Merry Christmas

TI*MES

1996 *T.I.* Workshop

Saturday 16th March 1996

Wheatsheaf Public House

Sandbach Cheshire.

Texas Instruments

TI-99/4A User Group U.K.

Quarterly Newsletter

Issue 51

Winter 1995/1996

Contents

All contributions for issue 52 must be submitted by February 16th 1995
You can use your modem to call the MOBB Bulletin Board on 01623 491282

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Editorial

Welcome to Issue 51 of TI*MES. I've got a feeling that I'm starting to get the hang of this editing lark now - this is the christmas issue and I reckon it should be with you just before then. Fortunately I've upgraded my PC which has made editing the magazine a whole lot easier.

Upgrading the Editorial PC

The upgrade consisted of simply unplugging my old 486DX-33 chip (which I then sold for about £20) and plugging a new 486DX2-66 chip which cost about £40. The net result was an effective doubling of performance of my PC! If only we could do that with the TI...

Go-fast TI99s

But of course we can - those of us running Emulators would also see a doubling of speed of their emulated TI - my work Pentium PC runs the TI Emulator at an atonishing speed.

However, the fact that my PC is running at twice the speed has sadly not halved the time it taks TI*MES to get put together. Oh well...

An Apology

I must also apologise the members who've written to me and not had a reply (or had a very long wait). I unexpectedly changed jobs at the end of August to become a full-time programmer rather than the programmer / support job I'd been doing for the past two and a bit years. It was, basically, an offer I couldn't refuse. The problem is that I now work almost excessive hours as well the fact that getting to work is now a three hour round trip. This means I leave the house at 6 in the morning and get back between 7 and 8 in the evening.

Get to the point!

The point I'm making is that if you don't get a reply, don't worry. I have an in-tray here where all correspondance goes, so you will get a reply eventually!

If you want to call me - the best time is between 7:30pm and 9pm on weekdays.

Console Only Members

You may recall that in my last editorial I said that we'd have a text entry program for console only members wanting to contribute to the magazine - unfortunately the author, Walter Allum, has had to go into hospital due to illness so I hope you'll understand that this particular project is currently 'on hold'. I hope you'll all join with me in wishing Walter a speedy recovery - his contribution and suggestions to date have been extremely useful to me in my first half year as editor.

Want To Contribute?

If you'd like to contribute to TI*MES, advertise something for sale or simply write a letter you can...

Write to me, Richard Speed at 8 Corfe Close, Southwater, Horsham, West Sussex, RH13 7XL

Email me via the internet at rspeed@cix.compulink.co.uk

Leave a message for me on the MOBB BBS on 01623 491282 if you have a modem.

PS

Don't forget about the workshop in March...

Rambles

Greetings
I shall start this time with a further update on both my personal position and the world of the TI as I see it.

This is triggered by a very useful letter from Walter Allum, commenting upon the quality of my recent submissions and the hotch potch of the glorious 80's!

The Good Old Days

Back in the good old days of the early 80's, there was a lot to learn about the TI99/4A. There were LOTS of new programs to review and explore, and hundreds of newsletters, magazines and books to delve into for nuggets of information to pass on, or to point to new avenues of exploration.

Rambles was always driven by information I received, questions I was asked, and software I was experimenting with! In those heady days I also had no family - no son, and my mother took care of my father who could then see. Work was secure and jogged along at a rather boring pace. That is the situation that produced the Rambles of old!

I have never been interested in hardware, my purchases have always been driven by what I could do with it! My principal programming interest is Basic, so the Myarc Extended Basic was of use to me. I could program it myself.

Now into the late 90's we are down to a mere handful of users, with no deluge of magazines and newsletters; almost no new software; and almost no questions arriving from our members. I have fairly thoroughly explored Basic programming already, so what can I write about?

I also now have a family to care for; a blind insulin dependant diabetic father to care for; an insecure job which has recently changed considerably and requires much additional training and adjustment - in other words, a lot less time and energy (especially less energy!).

Please accept this as an explanation of the reduction in my output - that is, things written by me.

What I have now done is to forward to the editor, on disk, all the articles from other sources which I hold and which have not yet been published. We have a major collection of articles by Bruce Harrison on Machine Code, and also articles by Jim Peterson.

Tips From The Tigercub

Walter tells me off for not editing Jim's articles more thoroughly, but they WERE edited by me, with odd insertions. I just don't think anyone should do a hatchet job on someone else's work; either publish, or don't publish! Anything else is a disservice to a man who contributed much to the TI scene and is no longer with us.

What remains is very rare snippets of news and answers to queries received (anyone out there want to know about Basic?). Which brings me to a solution to a problem posed by a member with an 80 column card unable to run Q Bert.

Q*Bert Fix

The answer comes from Oliver Arnold (who does not give his address). Q*Bert was a module produced by Parker Brothers. Unfortunately they made an error in their program. Fortunately the

TI99/4A did not mind and ignored it. 80 column cards with a 9938 chip DO mind however!

The problem arose in a 'for-next' loop which set the VDP registers. The author was not aware of how these worked in 9900 code, and in error instead of setting up just registers 1 to 7, also set register 8.

The TI99/4A 40 column chip does not have a register 8, and (fortunately) ignored the command. The 9938 does have a VDP Register 8, and the loop set a new mode, effectively blanking the screen.

Oliver has provided a fix for this and the Disk Library now has a modified version which should run on 80 column cards. The disk to ask for is [5EDAS N>R1].

Disk Library

The disk library catalogue sent out last time raised a few orders, which provided funds to send off for some new titles and news of some additions appears below! No software forwarded to me by members!

For this issue I will also submit the documentation for some disks received from Bruce Harrison which may interest some of you. [Which, due to technical problems, will appear in the March issue. Sorry - Ed]

Problems for solution
Please submit programs c/o the Editor! These two puzzles come from Personal Computer World, December 1995 issue.

a) Easy. What number is twice the produce of its digits. Write a program to solve the question and prove the solution in unique.

b) Hard. I've not done this one yet! A farm has five types of animal. The number of GEESE is less than one third of the number of HENS. The number of GEESE is three less than half the number of COWS. The SHEEP and HENS outnumber the HORSES and COWS by three. The HORSES and HENS total one less than half the total of all the animals. The HORSES and COWS total 7/16ths of the total number of animals.

How many animals of each type are there? (There are no fractional animals!)

The puzzles were set by J J Clessa. PCW carries puzzles each month.

Charles Good

Charles Good has been a strong supported of the TI99/4A for many years, and has recently been seeking out the original TI programmers. Amongst the interesting facts he has discovered are that the animated asteroids to be seen in Parsec were originally programmed using TI Logo! Also the "ported" version of Pole Position (from Atarisoft) was assembled on a TI99/4A using Editor Assembler.

The Internet

Anyone on Internet? Our local museum has a Web site available for visitors to use until the year end and I found a few items searching on 99/4A. A number of software authors seem to be saying in their CVs that they started their programming careers on the good old TI! (Yep - these folks are NOT ashamed of their heritage!)

Chris Bobbitt has a web page, and you can also find the TI Emulator- on the bottom of a page of emulators, or try searching under 9T9.

New to the disk library

Rambles

MAILING LIST MANAGER 1.1
By Bill Gaskell (2 disks or one double sided)

TI BASE TUTOR
For Version 2+ of TI Base, REQUIRES TI Base. (1 disk)

TI INTERN
The text from the translated German book - four double sided disks or nine single sided disks. This book contains commented (unofficial) dumps and disassemblies of the TI Console plus some GPL data. As there is room there is a bonus of the following item, also available separately....

AESOPS FABLES
TEXT//84 fables.. One disk

FLATLAND
5th Edition, revised, by Edwin Abbott, TEXT- two double sided disks or three single sided disks.

IANS GAMES
Machine code games, Tic Tac Toe, Sea Wolf, Space Zap Deluxe, Attack of the Creepers, all require joysticks. Space Zap needs a joystick you can reliably get diagonals on! One disk.

Jim Peterson 1500
Kaleidoscopes and Displays- around 32 programs to watch!

Jim Peterson 1507
Nine Nudes (the old fashioned way using 7 bit ASCII characters so all in the best possible taste!) For printing on an Epson compatible printer.

Jim Peterson 1411
a) One disk. Tunnels of Doom module image files and character and monster editors on one disk.
b) One disk. Three Tunnels of Doom database files (Magic Rings of the Gnomes; Quest for the King and his Party; Space Mine plus Character and Monster editors.

Select one disk or both!

Jim Peterson 825
Calendars -14 programs to display and print! Archiver required for one of them. NB: The disk menu system has another 7 files which are NOT on the disk!

Jim Peterson 1465
Games by Tigercub. 13 games. I like Barsballs and Scrum.

Jim Peterson 1165
Putting It All Together 1 to 12 (basic tuition) plus 13 programs from the articles to run.

Jim Peterson 1511
Tinygrams. Or what you can do in a small program including text files to read. 16 programs.

Each SSSD disk is One Pound, plus 50p if you don't want to send blank disks. Add a pound to order to cover post and packing etc.

From The Chairman's Chair

Before I start to ramble on about various things, I would like to say how I loved the lay out of our last TI*MES. I found it easy to read and easy to look up things to read about. All I can say is keep up the great work Richard or Mr Editor, which ever you like.

News

There will be a TI workshop for all you TI fans at the start of next year. The date is Saturday the 16th March 1996, at the Wheatsheaf Public House, Sandbach, Cheshire. Time 10am to 5pm. The way to get there is as follows.

By Train

Catch a train to Crewe. Get a bus from the bus station to Sandbach. Get off in the town centre. Walk to the first small island near to the butter market and you will see the Pub.

By Car

Get off at J17 of the M6. Head for Sandbach. Go round the small bypass going through one set of traffic lights. Pass one roundabout.(Near Safeway). At the next roundabout take the junction into the town centre. At the next small roundabout you will see in front of you the butter market. Look right and you will see the Pub.

For those that attended last year the food is very good and we had a good supply of coffee all day. So if you fancy a chat. See some demos, etc. then come along. Have you any hardware to sell? Have you any problems you want us to solve? Want to put a face to the name? Now you can. Entry is FREE to members and family. So see you there.

BBS News

The MOBB bbs is coming on nicely. There is now going to be a really large Hard Drive on line for your pleasure. So by December there will be 170 megs of space for all you to access. There are now new areas for your uploads and down loads including access areas for IBM and the Amiga. There are pictures, textfiles, games for the TI, programming areas, and on line games.

Using Telco

Some of you have had problems getting on line with Telco. Set up your program to come on at 1200 bps for starters. Turn off the compression by issuing a AT command before ringing, to your modem. You need to look at your modem book for the command. Also turn off in the same way the speed buffering. Set up for 8 N 1 half Duplex then use the ANSI terminal. This way you will illuminate some of the problems. All you do then is increase your speeds etc, the next time you log in.

Linking TIs

Some folks do not know how lucky you are out there. Did you know that you can join up two TIs with modems without a terminal program? This is how it is done:

Both parties must have RS232 set as Port 1 and one modem set at answer with the other to originate.

The person sending the program loads it into the computer, then in command mode types **`SAVE "RS232/1"`**. Do not press enter yet.

The person on the receiving end types in command mode **`OLD "RS232/1"`**. Do not press enter yet.

The person with the receiver then puts his modem into online mode. The sender on getting the tones, turns his modem on and the two modems lock, and the DCD light will come on. The person who is getting the data will press enter.

The sender will then press enter about ten seconds later. This is to ensure the receive buffer is ready and waiting.

The cursor will disappear and the number 255 will appear in the top left hand corner of the screen. After a few seconds another number will again appear. This indicates the actual sector size, eg 15. The a countdown sequence will occur, showing the progress of the exchange. When all data is passed the cursor will reappear. Now just disconnect. This connection can also be done with a null modem lead between the two computers using the same procedure, but without all the delays etc.

Convert XB To TI Basic

```
100 CALL CLEAR :: RANDOMIZE
105 DISPLAY AT(15,4):"HELLO I'M
THE TI99/4a"
110 FOR A=1 TO 28
120 CALL SPRITE(#A,63,INT(A/3)+3
,92,124,A*INT(RND*4.5)-2.25+A/2*
SGN(RND-.5),A*INT(RND*4.5)-2.25+
A/2*SGN(RND-.5))
130 NEXT A
140 CALL CHAR(91,"7C82BAA2A2BA82
7C")
150 DISPLAY AT(2,6):"THINK OF A
NUMBER"
160 DISPLAY AT(3,6):"************
******"
170 DISPLAY AT(5,5):"by t. steve
ns [1986"
180 DISPLAY AT(15,3):"I CAN READ
YOUR MIND"
190 DISPLAY AT(18,5):"DON'T BELI
```

Programming now. This is a double fold experience which will teach you how to convert a program from EXB to BASIC and how to rewrite common logic to make it work. Converting down is no problem except for the SPRITE routines which you can't use properly unless you have some form of CALL LINK machine code loaded before hand.

This time I am going to leave you with a puzzle which will give you and your friends some fun into the bargain, when you tap it in over the Christmas Period.

Think Of A Number

The program will read your mind. Yes IT WILL READ YOUR MIND. You don't need any wires to do it!

When you have played with it, can you guess, or work out how this little program works. Answers if you wish, to me for publication next issue. I promise your name will be there if you send me your answer.

BASIC (Put On Two Lines)
BASIC (Do PRINT Command or BASIC DISPLAY AT as per last issue)

BASIC (leave out 110 to 130 inc)

BASIC (PRINT or BASIC DISPLAY AT)

-Ditto-

-Ditto-

-Ditto-

-Ditto-

```
EVE ME THE WAIT.."
200 FOR A=1 TO 2000 :: NEXT A
210 CALL SCREEN(12)
220 CALL CLEAR
230 X=0 :: B=01
240  DISPLAY  AT(8,2):THINK OF A
NUMBER BETWEEN" :: DISPLAY AT(10
,12):"1 & 59" :: CALL KEYSET
250 DISPLAY AT(8,1):"I WILL NOW
DISPLAY A FEW    NUMBERS, IF YOU
R NUMBER IS  THERE PRESS Y ELSE
PRESS N"
260 CALL KEYSET
270 CALL CLEAR :: GOSUB 390
280 PRINT ": : : : : :" IS YOUR N
UMBER HERE? (Y/N)"
290 CALL KEY(0,K,S)
300 IF K<>89 AND K<>78 THEN 290
310 IF K=89 THEN X=X+B
320 IF B=32 THEN 340
330 B=B*2 :: GOTO 270
340 CALL CLEAR :: IF X=0 THEN DI
SPLAY AT(8,12):"   YOU MADE A MI
STAKE OR             CHEATED !!"
350 DISPLAY AT(10,1):"YOU THOUGH
T OF NUMBER ";X
360 FOR A=1 TO 500 :: NEXT A
370 CALL KEYSET
380 GOTO 210
390 C=01 :: N=B :: S=01
400 PRINT N;
410 IF S=8 THEN S=0
420 IF N>=59 THEN RETURN
430 N1=N+1+(B AND C=B)
440 IF C=B THEN C=0
450 C=C+1 :: N=N1 :: S=S+1
460 GOTO 400
470 SUB KEYSET
480 PRINT TAB(3);"press any key
to go on"
490 CALL KEY(0,K,S)
500 IF S=0 THEN 490
510 CALL CLEAR
520 SUBEND
```

BASIC (put on two lines)
BASIC (put on two lines)
BASIC (PRINT or BASIC DISPLAY AT)
BASIC (for KEYSET do GOSUB)
BASIC (PRINT or BASIC DISPLAY AT)
*BASIC (use GOSUB to **)*
BASIC (put on two lines)
BASIC (change separators)
BASIC (use (K<>89)(K<>78) THEN)*
BASIC (put on two lines)
-Ditto-
BASIC (use PRINT or BASIC DISPLAY AT)
-Ditto-
BASIC (put on two lines)
*BASIC (use GOSUB to **)*
BASIC (use separate lines)
BASIC (see note below)
-Ditto-
BASIC (use N1=N+1+((B)+(C)=B)
BASIC (see note below)
BASIC (use separate lines)
*BASIC (** use this number)*
BASIC (replace with RETURN)

NOTE: With the commands like **IF S=8 THEN S=0** you will have do a **GOTO** jump at the end of the program, i.e.

```
410 IF S=8 THEN 1000
1000 S=0 GOTO 420
```

From The Chairman's Chair

This can also be done with the return but make sure your logic is near to the return statement, i.e.

```
420 IF N>=59 THEN 423
421 GOTO 430
423 RETURN
```

Wanted: Your Programs

Have you in the past written any program and wanted to publish it? Your program can be in any format for the TI. If you have, send then to the Editor so they can be included into the magazine.

How do you send them? You can put them on disk or tape and Richard will be able to convert them into text. Short programs can be sent in on A4 paper. There is another way if you have a modem. Leave your program on the BBS and leave Richard a message about it and where you have put it.

The Draw

Some late news coming in for the BBS. I have through Richard Twyning, bless him, obtained a copy of THE DRAW. This animal allows me to produce some really good graphics. The format also allows me to do animations which with a colour terminal can be viewed. This now has tempted me to write to TIM TESH for the updated terminal for the TI that does full colour ANSI. I will let you know how I get on when I obtain it, and will give you all a review.

Happy Christmas

The following is my Christmas present to you for 1995. I hope you like the program and can learn some tricks for line graphic handling. Thats the title setup at the start of this program.
Have fun...

```
100 REM MOON BASE alpha v1.0
110 REM BY TREVOR STEVENS  (c) 1985
120 CALL INTRO :: CALL INST
130 CALL CLEAR
140 CALL CHARSET
150 CALL CHAR(64,"0000000000000000")
160 RANDOMIZE
170 CALL COLOR(5,2,11):: CALL COLOR(6,2,11):: CALL COLOR(7,2,1
1)::CALL COLOR(8,2,11)
180 Y=4000 :: P=50 :: OL=200 :: FS=200 :: MI=2 :: M=0 :: MO=10
0 ::WS=200
190 CALL SCREEN(4):: CALL CLEAR
200 A$="IF@YOU@WISH@TO@BUY@MORE" :: B$="THEN@ENTER@THE@NUMBER@
OF" :: C$="YOU@WISH@TO@BUY."
210 D$="IF@NOT@THEN@PRESS@NUMBER (0)" :: E$="YOUR@CASH@LEVEL@I
S"
220 GOTO 280
230 CALL CLEAR
240 OL=OL-INT(RND*25):: FS=FS-INT(RND*25):: WS=WS-INT(RND*25):
: Y=Y+1
250 IF OL<50 THEN P=P-10
260 IF OL>=50 AND OL<=100 THEN P=P+INT(RND*5)
270 IF OL>100 THEN P=P+INT(RND*10)
```

```
280 IF OL<0 THEN 1140 :: IF FS<0 THEN 1140 :: IF WS<0 THEN 114
0 ::IF P<0 THEN 1140
290 DISPLAY AT(2,5):"MOON@BASE@ALPHA"
300 DISPLAY AT(4,0):"( ) YEAR,          ";Y :: DISPLAY AT(6,0):"
( ) POPULATION,  ";P :: DISPLAY AT(8,0):"(1) OXYGEN@LEVEL,";OL

310 DISPLAY AT(10,0):"(2) FOOD@SUPPLY, ";FS :: DISPLAY AT(12,0
):"(3) WATER@SUPPLY,";WS :: DISPLAY AT(14,0):"(4) MISSILES,
 ";MI
320 DISPLAY AT(16,0):"(5) MINERALS,     ";M :: DISPLAY AT(18,0)
:"(6) MONEY, ";MO
330 IF RND>.8 THEN 1010
340 PRINT "PRESS@A@NUMBER" ::
350 ACCEPT AT(23,17)SIZE(1)BEEP VALIDATE("123456"):N
360 CALL CLEAR
370 IF N=1 THEN 380 :: IF N=2 THEN 460 :: IF N=3 THEN 550 :: I
F N=4 THEN 640 :: IF N=5 THEN 720 :: IF N=6 THEN 850
380 PRINT "OXYGEN@LEVEL": :
390 PRINT "YOU@HAVE";OL;"UNITS": :
400 L=OL :: GOSUB 940
410 V=INT(RND*2+1):: PRINT E$;MO;
420 PRINT "OXYGEN@COSTS";V;"PER@UNIT."
430 PRINT A$;"OXYGEN" :: PRINT B$;"UNITS@";C$ :: PRINT D$
440 INPUT N :: IF N<0 OR N*V>MO THEN 440
450 OL=OL+N :: MO=MO-(N*V):: PRINT :: PRINT "OK" :: CALL DELAY
 :: GOTO 230
460 PRINT "FOOD@SUPPLY" :: PRINT
470 PRINT "YOU@HAVE";FS;"KILOGRAMS" :: PRINT
480 L=FS :: GOSUB 940
490 V=INT(RND*2+1)
500 PRINT E$;MO
510 PRINT "FOOD@COSTS";V;"A@KILOGRAM" ::
520 PRINT A$;"@FOOD" :: PRINT B$;"KILOS@";C$ :: PRINT D$
530 INPUT N :: IF N<0 OR N*V>MO THEN 530
540 FS=FS+N :: MO=MO-(N*V):: PRINT :: PRINT "OK" :: CALL DELAY
 :: GOTO 230
550 PRINT "WATER@SUPPLY"
560 PRINT :: PRINT "YOU@HAVE";WS;"PINTS." :: PRINT
570 L=WS :: GOSUB 940
580 V=INT(RND*2+1)
590 PRINT E$;MO
600 PRINT "WATER@COSTS";V;"A@PINT."
610 PRINT A$;"WATER " :: PRINT B$;"PINTS@";C$ :: PRINT D$
620 INPUT N :: IF N<0 OR N*V>MO THEN 620
630 WS=WS+N :: MO=MO-(N*V):: PRINT :: PRINT "OK" :: CALL DELAY
 :: GOTO 230
640 PRINT "MISSILES"
650 PRINT :: PRINT "YOU@HAVE";MI;"MISSILES": :
```

```
660 V=INT(RND*10+1)
670 PRINT E$;MO
680 PRINT "MISSILES@COST";V;"EACH."
690 PRINT A$ :: PRINT B$ :: PRINT "MISSILES" :: PRINT C$ :: PR
INT D$
700 INPUT N :: IF N<0 OR N*V>MO THEN 700
710 MI=MI+N :: MO=MO-(N*V):: PRINT :: PRINT "OK" :: CALL DELAY
 :: GOTO 230
720 PRINT "MINERALS"
730 PRINT :: PRINT "YOU HAVE ";M;"KILOGRAMS"
740 PRINT :: PRINT "YOU@CURRENTLY HAVE";OL;"OXYGEN@UNITS."
750 PRINT "EXCAVATING@FOR@MINERALS      IS@ADVANTAGEOUS@BUT@YOU
    REQUIRE@OXYGEN@WITH@YOU."
760 PRINT "THE@MORE@OXYGEN@YOU@TAKE@THELONGER@YOU@CAN@EXCAVATE
@ANDTHE@MORE@MINE
RALS@YOU@CAN   BRING@BACK."
770 PRINT "ENTER@THE@NUMBER@OF@UNITS   YOU@ARE@TAKING." :: PRI
NT D$
780 INPUT N :: IF N<0 OR N>OL THEN 780
790 IF N=0 THEN 800 ELSE 810
800 PRINT "OK" :: CALL DELAY :: GOTO 230
810 LET V=INT(RND*(N/2))+1
820 PRINT "OK" :: CALL DELAY :: PRINT "YOU@MANAGED@TO@BRING@BA
CK";V :: PRINT "KILOGRAMS"
830 FOR Z=1 TO 300 :: NEXT Z
840 M=M+V :: OL=OL-N :: GOTO 230
850 PRINT "MONEY": :
860 PRINT E$;MO
870 PRINT :: PRINT "YOU@HAVE";M;"MINERALS"
880 PRINT :: PRINT "YOU@CAN MAKE@MONEY@BY       SELLING@YOUR@M
INERALS."
890 V=INT(RND*8+1)
900 PRINT "YOU@WOULD@RECEIVE";V;"PER" :: PRINT "KILOGRAM."
910 PRINT "ENTER@THE@NUMBER OF@MINERALS@YOU@WISH@TO@SELL." ::
PRINT D$
920 INPUT N :: IF N<0 OR N>M THEN 920
930 M=M-N :: MO=MO+(N*V):: PRINT "OK" :: CALL DELAY :: GOTO 23
0
940 IF L>100 THEN 950 ELSE 960
950 PRINT "level@SUPPORTIVE"
960 IF L>=50 AND L<=100 THEN 970 ELSE 980
970 PRINT "level@LOW "
980 IF L<50 THEN 990 ELSE 1000
990 PRINT "level@CRITICAL"
1000 RETURN
1010 FOR Z=1 TO 300 :: NEXT Z
1020 CALL CLEAR
1030 PRINT "YOU@ARE@UNDER@ATTACK@FROM   ALIEN@SPACESHIPS"
```

```
1040 PRINT :: PRINT "USE@MISSILES@TO@STOP@THEM"
1050 PRINT "(NOT@MORE@THAN@2@AT@A@TIME)" :: PRINT :: FOR Z=1 T
O 5 :: CALL SOUND(100,350,0):: NEXT Z
1060 IF MI<1 THEN 1070 ELSE 1080
1070 PRINT " NO@MISSILES@LEFT" :: FOR Z=1 TO 3 :: CALL SOUND(3
00,110,0):: NEXT Z :: GOTO 140
1080 DISPLAY AT(24,1)SIZE(6):"FIRE:-" :: ACCEPT AT(24,8)SIZE(-
1)VALIDATE("12"):N
1090 IF N=1 AND RND>.6 THEN 1100 ELSE 1120 :: IF N=2 AND RND>.
3 THEN 1100
1100 DISPLAY AT(6,0):"OK-" :: FOR Z=1 TO 300 :: NEXT Z :: DISP
LAY AT(6,6):"WELL@DONE/THEY'RE@GONE,     WATCH@IT@THEY'LL@BE@B
ACK" :: MI=MI-N
1110 CALL DELAY :: GOTO 230
1120 DISPLAY AT(6,0):"OK-" :: FOR Z=1 TO 300 :: NEXT Z :: DISP
LAY AT(6,6):"YOU@MISSED/TRY@AGAIN" :: MI=MI-N :: CALL DELAY
1130 DISPLAY AT(6,6):"                          " :: GOTO 1060
1140 CALL CLEAR :: FOR ZA=1 TO 100 STEP 2 :: CALL HCHAR(11,5,3
2,20)
1150 DISPLAY AT(11,5):"LIFE@TERMINATED" :: NEXT ZA
1160 IF MI<1 THEN A$="DESTROYED@BY@ALIENS"
1170 IF OL<0 THEN A$="OXYGEN@STARVATION"
1180 IF FS<0 THEN A$="FOOD@STARVATION"
1190 IF WS<0 THEN A$="LIQUID@STARVATION"
1200 IF P<1 THEN A$="POPULATION@DEAD"
1210 CALL SCREEN(9):: CALL SOUND(1250,-6,0)
1220 DISPLAY AT(9,5):A$
1230 DISPLAY AT(13,5):"YOU@SERVED@FOR@";Y-4000;"YEARS"
1240 CALL DELAY
1250 PRINT "  DO@YOU@WANT@TO@PLAY@AGAIN?" :: PRINT :: PRINT "
 PRESS@Y@FOR@YES@N@FOR@NO"

1260 CALL KEY(0,K,S):: IF S=0 THEN 1260 :: IF K=89 THEN CALL I
NTRO:: GOTO 130 :: IF K=78 THEN 1270
1270 END
1280 SUB DELAY
1290 FOR Z=1 TO 900 :: NEXT Z
1300 SUBEND
1310 SUB INTRO
1320 CALL CLEAR :: CALL SCREEN(2)
1330 FOR ZZ=5 TO 11 :: CALL COLOR(ZZ,15,1):: NEXT ZZ
1340 CALL CHAR(97,"000000000000080F"):: CALL CHAR(98,"00000000
000010F8"):: CALL CHAR(99,"1F3BEDFFDEFFDEFF"):: CALL CHAR(100,
"FCF6FFFBFDF7FFFF")
1350 CALL CHAR(117,"00000080C0F9FBBF"):: CALL CHAR(102,"000000
000080EFFF"):: CALL CHAR(103,"00000000CCFFFFFF")
1360 CALL CHAR(104,"0000000187C7FFFF"):: CALL CHAR(105,"000000
00000000F8"):: CALL CHAR(106,"000000000000001F")
```

```
1370 CALL CHAR(107,"18FFFFFF999999FF"):: CALL CHAR(116,"FFFF99
9999FFFFFF"):: CALL CHAR(109,"0000FFFF55FF0000")!BUILDINGS
1380 CALL CHAR(110,"0000001808080818"):: CALL CHAR(111,"000000
1810101018"):: CALL CHAR(112,"00007E81817E1818")
1390 CALL CHAR(113,"00008"):: CALL CHAR(114,"FFFFFFFFFFFFFFFF"
)
1400 CALL HCHAR(24,1,114,32)
1410 A$="ufufgcdufcdhufittttmmttjufgcdugh"
1420 X=23 :: Y=1
1430 GOSUB 1670
1440 A$="     ab  ab    tttt  tt    ab"
1450 X=22 :: Y=1
1460 GOSUB 1670
1470 A$="                k"
1480 X=21 :: Y=1
1490 GOSUB 1670
1500 CALL SPRITE(#1,112,5,152,129)
1510 FOR TU=1 TO 30
1520 KJ=INT(RND*32)+1
1530 PA=INT(RND*18)+1
1540 IF (PA=24)+(PA=23)THEN 32767
1550 CALL HCHAR(PA,KJ,113)
1560 NEXT TU
1570 DISPLAY AT(3,9)SIZE(16):"MOON BASE ALPHA"
1580 DISPLAY AT(6,5)SIZE(22):"BY T.STEVENS FOR PARCO"
1590 DISPLAY AT(15,5)SIZE(22):"PRESS ANY KEY TO GO ON"
1595 CALL SPRITE(#2,113,7,10,50,0,-15)
1600 CALL KEY(0,KK,SS)
1610 CALL PATTERN(#1,110):: FOR A=1 TO 6 :: NEXT A
1620 CALL PATTERN(#1,112):: FOR A=1 TO 6 :: NEXT A
1630 CALL PATTERN(#1,111):: FOR A=1 TO 6 :: NEXT A
1640 CALL PATTERN(#1,112)
1650 CALL SOUND(50,500,15)
1660 IF SS=1 THEN 1710 ELSE 1600
1670 FOR Z=1 TO LEN(A$)
1680 CALL HCHAR(X,Y+Z-1,ASC(SEG$(A$,Z,1)))
1690 NEXT Z
1700 RETURN
1710 CALL DELSPRITE(ALL):: CALL CHARSET
1720 SUBEND
1730 SUB INST
1740 CALL CLEAR
1750 CALL SCREEN(12)
1760 DISPLAY AT(1,7)SIZE(16):"MOON BASE ALPHA"
1770 DISPLAY AT(2,7)SIZE(16):"****************"
1780 DISPLAY AT(7,1)SIZE(28):"YOU ARE THE COMMANDER OF"
1790 DISPLAY AT(8,1)SIZE(28):"MOON BASE ALPHA.          "
1800 DISPLAY AT(9,1)SIZE(28):"THE OBJECT OF THE GAME IS"
```

```
1810 DISPLAY AT(10,1)SIZE(28):"TO SURVIVE ON THE MOON AS"
1820 DISPLAY AT(11,1)SIZE(28):"LONG AS YOU CAN BY BUYING"
1830 DISPLAY AT(12,1)SIZE(28):"AND SELLING ESSENTIAL    "
1840 DISPLAY AT(13,1)SIZE(28):"COMMODITIES.             "
1850 DISPLAY AT(14,1)SIZE(28):"THE YEAR IS A.D.4000 AND "
1860 DISPLAY AT(15,1)SIZE(28):"YOU ARE AT WAR WITH ALIENS."
1870 DISPLAY AT(18,1)SIZE(28):"MAY YOU PROSPER AND MULTIPLY"
1875 DISPLAY AT(24,3):"PRESS ANY KEY TO GO ON"
1880 CALL KEY(0,K,S):: IF S=0 THEN 1880
1890 SUBEND
```

I hope you enjoy your holiday and I wish you a Merry Christmas and a Happy tapping New Year... Brain empty ... Fctn Quit...

Jim Troy has the following TI items for sale:

Hardware
TI99/4a console
Speech Synthesizer
Joystick
TI Memory Expansion (stand-alone)
TI Program Recorder

Modules
TI Extended Basic
Terminal Emulator II
Video Chess
Parsec

Cassette Software
Starter Packs 1 and 2
Games Writer Packs 1 and 2
Teach Yourself Basic and Extended Basic

Books
All original manuals, TI*MES from no. 5, Programming Basic (Herbert Peckham),Books by Peter Brooks and Stephen Shaw

The price for the whole lot is £120 (ono) and the items cannot be split. If you're interested, please give Jim a call on 01282 412153.

For Sale
Surplus hardware, software (disks, cassettes and modules) and books for TI99/4a
Please write for list enclosing SAE to

David Duncan
15 Inglewood Close, Darlington, Co Durham, DL1 2TX

News And Reviews

Dear TI'ers,

Merry Christmas to all our members out there. I hope you all enjoy the Christmas season, or did enjoy the Christmas season if the magazines don't arrive until after Christmas! They should do though, since Richard Speed has already booked a time-slot with the printers, and today is still only Friday the 13th of October! I must be superstitious, because I set out to work a bit earlier this morning! Yes, I've got a job, and a new car (more about this in a moment) - I'm a Windows Programmer!

The World Of Windows

I thought Windows was crap before, but now I've got to write programs for it, I can see why it's crap! Because Microsoft can't write anything decent to save their lives, it's up to the programmer to do everything, including unloading every single icon, font, or menu box when your program ends.

It even screws your mind up when you try and do something as simple as drawing a rectangle in a window. If you do a rectangle instruction, you would think that the rectangle would appear on screen, but you'd be very wrong! You've got to make them invalid to force Windows to redraw them! If you don't include code to keep repainting things, then you will see them once at the start of the program, but as other windows are drawn over yours, all of your objects will disappear mysteriously!

A decent operating system can keep track of these resources, as they're called, and would unload them automatically when your program finishes, but Microsoft Windows definitely isn't that clever! This is made worse by the fact that Windows only allows 64k to store resources, which is considerably out of proportion, when you could have 32 megabytes of RAM in your machine.

Millionaire's Corner

Don't get jealous though. With minimum effort and a bank vault full of crispy spendable groat, you could address half a Gig of RAM out of the GROM Port. i.e. 2 bytes used as a memory mapper: 65535 * 8190 = 536731650 bytes.

Tips From The Bluesman

You will notice that I've got a multiply in the above text. I also noticed that in the Autumn issue there was a "Tips From The Tigercub by Jim Peterson on page 57 which described putting two asterisks, and two dummy characters! You don't need to go to all that trouble. All you need to do is put your first number then a space, then your asterisk, then another space, and the second number, and it never gives a problem.

Farewell To Nellie

I must say a few words now about Little Nellie, my VERY reliable and faithful Peugeot 205 which has transported me to AGM's for the last few years, transported Trevor, Gary and myself to the workshop in Maidenhead a few years ago, and has transported me to Mark's place in Shrewsbury a couple of times.

Hello To TEX

She hasn't gone to the great Q-Branch in the sky, well hopefully not, she's been handed down to 006 and traded in for a Vauxhall Tigra, or should that be TIgra!!! You will have to look out for it at the workshop in March, because I'm afraid I've had to have a personal number plate!

N99 TEX

Right, what have I got to talk about in this article?

The BBS

As far as the BBS is concerned, our greatest problem has been updating some of the menus, and particularly, the ANSI colour menus.

Each menu on the BBS has three possible files to choose from. These have different extensions, depending on the menu they contain:

- An extension of $40 is the 40 column version of a particular menu.
- An extension of $80 is the 80 column version of a particular menu.
- An extension of $-1 is the ANSI color version of a particular menu.

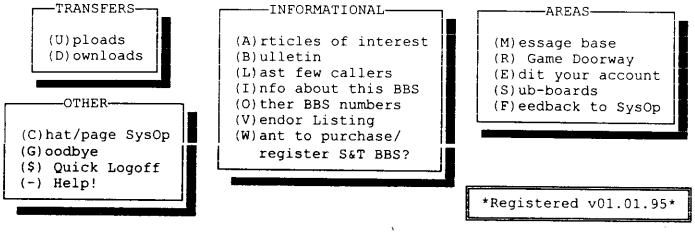
The version of menu you get, depends what parameters you set when you first log on as a new user, but it is possible to change your setup at a later date, if you should decide to upgrade to an 80-Column card.

ANSI Graphics On A 4A

Users with a standard 4A will view menu files with an extension of $40 for forty columns, but I'm not sure myself what happens if you've got 40 columns and don't want ANSI graphics, because even our 40 column menu files contain ANSI symbols. This case will only arise if you access the board with the Terminal Emulator cartridge. I think the way around it will be that the bulletin board screens out the ANSI symbols and replaces them with something else, which is a bit like TELCO when it logs a terminal session to disk, it replaces ANSI symbols with asterisks etc.

Yes! I was right, I've been on the board and checked it out! Every text file, (ones that have been uploaded and viewed in the file area, or the actual BBS menu files) have their characters scanned. Bulletin Boards send out their data a single byte at a time (which is then sent a bit at a time by the RS232 port and MODEM). As each character is about to be sent, it is checked, and if it is over a certain range, which means it must be an ANSI symbol, then a space character is sent instead, which means it will be compatible with the Terminal Emulator which can't handle ANSI codes.

Check out my BBS session for an example (my normal setup is 80 column ANSI without colour):



(Change terminal settings to 40 column)

```
Your Setup:
-----------

(*) Password

(T)erminal Width..40
(I)BM Graphics....On
(S)creen Clear....12
(C)olor ANSI......Off

(Q)uit/save
```

(Turn ANSI symbols off.)

```
Your Setup:
-----------

(*) Password

(T)erminal Width..40
(I)BM Graphics....Off
(S)creen Clear....12
(C)olor ANSI......Off

(Q)uit/save
```

(The menu no longer has ANSI symbols, and is now therefore compatible with the terminal emulator cartridge.)

```
     TRANSFERS          AREAS/INFO

    (U)ploads         (A)rticles
    (D)ownloads       (B)ulletin
                      (L)ast callers
                      (I)nfo about BBS
       OTHER          (O)ther BBS's
                      (V)endor List
  (C)hat w/SysOp      (W)ant to buy
  (G)oodbye             an S&T BBS?
  ($) Fast Logoff
  (-) Help!           (E)dit setups
                      (F)eedback
                      (M)essage base
   *Registered*       (R) Game Doorway
 (c)1995 S&T Soft.    (S)ub-boards

[06:48:07 pm] (? = Menu) Choice : e
```

(Change setups back to IBM graphics again.)

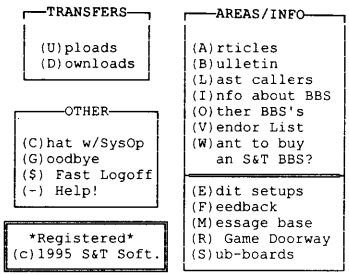
```
Your Setup:
-----------

(*) Password

(T)erminal Width..40
(I)BM Graphics....On
(S)creen Clear....12
(C)olor ANSI......Off

(Q)uit/save
```

(Forty column mode and ANSI symbols.)



(Change setup again to turn off ANSI symbols and switch to 80 columns.)

```
Your Setup:
-----------

(*) Password

(T)erminal Width..80
(I)BM Graphics....Off
(S)creen Clear....12
(C)olor ANSI......Off

(Q)uit/save
```

(Main menu with 80 columns, but no ANSI)

```
      TRANSFERS                INFORMATIONAL                  AREAS

      (U)ploads                (A)rticles of interest         (M)essage base
      (D)ownloads              (B)ulletin                     (R) Game Doorway
                               (L)ast few callers             (E)dit your account
                               (I)nfo about this BBS          (S)ub-boards
        OTHER                  (O)ther BBS numbers            (F)eedback to SysOp
                               (V)endor Listing
   (C)hat/page SysOp           (W)ant to purchase/
   (G)oodbye                      register S&T BBS?
   ($) Quick Logoff
   (-) Help!
                                                        *Registered v01.01.95*
```

(Even my TI T-Shirt comes up blank!)

```
                        T.I. T-Shirt SALE

                        T.I. T-Shirt SALE


          LIMITED EDITION T.I. T-Shirts from Richard Twyning

                  10 pounds + postage and packaging.
```

(Turn ANSI characters on again.)

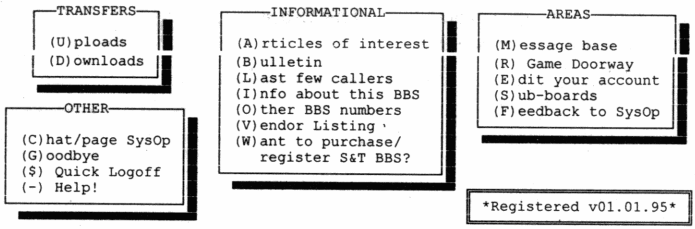
```
Your Setup:
-----------

(*) Password

(T)erminal Width..80
(I)BM Graphics....On
(S)creen Clear....12
(C)olor ANSI......Off
```

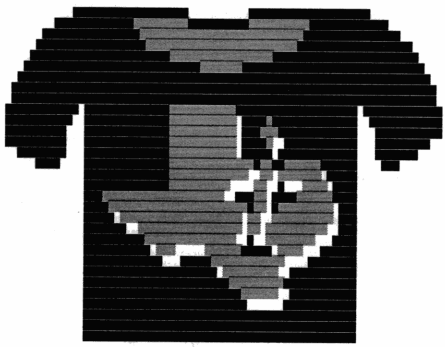
News And Reviews

(ANSI symbols are no longer screened out)



(My T-Shirt advert back to normal.)

T.I. T-Shirt SALE



T.I. T-Shirt SALE

LIMITED EDITION T.I. T-Shirts from Richard Twyning

10 pounds + postage and packaging.

Colourful Language

Those users who access the board regularly will have noticed one or two colourful additions. These are new ANSI colour screens and menus.

The main title screen has now been updated by Trevor to include a full colour picture of an expanded TI, complete with colour title screen and colour bars. We have also drawn various colour menus which we will use interchangeably to give the BBS a constantly fresh appearance, and during Christmas, we will hopefully have Christmas decorations on our screens and menus!

These colour screens have currently been made possible with a program called ANSI-Master on the Amiga, but this has one or two bugs, and seems to generate colour files that are slightly incompatible with IBM PC terminal programs, such as PROCOMM, and the standard terminal in Windows 95!

The Draw

However, thanks to my Senior Software Engineer, we now have The Draw, which he downloaded from the Internet.

This seems to be the best of all ANSI colour screen and menu drawing programs, and like all sensible software, will run straight from Messy DOS!!
Sprites On The BBS
Some of the things it will do are amazing, such as control individual layers like sprites. For example, you could have a picture as a background to a menu, and the menu could be overlayed on a higher layer. You don't need to keep redrawing the picture if you want to try the menu in a different location!

ANSI Fonts

There are also outline fonts, which are large fonts made up of ANSI symbols. You can just type what you like and the large characters are drawn in ANSI symbols across the screen!

Game Additions

Regular MOBB users will also have seen two additions to the Game Doorway. These are actually two little Extended BASIC programs which utilise Tim Tesch's documented XB CALL LINKs!

Mono Users

Oops! I forgot! Those users who don't access with colour including me, will not have noticed the changes, because we've forgot to update the mono 40 column and 80 column Game Door menus! I only noticed this last night when accessing directly at Trevor's place using the Amiga.

Trevor has typed in a little game, and I've put on a little ANSI test demo thingy! Just a fraction of Tim Tesch's utilities are listed below:

CALL LINK("PRINT", A$)
Works same as PRINT, but sends A$ to the RS232 port.

CALL LINK("PRINTX", A$)
Same as above, but CTRL-X is either enabled or disabled! I forget which, but for most cases it doesn't make any difference.

CALL LINK("INPUT", A$)
Works same as INPUT, but gets data from BBS user!

CALL LINK("SC", A$)
This can be used as an equivalent of CALL KEY, but it directly accesses the RS232 card. After doing the LINK, if no character has been retrieved A$ will contain either ASCII 0 or 1.

O.K., here's a quick example.

```
1000 CALL LINK("SC", A$)::IF
 ASC(A$)<=1 THEN 1000
```

A$ now contains a valid character.

Using these commands we can do some very powerful things. If you select A from the Game Doorway, you will see my little demo, and hopefully it will work with TELCO.

I bought a book called "Running A Perfect BBS", just so I could get a list of ANSI codes, and guess what, there is an ANSI code sequence which fixes the cursor position, so I've been able to write a remote CALL HCHAR, CALL VCHAR subprogram, and also an equivalent of DISPLAY AT!!!

Here's my routines:

```
30000 SUB RHCHAR(R1,C1,CH1,RP1):: A$=CHR$(27)&"["&STR$(R1)&";"
&STR$(C1)&"H"&RPT$(CHR$(CH1),RP1):: CALL LINK("PRINT",A$):: SU
BEND
30001 SUB RVCHAR(R1,C1,CH1,RP1):: FOR LP=1 TO RP1 :: A$=CHR$(2
7)&"["&STR$(R1-1+LP)&";"&STR$(C1)&"H"&CHR$(CH1):: CALL LINK("P
RINT",A$):: NEXT LP :: SUBEND
30002 SUB RDISP(R1,C1,STRNG$):: A$=CHR$(27)&"["&STR$(R1)&";"&S
TR$(C1)&"H"&STRNG$
 :: CALL LINK("PRINT",A$):: SUBEND
30003 SUB RCOLOR(FG,BG):: A$=CHR$(27)&"["&STR$(FG+30)&";"&STR$
(BG+40)&"m" :: CALL LINK("PRINT",A$):: SUBEND
```

The RHCHAR and RVCHAR work identical to their standard equivalent:

```
CALL RHCHAR(row, column, asc
ii_value, repetition)
```

If your repetition value causes the line of characters to go off of the end of the screen, it won't wrap around to the next line. The cursor will just bang its head on the right hand side of the screen!

```
CALL RVCHAR(row, column, asc
ii_value, repetition)
```

I'm unsure what will happen if you give it a repetition value that causes it to go off of the bottom of the screen. I'll have to sort it out and make it 100% compatible to the standard versions.

```
CALL RDISP(row, column, stri
ng$)
```

Does same thing as DISPLAY AT, but again, the string will not wrap around to the next line.

```
CALL RCOLOR(foreground, back
ground)
```

Allowable colours are from 0 to 7. Here are the colour values:

0. Black
1. Red
2. Green
3. Yellow
4. Blue
5. Magenta
6. Cyan
7. White

Write Your Own BBS Page

Please feel free to write a BBS linkable program such as a game, or some other type of program that will work well on-line, and you could see your efforts accessible through the Game Doorway on the BBS. Don't worry about the LINK routines, because when a linkable program is run, all the LINK's are already resident in memory since the BBS needs to make use of them. We don't mind if you want to get really saucy and use CALL LINK("SC", A$) to make something really interactive. You can use normal CALL HCHAR/VCHAR etc. while you're writing and testing your program.

Now all I've got to do is test TELCO with these to make sure they are recognized! Hopefully they should be, because I've noticed that TELCO does recognize the ANSI clear screen code, which is: Esc[2J so I'm quite hopeful.

New Hard Disk

As you may have read in Trevor's article, we have had quite a few problems with the

20Meg drive, which some people may have noticed, caused quite a few Message Base areas to be lost, and we've lost the SoftMail feature of attaching a file to a message. However, as you should have already seen in Trevor's article, Trevor is obtaining a BIG hard disk which he claims is around 140Megs!!! This will keep us going for a while!, and we can move the 20Meg out for development and possibly the games section.

Terminal Overload

Gary has confirmed to me that old regulators can go into "Current Overload" until they're warm, which explains conclusively the trouble with the small drive because it works O.K. when it's warmed up (said the vicar!), but we'll move it out and use it as WDS3 and put less critical things on it

Remote Support

Also what Trevor hasn't probably mentioned is the BBS remote support. We've fully worked it out and Trevor and I have access to use it. I can access the BBS and enter remote support, and I can control the system just as though I was sitting in front of Trevor's system 5 miles away. I can make program updates and BBS menu updates, edit user accounts, create or remove Up/Download areas, set the system clock etc. I can even catalog a disk from a distance of five miles!

Buying And Selling

While I'm on the subject of the BBS, I must thank Ross Bennett for his kind words in the last issue, but he was incorrect about having to type sales adverts. There is a seperate Sales upload/download area where you can directly upload your text files, or you could even draw an advert in TI-Artist or Picasso etc., and directly upload it to the Sales area. If you do this though, you must make sure that you say what type the file is to make it easy for someone else to download it and view it. You can type a full line of text description for each file before you upload it, but again I'm not sure if 40column users are only allowed to type 40 characters, but I suspect this is probably the case.

If you do decide that you want to advertise something in the sales section and would like to create some pictures with ANSI symbols, then you will need to be able to draw these and see how the pictures will turn out. You can't produce these on TI-Writer or Funnelweb, so what can you do? Well, try this little program for size!

ANSI Drawing Program

I wrote it probably almost two years ago, and it requires Extended BASIC, a disk system and joysticks. Don't try loading the files it creates into TI-Writer or Funnelweb, because it'll probably cause themem to lock up! They can be directly uploaded to the relevant area of the BBS using XMODEM in TELCO or whatever.

Anyone reading this has free permission to share the program, and re-print it, and John Murphy will hopefully provide his excellent services in making it more user-friendly!

You can type normal text directly using the keyboard, including spaces, which you can use to delete objects, but the ANSI symbols must be selected and dropped using the joystick and fire button.

```
1 PRINT "":"":"  ANSI GRAPHICS DRAWING      PROGRAM BY RICHARD
TWYNING ":""
```

```
2 FOR D=0 TO 160 :: PRINT CHR$(D);:: NEXT D
3 CALL CHAR(116,"AA55AA55AA55AA55181818181818181818181818F8F8181
8182424E40404E42424")
4 CALL CHAR(120,"2424242424242424240000FC0404E424242424E40404FC0
000000000F8F8181818")
5 CALL CHAR(124,"1818181F1F000000181818FFFF000000000000FFFF181
8181818181F1F181818")
6 CALL CHAR(128,"000000FFFF000000181818FFFF1818182424272020 3F0
00000003F2020272424")
7 CALL CHAR(132,"2424E70000FF00000000FF0000E724242424272020272
4240000FF0000FF0000")
8 CALL CHAR(136,"2424E70000E72424181818F8F80000000000001F1F181
818FFFFFFFFFFFFFFF")
9 CALL CHAR(140,"00000000FFFFFFFFF0F0F0F0F0F0F0F00F0F0F0F0F0F0
F0FFFFFFFFF00000000")
10 CH=32 :: ROW,COL=1
11 CALL CLEAR :: FOR D=116 TO 143 :: PRINT CHR$(D);:: NEXT D
12 CALL JOYST(1,X,Y):: COL=COL+X/4 :: ROW=ROW+Y/4*-1 :: IF ROW
<1 THEN 12 ELSE IF ROW>24 THEN 12 ELSE IF COL<1 THEN 12 ELSE I
F COL>32 THEN 12
13 CALL GCHAR(ROW,COL,X):: CALL HCHAR(ROW,COL,30):: CALL HCHAR
(ROW,COL,X)
14 CALL KEY(1,K,S):: IF K=18 THEN IF ROW<24 THEN CALL HCHAR(RO
W,COL,CH)ELSE CALL GCHAR(ROW,COL,CH)
15 CALL KEY(0,K,S):: IF K=83 THEN GOSUB 10000 ELSE IF K=84 THE
N GOSUB 5000 ELSE IF K=76 THEN GOSUB 12000 ELSE IF K=103 THEN
CALL GCHAR(ROW,COL,CH)ELSE IF K=67 THEN GOSUB 9000
16 CALL HCHAR(24,1,CH):: GOTO 12
5000 C=COL
5001 CALL KEY(0,K,S):: CALL GCHAR(ROW,C,X):: CALL HCHAR(ROW,C,
30):: CALL HCHAR(ROW,C,X):: IF S=0 THEN 5001
5002 IF K=8 THEN C=C-1 :: GOTO 5001 :: IF K=9 THEN C=C+1 :: GO
TO 5001
5003 IF K=13 OR C>32 THEN RETURN
5004 CALL HCHAR(ROW,C,K):: C=C+1 :: GOTO 5001
9000 CALL SAY("PLEASE+ENTER+TOP+LEFT+OF+SHAPE")
9001 CALL JOYST(1,X,Y):: COL=COL+X/4 :: ROW=ROW+Y/4*-1 :: IF R
OW<1OR ROW>24 OR COL<1 OR COL>32 THEN 9001
9002 CALL GCHAR(ROW,COL,X):: CALL HCHAR(ROW,COL,30):: CALL HCH
AR(ROW,COL,X):: CALL KEY(1,K,S):: IF K<>18 THEN 9001
9003 TOP=ROW :: LEFT=COL :: CALL SAY("PLEASE+ENTER+BOTTOM+RIGH
T+OF+SHAPE")
9004 CALL JOYST(1,X,Y):: COL=COL+X/4 :: ROW=ROW+Y/4*-1 :: IF R
OW<1OR ROW>24 OR COL<1 OR COL>32 THEN 9004
9005 CALL GCHAR(ROW,COL,X):: CALL HCHAR(ROW,COL,30):: CALL HCH
AR(ROW,COL,X):: CALL KEY(1,K,S):: IF K<>18 THEN 9004
9006 BOTTOM=ROW :: RIGHT=COL :: CALL SAY("PLEASE+ENTER+POSITIO
N+TO+PUT+THE1+SHAPE")
```

```
9007 CALL JOYST(1,X,Y):: COL=COL+X/4 :: ROW=ROW+Y/4*-1 :: IF R
OW<1OR ROW>24 OR COL<1 OR COL>32 THEN 9007
9008 CALL GCHAR(ROW,COL,X):: CALL HCHAR(ROW,COL,30):: CALL HCH
AR(ROW,COL,X):: CALL KEY(1,K,S):: IF K<>18 THEN 9007
9009 CALL SOUND(100,900,0):: FOR R=BOTTOM-TOP TO 0 STEP -1 ::
FOR C=RIGHT-LEFT TO 0 STEP -1 :: IF (R+TOP)<1 OR(R+TOP)>24 OR(
C+LEFT)<1OR(C+LEFT)>32 THEN 9011
9010 CALL GCHAR(R+TOP,C+LEFT,X):: CALL HCHAR(R+ROW,C+COL,X)
9011 NEXT C :: NEXT R :: CALL SAY("COMMAND+COMPLETED"):: RETUR
N
10000 A$="" :: FOR C=1 TO 32 :: CALL GCHAR(24,C,X):: A$=A$&CHR
$(X):: CALL HCHAR(24,C,32):: NEXT C :: CALL SAY("ENTER+DEVICE+
NAME+FOR+SCREEN+DATA")
10001 ACCEPT AT(24,1):F$ :: OPEN #1:F$,DISPLAY ,VARIABLE 80 ::
 FORC=1 TO 32 :: CALL HCHAR(24,C,ASC(SEG$(A$,C,1))):: NEXT C
10002 FOR R=1 TO 23 :: A$="" :: FOR C=1 TO 32 :: CALL GCHAR(R,
C,X):: CALL HCHAR(R,C,30):: CALL HCHAR(R,C,X)
10003 IF X=116 THEN X=178
10004 IF X=117 THEN X=179
10005 IF X=118 THEN X=180
10006 IF X=119 THEN X=185
10007 IF X=120 THEN X=186
10008 IF X=121 THEN X=187
10009 IF X=122 THEN X=188
10010 IF X=123 THEN X=191
10011 IF X=124 THEN X=192
10012 IF X=125 THEN X=193
10013 IF X=126 THEN X=194
10014 IF X=127 THEN X=195
10015 IF X=128 THEN X=196
10016 IF X=129 THEN X=197
10017 IF X=130 THEN X=200
10018 IF X=131 THEN X=201
10019 IF X=132 THEN X=202
10020 IF X=133 THEN X=203
10021 IF X=134 THEN X=204
10022 IF X=135 THEN X=205
10023 IF X=136 THEN X=206
10024 IF X=137 THEN X=217
10025 IF X=138 THEN X=218
10026 IF X=139 THEN X=219
10027 IF X=140 THEN X=220
10028 IF X=141 THEN X=221
10029 IF X=142 THEN X=222
10030 IF X=143 THEN X=223
10031 A$=A$&CHR$(X):: NEXT C :: PRINT #1:A$ :: NEXT R :: CLOSE
 #1 :: CALL SAY("FINISHED"):: RETURN
```

```
12000 A$="" :: FOR C=1 TO 32 :: CALL GCHAR(24,C,X):: A$=A$&CHR
$(X):: CALL HCHAR(24,C,32):: NEXT C :: CALL SAY("ENTER+DEVICE+
NAME+FOR+SCREEN+DATA")
12001 ACCEPT AT(24,1):F$ :: OPEN #1:F$,DISPLAY ,VARIABLE 80 ::
 FORC=1 TO 32 :: CALL HCHAR(24,C,ASC(SEG$(A$,C,1))):: NEXT C
12002 FOR R=1 TO 23 :: LINPUT #1:A$ :: FOR C=1 TO 32 :: X=ASC(
SEG$(A$,C,1))
12003 IF X=178 THEN X=116
12004 IF X=179 THEN X=117
12005 IF X=180 THEN X=118
12006 IF X=185 THEN X=119
12007 IF X=186 THEN X=120
12008 IF X=187 THEN X=121
12009 IF X=188 THEN X=122
12010 IF X=191 THEN X=123
12011 IF X=192 THEN X=124
12012 IF X=193 THEN X=125
12013 IF X=194 THEN X=126
12014 IF X=195 THEN X=127
12015 IF X=196 THEN X=128
12016 IF X=197 THEN X=129
12017 IF X=200 THEN X=130
12018 IF X=201 THEN X=131
12019 IF X=202 THEN X=132
12020 IF X=203 THEN X=133
12021 IF X=204 THEN X=134
12022 IF X=205 THEN X=135
12023 IF X=206 THEN X=136
12024 IF X=217 THEN X=137
12025 IF X=218 THEN X=138
12026 IF X=219 THEN X=139
12027 IF X=220 THEN X=140
12028 IF X=221 THEN X=141
12029 IF X=222 THEN X=142
12030 IF X=223 THEN X=143
12031 CALL HCHAR(R,C,30):: CALL HCHAR(R,C,X):: NEXT C :: NEXT
R ::CLOSE #1 :: CALL SAY("FINISHED"):: RETURN
```

It Works!

Back to the previous subject of remote CALL HCHAR's & VCHAR's and TELCO. I'm no longer hopeful. I'm ecstatic!

Not only does TELCO recognize the relative cursor position command, but it even recognizes ANSI colour codes!!! TELCO is only monochrome, but it intercepts the colour codes, and depending on what it receives, it will invert its colours! Very Clever! This means that 80 Column users with TELCO could set ANSI colour on the BBS and view our colour menus, but in monochrome of course.

This also means that TELCO users can view our ANSI animations which make

extensive use of ANSI colour codes, and of course ANSI cursor control.

On the subject of John Murphy improving my programs, you will remember that a couple of issues ago, I included a little music program for either BASIC or Extended BASIC for you to type in and guess what the tune was. It was of course The X-Files, and not Close Encounters Of The Third Kind as John thought. But, as usual he has offered his programming expertise in tidying up my submitted TI*MES program listings, and he's added a little graphics demo to the program!

Here's the new full listing to keep you occupied while the rest of the family sit down to listen to Queeny Windsor and the James Bond film on Christmas Day. O.K., so I'm not psychic, I'm just guessing that we'll get a James Bond film on Christmas Day!!!

```
2 !TUNE by R.Twyning TI*MES          Iss.49 1995 P.21          SA
VED AS 'RTW/TUNE'
3 ! GRAPHICS added by J.M        DORTIG 05/08/95
8 CALL CLEAR
9 RANDOMIZE
10 CALL SCREEN(2):: CALL MAGNIFY(2):: CALL SSHIP
11 C=112 :: R=8 :: Z,X=1 :: GOTO 13
12 C=112 :: R=8
13 ON Z GOTO 14,15,16
14 CN=64 :: GOTO 20
15 CN=97 :: GOTO 20
16 CN=33 :: GOTO 20
20 FOR S=1 TO 26 :: CALL SPRITE(#S+1,S+CN,1,R,C):: C=C+16 :: X
=X+1
21 IF X=4 THEN 22 ELSE 23
22 C=112 :: R=R+16 :: X=1
23 NEXT S
90 X=1 :: SC=2
100 FOR NOTE=1 TO 51
110 READ N,D
112 ON Z GOTO 120,114,115
114 D=D/2 :: GOTO 120
115 D=D/8 :: GOTO 120
120 CALL SOUND(D,N,0,N+800,10,N-20,15)
122 CL=INT(RND*13)+3
125 CALL COLOR(#SC,CL,#SC-1,1):: CALL COLOR(13,CL-1,1,14,CL+1,
1)::SC=SC+1
127 IF SC=29 THEN SC=2
130 NEXT NOTE
140 DATA 294,400
150 DATA 440,390
160 DATA 392,400
170 DATA 440,390
180 DATA 523,410
190 DATA 440,600
```

```
200 REM
210 DATA 294,400
220 DATA 440,390
230 DATA 392,400
240 DATA 440,390
250 DATA 587,410
260 DATA 440,600
270 REM
280 DATA 698,400
290 DATA 659,390
300 DATA 587,400
310 DATA 523,390
320 DATA 587,400
330 DATA 440,600
340 REM
350 DATA 698,400
360 DATA 659,390
370 DATA 587,400
380 DATA 523,390
390 DATA 659,400
400 DATA 440,600
410 REM
420 DATA 294,400
430 DATA 440,400
440 DATA 392,400
450 DATA 440,400
460 DATA 523,400
470 DATA 440,700
480 REM
490 DATA 294,400
500 DATA 440,400
510 DATA 392,400
520 DATA 440,400
530 DATA 587,400
540 DATA 440,700
550 REM
560 DATA 698,400
570 DATA 659,400
580 DATA 587,400
590 DATA 523,400
600 DATA 659,400
610 DATA 440,600
620 REM
630 DATA 294,400
640 DATA 440,400
650 DATA 392,400
660 DATA 440,400
670 DATA 523,400
```

```
680 DATA 440,600
690 REM
700 DATA 587,400
710 DATA 440,400
720 DATA 294,800
730 DATA 294,1000
740 RESTORE 140
750 Z=Z+1
760 IF Z=4 THEN 770 ELSE GOTO 12
769 !OPEN DOOR
770 CALL DELSPRITE(ALL)
775 R=15 :: R1=20 :: C=16
780 FOR D=1 TO 5 :: CALL HCHAR(R,C,128,4):: CALL HCHAR(R1,C,13
6,4):: R=R+1 :: R1
=R1+1 :: NEXT D
789 !MAKE MEN
790 CALL CHAR(140,"101038D6387C28")
800 FOR SN=1 TO 26 :: CALL SPRITE(#SN,140,13,136,128):: NEXT S
N
807 ST=3105 :: CD=2000 :: S=5
808 FOR SN=1 TO 18 STEP 2
810 CALL MOTION(#SN,S,0,#SN+1,S,0):: CALL DLY(700):: CALL MOTI
ON(#SN,0,-
S,#SN+1, 0,S):: CALL DLY(CD)
812 CALL MOTION(#SN,-S,0,#SN+1,-S,0):: CALL DLY(ST):: CALL
MOTION(#SN,0,0,#SN+1, 0,0)
815 ST=ST-350 :: CD=CD-100 :: NEXT SN
820 RESTORE 850
825 FOR SN=1 TO 18 :: READ MS :: CALL PATTERN(#SN,MS):: CALL D
LY(100):: NEXT
SN
850 DATA 71,84,82,79,69,32,69,84
852 DATA 84,73,73,42,78,77,71,69,83,83
999 GOTO 999
1000 SUB SSHIP
1010 CALL CHAR(128,RPT$("FF",8),136,RPT$("FF",8)):: CALL CHAR(
96,RPT$("FF",8)):
 CALL COLOR(9,2,2,13,2,2)
1020 R1=19 :: R=2 :: C=15 :: N=6
1030 FOR T=2 TO 10 :: CALL HCHAR(R,C,96,N):: CALL HCHAR(R1,C,9
6,N):: CALL
HCHAR(R,C-1,128):: CALL HCHAR(R,C+N,128):: CALL HCHAR(R1,C-1,1
36)
1032 CALL HCHAR(R1,C+N,136)
1040 R1=R1-1 :: R=R+1 :: C=C-1 :: N=N+2 :: NEXT T
1050 CALL COLOR(9,16,2)
1100 SUBEND
1110 SUB DLY(D)
```

```
1112 FOR DL=1 TO D :: NEXT DL
1113 SUBEND
```

TI Gear For Sale

Well, my life is hardly worth living at home with the moaning I keep getting to tidy up our hallway and my bedroom. I still haven't paid Richard Sierakowski any money for his equipment that I've bought myself, and for the equipment and books etc. that people bought at the AGM in June.

Can you please help me out and take some of the hardware off of my hands?

I've probably got enough ROMOX cartridges to supply the entire group with them to make Supercarts or Superspaces with! If anyone is interested they are £2 plus post and packing.

Sorry, Mitch

(Ooops! Before I forget, a quick apology to Mitch Deighton for the delay in sending him a manual for the Mini-Memory and Line-By-Line Assembler. I've located a copy of each, but I've also got to locate an assembly language tutorial book!)

Back to the hardware, and I've got two serial thermal printers (requiring RS232 cards), but from what I remember, one of them is slightly faulty and was recommended for use as spare parts for the other one.

I've got a big Daisy Wheel printer amongst Peter Brooks' collection which does work, but it seemed to give strange results when I tested it on my Organizer. I didn't have any messages from Francesco saying that it didn't work, so it should be O.K. when used with a TI. There is also a standard Dot Matrix printer which requires tractor feed paper.

There are various books etc. and a couple of boxes of numerous back issues of TI*MES and TI-LINES.

There is also a full Expansion Box and the card to go with it. I don't care if this is sold as a whole, or as an empty box and individual cards.

For these larger items such as the printers, and the PEB, it is probably easier to wait until the Workshop on Saturday the 16th of March as I'll be bringing everything I can, and fitting it into every spare gap in the TIgra!
In the gear from Peter Brooks, there is also a MASSIVE box of full-height disk drives and a small selection of half-height disk drives. And, I've got two MASSIVE boxes of TI-consoles and assorted parts for consoles. If my dad comes to the workshop he will have to sit with these on the back seat as I'm sure Gary will accept a lift to Sandbach in the front seat.

It's probably best if you look through the back issues of TI*MES and TI-LINES etc. while you're at the Workshop and let me know what you want then, because I just don't have time to look through them and make a note of what issues I've got.

So you can see that it's VERY beneficial for you to turn up to the Workshop, because besides not having time to produce a list of back issues, I also don't have time (because I'm typing this at work in my lunch hour!) to do a thorough check of every piece of hardware, so if you miss the Workshop, you may very well miss a tasty piece of hardware that you have been

looking for! YOU HAVE BEEN WARNED!

Late Again, Twyning!

When I write my articles I always try and plan them out so that I can group every thing that is related into one section, so that things don't get spread around, but here, I've failed again, probably because I'm running behind schedule in writing it and I'm trying to get it to Richard Speed to edit as soon as possible.

Here's an example of how things become jumbled up!! I've got something else to say about the BBS! The job I've got is at a firm that does CTI. This stands for Computer Telephony Integration. This is a posh phrase for replacing the phone on your desk with a card in your PC, and having a picture of a phone keypad on the screen. Microsoft, the parasites that they are have already come out with a standard for handling this sort of thing, and they've called it TAPI, which stands for Telephony Application Programming Interface!

Telephony

What our company does is to go to switchboard manufacturers and offer to design PC phones for them that function identically to their standard desktop phones, so naturally we have several switchboards in the office.

This gives me an idea to sort a few problems out. Bill Moran has been having trouble accessing the BBS with his TI and TELCO, but he's been able to dial straight in without a glitch using his PC. It's because his setups on the PC send an initialization string to the MODEM which makes it compatible with our MODEM's compression settings. By accident it seems to work, but of course, TELCO is not sending the same setup string and is therefore not letting him in with the TI.

Obviously the best way of testing it would be to have access to his MODEM and be able to dial into our MODEM. We would need to travel up to Bill's house and do this, but I've come up with a solution. We've got this very small switchboard that's only a little bit bigger than a PEB and it's got about four or six normal phone sockets on the top which each have a different extension. If we need to, and if it's compatible with the MODEM's, then I could enquire about borrowing it for the workshop to let us directly test Bill's MODEM, or anyone elses who might be having trouble accessing the BBS. We can then re-create the exact conditions of the problem and sort it out.

Printers Apprentice

Just a quick hello to Jeff Kuhlman who has very kindly sent me LOADS of disks, including the latest possible version of The Printer's Apprentice for M-DOS which directly loads and saves Mac Paint (MACFLIX) pictures!

He's also got a Psion Organizer, and I'm pleased I mentioned mine in the magazine, because I was able to help him out with the problem of making screen dumps. It wasn't documented in his user manual, and in mine it was in an obscure place that I found by accident and I tried to find again but couldn't! CTRL-SHIFT-PSION-S all at once if anyone else out there has an organizer and was wondering.

My apologies to Jeff for the delay in sending him something. I received something else from him on Monday I think, and I sent his stuff out on the same day. I'm afraid I didn't have time to send him any TI stuff, but he's now got just

about every useful piece of software that the Internet had for the PSION on around five 720K disks and all ZIPped!

He's been very kind to phone me a couple of times from Germany on a couple of Saturday afternoons when he was bored, and we spent ages on the phone gassing about TI projects and organizer stuff. I'm just in the process of persuading him to come over to England for the Sandbach workshop!

We discussed a problem of transferring D/V80 files over to PC's using XMODEM and his latest disk, I think, contains a little utility he's written for the organizer which sorts out the problems with D/V80 files.

D/V 80 Files

You may have read some time ago in TI*MES that D/V80 files are terribly inefficient when compared to D/F files because they have to be padded out by the DSR when the files are written to disk.

There is an invisible marker that we never see that indicates the end of each line, and the DSR interprets this and gives us the exact number of characters, but for some reason, when XMODEMing to a PC or somthing, these markers get ignored, and all the padding gets transmitted too! This doesn't happen however if you upload to another TI (BBS included, so the ANSI screens created with my little program will be perfectly O.K.)

This has played havoc with trying to upload ANSI graphics files which I have used my little programs to create, but after looking at the directory of Jeff's latest disk, I think he's included a little utility to tidy up the problem.

Well, it seems that I'm doing nothing but apologise in this article. I would also like to apologise to Francesco for the problems he has encountered with modifying the address decoding on his Horizon RAM Disk. There were a couple of errors in the article that I submitted in TI*MES a couple of years ago. I hope that everything is going O.K. with it now, and I hope that the diagram that I uploaded to the BBS was helpful.

Hard Disk Formatting

I can confirm that we've managed to get the new "little" BIG drive formatted! It's the smallest we've got, but it's supposed to have the biggest capacity. We've confirmed that it's fully working, and it's got at least six heads, but we definitely know it's got less than nine heads because the MYARC formatter locked when we tried to format it with nine!

Well, I can't think of anything else to say, although I'll probably realize that I've missed something when my article has already been sent for publication!!!

You will see the map for Sandbach somewhere in this issue, most likely on the back cover, but you will need to know exactly where it is:

Saturday 16th March 1996
Wheatsheaf Public House, 1 Hightown, Sandbach, Cheshire.

The phone number of the pub is:
01270 762013

Merry Christmas
from
Richard Twyning

There's more things to life than computers some would say (My wife told me that.) I had to agree. Silver weddings for one. This celebrates the increasingly rare event of 25 continuous years of patience, understanding, tolerance and suffering endured by the same two people. To mark this occasion, parties are held and gifts are given, though what can you give to two people who have been around that long?

To aviod this trauma for our few friends and fragmented families, Christine and I decided to go away, far away. Any excuse for a break in a tropical paradise will do. Antigua looked great and a smaller beach side hotel was just what we were looking for. So book the holiday, flex the credit card, and start counting the days to go.

Having realised that thirty or so years of not eating breakfasts is not good for one's failing digestion, (for those younger readers, some bad news, most things start failing at thirty five plus) I have acquired the habit of watching Breakfast TV whilst eating my daily dose of high fibre and essential vitamins. One morning early in October there was an interesting news story and film of a hurricane battering about in the Caribbean, and blowing hotels flat. Including our hotel. Totally two dimensional. The travel agent suggested looking elsewhere particularly as British Scairways suspended all flights. And so, the second choice, 15th. October off we go to:

Jamaica

To all TIers everywhere, best wishes for a merry Chritmas and a happy New Year.

Ross & Christine Bennett.

from MICROpendium, August 1995:

Comparing pixel editors: Picasso Publisher v2 and TI-Artist Plus! by Alf Ruggeri
The author is a member of the TI Sydney Home Computer User Group (TIsHUG) in Australia.
The article is reprinted from the 1995 June BUG Bytes, newsletter of the Brisbane User Group.

In this article, neither a detailed comparison between Picasso Publisher v2 and TI-Artist Plus!, nor a review or user walkthrough is intended.

Given the length of time since the products were first released, it is fairly conceivable that any potential users would have long since bought the same, assimilated the fairly descriptive documentation supplied, and no doubt had excellent service from them, however a particular feature requires further comment.

Pixel editors
So what purpose is this article meant to serve? Although the two products have very similar properties, the only performance overlap is in their capacity as graphic or pixel editors of 256 × 192-pixel images. Pixel status adjustment as used in "touching up" scanned images can be a time-consuming and extremely daunting task, if not entirely an exercise in masochism. Therefore, if enthusiasm for creative graphic production is to be maintained, the most expedient method to reduce the mundane process must be utilized.

Using TI-Artist Plus! as a pixel editor: The procedure is:
a. Access the ARTIST option from the SELECT MENU.
b. Load an image to be processed.
c. Set the PLOT/ERASE icon for the intended task.
d. The individual pixels need to be identified, and, for this to take place, the ZOOM facility has to be set.
e. The cursor is advanced to the appropriate pixel area via the joystick or keyboard arrow/FCTN key
combination. The pixel is adjusted via the fire button or ENTER key.
f. The status of the PLOT/ERASE facility can be toggled in the zoom mode by pressing FCTN . (period) or simply "."
g. The ZOOM mode is canceled by a Z keystroke in order to observe the overall effect of the pixel status alteration.
h. If further pixel alteration is required, the sequence from c to g is repeated.

Using Picasso Publisher as a pixel editor: The procedure is:
a. From the title screen press FCTN = to access the FILE UTILITY MENU.
b. Load an image to be processed.
c. Set the draw/erase mode for its intended task via a U keystroke.
d. The individual pixels need to be identified, and, for this to take place, the ZOOM facility has to be set.
e. The cursor is advanced to the appropriate pixel area via the joystick. The pixel is adjusted via the fire button.
f. The status of the draw/erase facility can be toggled in the ZOOM mode via a U keystroke.
g. The ZOOM mode is canceled by a D keystroke in order to observe the overall effect of the pixel status alteration.
h. If further pixel alteration is required, the sequence from c to g is repeated.

The comparison:
Both sequences have exactly the same number of keystrokes and steps and, therefore, offer little choice by way of a method shortcut between the two.
There are, however, two major advantages that Picasso Publisher has over TI-Artist Plus!. They are:
1. The ZOOM mode activation and cancellation performance time in Picasso is instantaneous. The ZOOM mode performance time for TI-Artist Plus! is 10 seconds for activation and two seconds for cancellation. The manufacturers are aware of the delay, and in the documentation ask the user to be patient, but having to wait for a total 12 seconds turnaround between numerous pixel "touch-up" operations is not very appealing.

2. In the ZOOM mode of Picasso Publisher, the status and location of pixels in the magnification area are clearly identified individually in a matrix grid.
   The ZOOM mode of TI-Artist Plus! displays the presence or absence of pixels by areas of black or white. It is not an easy task to recognize individual turned-on pixels, not to mention those that are turned off. Not too many of us have sufficiently calibrated vision that allows recognition of discrete areas as pixel occurrence and non-occurrence.
   This ambiguity is particularly noticeable in the apparent different line widths of TI-99/4A screen display areas that are assigned to linearly consecutive pixels arranged as vertical or horizontal lines.
   The screen display problem mentioned in the previous paragraph is certainly a result of the 99/4A's limitations, and TI-Artist Plus! copes with the problem as best as it can. Objectively, the screen distortion situations must be related to the fact that the TI-99/4A was primarily designed for the NTSC system as used in the USA, not the PAL system used in Australia. I have not seen a screen display produced by an NTSC system, so I cannot make a further comment on the subject.
   On the other hand, Picasso Publisher's matrix grid approach very elegantly avoids the problem altogether.

A criticism of Picasso Publisher
In spite of my (I hope) objective appraisal of Picasso Publisher as the better pixel editor (and that appraisal is based on very intensive use of both products since they were made available), not all is a source of joy with Picasso. It is sadly lacking two very useful features available in TI-Artist Plus!, notwithstanding the difference in ZOOM mode performance.

The two missing features elate to cursor location management and are:
1. Single-step control of the cursor
2. Keyboard control of the cursor's movement.

The absence of the first feature is in part offset by the many increments of "=" and "+" inputs (65,000 are quoted in Picasso's documentation), but all the same it is very easy to lock cursor mobility, and then it becomes necessary to gingerly press the "+" key x number of times to restore movement.
TI-Artist's approach of 10 discrete speeds set by keystrokes "1" to "0" is definitely more comfortable. I would advise that Picasso's lowest speed be initially set up and used right throughout the PIXEL EDIT operation. This setting should be suitable for most operations, and it will certainly provide the most accurate pixel location seeker in what is really not a 256 ×192, but part of a larger 480 × 336-pixel screen.

The Art Of Assembly Part 8

File Handling Tips
By Bruce Harrison

This month's column will offer a few useful tips and hints drawn from our experience with file handling in Assembly language.

There are some fundamental decisions that must be made in any file structure you're going to use in a program. Perhaps the most fundamental is whether to use a Fixed or Variable record size. This of course brings implications along for the ride. With Fixed record length, you get the ability to access any record in the file without reading those that came before it. In a game program that we wrote some time ago, we used a fixed record length so that we could take a random number and use that to read a record in the file selected at random. In another case, for our Golf Score Analyzer, we used a fixed record length of 56 bytes, which corresponded to the records in memory relating to each round of golf entered. This made our whole file-access problem much easier to deal with than it could have been. Variable record length is, in general, more efficient in use of disk space, because the disk controller will squeeze as many records as possible into each sector of the disk. Thus if your file organzation is Variable 80, there could be twenty such records in a single 254 byte sector on the disk, provided the actual length of the records was quite short. You can't, of course, put more than eighty characters in any record. In either case, this choice of fixed or variable is not to be taken lightly, as the choice made will have implications later on. We've had occasion to regret some decisions we've made along this line, and so advise a lot of "thinking through" for this decision. By far the worst "killer" in file handling operations is error handling. Errors generally fall into two major categories. The first is the case in which the file failed to open. One common cause for this kind of error is a mistake of one kind or another in the device name. If the user types in "DKS1" instead of "DSK1", the file will not open. We have found one reliable way of detecting that this kind of error has occurred. If an invalid device name is used, the status register will have its bit two set. We have found that, at least with TI's built-in DSRLNK routine, the status byte at >837C does not get bit two set. (Page 298 of the E/A manual says that the byte at >837C does get bit 2 set.) Thus one must examine the status register upon return from an Open File operation to discover whether or not such an error has happened. In source code:

```
BLWP  DSRLNK          Use DSR link to open file
DATA  8               Required data for DSRLNK
STST  R14             Store the status register in R14
ANDI  R14,>2000       Mask all but bit 2 in R14
JEQ   NEXTOP          If zero, file has opened - proceed
B     OPNERR          Else file has not opened, report error
NEXTOP                (program continues)
```

We have run extensive tests using this method, and have not found it to fail to detect a "bad device name". It will, when used in combination with the error reporting scheme shown below, also detect errors of other kinds when opening

a file, such as "bad attribute" errors. Using a special program we prepared just for testing, we found we could type in such errors as DKS1, SR232, POI, and so forth, and the OPEN would always indicate a bad device name using the above code. This will also report the same error if, for example, you type DSK6 when you only have DSK1 thru DSK5 on your system (including RAMDISKS).

When an open error has been detected, you can branch to the error reporting code at OPNERR and produce a screen message such as "BAD DEVICE NAME" or "BAD ATTRIBUTE", to alert the user. There are other errors that will be reported when opening a file, such as the case where your external Drive 2 is turned off, or the drive door is open. These will report "DEVICE ERROR" using the source code included here. Once a file has been opened, there are other possible errors that can be found by attempting to read or write records in the file. The only way we've found to properly report such errors is as follows:

```
BLWP DSRLNK       Attempt to read or write
DATA 8            Required data for DSR
LI   R0,PAB+1     Point to second byte in PAB
BLWP VSBR         Read that into left byte R1
SRL  R1,13        Shift R1 right by 13 bits
JEQ  CONTOP       If zero, operation OK
B    FILERR       Else branch to error report
CONTOP            (program continues)
```

The Editor/Assembler book gives definitions for the errors you can find by this method, on page 299. Note that the first given applies only in the case of a bad device name, and that must actually be found in the OPEN operation. This snippet of source code assumes you have a Peripheral Access Block (PAB) in the VDP Ram at address PAB. When a write or read error has been found on an opened file, you can construct a lookup table in your error reporting scheme, and report errors in plain English on screen. This is preferable to simply reporting errors by code numbers, since it gives the user a clue to what may be wrong. There will be cases, of course, that fall into the catchall "OTHER FILE ERROR" category, and that message won't help much. Here's the source code for a lookup table method to report file errors in a reasonably user-friendly fashion, assuming the errors have been detected as we've shown above:

```
OPNERR
LI    R0,22+2       Row 23, Column 3 of screen
LI    R1,FNOMSG     Point to message string
BL    DISSTR        Use subroutine to display
LI    R0,PAB+1      Point to PAB+1
BLWP  VSBR          Read into left byte R1
SRL   R1,13         Shift R1 right 13 bits
FILERR  SLA R1,1    Double number in R1
AI    R1,LUT        Add lookup table address
MOV   *R1,R1        Get address of text string
```

```
LI    R0,23+2          Row 24, Column 3
BL    DISSTR           Use subroutine to display
BL    KEYLOO           Stop at key loop for reading
B                      (somewhere else in program)
```

The line BL KEYLOO is simply a means of stopping anything from happening so the user can read the message on the screen. The subroutine KEYLOO was included in Part 2 of this series, and may be used as shown there. In the data section, include the following:

```
BADDEV  BYTE 15
TEXT 'BAD DEVICE NAME'
WRPROT  BYTE 15
TEXT 'WRITE PROTECTED'
BADATT  BYTE 13
TEXT 'BAD ATTRIBUTE'
ILLOP   BYTE 17
TEXT 'ILLEGAL OPERATION'
OUTSP   BYTE 19
TEXT 'OUT OF BUFFER SPACE'
ENDFIL  BYTE 11
TEXT 'END OF FILE'
DEVERR  BYTE 12
TEXT 'DEVICE ERROR'
FILBAD  BYTE 16
TEXT 'OTHER FILE ERROR'
LUT     DATA BADDEV,WRPROT,BADATT
DATA ILLOP,OUTSP,ENDFIL
DATA DEVERR,FILBAD
FNOMSG  BYTE 17
TEXT 'FILE DID NOT OPEN'
```

You'll also need the small subroutine which we've called DISSTR to display the appropriate string on the screen. For example:

```
DISSTR
MOVB *R1+,R2     Get length into left byte R2
SRL  R2,8        Right justify byte in R2
JEQ  DISX        If R2 zero, get out
BLWP VMBW        Write text to screen
DISX RT          Return
```

We'll digress for just a moment here to discuss that line JEQ DISX in this subroutine. The utility VMBW does not check to see whether R2 is zero before performing its job, so we must do that before calling the utility. In the code we've shown here, R2 would never be zero at this point, but this subroutine can be used for other purposes, and might encounter a null string to display. If one calls VMBW with R2 zero, the utility will attempt to write 65,535 bytes into VDP Ram, with disastrous results. There will be situations where you'll want to do

something different about an end of file error, rather than reporting that to the screen. If you are reading the entire file into memory, you may want an error where R1 is five to simply return to a menu or go on to some other place in the program. You could, after each read operation, insert a CI R1,5 after the line JEQ CONTOP, then jump or branch to somewhere else if R1=5. There are some things said in the TI E/A manual that, to borrow a phrase from Gershwin, "Ain't necessarily so!" We mentioned one of those earlier, concerning the status byte at >837C. Here's another. The book says that the Status test only applies if the three leftmost bits of the byte at PAB+1 are all zero. Not true! For Open operations, we recommend that you first test for the Status register, then check the PAB+1 byte, as we did at OPNERR. There will be instances, for example, when this second test will indicate "BAD ATTRIBUTE" when a file did not open. Our tests have been as exhaustive (and exhausting) as we could manage in preparing for this article. Our system has a Horizon Ramdisk with Drives 3, 4, and 5 thereon, plus floppy drives 1 and 2, connected to a TI Controller. We have even tried writing to a full disk, and sure enough when we opened a file for Output to that disk, we got a "FILE DID NOT OPEN" message plus the "OUT OF BUFFER SPACE" message. We did find instances where the RAMDISK reports a different error than the TI controller does for the same situation. There was one peculiar thing that we found on Ramdisk. Our test program was set up for D/V 80 files. The disk catalog file (e.g. DSK1.) is not that kind of file, and the TI Controller will dutifully give you a BAD ATTRIBUTE indication and will not open the file when you try it as a D/V 80 file. The Ramdisk, however, will open the file DSK5. and allow you to read from it, even though the attributes in our PAB clearly do not match that file. In other cases, such as trying to open a D/F 80 file with a PAB set up for D/V 80, the Ramdisk does report errors correctly. This is of course not something you'd normally do on purpose, but it did confuse us to see the Ramdisk catalog being accessed as a D/V 80 file. Maybe Gary Bowser planned it that way, but in any case it won't bother the average user. Incidentally, there's nothing really magic about the messages we've used in today's source code. You could make your messages shorter or more elaborate. "OUT OF BUFFER SPACE" could just as well read "OUT OF DISK SPACE", since that's the more likely cause for this kind of error. For our own convenience, we made each message in the form of a string, with its length byte first, then content in a TEXT line. That allowed us to use a rather simple subroutine (DISSTR) to display any message chosen from the lookup table. This simple subroutine will not work with XB, but does just fine in E/A Option 3 programs like the one we used to do testing for this article. We also tested this error reporting scheme using the GPLLNK and DSRLNK shown in last month's sidebar, with results identical to those using TI's DSRLNK under the E/A Option 3.

Yes, we've gone on forever about the business of error checking without even showing all the steps required to open a file, let alone read or write to one. We believe, however, that with a little patience studying the E/A manual, one can learn fairly quickly how to manage those steps, but the business of error trapping and reporting has caused us much anguish, so we thought it deserved lots of "ink".

TI Interview

An Interview With One Of TI's Original Command Module Programmers, Hank Mishkoff

by Charles Good
Lima Ohio User Group

The following text is taken from electronic interviews conducted by Charles Good of Lima, Ohio, in 1995. The interviews commence with an introduction by Charles, and have been edited by both Charles and Stephen Shaw.

The Midi files referred to are available from Stephen Shaw on PC disk in Type One .MID format for PCs, in return for a formatted disk and return post and packaging. Each of the three tunes plays for about 30 seconds and occupies just over 2k.

Hank Mishkoff worked on a lot of projects for TI between 1978 and 1983 relating to the 99/4, 99/4A and 99/8. As an independent contractor he wrote the code for some early TI education command modules, wrote the music for some modules (he is a musician), and wrote some of the 99/8 documentation.

He also was an employee of Tronics, which is a company that sold 99/4A computers through multiple layers of distributors much like Amway home care products are sold today.

In addition Hank worked in 1983 for Looking Glass Software and was involved in the creation of some of the never released ET command modules. What follows is compiled from a telephone interview and (mostly) from a number of separate internet email messages sent between Hank Mishkoff and Charles Good in late September and early October 1995. You certainly meet the most interesting people on the internet!

CG Tell me about some of the early work you did that relates to the TI Home Computer

HM I worked for TI as a programmer on the 99/4 in 1978, and then again doing documentation (and some programming) from 1980-1982. (Oh yeah, I'm also a musician; a lot of the music on TI's programs - especially the early ones - was mine.) For about a year after that, I worked with a company called Tronics, which sold the TI Home Computer on a multi-level basis. Following that, I did contract work on various TI products for years. I'm not an engineer, so I may not have the kind of info you're looking for; but I was involved with TI Home Computer products for quite a while, and I'd be happy to share my reminiscences with you any time you're interested.

CG The following is quoted from the June 1980 issue of FORTUNE magazine and describes the situation at TI in 1979 as TI considered developing an advanced version of the 99/4 to be called the 99/7. Any comments on this?

"Internal competition ultimately put the kibosh on the 99/7. TI's digital systems group, which is based in Austin and sells minicomputers to small businesses, argued that it should control development of the 99/7 because the machine was designed for small businesses. Besides, the 99/7 was so powerful and inexpensive

that it would have cannibalised the low end of the minicomputer line. The squabble went all the way up to top management, which decided at the last minute to cancel the 99/7 introduction and transfer the project to Austin. There, the "not invented here" syndrome took over. Austin engineers started questioning the new product's technical and economic feasibility, and within six months, most of the project staff had left for other jobs in TI.

Looking back on all this, an alumnus concludes, "They threw away the two pieces of gold and kept the lump of coal.""

HM Wow, this section is incredibly accurate - I remember quite well when all of this happened.

CG Did you have anything to do with the 99/8 project?

HM Wow, does *that* bring back memories. I wrote the manual for that sucker; I didn't know that *any* of them were ever actually produced. I just went back and dug up an old invoice dated 7/7/83, in which I billed TI for my expenses in shipping them the final copy of the TI-99/8 manual counter-to-counter air freight (they must have wanted it *real* fast). If I remember correctly, I had worked on the manual all night (hey, I was a *lot* younger then), then drove to D/FW Airport in the wee hours of the morning to ship the manual to Lubbock. I seem to recall that the product was killed shortly after that; I doubt that the manual was actually printed.

Another nostalgia note: My invoice says that I shipped the manual to Monte Williams; Monte has since moved to Dallas, and now heads up Micrografx' documentation group.

CG I have the 99/8 book you wrote! I have rough, not quite ready for printing, "Final Draft 09/15/83" of the "TI-99/8, Book 2, Programmer's Guide for the Computer 99/8". Much of it looks it was printed on a line printer. It's about 300 pages. I can send it to you if you are interested, no charge.

HM I am definitely interested, thanks! That sounds like my book. It's probably slightly revised, since my records show that I shipped them *my* final draft in July.

CG I don't have a 99/8 but I know some people who do. One friend has a hex bus disk drive, an armadillo interface, and a whole bunch of special memory expansion cards that only work with his 99/8.

HM Well, I'm more amazed all the time. The very concept that you would personally know more than one person who has a 99/8 is stunning. Do you have any idea of how they got them? (Or why they would want them?) Did they work for TI?

CG Did you do any work on the 99/2? I have one of these, complete with a built in hexbus interface that can use all the little hexbus peripherals that TI sold, and some they never sold. I also have a "Wafertape digital tape drive", serial number 0000007. I can understand why TI never sold the things. Mine doesn't work at all reliably.

HM I don't think so. Let me take a minute here and search through some old invoices...

Nope, lots of charges for the 99/8, nothing for the 99/2. Did the 99/2 precede the 99/8? It seems to me that they provided me with a copy (possibly a draft) of the 99/2 manual, and I used it as the basis for the 99/8 manual. Maybe not.

CG In the Spring 1988 Triton catalog Number Bowling is listed for $11.95 as cartridge #1030. It is one of the modules shown on the video tape I am sending you. Did you work on Number Bowling?

HM I think I might have written Number Bowling, but I wouldn't swear to it. I worked on a few of the Scott Foresman programs, but I sure can't remember which ones right now.

CG On December 15, 1994 Thomas Hartsig left a message on the comp.sys.ti internet newsgroup. He was commenting on discussions of recent sales and purchases by newsgroup readers of TI educational modules. "I wrote Addition and Subtraction 1 back in 1981. I had no idea people were still using these cartridges." Were you involved in that project?

HM I always thought that *I* "wrote" it, but I guess that depends on how you define "wrote." Tom designed the module and "wrote" the specification; I "wrote" every line of code that went into that module.

CG So why is Thomas Hartsig's name prominently displayed on the title screen of Addition & Subtraction 1 and your name is found nowhere, not even in the documentation. Why are you given no credit?

HM Here's a funny story for you (well, *I* think it's funny, anyway)...

All of the programmers were miffed when we saw that Scott Foresman wanted to put Tom's name on the title page of Addition and Subtraction 1. Not that we had anything against Tom (we had never met him, for one thing; and for another, his contract with SF *required* that they give him onscreen credit), but we had all been developing programs for the Home Computer for years, and not once had any of us been given that kind of visibility. We weren't angry, but we were annoyed.

When I had completed a first pass of the program, I flew up to Chicago to show it to the folks at SF; I knew that Tom was going to be there also. (I think that was the first - and possibly the only - time that I met him.)

Just as a joke - and to exact some small measure of satisfaction - I changed the onscreen credit from Tom's name to mine, mostly to see how he would react (and, I suppose, in some obscure way, to make a point).

So I'm in the room with Tom and two folks from SF (Bob and Dee), and I fire up the program, and up pops the title screen with my name on it. I keep a perfectly straight face, like nothing's going on. Bob looks real surprised for a second, then he smiles, and I think he's going to laugh, but he covers his face with

his hand for a second, and then he's got a straight face, too.

And Tom, who is staring directly at the screen, doesn't react at all! I even find some excuse to keep the title screen up there for a few extra seconds to make sure he sees it, but there's no reaction. I figure that he's missed it, maybe he's been looking at the esthetics and hasn't noticed the switch. Bummer.

After a while, Bob and I leave to go talk about something else, leaving Tom alone with Dee. Later, Dee tells me that the second I left the room, Tom turned to her and said, worriedly, "I didn't know that *Hank's* name was going to be on the title screen!" Dee, who had figured out what I was doing, said something non-committal like, "I'll have to review that with Hank to see what's going on." I got a *tremendous* feeling of satisfaction after that; all I had been trying to do was to tweak Tom a little bit, and it had worked. Life is full of little victories!

CG Did you do the music at the beginning of the Music Maker module? You can hear this music near the end of the video I am sending you. It is, I think, a Beethoven sonata.

HM It's possible; I'd have to hear it to be sure. Actually, the main reason that TI hired me was because of my background as a musician; my programming training and experience were pretty weak at the time. When I went to Lubbock for my interview in early 1978, they were in a position where they were making this revolutionary computer with three voices, and yet they had nobody on their staff with any musical ability.

I hadn't mentioned my musical background on my resume, because it didn't seem relevant to a programming job. And TI couldn't tell me anything about the product (or even admit that they were working on a home computer) because the product hadn't been announced! Finally, in my very last interview of the day, someone asked my about the two year hole in my resume. When I mentioned that I had been playing in a band, his eyes lit up although I had no idea why, and he couldn't tell me. Weird.

When I first started on the job, my first assignment was the Home Budget module; any experimenting with music was on my own time. I remember that I programmed the Minute Waltz to play in less than a minute -- it sounded terrible that fast, but it was a lot of fun. I also did a Bach two-part invention that was one of my favourite piano pieces; that may be what they later used on Music Maker.

Then I started doing little bits and pieces for the Grammar module, which everybody liked so much that they decided to actually pay me for creating music (as long as I got my "real" work done on time!).

The piece I'm most proud of is a three-part piece I wrote for the Demo module. Unfortunately, they chopped it up and only used pieces of it. I've recently entered the entire piece into MIDI format; if you have some way to play MIDI, I can send you the file as an attachment, if you're interested.

CG Sure, send me the Demo module music in MIDI format.

These .MID files are available on PC disk from Stephen Shaw in return for formatted 3.5" PC disk and return post and packing.

HM Ok, here is the demo module music. I've attached three slightly different arrangements. I would have only sent you the best one, but I'm not at home, and I have no way to play them, and I can't remember which is which.

By the way, here's a funny story about that music, which was written for the Demo module. I left TI before the computer hit the market, and I was real excited when it finally began to show up in stores - especially because a lot of retailers, having no idea of what else to do with it, just left the Demo module running in an "endless loop."

One day, I stopped into a computer store with some friends of mine, hoping to show off the computer - and my music. They had the Demo program running, but the sound was turned off! I asked a salesman if they ever turned the sound up. "Yeah," he said. "When we're bad salespeople, they turn the sound on and make us stand next to the computer!" I had never realised that my wonderful music could get on your nerves after you'd heard it maybe 500 times...

HM Here's a long shot for you: When TI pulled the plug on Home Computer division, I was in the middle of writing a program that I believe was planned to be put into a "Command Module." I was writing the program as a subcontractor; the contractor was a company named Looking Glass. The program had to do with the adventures of ET; TI had licensed the character from Speilberg. Looking Glass had contracted to create 2 or 3 ET adventures; I don't remember the name of the one I was working on. I assume that, when the project went under, TI would have had a current copy of the code, and someone could have burned it into some EPROM's (the programs were pretty far along). Have you ever seen or heard of any program that might fit that description?

CG Which ones? Of those I know about one was just called "ET" and was a frogger like game where ET had to cross the highway, river, etc. to get to his space ship at the top of the screen.

HM Nope, that one doesn't even sound familiar.

CG The other, and maybe the one you worked on, is called "ET at Sea". It is a world geography game. ET has to move around a map of the world visiting cities and getting clues to the location of his space ship.

HM Now we're getting somewhere -- but that still isn't mine. Mine was called "ET's Adventures on Land", which I *never* would have remembered, not in a zillion years, if you hadn't jogged my memory with the At Sea title. If my memory is accurate after all these years, the "At Sea" program was created by a programmer who worked for Looking Glass; his first name was Pete, but I can't remember his last name.

(I vaguely remember that it was some kind of long Polish-sounding name.) His wife was also a programmer; she worked for a company in Richardson (a Dallas suburb) that did a couple of TI games, including one called HenHouse or something like that.

CG I have a video tape of these two modules, and other never released official 99/4A module software that I will be glad to copy and send you.

HM I would *love* to see that! The memory overload might prove to be fatal, but it would be worth it!

CG I have heard of "ET and his Adventures On Land" and always thought it was the frogger type game I described. Nobody that I have ever heard of has seen the "Adventures On Land" software.

HM I don't believe I was as far along on it as Pete was on the Sea module when work was discontinued. As I recall, I had programmed in all the little animals and animated them and given them paths to walk on, but the game didn't actually *do* anything when it was abandoned. You could move the animals around, but that was it. My guess is that nobody saved it because it was so incomplete.

Looking Glass Software (the company that had the contract for the ET games) was run by Gary and Mary Schenck (since then, they've been divorced, remarried, and divorced again), with whom I still speak every once in a while; if I remember, I'll ask them if they still have a copy of ET/Land, such as it was. Gary lives in KC (he's an art director for Hallmark), and I'm going to be visiting a client next week who has an office just down the street from his house; I think I'll give him a call.

I was right in the middle of writing this note, thinking about what the chances were that Gary might have any idea where any of my old work might be, when it hit me that I might have some old stuff lying around - and guess what I found??? I opened up one of my old diskette cases (this is starting to sound like the discovery of King Tut's tomb), and the diskette on top was labelled (in my handwriting) "E/A," which I assume means Editor/Assembler. The only project in which I ever used the Editor Assembler was the ET game, so I figured that I might have hit paydirt - although I did work on the manual for that product, so the diskette might contain documentation, rather than code...

But here's what the labels on the other disks say:

ET LAND ("GROM7" crossed out)
CODE FILES
ET LAND ROM
ET LAND ROM2
ET LAND GROM3
ET LAND GROM4
ET LAND GROM5
ET LAND ("GROM7" crossed out)
CODEFILES BACKUP
ET LAND ROM BACKUP
ET LAND ROM2 BACKUP
ET LAND GROM3 BACKUP
ET LAND GROM4 BACKUP
ET LAND GROM5 BACKUP

Also, there's a sheet of paper with what looks like some coding equates for animals, homes, and food (12 of each); I'm thinking that maybe you were supposed to get each animal to its home and feed it (?).

Anyway, I'd like to mail this stuff to you, if you're interested and if you think you might be able to make some sense out of it (and if you think there's half a chance that the diskettes are still readable). Would you promise me to let me know what's on it before you make it public and let me "withdraw" some of the stuff if it turns out not to have anything to do with the Home Computer (like if I included a list of my ex-girlfriends and their phone #s...)?

(Charles Good's added note:-- Hank did indeed mail these disks to me, along with the "ET and his Adventures on Land" programming notebook containing original graph paper drawings and notes of all the graphics in the game, as well as extensive dated notes concerning the conception and development of all the Looking Glass Software ET series of command modules. There were three planned modules called Land, Sea, and Air. The notebook contains little information on the Air game beyond its general concept. The Sea game exists in the Lima software library as GROM files that can be run with a gram device, as well as a slightly buggy version that works from extended basic. None of these three ET games are the same as the frogger type ET command module game, which was not a Looking Glass Software project.

The disks are TI DOS in SSSD format and contain lots of GPL source and object code for the Land game. There are no phone numbers of girl friends. The code is incomplete and the game is not functional. At Hank's request, I copied the disks (some were duplicates) and made a xerox copy of the development notebook, then returned all the originals to him.)

CG Do I have your permission to give copies of your disks and notebook to others interested in the 99/4A?

HM Absolutely, although I must tell you that I have no idea whether or not I have any legal right to give you that permission. I suspect that Looking Glass (which doesn't exist any more) or TI may own the rights to the material.

Practically speaking, however, I have a hard time imagining that anyone would care, at this late date, as I can't see that any of that stuff could possibly have even the slightest commercial value.

CG The Looking Glass notebook you sent me has several pages that are headed "Conceptual development for TI/SDA education modules..." What does "SDA" stand for? I have a never released TI module that says "Music SDA" on its title screen. It is the regular Music Maker module with extra code that allows you to get printouts of assembly source code, GPL source code, and Basic CALL SOUND statements that will produce the music you enter into the module. I have always wondered about the meaning of "SDA" in this module's title screen.

HM I don't have a clue what SDA means - although you'd think I'd know,

seeing as how it's in my notebook. I've forwarded your question to Paul Urbanus, the creator of Parsec, who's the only one of the TI Home Computer programmers that I keep in touch with; I'll let you know if his memory is any better than mine.

CG I am today mailing book rate a VHS video tape with 6 hours of viewing. Included are many of the never released modules such as the ET stuff, a bunch of Bill Cosby commercials and pep talks designed for 99/4 and /4A retailers, and the official TI Retail Training video. There is lots of footage of the 99/4 (no A).

HM That sounds great. I remember seeing Cosby at a CES show in Chacago; TI had rented a ballroom as a hospitality suite, and he was posing for pictures with retailers. There was quite a long line, as I recall, of people waiting to be in some pix with Cos.

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An Interview With One Of TI's Original Module Programmers, Paul Urbanus

Paul Urbanus: I was hired by TI in December of 1979 as a coop student, and spent six months working for the Home Computer Division of TI in Lubbock. During this time, I did such diverse things as gather statistics on the distribution of data in the various GROM chips and program an HP test station to verify that the RF modulators were meeting FCC and TI specifications. In my spare time, I purchased a surplus IBM terminal keyboard (a really nice one) and interfaced it to the 99/4. This was the first REAL keyboard for the 99/4. I even added logic to do auto-repeat and mapped the IBM cursor keys to function correctly. My coop term expired, the fun ended, and I went back to school (New Mexico State University) for a year.

I returned to TI in Lubbock in the summer of 1981 to serve a second stint as a coop student (and earn some money!). In my absence, the TI99/4 had undergone puberty and blossomed into the TI99/4A. In addition to the new keyboard, there was also a new video chip. The TMS9918 had been replaced by the TMS9918A. At this point several things were happening, and the confluence thrust me into a rather unique position at TI.

My first assignment was to perform some testing of the new video chip and plot a chart of chip operation versus supply voltage and temperature. While waiting for the temperature chamber to stabilise during these tests, I was reading the detailed chip specification and came to a startling discovery - there was a new graphics mode in this chip which would allow neat new applications.

At the same time, the Editor/Assembler (E/A) cartridge was in the early stages of

alpha (internal) testing. I used the E/A cartridge to play around with the new graphics mode (Graphics Mode II). One of the first programs I wrote was a simple line-drawing program which I called "Lines". This is the same program which was bundled with the Mini Memory module.

After I wrote the Lines program, management moved me from the hardware to the R&D group and suggested that I collaborate with Jim Dramis on a new game. I thought this was better than sex (ok, I WAS kinda naive) -getting paid to write a video game. Just for reference, Jim had written some of the best TI games available at that point - Car Wars and MunchMan. We quickly agreed that we wanted to write a space game and we wanted to have smooth horizontal scrolling to give the illusion of flying over the surface of a planet. As some of you may know, there is NO hardware support for scrolling the screen on a pixel basis in the 99/4A video chip.

After lot's of pondering, I hit upon the solution - copy the inner loop of the scroll code into the fast 16-bit RAM of the 99/4A. Since this code is responsible for 80% of the execution time of the scroll loop, substantial speed gains were made by moving the loop to fast RAM. In today's world of 486s and Pentiums, this RAM would be referred to as cache RAM. I then handed this code off to Jim so he could incorporate it into the game.

The next thing I wanted to do for the game was to come up with some really neat sound effects. Since the sound chip on the /4A was only capable of generating square waves, I wanted to use the speech chip. The speech chip operates by using a model of the human vocal tract, and I reasoned that if people could make really strange noises, then so could the speech module.

After studying the speech chip specification, I made an important discovery: the speech chip didn't need new data very often (it sure helps to understand hardware when writing software). This fact could be combined with one of the new features in the 99/4A software architecture - the User video interrupt. The net effect of this combination was that the speech chip could be used while the game was going on. When I went to the software folks with my discovery, they told me that "you couldn't do that". Only after I showed them did they believe.

I created the asteroids in Parsec in TI Logo. I wrote a small Logo program to animate them, and iterated the shapes until they were satisfactory to me. Then I wrote an assembly program to convert the asteroid bitmap from the binary TI Logo data file to ASCII data statements for use with the 9900 assembler.

All of the above programming was done on the 99/4A using the Editor/Assembler package. EVERYTHING I wrote for the 99/4A was written using the Editor/Assembler cartridge. I could fix the /4A system if it went down, unlike the 990 minicomputers.

As Jim continued to progress with Parsec (we brainstormed on ideas, but he did most of the game flow implementation), the Mini Memory cartridge was developed. However, there was no software available to make it do anything useful. So I suggested that this would be a great tool for letting people experiment with assembly language without having to have any peripherals other than a cassette recorder .

The Line-by-Line Assembler was a derivative of the code used in a TI single board computer which had been developed for microprocessor courses at the university level. This single board computer was called the University Board

(model no. 990/189). When I returned to school after my first coop session, I had borrowed one of these from TI and it was an excellent learning tool for me so I assumed that a similar capability on the /4A would also be good.

We were able to get the source code for the assembler from another TI group. All the I/O routines expected a dumb terminal, and so they had to be converted for use with the /4A keyboard and screen. I also added a routine to dump the symbol table. In retrospect, the code could have been a lot cleaner and more compact, but I can probably say that about any program I write today after I have finished it. We decided to include the Lines program as an example of how to program the new video chip, as well as instant gratification for Mini Memory customers.

My final task was in this coop session was to go out to La Jolla, California and work with Control Data Corporation and educate and support them in their efforts to port the Plato series of computer-based courseware to the 99/4A. I spent about a month out there, and in that time I wrote the graphics and disk I/O package for the Plato interpreter. A byproduct of this work was an intermediate tool, DISKO, which was used for debugging the disk I/O package.

I understand this program eventually made it into the public domain. For those of you familiar with this tool, there is a whimsical menu choice, "Resign/Go to Black's Beach". Black's Beach is a nude beach in La Jolla :)

I returned to school in the fall of 1992, but only lasted for one semester. At that time I joined with my Parsec partner, Jim Dramis and the author of TI Invaders, Garth Dollahite, along with two business types and we formed a company called SofMachine. Our charter was to author, produce and market game cartridges for the TI 99/4A. Kind of like the TI version of Activision. While Sofmachine was in existence, we wrote three games of our own and converted two games for Atarisoft. The games we wrote during that time were:

Title	*Author*	*Company*
Spot-Shot	Jim Dramis	Sofmachine
Barrage	Garth Dollahite	Sofmachine
Jumpy	Paul Urbanus	Sofmachine
Pole Pstn	Dollht/Urbanus	Atarisoft
Jungle Hnt	Dramis/Urbanus	Atarisoft

Because our business partners were unsuccessful at securing the required venture capital funding, combined with TI's exit from the home computer market, we were unable to manufacture and market our (Sofmachine's) three games. However, due to a sequence of events beyond our control the Sofmachine games were pirated and eventually freely exchange around the TI 99/4A community. A valuable lesson was learned: NEVER trust anyone with your own livelihood. Lesson number two: Don't believe what a "business" guy tells you just because they're the business guys and you're the technical guys, ESPECIALLY if it goes against your gut instincts.

A number of years later, the Sofmachine games were released in a cartridge form by Databiotics under license by Sofmachine. All games programmed by Sofmachine used the TI 99/4A as the development platform, along with the Editor/Assembler cartridge. Two of us programmers purchased a Myarc 10 MByte hard drive for $1800 EACH! I just sold it about 6 months ago for $100. OUCH!

The following quotes were originally published in then Lima Newsletter in

TI Interview

April 1993 about John Phillips by Bill Gaskill

"I would venture a guess that most people who have owned a TI-99 for more than a couple of years have run across the name John Phillips before. He is a near legend in the TI-99/4A cartridge and assembly language programming community and can claim authorship, co-authorship or significant involvement in over a dozen cartridge programs produced for the 99/4A, not to mention numerous articles written about the inner workings of the 4A's architecture."
"HOPPER - Michael Archuleta and John Phillips co-wrote Hopper, which was the only cartridge developed entirely on the TI-99/4A Home Computer, using the Editor/Assembler cartridge for all of the programming. All of the other TI-99 cartridge software programs were developed on a TI Mini, not the 99/4 or 4A."

Comment by Paul Urbanis:
All of the programs for the Mini Memory cartridge were programmed exclusively using the 99/4A and Editor/Assembler cartridge. As noted at the beginning of this article, all 5 of the titles developed by Sofmachine were also programmed using only the 99/4A. I suspect that many of the third-party games were also programmed in this manner, but I can't say for sure.

"Mini Memory's Line-By-Line Assembler - Phillips claims responsibility for its development, but I am not sure exactly what that means."

I developed the Line-By-Line Assembler exclusively. John Phillips was not even working in the Home Computer division at that time. And I can't claim responsibility for writing all of the code, only for porting it from the 990/189 University Board single board computer. Also, I wrote the Lines program. I am not aware of ANY contributions which John made to the programs in the Mini Memory.

"MOONMINE - Programmed by John Phillips from a design by Bob Hendren. You may remember that Hendren was also the project engineer behind Parsec and the person who recruited Aubree Anderson to do the voice for the Parsec game."

Bob Hendren had ABSOLUTELY NOTHING to do with the development of Parsec in regards to content, playability or technical direction. With respect to his role in the recruitment of Aubree Anderson, I really don't know about that. Parsec was strictly a collaboration by Jim Dramis and myself. Parsec was not directed or defined in any way by management or anyone else. We were merely instructed to "...get together and see what you can come up with..."

Although we received much input from our co-workers as they played with Parsec during the development process, almost all of Parsec was what came from our imaginations. I think I can speak for Jim when I say we are still pleased with our efforts more than 10 years later. We both hope that everyone who has played Parsec has enjoyed it as much as we enjoyed both writing AND playing it.

Heat Loss Calculator

```
100 !Central heating              ********************        h
eat loss calculator         ********************
110 !VERSION 02.01 ******         ********************        S
.A.R.BENNETT ******         ********************         **** 20
/10/1986 ****
120 !********************          TI*99/4A EXT BASIC          *
******************
210 DIM ROOM$(18),ADDRESS$(4),TOTAL(18)
220 CALL CLEAR :: CALL SCREEN(2):: FOR CLR=2 TO 13 :: CALL COL
OR(CLR,3,2):: NEXT CLR
230 DISPLAY AT(3,6):"CENTRAL HEATING"
240 DISPLAY AT(5,4):"HEAT LOSS CALCULATOR"
250 DISPLAY AT(9,1):"Do you require instructions?"
260 DISPLAY AT(11,2):"Press Y for yes, N for no"
270 CALL YN(Y)
280 IF Y THEN CALL INST
290 CALL HCHAR(8,1,32,484)
300 DISPLAY AT(7,2):"Name of client please" :: ACCEPT AT(9,1)S
IZE(27)VALIDATE(ALPHA,".,-"):CLIENTNAME$
310 DISPLAY AT(11,2):"Address of client please" :: FOR R=13 TO
 16 :: DISPLAY AT(R,1):">.........................<" :: NEXT
R
320 FOR R=13 TO 16 :: ACCEPT AT(R,2)SIZE(-27)VALIDATE(ALPHA,DI
GIT,",./"):ADDRESS$(R-12):: NEXT R
2000 DATA 2,1,2,1,1,1.5
2010 WALL=0 :: COUNT=COUNT+1 :: CALL CLEAR :: DISPLAY AT(10,4)
:"Name of room please" :: ACCEPT AT(12,4)SIZE(16):ROOM$(COUNT)
2020 CALL CLEAR :: IF COUNT=1 THEN READ E,I,F,C,W,A
2040 REM DISPLAY
2045 DISPLAY AT(1,1):"EXTERNAL WALLS>"
2050 R=2 :: ON E GOSUB 2200,2210,2220,2230,2240,2250,2260
2055 DISPLAY AT(5,1):"INTERNAL WALLS>"
2060 R=6 :: ON I GOSUB 2300,2310,2320,2330,2340
2065 DISPLAY AT(9,1):"FLOOR>"
2070 R=10 :: ON F GOSUB 2400,2410,2420,2430,2440
2075 DISPLAY AT(13,1):"CEILING>"
2080 R=14 :: ON C GOSUB 2500,2510,2520,2530,2540,2550,2560
2085 DISPLAY AT(17,1):"WINDOWS>"
2090 R=18 :: ON W GOSUB 2600,2610,2620,2630,2640
2095 DISPLAY AT(21,1):A;"Air changes per hour"
2100 DISPLAY AT(24,1):"Correct for ";ROOM$(COUNT);"?"
2110 CALL YN(Y):: IF Y THEN 4000 ELSE 3000
2200 DISPLAY AT(R,9):"220mm brick solid,":"   heavy plaster" :
: UE=2.30 :: RETURN
2210 DISPLAY AT(R,9):"260mm brick cavity,":"   heavy plaster"
:: UE=1.60 :: RETURN
2220 DISPLAY AT(R,9):"260mm brick cavity,":"   light plaster"
:: UE=1.4 :: RETURN
```

Heat Loss Calculator

```
2230 DISPLAY AT(R,9):"260mm brick cavity,":"   insulated, heav
y plaster" :: UE=0.63 :: RETURN
2240 DISPLAY AT(R,9):"260mm brick/block ":"   cavity, light pl
aster" :: UE=1.10 :: RETURN
2250 DISPLAY AT(R,9):"260mm brick/block ":"   cavity, insulate
d" :: UE=0.56 :: RETURN
2260 DISPLAY AT(R,9):"Special value ";UES :: RETURN
2270 DISPLAY AT(R+1,9):"Enter value" :: ACCEPT AT(R,23)VALIDAT
E(DIGIT,".")SIZE(-4):UES :: UE=0
2280 IF UES>0 AND UES<4 THEN UE=UES ELSE 2270
2290 CALL CLEAR :: RETURN
2300 DISPLAY AT(R,9):"105mm brick,":"        heavy plaster" ::
 UI=2.18 :: RETURN
2310 DISPLAY AT(R,9):"220mm brick solid,":"        heavy plast
er" :: UI=1.16 :: RETURN
2320 DISPLAY AT(R,9):"100mm block,":"        light plaster" ::
 UI=1.60 :: RETURN
2330 DISPLAY AT(R,9):"100mm stud wall,":"        plaster board
" ::UI=1.67 :: RETURN
2340 DISPLAY AT(R,9):"Special value ";UIS :: RETURN
2350 DISPLAY AT(R+1,9):"Enter value" :: ACCEPT AT(R,23)VALIDAT
E(DIGIT,".")SIZE(-4):UIS :: UI=0
2360 IF UIS>0 AND UIS<4 THEN UI=UIS ELSE 2350
2370 CALL CLEAR :: RETURN
2400 DISPLAY AT(R,9):"Solid ground floor" :: UF=0.76 :: RETURN
2410 DISPLAY AT(R,9):"Suspended ground":"        floor, timber
" ::UF=0.68 :: RETURN
2420 DISPLAY AT(R,9):"Intermediate floor,":"        timber" ::
 UF=1.14 :: RETURN
2430 DISPLAY AT(R,9):"Intermediate floor,":"        concrete"
:: UF=2.2 :: RETURN
2440 DISPLAY AT(R,9):"Special value ";UFS :: RETURN
2450 DISPLAY AT(R+1,9):"Enter value" :: ACCEPT AT(R,23)VALIDAT
E(DIGIT,".")SIZE(-4):UFS :: UF=0
2460 IF UFS>0 AND UFS<4 THEN UF=UFS ELSE 2450
2470 CALL CLEAR :: RETURN
2500 DISPLAY AT(R,9):"Intermediate wood":"        floor, room
above" :: UC=1.63 :: RETURN
2510 DISPLAY AT(R,9):"Intermediate":"       concrete, room abo
ve" :: UC=2.00 :: RETURN
2520 DISPLAY AT(R,9):"Ceiling and roof":"        tiles only" :
: UC=2.74 :: RETURN
2530 DISPLAY AT(R,9):"Ceiling+50mm fibre":"        and roof ti
les only" :: UC=0.62 :: RETURN
2540 DISPLAY AT(R,9):"Ceiling+75mm fibre":"        roof tiles+
felt" :: UC=0.43 :: RETURN
2550 DISPLAY AT(R,9):"Ceiling, flat felt":"
roof" :: UC=1.62 :: RETURN
```

```
2560 DISPLAY AT(R,9):"Special value ";UCS :: RETURN
2570 DISPLAY AT(R+1,9):"Enter value" :: ACCEPT AT(R,23)VALIDAT
E(DIGIT,".")SIZE(-4):UCS :: UC=0
2580 IF UCS>0 AND UCS<4 THEN UC=UCS ELSE 2570
2590 CALL CLEAR :: RETURN
2600 DISPLAY AT(R,9):"Wood frame":"           single glazed" :
: UW=4.30 :: RETURN
2610 DISPLAY AT(R,9):"Wood frame":"           double glazed" :
: UW=2.5 :: RETURN
2620 DISPLAY AT(R,9):"Metal frame":"           single glazed"
:: UW=5.60 :: RETURN
2630 DISPLAY AT(R,9):"Metal frame":"           double glazed"
:: UW=5.20 :: RETURN
2640 DISPLAY AT(R,9):"Special value ";UWS :: RETURN
2650 DISPLAY AT(R+1,9):"Enter value" :: ACCEPT AT(R,23)VALIDAT
E(DIGIT,".")SIZE(-4):UWS :: UW=0
2660 IF UWS>0 AND UWS<6 THEN UW=UWS ELSE 2650
2670 CALL CLEAR :: RETURN
3000 CALL CLEAR :: DISPLAY AT(2,1):"Change which item?" :: R=0
3010 DISPLAY AT(6,2):"'E' External walls" :: DISPLAY AT(8,2):"
'I' Internal walls" :: DISPLAY AT(10,2):"'F' Floor"
3020 DISPLAY AT(12,2):"'C' Ceiling" :: DISPLAY AT(14,2):"'W' W
indows" :: DISPLAY AT(16,2):"'A' Air changes"
3030 DISPLAY AT(18,2):"Select E, I, F, C, W, or A."
3040 ACCEPT AT(20,15)VALIDATE("E,I,F,C,W,A"):C$ :: CALL CLEAR
3050 IF C$="E" THEN 3060 :: IF C$="I" THEN 3120 :: IF C$="F" T
HEN 3180 :: IF C$="C" THEN 3240 :: IF C$="W" THEN 3300 :: IF C
$="A" THEN 3360
3060 DISPLAY AT(1,2):"External wall construction" :: UE=0
3070 FOR CE=1 TO 7 :: R=R+3 :: CALL VCHAR(R,3,48+CE):: ON CE G
OSUB2200,2210,2220,2230,2240,2250,2260
3080 NEXT CE
3090 DISPLAY AT(24,1):"Select 1 TO 7" :: ACCEPT AT(24,16)VALID
ATE(DIGIT):E
3100 IF E<1 OR E>7 THEN 3090 :: IF E=7 THEN GOSUB 2270 ELSE CA
LL CLEAR
3110 GOSUB 2040
3120 DISPLAY AT(1,2):"Internal wall construction" :: UI=0
3130 FOR CI=1 TO 5 :: R=R+3 :: ON CI GOSUB 2300,2310,2320,2330
,2340
3140 CALL VCHAR(R,3,48+CI):: NEXT CI
3150 DISPLAY AT(24,1):"Select 1 TO 5" :: ACCEPT AT(24,16)VALID
ATE(DIGIT):I
3160 IF I<1 OR I>5 THEN 3150 :: IF I=5 THEN GOSUB 2350 ELSE CA
LL CLEAR
3170 GOSUB 2040
3180 DISPLAY AT(1,2):"Floor construction" :: UF=0
```

Heat Loss Calculator

```
3190 FOR CF=1 TO 5 :: R=R+3 :: ON CF GOSUB 2400,2410,2420,2430
,2440
3200 CALL VCHAR(R,3,48+CF):: NEXT CF
3210 DISPLAY AT(24,1):"Select 1 TO 5" :: ACCEPT AT(24,16)VALID
ATE(DIGIT):F
3220 IF F<1 OR F>5 THEN 3210 :: IF F=5 THEN GOSUB 2450 ELSE CA
LL CLEAR
3230 GOSUB 2040
3240 DISPLAY AT(1,2):"Ceiling construction" :: UC=0
3250 FOR CC=1 TO 7 :: R=R+3 :: ON CC GOSUB 2500,2510,2520,2530
,2540,2550,2560
3260 CALL VCHAR(R,3,48+CC):: NEXT CC
3270 DISPLAY AT(24,1):"Select 1 TO 7" :: ACCEPT AT(24,16)VALID
ATE(DIGIT):C
3280 IF C<1 OR C>7 THEN 3270 :: IF C=7 THEN GOSUB 2570 ELSE CA
LL CLEAR
3290 GOSUB 2040
3300 DISPLAY AT(1,2):"Window construction" :: UW=0
3310 FOR CW=1 TO 5 :: R=R+3 :: ON CW GOSUB 2600,2610,2620,2630
,2640
3320 CALL VCHAR(R,3,48+CW):: NEXT CW
3330 DISPLAY AT(24,1):"Select 1 TO 5" :: ACCEPT AT(24,16)VALID
ATE(DIGIT):W
3340 IF W<1 OR W>5 THEN 3330 :: IF W=5 THEN GOSUB 2650 ELSE CA
LL CLEAR
3350 GOSUB 2040
3360 DISPLAY AT(1,2):"Please enter number of air":"changes per
 hour required":"  for ";ROOM$(COUNT)
3370 ACCEPT AT(6,15)VALIDATE(DIGIT,"."):A
3380 IF A<0.5 OR A>9.9 THEN 3360 ELSE CALL CLEAR
3390 GOSUB 2040
4000 CALL CLEAR :: DISPLAY AT(2,2):ROOM$(COUNT)
4010 DISPLAY AT(4,2):"Design temperature? 21" :: ACCEPT AT(4,2
2)VALIDATE(DIGIT)SIZE(-2):T
4020 IF T<5 OR T>30 THEN 4010
4022 DISPLAY AT(6,2):"Room length?" :: ACCEPT AT(6,25)VALIDATE
(DIGIT,"."):RL
4024 DISPLAY AT(8,2):"Room breadth?" :: ACCEPT AT(8,25)VALIDAT
E(DIGIT,"."):RB
4030 DISPLAY AT(10,2):"Room height?" :: ACCEPT AT(10,25)VALIDA
TE(DIGIT,"."):H
4040 IF F>2 THEN DISPLAY AT(12,2):"Temperature below? " :: ACC
EPT AT(12,25)VALIDATE(NUMERIC):TB :: GOTO 4060
4050 IF F<3 THEN TB=-1
4060 IF C=7 OR C<3 THEN 4070 ELSE TA=-1 :: GOTO 4080
4070 DISPLAY AT(14,2):"Temperature above?" :: ACCEPT AT(14,25)
VALIDATE(NUMERIC):TA :: CALL CLEAR
4080 WALL=WALL+1
```

Heat Loss Calculator

```
5000 DISPLAY AT(2,2)ERASE ALL:ROOM$(COUNT):: DISPLAY AT(4,2):"
Wall#";WALL
5010 DISPLAY AT(6,2):"Wall length? " :: ACCEPT AT(6,25)VALIDAT
E(DIGIT,"."):L
5020 DISPLAY AT(8,2):"Exterior,Interior or Party?"
5030 ACCEPT AT(9,25)VALIDATE("EIP"):K$
5050 IF K$="P" THEN HL(WALL)=L*H*1.61*(T-8):: GOTO 5330
5060 IF K$="I" THEN 5300
5090 DISPLAY AT(8,2)ERASE ALL:"Bay window?" :: CALL YN(Y):: IF
 Y THEN GOSUB 5200 ELSE 5100 :: GOTO 5250
5100 DISPLAY AT(8,2)ERASE ALL:"Window?" :: CALL YN(Y):: IF Y T
HEN 5250 ELSE 5320
5200 DISPLAY AT(8,2):"Bay mean length?" :: ACCEPT AT(8,25)VALI
DATE(DIGIT,"."):BL
5210 DISPLAY AT(10,2):"Bay mean depth?" :: ACCEPT AT(10,25)VAL
IDATE(DIGIT,"."):BD
5220 DISPLAY AT(12,2):"Bay height?" :: ACCEPT AT(12,25)VALIDAT
E(DIGIT,"."):BH
5230 BV=BL*BD*BH*A
5250 DISPLAY AT(8,2)ERASE ALL:"Window length?" :: ACCEPT AT(8,
25)VALIDATE(DIGIT,"."):WL
5260 DISPLAY AT(10,2):"Window height?" :: ACCEPT AT(10,25)VALI
DATE(DIGIT,"."):WH
5270 WA=WL*WH :: WT=WT+WA
5280 DISPLAY AT(12,2):"Another window?" :: CALL YN(Y):: IF Y T
HEN 5250 ELSE 5320
5300 DISPLAY AT(8,2):"Temperature adjacent room?" :: ACCEPT AT
(9,25)VALIDATE(NUMERIC):TN
5310 HL(WALL)=L*H*UI*(T-TN):: GOTO 5330
5320 BAYAREA=BD*BH*2 :: WALLAREA=(L*H)-WT :: WALLTOT=WALLAREA+
BAYAREA :: HL(WALL)=((WALLTOT*UE)+(WT*UW))*(T+1)
5330 CALL CLEAR :: HTL=HTL+HL(WALL)
5340 DISPLAY AT(10,2)ERASE ALL:"Another wall?" :: CALL YN(Y)::
 IF Y THEN 4080 ELSE 5400
5400 RV=RL*H*RB*A+BV
5410 VL=(RV+BV)*(T+1)*0.34
5420 CL=((RL*RB)+(BL*BD))*(T-TA)*UC
5430 FL=((RL*RB)+(BL*BD))*(T-TB)*UF
5440 TOTAL(COUNT)=INT(HTL+VL+CL+FL)
5450 DISPLAY AT(10,2):"Heat loss for ":ROOM$(COUNT);TOTAL(COUN
T);"Watts."
5460 HTL=0 :: BV=0 :: BL=0 :: RV=0 :: VL=0 :: CL=0 :: FL=0 ::
INDEX=COUNT
5470 DISPLAY AT(16,2):"Another room?" :: CALL YN(Y):: IF Y THE
N 2010
5480 DISPLAY AT(1,1)ERASE ALL:CLIENTNAME$ :: FOR AD=1 TO 4 ::
DISPLAY AT(AD+2,2):ADDRESS$(AD):: NEXT AD
```

Heat Loss Calculator

```
5490 FOR INDEX=1 TO COUNT :: DISPLAY AT(INDEX+7,3):ROOM$(INDEX
),TOTAL(INDEX):: HEAT=HEAT+TOTAL(INDEX):: NEXT INDEX :: DISPLA
Y AT(22,2):"Total heating loss ":HEAT;" Watts."
5500 DISPLAY AT(24,2):"Printout required?" :: CALL YN(Y):: IF
Y THEN 6000 ELSE 10199
6000 OPEN #1:"PIO" :: PRINT #1
6010 PRINT #1:TAB(12);"CENTRAL HEATING CALCULATIONS FOR  ";CLI
ENTNAME$ :: FOR A=1 TO 4 :: PRINT #1:TAB(43);ADDRESS$(A):: NEX
T A
6020 FOR INDEX=1 TO COUNT :: PRINT #1:TAB(15);ROOM$(INDEX),TOT
AL(INDEX);" WATTS" :: NEXT INDEX
6030 PRINT #1:TAB(15);"TOTAL HEAT LOSS ";HEAT;" WATTS"
10199 GOTO 100
10200 SUB YN(Y):: !##########################################
##################
10210 CALL KEY(3,YN,S):: IF S=0 THEN 10210
10220 IF YN=89 THEN Y=1 :: SUBEXIT
10225 IF YN=78 THEN Y=0 ELSE 10210
10230 SUBEND
10299 !
10300 SUB INST :: !##########################################
######################
10310 CALL HCHAR(9,1,32,280)
10320 DISPLAY AT(7,6):"This program will work out     heat cal
culations for one   house a room at a time.     Enter dimensio
ns in"
10330 DISPLAY AT(12,1):"meters and temperatures in       degre
es kelvin."
10331 DISPLAY AT(15,1):"Enter bay window sizes as   mean lengt
h and full depth, enter glazing sizes as the  windows."
10339 DISPLAY AT(20,1):"Press Y for yes,N for no.   Press spac
e tocontinue."
10340 KEY=32 :: CALL K(KEY)
10350 SUBEND
10399 !
10400 SUB K(KEY):: !#########################################
####################
10410 CALL KEY(3,K,S)
10420 IF S=0 THEN 10410
10430 IF KEY<>K THEN 10410
10440 KEY=0 :: SUBEND
```

Letters

This letters page is here for you to air your views on the group and magazine or ask the contributors questions. All comments are very welcome (good or bad!)

The Tandy Printer Revisited

Dear Richard,

Having once again looked at early issues of TI*MES I found a reference in one of S.Shaw's indexes to the Tandy TRS printer - the CGP 115. It is only a small reference to this printer, in issue 7, p53:

Here are details of how to connect a cheap printer to the TI99/4a RS232 interface. The printer is the Tandy CGP 115.

The two plugs can easily be obtained from Tandy stores. They are a 25 pin D Plug and a 4 pin Din Plug. The pin numbers are as follow:

D Plug	Din
Pin 1	Pin 4
Pin 2	Pin 1
Pin 7	Pin 3
Pin 20	Pin 2

The entry codes for files RS232.BA=600.DA=7.PA=N in quotes.

End of letter, if this is of any assistance to the member then I am glad to be of some use.

Best Regards

J. Murphy.

Thanks for the help, Mr Murphy.

How Much?

Dear Richard,

I want to expand my system especially with all the new items appearing on the TI scene, you keep mentioning the Geneve but never quote the price for the system, can that be rectified?

I printed out Richard's article 'Probably the best computer in the world' and show my friend's,but they don't believe me and I dearly love to show them a system as quoted on the list to them.

But as always it always comes down to cost, why does it cost so much to expand? Richard is always comparing our computer to the PC, isn't that wrong because the TI unexpanded can't compete can it with the PC? Surely he means the Geneve. Not the bare TI-99/4A and expansion box. Some of the prices quoted for hard drives and SCSI interface are quite high for expansion needs; I have read in Micro-Mart that for Atari the SCSI interface costs £59 and £85 for a 105mb QUANTUM SCSI hard drve which is large enough for my needs.

Surely the prices you are quoting are a bit steep for the average TI user, floptical drives and CD rom drives, we don't need them at those prices.

Kenneth Hughes

I've put your comments to Richard, Ken, and he'll reply in his spring article. Thanks for your comments about the assembly tutorial.

Please send all letters to the editor at the address given inside the front cover.

Expanding The TI99

Here as promised after my last letter is another article for the magazine, it's all about the history of the peripheral expansion box and it's successors etc.What could have been and what was not seen by the British users.

TI Expansion Box

The old peripheral expansion box was a very clumsy and big for it's day,especially going by today's standard.But it has come a very long way and served alot of TI-user's. For many year's and for many year's to come.

The PEB was, in terms of size, very big.

Size	17 1/2" X 7"
Hook up	Req.TI card & 2 foot hook up cable
Mobility	Space limited due to size
Features	Must purchase each card seperately
Future	No production since 1977
Extra Ram	Need to buy cards
FD controller	Single sided single density

TI34BX

The PEB was superceded by the new TI34BX which was much smaller lighter and more covenient, due to it's size and being able to plug it directly into the side of the computer.The unit runs with less power - up to 80% less than other's of the same design.

As an all in one unit everything is provided built in - i.e. RS232 card which operates 1 parallel and 2 serial devices, a 32k memory card which will upgrade you to 48k, a ds/dd disk controller card which can handle upto 4 drives, built in Editor assembler and new disc manager.

Features

Size	6" X 6"
Hook up	Plugs directly into side of computer
Mobility	Fits anywhere
Features	Built in DS/DD controller, RS232 and 32k memory
Future	New idea's in hardware/software
Extras	Upgrades simply add-on
FD controller	Double sided double density

But to alot of TI-users the price didn't justify the new set-up: $300, you probably could have gone out and bought a newer computers which were out on the market at the time i.e. Atari ST.

Corcomp 9900 Expansion Box

Also out on the market at the same time was the new Corcomp 9900 expansion system but at $100 plus more than the TI34BX it was for the more serious TIer. The set-up was just as compact as the TI34BX with DD D/S drives , built in disc controller etc.

The unit plugs into the side of the computer as did the TI34BX,so giving you the following -:

Features
Parallell printer port
RS232 port
32k memory expansion
DS/DD disk controller
Half height disk drive
Disc drive cables etc.
External box, power supply
Filler plate

Zeno

Also out on the market at the time, that is if you didn't want to buy an expansion system was an idea by an American chap called E,ric Zeno. His idea was to put a

board inside the computer which would take all your memory and module utilities, speech etc. The idea was a do-it-yourself project, which I have the docs etc if anyone wants to try. It does work and is a clever idea...

The Geneve

As technology grew for the TI-user we soon came upon the new GENEVE 9640 which is a card for the expansion box. Once all existing software for the TI-99/4a etc is converted to the Geneve format, the old TI99 is not needed. You can use the new enhanced keyboard, which is a better laid out IBM style keyboard.

The Geneve supports all modes and software etc and most cartridge software (once it has been saved to disc using the new cartridge saver program provided with the machine).

Geneve Features:
99/4a compatible
TI-writer full 80 columns
Runs 95% of assembly/utility programs
Multi-plan 80 columns
640k ram standard
Extended Basic 3.0
2 megabyte addressable ram
RGB output
Myarc memory card compatible
Mouse/joystick Port
IBM keyboard
Runs 2-3 times faster
TMS9995 processor - 12MHz
128k VDP ram memory

Emulating The TI

You would of thought after all that this would be the end of the story, well it is .....URGENT REPORT .....News just in - a new TI-COMPUTER ....no a new TI-Emulator. Some one has invented a emulator for the P.C. called the TI-EMULATE for IBM PC compatible computers, which more or less does away with the TI-99/4a completely and the Geneve.

Emulator Features
Basic and Extended Basic
Logo
Assemble 9900 code
Speech (wav)
Funlweb and TI-Writer
100 Modules (Emulate Format)

It more or less makes it obsolete and not needed anymore, poor old TI-99/4a, now the PC can emulate nearly all the old computers: Atari, Oric, Commodore, ZX Spectrum etc. No need to buy any other computer, good bye old friend....

ANYONE SEEN THE DUSTBIN ..... OVER HERE ..... CRASH !!!!

I hope this is not too long an article for the magazine but I thought it was an interesting topic for old member's and the new ones.....Hi! to All.

E-Mail:
kenhughes@walusoft.centron.com

The Module Library

To order a module simply write to the module librarian enclosing your cheque and order. The modules marked with an asterisk (*) are not suitable for mark 2 consoles

4

4A Flyer	4.50

A

Addition And Subtraction 1	3.00
Addition And Subtraction 2	3.00
Adventure (with Pirate tape)	5.00
Adventure Module	3.50
Alien Addition	3.00
Alligator Mix	3.00
Alpiner	8.00
A-Mazing	2.50

B

Beginning Grammar	3.00
Big Foot	3.50
Black Hole	3.00
Blackjack and Poker	3.00
Buck Rogers	4.50
Burger Time	3.50

C

Car Wars	3.00
Chisholm Trail	3.50
Congo Bongo	3.50
Connect 4	3.50

D

Decimals	3.00
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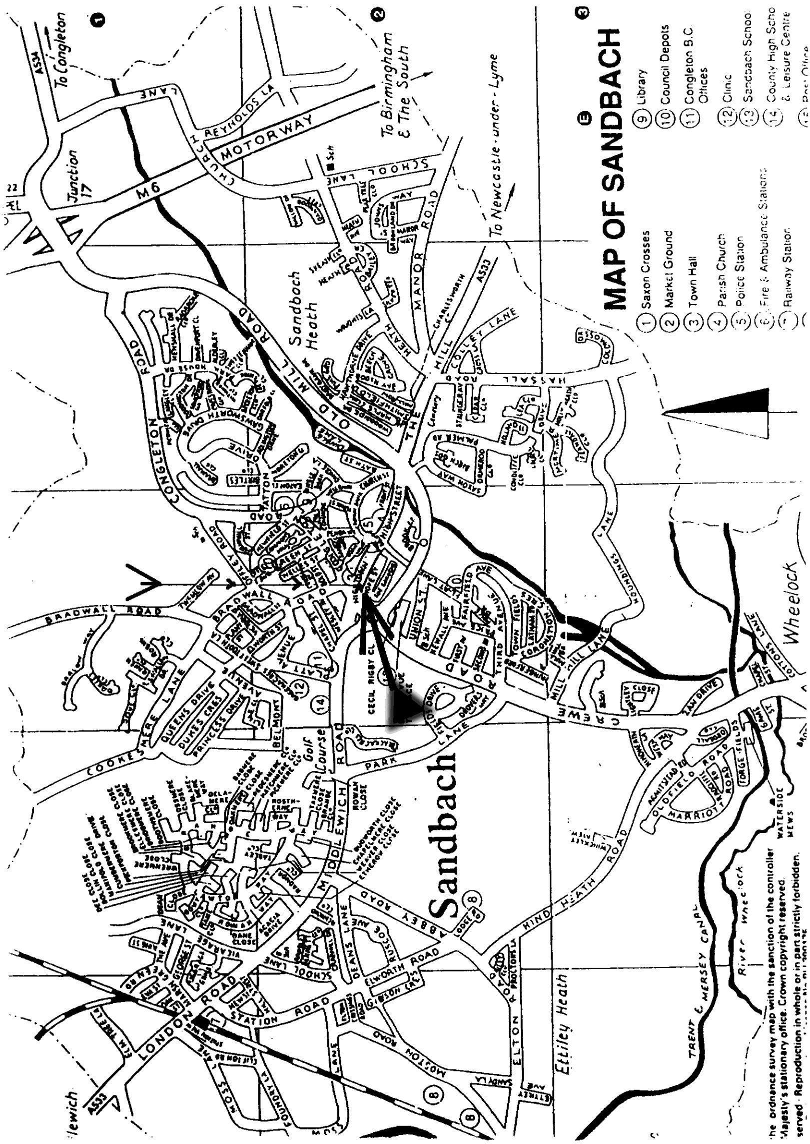
* Not for Mark II consoles

The Back Page

"I've been using the same computer since 1982. They can't replace it without violating the company's age discrimination policy."


MAP OF SANDBACH
1 Saxon Crosses
2 Market Ground
3 Town Hall
4 Parish Church
5 Police Station
9 Library
10 Council Depots
11 Congleton B.C. Offices
12 Clinic
To Congleton
To Birmingham & The South
To Newcastle-under-Lyme
M6
MOTORWAY
Junction 17
Sandbach Heath
Sandbach
Wheelock
Ettiley Heath
Golf Course

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