO CHESS | 1 | 5.00 |
| YAHTZEE | 2 | 3.00 |

# AN EXTENDED BASIC DV80 FILE SPEAKER BASED ON TI'S TEXT-TO-SPEECH

by Charles Good
Lima Ohio User Group

Save time! Why not let the computer read this newletter to you while you do something else useful at the same time. The Lima User Group and some other user groups offer their newsletters in DV80 text file format. Stephen Shaw of England once wrote a TEII/TI BASIC program to speak bible text files. I decided to write a program that will speak any DV80 text file without the necessity of using the TEII module. All you need is TI's TEXT-TO-SPEECH (ENGLISH).

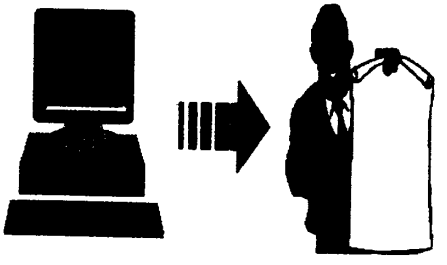
In 1984 TI released TEXT-TO-SPEECH (ENGLISH) and most of its other disk based 99/4A software to the public domain. T-TO-SP has all the capabilities of TEII speech, but runs out of extended basic. The only disadvantages are that T-TO-SP takes about 1.5 minutes to load (sjs: if you use the old TI version. We can supply one that takes just 23 seconds from the group disk library) and it more or less fills the entire 32K memory expansion. This somewhat limits the size of any XB program that uses T-TO-SP. Besides the obvious advangage of not having to remove the XB module, T-TO-SP can use XB's LINPUT command to safely include quotation marks within strings of text to be spoken without crashing the program. Any attempt to use TI BASIC and the TEII to speak text from a DV80 file that includes quotes will crash the program.

I find it interesting that neither the TEII book nor the T-TO-SP docs mention the fact that you can't use lower case letters in your "text to be spoken" strings. Lower case letters are pronounced one letter at a time and not converted into words. I had to include some code to convert lower case letters (ASCII 96 and up) to their equivalent upper case ASCII codes. This translation of ASCII codes slows down program execution somewhat.

The program is simple to use. Just type in the DSKx.FILENAME of the DV80 text file to be spoken when prompted. The program reads in a text record (same as a TI Writer line), displays the text on screen, and speaks the text. The next record is read in from the file, displayed and spoken, etc. If a sentence is split between several records (TI Writer lines), annoying pauses in speech will occur as each part of the sentence is read in and converted to upper case. Other than this, the speech is pretty good. Deliberate misspellings to improve phonetics and the use of inflection symbols in the DV80 text file can further improve understandability of the resulting spoken text.

My program below and all necessary TEXT-TO-SPEECH files are available to members of the User Group from the disk librarian.

```
90 ! by Charles Good, August
 1992, based on ideas of Ste
phen Shaw. Requires TI's TEX
T-TO-SPEECH, Extended Basic,
and speech synthesizer.
100 CALL CLEAR :: CALL SCREE
N(5)
110 DISPLAY AT(6,1):"      DV
80 FILE SPEAKER"
120 DISPLAY AT(12,1):" Pleas
e wati, loading TI's
                        TE
XT-TO-SPEECH data"
130 CALL INIT
140 DISPLAY AT(18,1):"
 COUNTDOWN-- 4"
150 CALL LOAD("DSK1.SPEAK")
160 CALL SCREEN(11):: DISPLA
```



```
Y AT(18,1):"        COUNTDOWN
-- 3"
170 CALL LOAD("DSK1.XLAT")
180 CALL SCREEN(14):: DISPLA
Y AT(18,1):"        COUNTDOWN
-- 2"
190 CALL LOAD("DSK1.SETUP")
200 CALL SCREEN(4):: DISPLAY
 AT(18,1):"         COUNTDOWN-
- 1"
210 CALL LINK("SETUP","DSK1.
DATABASE")
220 DISPLAY AT(18,1):"
     ZERO!!"
230 CALL SCREEN(16):: PRINT
: : : : : :"      DV80 FILE S
PEAKER": : : : : : : : : : :
 : :
240 INPUT "DSKx.FILENAME ? "
:C$
250 ON ERROR 430
260 CALL CLEAR :: CALL SCREE
N(11)
270 OPEN #1:C$,INPUT
280 ON ERROR STOP
290 LINPUT #1:A$
300 PRINT A$
310 FOR T=1 TO LEN(A$)
320 A=ASC(SEG$(A$,T,1)):: IF
 A>96 THEN A=A-32
330 B$=B$&CHR$(A)
340 NEXT T
350 CALL LINK("XLAT",B$,C$)
360 CALL LINK("SPEAK",C$,43,
128)
370 B$="" :: IF EOF(1)THEN 3
80 ELSE 290
380 CLOSE #1 :: CALL CLEAR :
: CALL SCREEN(9)
390 PRINT : : : :"READ ANOTH
ER FILE? Y/N"
400 INPUT D$
410 IF D$="Y" THEN 230
420 END
430 CALL SCREEN(7):: CALL CL
EAR :: DISPLAY AT(12,1):"
  FILE NOT FOUND" :: INPUT "
Press <ENTER>":D$
440 RETURN 230
```

## Notes From The Ed...

Sorry for the delay of this issue, there have been a few technical problems with my system and also there were a few articles which needed inclusion after the deadline.

The A.G.M. this year was quite an event. Many people turned up and there was plenty to see and try. The minutes for this meeting turned into hours!

One of the products of the meeting was for the group to purchase a modem. This was not just any modem but it is almost the 'bees knees' as far as high speed fax\modems go at the moment. Also, due to the fact that the general secretary seems to have ample bartering skills, the modem cost a lot less that it should have done.

The whole idea is to enable users to access a bulletin board and find out what software is available in the disk library, send messages to each other, leave articles for the mag, etc etc. There also exists the possibility to communicate with other user groups world-wide.

At the moment, I am working on renovating a few modems with the aim to restore them to working order. They will then be available for loan to anyone who wishes to try out telecommunications without the full expense. There should be more news on the bulletin board and the availability of these modems in the next issue: Keep your eyes peeled!!!!

```
1 ! program by stephen shaw     stockport  england
2 ! September 1992
3 !
100 REM LAMBTON WORM
110 REM MUSIC C.1860
120 REM STORY OLDER AND
130 REM HERE SANITISED.
140 FOR T=1 TO 8
150 READ N(T)
160 NEXT T
170 DATA 587,659,740,784,880,988,1047,1175,,
180 REM
190 T1=90 :: T2=T1*2 :: T3=T1*4 :: T4=T1*6
200 CALL CLEAR
210 PRINT "THE LAMBTON WORM":"music c 1860":"story older but the words   here ar
e sanitised"
220 PRINT
230 FOR T=1 TO 8
240 P(T)=N(T)/2
250 NEXT T
260 GOSUB 1060
270 PRINT "One Sun day morn young Lamb- ton went a fish-ing in the  Wear"
280 PRINT "He catched a fish u - pon   his heuk he thowt looked    var- y  queor
"
290 PRINT "But what a kind o fish it   was young Lamb - ton could   na tell"
300 PRINT "He would not fash ter tak it yairm  so he  hoyed it in  the well"
310 GOSUB 2330
320 FOR T=1 TO 8
330 P(T)=N(T)/4
340 NEXT T
350 GOSUB 1060
360 PRINT
370 PRINT "Then Lamb- ton felt inc-    lined ter gan an fight in   for eign wars
"
380 PRINT "He joined a troop o knights that cared for nee ther     wounds nor sc
ars"
390 PRINT "So off he went to Pal-est-  ine where queor things him  be-fel"
400 PRINT "And varry soon for got abootthe quor worm   in the well"
410 GOSUB 2330
420 FOR T=1 TO 8
430 P(T)=N(T)/2
440 NEXT T
450 GOSUB 1060
460 PRINT ""
470 PRINT "This aaful worm it graad an graad it graad an aaful size"
480 PRINT "Wi a greet big heed an a     greet big gob an greet big  goggly eyes"
490 PRINT "An when at neet it wandered oot ter pick up bits o news"
500 PRINT "If it felt dry upon the roadit milked a dozen coos"
510 GOSUB 2330
520 FOR T=1 TO 8
530 P(T)=N(T)/3
540 NEXT T
550 GOSUB 1060
560 PRINT " "
570 PRINT "This fearful beast would    often feast on calves an    lambs an shee
p"
580 PRINT "And swally bits o bairns    alive when they lay down tersleep"
590 PRINT "An when it'd eaten all it   could an it'd had its fill"
600 PRINT "It'd craal away an lap its  tail ten times roond Pensha Hill"
610 GOSUB 2330
620 FOR T=1 TO 8
630 P(T)=N(T)/2
640 NEXT T
650 GOSUB 1060
660 PRINT "":""
670 PRINT "The news o this most aaful  beast an its quor gannins on"
680 PRINT "Soon crossed the seas, got  to the ears o bold and braveSir John"
```

```
690 PRINT "So yairm he came an catched the worm an cut it in three halves"
700 PRINT "Soon put a stop tiv its      eatin bairns an lambs an    calves"
710 GOSUB 2330
720 FOR T=1 TO 8
730 P(T)=N(T)/3
740 NEXT T
750 GOSUB 1060
760 FOR T=1 TO 8
770 P(T)=N(T)/4
780 NEXT T
790 PRINT "":""
800 PRINT "So now yer knaa how aal the folks on both sides of the  Weor"
810 PRINT "Lost lots of sleep an lots osheep an lived in mortal    fear"
820 PRINT "SO let's have one ter bold  Sir John who saved the      barins from h
arm"
830 PRINT "Saved sheep an calves by    makin halves o the famous   LAMBTON WORM"
:""
840 PRINT "Naw lads ah'll haad me gob, thats aal ah knaa aboot the story"
850 PRINT "Aboot Sir John an his       clivvor job wi the famous   LAMBTON WORM"
860 GOSUB 1060
870 FOR T=1 TO 8
880 P(T)=N(T)/3
890 NEXT T
900 GOSUB 1060
910 PRINT "The story is set in the     Middle Ages. In order to    deal with the
 worm Sir John"
920 PRINT "had to ask for help from a  Witch- you see if you cut   the worm in h
alf, the two   bits would rejoin!!!":""
930 PRINT "He did as the witch said andcovered his armor in sharp  knives, then
stood in the   fast flowing river"
940 PRINT "Cut into little bits the    bits were swept away and    could not rej
oin":""
950 PRINT "The witches price was that  Sir John then kill the firstthing he met.
 He arranged   with his father to let loosea dog"
960 PRINT "press a key for more"
970 CALL KEY(5,A,B):: IF B<1 THEN 970
980 PRINT "But his father in his       excitement forgot and came  running along
 himself.      Sir John did not kill him"
990 PRINT "So the Witch cursed the     family that all should die  violent death
s"
1000 PRINT
1010 PRINT "The Lambton family are famedfor the First Earl of Durhamwho supporte
d votes for     women and prevented the US"
1020 PRINT "from walking into Canada":"":"Ken Russell used the story  in his fil
m The Lair of the White Worm":""
1030 GOSUB 1060
1040 STOP
1050 STOP
1060 CALL SOUND(T2,P(4),0)
1070 CALL SOUND(1,P(1),30)
1080 CALL SOUND(T2,P(4),0)
1090 CALL SOUND(1,P(1),30)
1100 CALL SOUND(T2,P(4),0)
1110 CALL SOUND(T2,P(3),4)
1120 CALL SOUND(T2,P(1),4)
1130 ! BAR 3
1140 CALL SOUND(T2,P(4),0)
1150 CALL SOUND(1,P(1),30)
1160 CALL SOUND(T2,P(4),4)
1170 CALL SOUND(T2,P(3),4)
1180 CALL SOUND(T2,P(1),4)
1190 ! BAR 4
1200 CALL SOUND(T2,P(4),0)
1210 CALL SOUND(1,P(1),30)
1220 CALL SOUND(T2,P(4),4)
1230 CALL SOUND(T2,P(5),4)
1240 CALL SOUND(T2,P(6),4)
1250 ! BAR 5
```

**Stop Press..!!**

Here is another date for your diary!! There is a workshop at the: 'Wheatsheaf Public House' 1 Hightown Sandbach Cheshire on Saturday the 12th of November later this year. The telephone number is 0270 762013.

```
1260 CALL SOUND(T4,P(4),0)
1270 CALL SOUND(1,P(1),30)
1280 CALL SOUND(T2,P(6),0)
1290 CALL SOUND(T2,P(7),0)
1300 FOR T=1 TO 3
1310 CALL SOUND(T2,P(7),4)
1320 CALL SOUND(1,P(1),30)
1330 NEXT T
1340 CALL SOUND(T2,P(6),0)
1350 CALL SOUND(1,P(1),30)
1360 CALL SOUND(T2,P(6),4)
1370 CALL SOUND(1,P(1),30)
1380 CALL SOUND(T3,P(6),4)
1390 CALL SOUND(1,P(1),30)
1400 CALL SOUND(T1,P(6),4)
1410 !
1420 CALL SOUND(T2,P(5),0)
1430 CALL SOUND(T2,P(4),4)
1440 CALL SOUND(T2,P(3),4)
1450 CALL SOUND(T2,P(2),4)
1460 !
1470 CALL SOUND(T4,P(1),0)
1480 CALL SOUND(1,P(1),30)
1490 CALL SOUND(T2,P(1),0)
1500 CALL SOUND(T2,P(4),0)
1510 CALL SOUND(1,P(1),30)
1520 CALL SOUND(T2,P(4),4)
1530 CALL SOUND(T2,P(3),4)
1540 CALL SOUND(T2,P(1),4)
1550 !
1560 CALL SOUND(T2,P(4),0)
1570 CALL SOUND(1,P(1),30)
1580 CALL SOUND(T2,P(4),4)
1590 CALL SOUND(T2,P(3),4)
1600 CALL SOUND(T2,P(1),4)
1610 ! LAMB
1620 CALL SOUND(T2,P(4),0)
1630 CALL SOUND(1,P(1),30)
1640 CALL SOUND(T2,P(4),4)
1650 CALL SOUND(T2,P(5),4)
1660 CALL SOUND(T2,P(6),4)
1670 !
1680 CALL SOUND(T4,P(7),0)
1690 !
1700 CALL SOUND(1,P(1),30)
1710 CALL SOUND(T4,P(7),2)
1720 ! WAD-
1730 CALL SOUND(T2,P(8),0)
1740 CALL SOUND(T2,P(6),4)
1750 CALL SOUND(T2,P(5),4)
1760 CALL SOUND(T2,P(4),4)
1770 ! TAK
1780 CALL SOUND(T2,P(6),0)
1790 CALL SOUND(T2,P(4),4)
1800 CALL SOUND(T2,P(2),4)
1810 CALL SOUND(T1,P(4),4)
1820 CALL SOUND(1,P(1),30)
1830 CALL SOUND(T1,P(4),5)
1840 ! HOYED
1850 CALL SOUND(T2,P(1),0)
1860 CALL SOUND(1,P(1),30)
1870 CALL SOUND(T2,P(1),4)
1880 CALL SOUND(T2,P(2),4)
1890 CALL SOUND(T2,P(3),4)
1900 CALL SOUND(T3,P(4),0)
1910 CALL SOUND(T3,P(4),0)
1920 CALL SOUND(2,P(1),30)
1930 !
```

## A quick note from Alasdair.

'There has been a fair drop in numbers during the last year but there have been seven new faces to balance things a little and income from subscription totalled £1274, of which £59.50 was by way of donations to the software library.'

## Consoletation Zone Query

While Trevor has been using the RS232 card on his Texas, he has found that something does not quite add up. It is possible to transmit from Texas to Amiga at the maximum baud rate but the other way around causes problems. In fact, the transmission rate needs to be reduced to about 4800 baud for the transfer to work.

The same problem has occurred while using the groups new modem. If the speed is set to 4800 baud there is no problem but as the baud rate is increased over this point the modem will receive commands and act upon them but the information returned to the screen is garbage!

Initially we thought that the problem may be the voltage levels at which the Amiga and Modem are talking to the Texas. We found that the modem was using 3 volts which is the bear minimum for the RS232 standard. A modification will be made at a later date to see if this problem can be overcome. However, this does not explain why the Amiga, which talks at 7.5 volts has the same problem as the modem.

If you know what is causing this problem, hardware or software, then please get in touch. All ideas and comments are welcome!

```
1940 ! CHORUS
1950 CALL SOUND(2,P(1),30)
1960 CALL SOUND(T3,P(4),0)
1970 CALL SOUND(T3,P(6),4)
1980 !
1990 CALL SOUND(T2,P(8),0)
2000 CALL SOUND(T2,P(6),4)
2010 CALL SOUND(T2,P(4),4)
2020 CALL SOUND(T2,P(3),4)
2030 ! TELL
2040 CALL SOUND(T2,P(2),0)
2050 CALL SOUND(T2,P(5),4)
2060 CALL SOUND(1,P(1),30)
2070 CALL SOUND(T4,P(5),4)
2080 CALL SOUND(T1,P(4),4)
2090 ! AA-
2100 CALL SOUND(T2,P(3),0)
2110 CALL SOUND(T2,P(2),4)
2120 CALL SOUND(T2,P(3),4)
2130 CALL SOUND(T2,P(1),4)
2140 ! WHISHT 2
2150 CALL SOUND(T3,P(4),0)
2160 CALL SOUND(T3,P(6),4)
2170 ! HAAD 2
2180 CALL SOUND(T2,P(8),0)
2190 CALL SOUND(T2,P(6),4)
2200 CALL SOUND(T2,P(4),4)
2210 CALL SOUND(T2,P(3),4)
2220 ! TELL 2
2230 CALL SOUND(T2,P(2),0)
2240 CALL SOUND(T1,P(5),4)
2250 CALL SOUND(1,P(1),30)
2260 CALL SOUND(T1,P(5),5)
2270 CALL SOUND(T2,P(4),4)
2280 CALL SOUND(T2,P(3),4)
2290 ! WORM
2300 CALL SOUND(T4,P(4),0)
2310 CALL SOUND(T4,P(1),30)
2320 RETURN
2330 PRINT "WHISHT LADS HAAD YER GOBS   Ah'll tell yer all an aw-ful stor-ry"
2340 PRINT
2350 PRINT "WHISHT LADS HAAD YER GOBS   Ah'll tell yer a- boot      THE WORM"
2360 RETURN
° _ °
```

## Book Review By Derek Hayward.

*'I'm aware not all our members subscribe to Micropendium, but in the November issue, they reviewed a booklet written by Larry Tippettt on how to configure Funnelweb. With most of our members using this word processor, like myself, I think they may be interested to know more about the information given by Larry.'*

*'I purchased a copy ( it cost $4 ) then set about using the information given. The booklet is very well illustrated, Larry shows each screen layout as you are guided through from one screen to the next, at the same time he gives an explanation as to the effect each change will make when you run Funnelweb. The booklet is ideal for users who do not totally understand all the technical information which is supplied with the programs.'*

*'If anybody would like a copy, all you need to do is send a $5 note with a covering letter to Larry Tippett requesting his booklet called "The Spider's Guide To Funnelweb Configuration", the address is as follows:*
*5826 Buffalo Street*
*Sanborn, NY*
*14132*
*U.S.A.*

*I hope this information may be of some interest to other members.'*

2022 note: TI Emulate 5.1 was a version of v9t9 by Ed Swartz.

## The TI Emulator for the PC

by Peter Hutchison

What! You may ask, yes, there is an actual TI 99/4A emulator for the PC and I discovered it while using the Internet. I downloaded the 51TIEMUL.ZIP archive file from wuarchive.wustl.edu from the pub/msdos_uploads/emulators directory (for those who have access to Internet) onto a PC HD disk.

Before running it, you need to run SETUP which will define where DSK1 to DSK3 will point to on your Hard Disk. Something like, C:\DSK1 etc would do. Then select Update and exit to save the settings.

To run, type TIEMUL and a menu will appear, listing the available modules, as follows:-

TI Extended Basic, Hunt the Wumpus, TI Logo II, A-Mazing and a Demonstration program.

Once you have selected the module to 'insert' the standard TI title screen appears and after pressing a key the menu appears along with the module! The games play exactly as you would expect on the TI console.

It is possible to program the emulated TI as you would expect, most Basic and machine code programs should work (there maybe problems with those that depend on timing though). I tried a program from Issue 18, p.25 which turns numerals and puntuation white, using CALL LOADs and it worked!

The emulator supports all graphics modes: graphics, text, multi-color and bitmap. It supports all 32 sprites. All keyboard modes including the split keyboard as well as joysticks and mice. Uses the Adlib sound card for TI three channel sound but NOT its noise generator. Support for DSR routines, RS232, PIO, 3 disk drives and expansion unit. It also has some basic speech synthesis although no where near as good as the TI!

The keyboard is mapped so the FCTN keys are mapped to the ALT key although FCTN + QUIT is redefined as Alt+RShift+RAlt+Equals to avoid accidents! There are some special Function keys to toggle various features of the Emulator such as speed up/down and module swapping.

It is possible to transfer TI files to the PC, with a little work on them, particularly when using DOS' filename structure. Unfortunately, it cannot directly read TI disks. You must use programs supplied with the registered package.

For $40 registration fee you can get the latest version of TI Emulator, utilities to transfer modules and disks, about 20 or so module files and a big 1.5Mb speech file so that you can hear speech synthesis.

I have a copy, if you have access to a PC and want a copy I cam post you one, if you include postage and packing in jiffy bag if possible. Well worth investigating!

Requests for emulator to:
75/76 Lower Skircoat Green, Copley Lane, Halifax, W Yorks, HX3 0TG.

## Consoletation Comments.

Thanks to Walter Allum for his constructive criticism of the Consoletation Zone. His idea makes sense so from now on, if you have an enquiry, could you please forward it to the general secretary and he will then distribute it to the most relevant person or pass it to me to publish the question.

( Reply from back cover page )

**********
* TI 99 / 4A SYSTEM SALE !!! *
**********

**HARDWARE FOR SALE**

| | |
|---|---|
| TI-99/4A Console | £15 + £5 for postage |
| Dust Cover | £1 |
| Joystick Splitter | £1 |

**BOOKS**

| | |
|---|---|
| TI*MES back issues | 50p each |
| Editor/Assembler | £3 |
| Intro. to Assembly | £3 |

**CASSETTE**

Game Writers £1
Starter Pack £1
Scott Adams Adventures 50p each :-
The Count, Voodoo Castle, Strange Odyssey, Adventureland, Ghost Town, Savage Island series, Pyramid of Doom.

| | |
|---|---|
| Adventure Mania | 50p |
| Oldies but Goodies I | 50p |
| Oldies but Goodies II | 50p |
| Fun Pac 3 | 50p |
| 3-D Maze | 50p |
| Blank C15 tapes (49) | 10p each |

**Please add 50p p+p for tapes, £1 for small hardware items.**

**Cheques to Peter Hutchison, 75 Lower Skircoat Green, Copley Lane, Halifax, W Yorkshire HX3 0TG. Tel: 0422 366120 (eve) or 0484 472016 (day).**

Dear Editor,

To use the old cliché, Consoletation Zone is the best thing since sliced bread. I recommend it to all members. Thank you and your mates for the easily understood commentary upon my problem and to yourself for physical discomfort endured beyond the call of duty.

At the time of writing, I have not applied the advice given because I have been much occupied trying to finish my part of a collaboration with Alasdair Bryce and with studying Molesworth's book that you recommended. One thing I would say to any member considering having a go at Assembler -- be clear from the outset how you are going to implement it and then don't confuse yourself by reading the alternative literature. There's too much difference between "official" Assembler and the Minimemory version. If you choose the latter, ask Mike Curtis for Morley's book; otherwise, Molesworth. If, like me, you go for Funnelweb, pray that all the routines you may need are there - I has me doubts!

Turning now to more of an organization matter. The trouble with C.Zone for many people could be that they are reluctant to wait until the next issue of TI*MES before getting your guidance. Others may know a member whom they consult privately with the result that the problem and its answer never get more widely known. Is there any merit in the idea of, say, the Secretary acting as a clearing house for problems, passing each to one or other of an informal panel as he judged best so that no expert became disenchanted at the level of distraction from his own work? Solutions would go to the enquirer as soon as they were ready and copy to yourself for use (if likely to interest a wider circle) in C.Zone in due course.