

CABLES

| | |
|-------------------------------|-------|
| DISK DRIVE CABLE EXT X 2 | 08.00 |
| DISK DRIVE CABLE EXT X 2 LONG | 09.00 |
| DISK DRIVE CABLE INT X 2 | 08.00 |
| DISK DRIVE POWER SPLITTER | 05.50 |
| PARALLEL PRINTER CABLES | 08.50 |
| PEB MAINS POWER CABLES | 05.00 |
| SPECIAL CABLES TO ORDER | CALL |

COMPONENTS

| | |
|--|-------|
| ZENO BOARDS & INSTRUCTIONS | 18.50 |
| DISK CONTROLLER CONNECTORS 34 WAY | 01.25 |
| DISK DRIVE CONNECTORS 34 WAY IDC | 01.10 |
| DISK DRIVE POWER CONNECTORS IN or EX | 01.00 |
| 9 PIN "D" CONNECTOR & COVER | 01.00 |
| PARALLEL PRINTER CONNECTORS | 03.00 |
| 16 PIN PRINTER CONNECTORS | 01.00 |
| P.E.B PUSH BUTTON ON/OFF SWITCH HEAVY DUTY REPLACEMENT | 01.75 |
| PROGRAM HEADERS 8 WAY (FOR SETTING DISK DRIVES) | 00.50 |
| SMALL BLACK PLASTIC BOXES 72x45x22mm | 01.00 |
| 16 way RIBBON CABLE IDC PER FOOT | 00.50 |
| IN4148 TYPE DIODES FOR JOYSTICKS ETC | 00.05 |

ANCILLIARIES

| | | |
|------------------------|-------------|-------|
| ALPHACOM THERMAL PAPER | per roll | 02.50 |
| " | box 5 rolls | 12.50 |

BATTERIES

| | |
|---|-------|
| MINIMEM LITHIUM (#1.50 fitting charge if req) | 01.00 |
| AA size ALKALINE (Duracell equivalent) | 00.50 |
| PP3 size ALKALINE | 01.70 |

HARDWARE

NON MEMBERS MEMBERS

| | CALL | CALL |
|---|-------|-------|
| PERIPHERAL EXPANSION BOXES | | |
| RS232 INTERFACE STAND ALONE | 40.00 | 35.00 |
| DISK DRIVES VARIOUS, REQUEST LATEST LIST. | | |
| T1 CASSETTE RECORDER | 25.00 | 20.00 |
| JOYSTICKS QUICKSHOT SV1 (ATARI TYPE) | 06.50 | 05.00 |
| JOYSTICK INTERFACE T1 to 2 ATARI | 09.50 | 07.00 |
| CONSOLES | 25.00 | 20.00 |
| POWER SUPPLIES | 10.00 | 07.50 |
| MODULATORS | 10.00 | 07.50 |
| JOYSTICKS T1 | 10.00 | 07.50 |
| CASSETTE LEADS | 07.50 | 05.00 |

PLEASE ENQUIRE FOR ANYTHING NOT LISTED

Carriage small items 50p Larger at cost.
 Cheques etc Made out to M.Goddard
 Overseas cheque or money order drawn on London
 Overseas carriage at cost call for details
 MIKE GODDARD COMPUTER SUPPORT TEL 0978 843547
 "SARNIA" CEMETERY RD, RHOS, WREXHAM, CLWYD.

TI*MES

TI99/4A USERS GROUP (U.K.) CONTACTS

Chairman: Gordon Pitt Tel 0922 476373
 259 Sneyd Lane, Bloxwich, WALSALL, West Midlands. WS3 7LS
 General Secretary: Jim Ballinger Tel 0332 772612
 5 Offerton Ave.. DERBY. DE3 8DU
 Membership Secretary & Telecoms: Peter Walker Tel 0707 873778
 24 Bacons Drive, CUFFLEY, Herts. EN6 4DU
 Treasurer: Alan Rutherford Tel 0625 524642
 13 The Circuit, WILMSLOW, Cheshire. SK9 6DA
 Publicity Officer: Christine Bennett Tel 061 430 7298
 20 Oak Ave., Romiley, STOCKPORT, Cheshire. SK6 4DN
 TI*MES EDITOR: Alan Bailey Tel 01 508 1053
 14 Shelley Grove, LOUGHTON, Essex. IG10 1BY
 Librarians:
 Cassette: Tim Anderson Tel 041 337 1291
 Ground Floor Left, 47 Apsley St., GLASGOW. G11 7SN
 Disk: Stephen Shaw (also Journal Exchange & Vice Chairman)
 10 Alstone Rd., STOCKPORT, Cheshire. SK4 5AH
 Hardware & Projects: Mike Goddard Tel 0978 843547
 'Sarnia', Cemetary Rd., Rhos, WREXHAM, Clwd. LL14 2BY
 Modules: Edward Shaw Tel 0538 360382 (5pm to 8pm)
 Crow Holt Farm, Basford, LEEK, Staffs. ST13 7DU
 Publications: Mike Curtis Tel 0209 219051
 21 Treliske Rd., Roseland Gdns., REDRUTH, Cornwall. TR15 1QE

MAGAZINE CONTENTS

- IFC AGM Timing, show, & agenda
- p1 AGM Location & map. Mike Goddard.
 - 2 Membership news. Peter Walker.
 - 3 Module Library Report. Edward Shaw.
 - 4 Publications Library Report. Mike Curtis.
 - 6 Frequency Meter. Peter Walker.
 - 9 Tibase Tips. Peter Walker.
 - 10 Console Only Corner. Peter Walker.
 - 11 Wrexham/Chester Workshop. Mike Goddard. Transporting Hardware.
 - 12 Cassette Reviews. Nicky Goddard.
 - 13 Fan Silencer Followup. Mike Goddard.
 - 14 Messing About With The Gear. Jim Ballinger.
 - 19 Rambles. Stephen Shaw.
 - 24 Tips From Tigercub. Jim Peterson. (SJS)
 - 32 Disk Library Report. Stephen Shaw.
 - 35 Minimemory Madness. Peter Hutchinson. (SJS)
 - 37 Educational Modules. Stephen Shaw.
 - 38 TI Basic Game. Stephen Shaw.
 - 41 Reviews. Stephen Shaw.
 - 49 Module Reviews. Stephen Shaw.
 - 56 Ontplopper. Koen Holtman. (SJS)
 - 57 Fractal Graphics Again. Stephen Shaw.
 - 60 Graphics Program. Stephen Shaw.
 - 64 TIArtist Plus Review. Stephen Shaw.
 - 71 Vector Graphics & Transformations. Stephen Shaw.
 - 77 Digit AVPC 80 Column Card. Jan Alexandersson. (SJS)

ANNUAL GENERAL MEETING

The AGM will be held in Chester (see p.1), on Saturday 26th.May. Doors open 10.30 AGM itself to start at 1 PM. There will be a lot to see! Communications & Bulletin Board, Graphics with mouse, Word Processors including Funnelweb, Databases, Modula Library, Disk Library on disk(if ordered in advance disk orders can be collected), as can back copies of publications, Telephone Dialler project, mains control, standalone RAM disk, Missing Link, display enhancement package, Mechatronics 80 column card, Geneve computer by the UK Myarc Distributer (Richard Bierakowski), Horizon RAM disk. The new owner of PARCO, Martin Blyth,will also be exhibiting, and our own Hardware Consultant and organiser of this AGM, Mike Goddard. If you have any problems at all with the 99/4A you can be sure of expert help before or after the formal part of the meeting!

AGENDA

The Agenda for the formal meeting will be as follows:

1. Minutes of 1989 AGM.
2. Reports from Officers.
3. Nominations and Elections of Officers for the year.
4. Second Annual Show.
5. Any Other Business.

DISCLAIMER

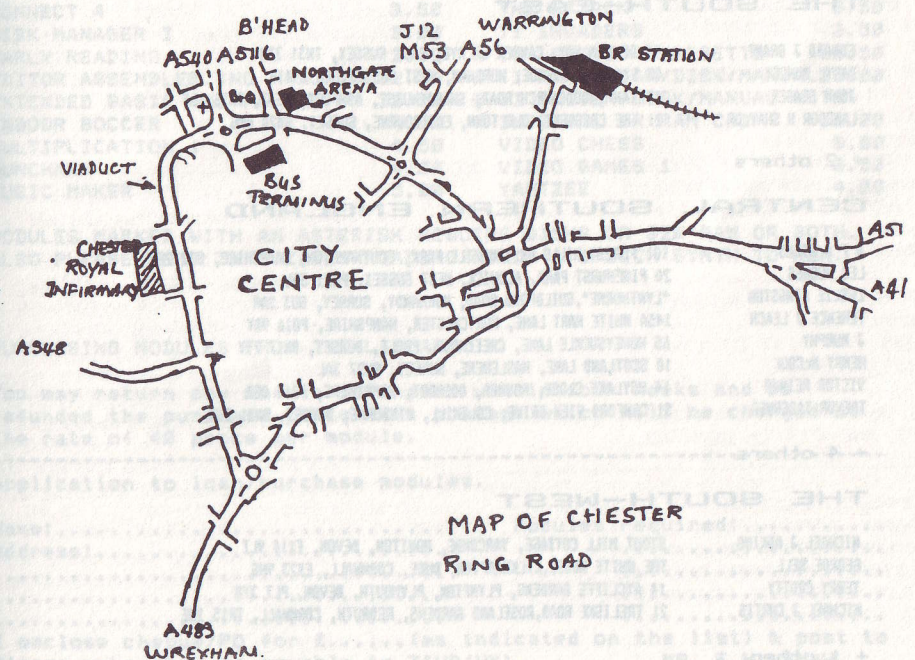
The views expressed in this publication are those of the contributor and not necessarily shared by any member of or all the Committee. We acknowledge any excerpts from other publications which are not specifically mentioned in situ.

NEXT COPY DATE

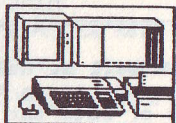
All copy for the magazine should reach the Editor by 1st.June. Since reproduction is by photocopier it is essential that the print should be black,not grey,and it should be carefully laid out not closer than 15mm to the top and side edges of A4 paper, and preferably not closer than 20mm to the bottom edge. Retyping is only possible by special individual arrangements well in advance of the publication date.

The 1996 ANNUAL GENERAL MEETING of TI USER GROUP UK will be held at the NORTHGATE ARENA, CHESTER. This well appointed venue is on the main Chester ring road and within easy walking distance of both the Bus and train Stations there is ample car parking on site and the Arena offers full swimming and sport facilities for those not interested in the A.G.M. There is also a full cafeteria and licenced bar plus of course the Chester City Centre is only a short walk away and has plenty of historical interest and it is also one of the finest shopping centres for miles around.

We desperately need members to bring along their gear for demos etc and I hope by then to have TVs or Monitors available on site to save having to carry them over long distances please contact me to check beforehand. If anybody would like to demonstrate or indeed see demonstrated anything of special interest please get in touch and we'll see what can be done. For directions see map below or contact me for further information.



MAP OF CHESTER
RING ROAD



MEMBERSHIP NEWS

from Peter Walker
Membership Secretary

Since the last issue of TI*MES we welcome to TIUG(UK): Robert Beattie, Michael Robinson, George Bell, Ian Pickles, Helga Wettern, Mike Adkins, Stephen Blythe and Geoffrey Cox. I hope you all enjoy our group.

Here is the final listing of members who agreed to their names being published in TI*MES. Why not get together and form a local group?

SOUTH THAMES

| | |
|------------------|--|
| LEON S BECKER | 25 LENNOX GARDENS, BROMPTON, LONDON, SW1X 0DE |
| JOHN BINGHAM | MOORCROFT, SANDOWN AVENUE, ESHER, SURREY, KT10 9NT |
| JOHN C HARRIS | 2A LITTLE BIRCHES, SIDCUP, KENT, DA15 7LW |
| MAURICE G WALKER | 18 CHINBROOK ROAD, GROVE PARK, LEE, LONDON, SE12 9TH |

+ 1 other

THE SOUTH-EAST

| | |
|-------------------|---|
| EDWARD J GRANT | 49 DENHAM WAY, CAMBER nr RYE, EAST SUSSEX, TN31 7XR |
| DARYL MUNCEY | 45 SYCAMORE AVENUE, HORSHAM, WEST SUSSEX, RH12 4TP |
| JOHN SEAGER | *'ISIAN', WOODCHURCH ROAD, SHADOXHURST, ASHFORD, KENT, TN26 1LF |
| LANGDON H SHAYLOR | 21 THE CRESCENT, OLD TOWN, EASTBOURNE, SUSSEX, BN20 8PU |

+ 2 others

CENTRAL SOUTHERN ENGLAND

| | |
|-----------------|---|
| 6 F A GILES | 101 FOREST HILLS DR. TOMNHILL PARK, SOUTHAMPTON, HAMPSHIRE, SO2 2FZ |
| LEO HUGHES | 20 PINEHURST PARK, ALDWICK, WEST SUSSEX, PO21 3DL |
| LESLIE KINGSTON | *'LYNTHORNE', GUILDFORD ROAD, NORMANDY, SURREY, GU3 2AR |
| TERENCE J LEACH | 145A WHITE MART LANE, PORTCHESTER, HAMPSHIRE, PO16 9AY |
| J MURPHY | 65 HONEYSUCKLE LANE, CREEKNOOR, POOLE, DORSET, BH17 7YY |
| HENRY MCCOOK | 18 SCOTLAND LANE, HASLENERE, SURREY, GU27 3AL |
| VICTOR REINAR | 14 HOYLAKES CLOSE, ROMNER, GOSPORT, HAMPSHIRE, PO13 0EX |
| TREVOR TABERNER | 51 CANFORD VIEW DRIVE, COLEHILL, WIMBORNE, DORSET, BH21 2UW |

+ 4 others

THE SOUTH-WEST

| | |
|------------------|---|
| MICHAEL J ADKINS | STOUT HILL COTTAGE, YARCOMBE, HONITON, DEVON, EX14 9LZ |
| GERGE BELL | THE WHITE HOUSE, KILHAMPTON, BUDE, CORNWALL, EX23 9HS |
| TERRY CROTTY | 14 AYCLIFFE GARDENS, PLYMPTON, PLYMOUTH, DEVON, PL7 3YN |
| MICHAEL J CURTIS | 21 TRELISKE ROAD, ROSELAND GARDENS, REDRUTH, CORNWALL, TR15 1DE |

+ 1 other

NORTHERN IRELAND

| | |
|--------------------|--|
| STEPHEN M WILLIAMS | 27 UPPER CAPTAIN STREET, COLERAINE, NORTHERN IRELAND, BT51 3LY |
|--------------------|--|

+ 1 other

MODULES MODULES MODULES

APPEAL TO ALL DISK DRIVE OWNERS.....

Do you have any modules that you would consider selling or donating to the module library. Reasonable prices paid. Games modules and utilities are the most sought after. For more information please contact me at the address given below.

The latest list of modules available for purchase follows; please remember that often there are only one or two modules of each title held and it helps if you can give alternatives when ordering. Terms are strictly first come, first served.

| | | | |
|--------------------------------|-------|------------------------------|-------|
| ADDITION AND SUBTRACTION 1 | 2.00 | PARSEC | 3.50 |
| ADVENTURE and PIRATE TAPE | 5.00 | PERSONAL RECORD KEEPING | 3.50 |
| ALLIGATOR MIX | 4.50 | PROTECTOR | 4.50 |
| BEGINNING GRAMMAR | 3.00 | SHAMUS | 3.50 |
| BLASTO | 3.50 | SPEECH EDITOR | 5.00 |
| CONNECT 4 | 3.50 | THE ATTACK | 3.50 |
| * DISK MANAGER I | 3.00 | TI INVADERS | 3.50 |
| EARLY READING | 2.50 | * TI LOGO I + CASSETTE | 12.50 |
| * EDITOR ASSEMBLER (NO MANUAL) | 22.50 | * TI MULTIPLAN/DISK/MANUAL | 25.00 |
| * EXTENDED BASIC AND MANUAL | 22.50 | * TI WRITER/DISK/MANUAL WITH | |
| INDOOR SOCCER | 4.00 | INTEGRAL 8K RAM CHIP | 15.00 |
| MULTIPLICATION 1 | 4.50 | VIDEO CHESS | 8.00 |
| MUNCHMAN | 4.00 | VIDEO GAMES 1 | 3.50 |
| MUSIC MAKER | 5.00 | YAHTZEE | 4.00 |

* MODULES MARKED WITH AN ASTERISK REQUIRE DISKS OR 32K RAM OR BOTH. ALSO PLEASE NOTE THAT EARLY READING NEEDS A SPEECH SYNTH TO RUN.

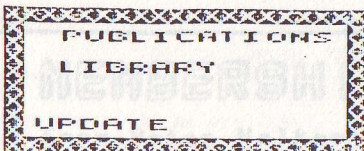
PURCHASING MODULES FROM THE LIBRARY

You may return any module purchased within four weeks and be refunded the purchase price less postage which will be charged at the rate of 40 pence per module.

Application to loan/purchase modules.

Name:..... Modules required:.....
 Address:.....

I enclose cheque/PO for £.....(as indicated on the list) & post to
 Please make cheques payable to TIUG(UK). MR. E.H. SHAW
 Foreign orders can only be accepted if a CROW HOLT FARM
 BANKERS DRAFT is enclosed drawn in STERLING BASFORD
 on a LONDON bank. It also helps if a little LEEK
 extra is added on for postage overseas. STAFFS. ST13 7DU



TI*MES PUBLICATIONS LIBRARY

MANUALS FOR MODULES NOW IN

There has been quite a lot of activity in the library recently, I have purchased a lot of magazines, books and module manuals out of my own pocket and I am letting these be used for library purposes. The magazines, these are 99er Magazine, an American publication, highly recommended for all aspects of computing with the TI. These will require a deposit of 5.00 each as they are rather hard to come by now, and a hire of 1.00 per month, with a one month maximum time period. I also have a set of Home Computing Weekly, 1.00 deposit per magazine with a 50p hire per month. Before I go any further, I will mention that ALL monies paid for these will go into TI*MES.

NEW BOOKS INCLUDED FOR THE LIBRARY.

- 9900 FAMILY SYSTEMS DESIGN. - TI Staff
9900 FAMILY DATA BOOK. - TI Staff
PRACTICAL USE FOR THE MICRO IN THE HOME - David R. Hole
INTRODUCTION TO TI BASIC. - Inman, Zamora, Albrecht
THE ART OF STRUCTURAL PROGRAMMING. - Peter Julief
SIMULATIONS ON THE MICRO. - Burr-Brown PCI HANDBOOK. - Burr-Brown
MAKING THE MOST OF YOUR TI99/4A. - Scott Vincent

VAST QUANTITIES OF IC LITERATURE ON TI CHIPS AND SYSTEM CONTROL.

A COMPLETE LIST OF THE LIBRARY AND IN-DEPTH INFORMATION ON EACH BOOK, WAS NEAR COMPLETION ON A TI-BASE FILE WHEN THE DISK CORRUPTED AND THE WHOLE LOT WAS LOST, I HAVE STARTED TO REDO THIS LIST. NEXT ISSUE!

- Household Budget Management.
Personal Record Keeping.
Personal Report Generator.
Music Maker.
Mini Memeory.
Home Financial Decisions.
Terminal Emulator 2.
Video Chess.
Adventure.
Tax/Investment Record Keeping.
Statistics
Frogger. Popeye. Q*Bert.
Shamus. Defender. Picnic Paradise.
Jungle Hunt. Protector. Donkey Kong
Mind Challengers.
Indoor Soccer.
The Attack.
Return to Pirates Isle.
Microsurgeon.
Jawbreaker2.
Amazing.
Parsec.
Invaders.
Hopper.
Car Wars.
Yahtzee.
Othello.
M*A*S*H.

Many more manuals are expected in the next few months, so updates will be forthcoming!

LIBRARY TERMS.

- 1. 10.00 DEPOSIT PER BOOK PER MONTH
2. 1.00 HIRE PER BOOK PER MONTH
3. POSTAGE WILL BE BY THE CHEAPEST METHOD UNLESS SPECIFIED OTHERWISE BY THE PERSON REQUESTIN THE BOOK.
4. ALL CHEQUES MADE PAYABLE TO ME AND NOT TI*MES AS I AM RESPONSIBLE TO THE GROUP FOR THIS ENTITY YEARLY AUDITING TIME.

MANY THANKS TO ALL WHO HAVE SUPPORTED THE LIBRARY, AND ALL THOSE WHO INTEND TO IN THE FUTURE.

MIKE.

21 TRELISKE ROAD, ROSELAND GARDENS, REDRUTH, CORNWALL, TR15 1QE

The PUBLICATIONS LIBRARY is now in full swing with regular users and new ones now starting to join in. To recap the books available, here is the list from issue 26.

- LIB NO. -TITLE-
TPL001 SOFTWARE DEVELOPMENT
TPL002 EDITOR ASSEMBLER MANUAL
TPL003 TI USER REFERENCE GUIDE & READ THIS FIRST
TPL004 READ THIS FIRST [NOW WITH TPL003]
TPL005 USING AND PROGRAMMING THE TI
TPL006 TI FAVORITE PROGRAMS EXPLAINED
TPL007 YOUR FIRST TI99/4A PROGRAM
TPL008 BEGINNERS BASIC
TPL009 TI WRITER MANUAL
TPL010 TI WRITER TRICKS & TIPS
TPL011 INTRO INTO ASSEMBLY LANGUAGE
TPL012 TI TECHNICAL INFO MANUAL
TPL013 PROGRAMMING BASIC
TPL014 GET MOKE FROM THE TI
TPL015 MASTERING THE TI
TPL016 GETTING STARTED WITH THE TI
TPL017 LEARNING TO USE THE TI
TPL018 GAMES FOR YOUR TI
TPL019 THE ORPHAN CHRONICLES
TPL020 SMART PROGRAMMING GUIDE FOR SPRITES
TPL021 ENTERTAINMENT GAMES IN BASIC & EXTENDED BASIC
Includes a cassette.
TPL022 THE TEXAS PROGRAM BOOK
TPL023 THE BEST OF 99ER VOL 1
TPL024 FUNDAMENTALS OF TI ASSEMBLY LANGUAGE
***** TI MODULE MANUALS
TPL025 PHYSICAL FITNESS
TPL026 PERSONAL REPORT GENERATOR
TPL027 PERSONAL RECORD KEEPING
TPL028 VIDEO CHESS
TPL029 TOMBSTONE CITY
TPL030 EXTENDED BASIC REFERENCE CARD
TPL031 BASIC REFERENCE CARD
***** MANUALS PRINTED FROM THE DISK LIBRARY
TPL032 PILOT 99
TPL033 PREBASE
TPL034 TE2 PROTOCOL MANUAL
TPL035 CREATIVE FILING SYSTEM
TPL036 FORTH MANUALS (SET OF 2)
TPL037 SUPERBUG2 (VERSION 1)
TPL038 EXTENDED DISPLAY PACKAGE
TPL039 STAR MANUAL
TPL040 DM1000 MANUAL
TPL041 G MANUAL (GRAPHICS PROGRAMMING LANGUAGE)
TPL042 LINKER MANUAL
TPL043 LINKER LIBRARIAN MANUAL

T199 FREQUENCY METER

BY PETER WALKER



In the last 2 issues, Mike and I described an interrupt driven program for dialling telephone calls. In this article, I describe another program exploiting an interrupt routine which can be used as a crude audio frequency meter. The program uses the audio input port, normally used for the cassette. The program measures the number of times the input signal changes polarity (since the input signal is digitised) during a 100ms period. This period is generated by 5 interrupt cycles of 20ms each and is counted down by an interrupt routine, whose start address is stored at >8374.

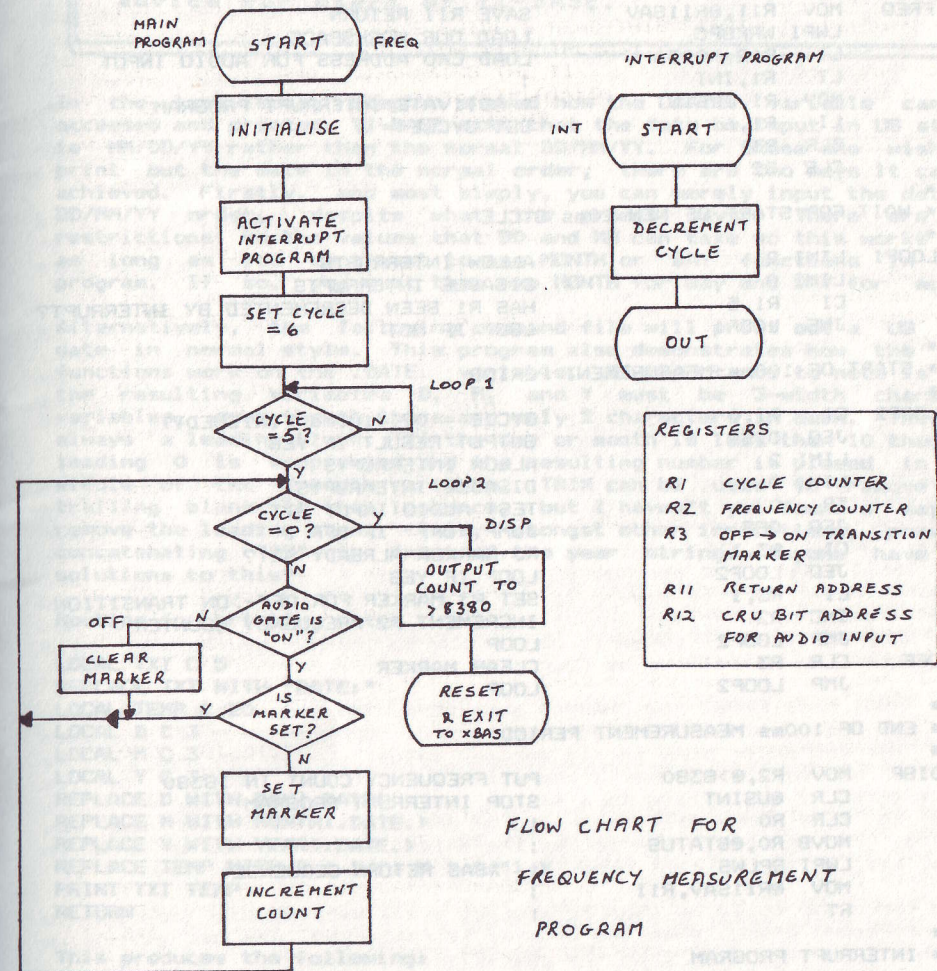
I hope the flowchart and source code are generally self explanatory. The first LOOP1 causes the program to wait until the interrupt program has run once, thus marking the start of a 20ms period. LOOP2 is the main measurement loop. It first checks if the 100ms period is complete. If not, it tests the audio input port for its polarity. If the polarity goes from off to on, it marks that fact in R3 and increments the frequency counter in R2. When the polarity changes back, the marker is cleared. As long as this program runs fast enough, it will catch every polarity change of an audio signal up to around 6000Hz.

When the 100ms period is over, in order to display the COUNT result, I chose to move the result to >8380, return to ExBas and PEEK the result from there. I would preferred to have displayed the result on the screen within the assembler program, but could not work out how to do this. (I admit not to be an expert in Assembler). What I thought of doing was using two XMLLNK routines: Convert Integer to Floating (CIF) followed by Convert Number to String (CNS). Then it would have been a simple matter to use VMBW to display the result on the screen. Unfortunately the manual tells us that CIF is not loaded by Extended Basic, and I do prefer to get all my Assembler Utilities working from ExBas. Does anyone know how to overcome this problem, or otherwise has a simple way of displaying hex integers as decimal numbers on the screen? Can anyone explain the fact that the manual quotes an EQUATE for CIF for use in ExBas?

Having developed the routine, I later realised that the time taken to perform the system (as opposed to the user) interrupt routines causes the interrupt time to be significant as a proportion of the 100ms period (~1.4%) and so input transitions are missed. Thus the ExBas routine multiplies the final count by 10.14 rather than 10, in order to adjust for this. Above 6000Hz, the result reads low and gives up above 8500Hz, since the time to execute the assembler code becomes significant compared to the frequency period. (Bear in mind that each instruction takes around 5 microseconds to execute and LOOP2 has 11 instructions in the main cycle).

I hope some of you find this program of interest. I seem to recall reading about a program (I think it's in the library) that uses the technique of measuring the audio port to provide a 'disco-strobe' utility that turns on lights depending on the music being played. Can anyone think of other uses for the audio port?

Peter Walker



```

DEF FREQ
R11SAV BSS 2
WRKSPC BSS 32
GPLWS EQU >B3E0
STATUS EQU >B37C
USINT EQU >B3C4          USER INTERRUPT ADDRESS
*
* FREQUENCY MEASUREMENT PROGRAM
*
* R1 = 20ms CYCLE COUNTER
* R2 = FREQUENCY COUNTER
* R3 = AUDIO GATE CHANGE MARKER
*
FREQ  MOV R11,@R11SAV      SAVE R11 RETURN
      LWPI WRKSPC          LOAD OUR WORKSPACE
      LI R12,>0036         LOAD CRU ADDRESS FOR AUDIO INPUT
      LI R1,INT            ;
      MOV R1,@USINT        ; ACTIVATE INTERRUPT PROGRAM
      LI R1,6              SET CYCLE = 6
      CLR R3
      CLR R2
*
* WAIT FOR START OF NEW 20ms CYCLE
*
LOOP1  LIM1 2              ALLOW INTERRUPTS
      LIM1 0              DISABLE INTERRUPTS
      CI R1,5              HAS R1 BEEN DECREMENTED BY INTERRUPT?
      JNE LOOP1           LOOP IF NOT
*
* START OF 100ms MEASUREMENT PERIOD
*
LOOP2  CI R1,0             CYCLE = 0? (100ms FINISHED?)
      JEQ DISP            OUTPUT RESULT IF YES
      LIM1 2              ALLOW INTERRUPTS
      LIM1 0              DISABLE INTERRUPTS
      TB 0                TEST AUDIO INPUT BIT
      JEQ OFF             JUMP "OFF" IF OFF
      CI R3,1             R3 MARKER ALREADY SET?
      JEQ LOOP2           LOOP IF YES
      LI R3,1             SET R3 MARKER FOR OFF->ON TRANSITION
      INC R2              INCREMENT R2 FREQUENCY COUNTER
      JMP LOOP2           LOOP
OFF    CLR R3              CLEAR MARKER
      JMP LOOP2           LOOP
*
* END OF 100ms MEASUREMENT PERIOD
*
DISP   MOV R2,@>B380      PUT FREQUENCY COUNT IN >B380
      CLR @USINT          STOP INTERRUPT PROGRAM
      CLR R0              ;
      MOVEB R0,@STATUS    ;
      LWPI GPLWS          ; XBAS RETURN SEQUENCE
      MOV @R11SAV,R11     ;
      RT                  ;
*
* INTERRUPT PROGRAM
*
INT    LWPI WRKSPC        LOAD OUR WORKSPACE
      DEC R1              DECREMENT 20ms CYCLE COUNTER
      LWPI GPLWS          RESTORE WORKSPACE
      RT                  OUT
      END

```

```

100 CALL INIT
110 CALL LOAD("DSK2.FREQ/D")
120 CALL LINK("FREQ")
130 CALL PEEK(-31872,A,B)
140 PRINT INT(10.14*(256*A+B))
150 GOTO 120

```

TI-BASE TIPS



Peter Walker gives some more advice for users of TI-BASE.

In the last issue, Stephen showed how the .DATE. variable can be accessed and printed. TI-BASE asks that the date be input in US style, ie MM/DD/YY rather than the normal DD/MM/YY. For those who wish to print out the date in the normal order, there are two ways it can be achieved. Firstly, and most simply, you can merely input the date in DD/MM/YY order, despite what the prompt says. There are no restrictions on the values that DD and MM can take so this works fine as long as you dont want to use MONTH or DAY functions in your program. If so, you must then use MONTH for day and DAY for month!

Alternatively, the following command file will print out a US form date in normal style. This program also demonstrates how the date functions work on the .DATE. variable. Of importance to note is that the resulting variables D, M, and Y must be 3-width character variables, even though there are only 2 characters in each. There is always a leading blank. If the day or month is less than 10 then the leading 0 is suppressed and the resulting number is placed in the middle of the 3-width variable. TRIM can be used to remove the trailing blank in this instance, but I haven't yet found a way to remove the leading blank. This, amongst other irritations, prevents concatenating "19" in front of the year string. Anyone have any solutions to this?

Routine for printing date:

```

LOCAL TXT C 5
REPLACE TXT WITH "DATE:"
LOCAL TEMP C 20
LOCAL D C 3
LOCAL M C 3
LOCAL Y C 3
REPLACE D WITH DAY(.DATE)
REPLACE M WITH MONTH(.DATE.)
REPLACE Y WITH YEAR(.DATE.)
REPLACE TEMP WITH D : "/" : M : "/" : Y
PRINT TXT TEMP
RETURN

```

This produces the following:

```

DATE: 3 / 2 / 90
or
DATE: 31/ 12/ 89

```

Incidentally, the .DATE. can be reset at any time by the use of the SET DATE command. Also the date separators can be any character, such as . in place of / if you prefer. Several dates can be handled by creating new variables with the D type:

```
LOCAL NEWDATE D 8
```

I hope this explains all you want to know about dates.

Peter Walker



CONSOLE ONLY CORNER

BY PETER WALKER

Many "console-only" members do possess Extended Basic and in this issue I will be giving some tips for those members. Apologies for those of you without ExBas: I can only encourage you to purchase this extremely useful module.

The technique I will be describing here can solve two related problems. Whenever a program is started, or CONTINUED after a BREAK, all variables are reset. Also variables cannot be passed from one program to another it has RUN. To overcome this, we can exploit character definitions which are not reset between programs and in some cases are not reset at a break.

Consider the two programs below. We wish to pass a character string A\$ from PROG1 to PROG2. If A\$ is less or equal to 8 characters long, each character can be coded by a pair of Hex characters within a character definition string DEF\$. This is because each character can take one of 256 ASCII values and two Hex characters (0 to F) gives 16 x 16 = 256 combinations. DEF\$ is always 16 Hex characters long. The loop 120-200 takes each character and converts it to a pair of Hex values B1 and B2. Subprogram HEX1 converts each value to its Hex equivalent. Line 220 stores the definition as Character 127.

When PROG1 runs PROG2 the CHARPAT sets DEF\$. The loop 120-180 converts each of the 8 pairs to a single character. Subprogram HEX2 converts each Hex character back to its decimal value. Longer strings can be handled by splitting over 2 character definitions. Numbers can be transferred by converting to a string, although some of you might be able to find more efficient ways of coding numbers within the Hex string. For example, the 16 Hex characters in DEF\$ could be used to code, say, 13 significant numerics and two exponent characters.

This technique could be used to protect vital data against loss due to an unforeseen break. When the program is restarted, you can include an option to recover data from the character definitions.

Peter Walker

```

100 A$="STRING!"
110 PRINT A$
120 FOR A=1 TO LEN(A$)
130 B$=SEG$(A$,A,1)
140 B=ASC(B$)
150 B1=INT(B/16)
160 CALL HEX1(B1,C$)
170 B2=B-16*B1
180 CALL HEX1(B2,D$)
190 DEF$=DEF$&C$&D$
200 NEXT A
210 DEF$=SEG$(DEF$&RPT$("20",8),1,16)
220 CALL CHAR(127,DEF$)
230 PRINT DEF$
240 RUN "DSK1.PROG2"
250 SUB HEX1(A,B$)
260 H$="0123456789ABCDEF"
270 B$=SEG$(H$,A+1,1)
280 SUBEND

100 CALL CHARPAT(127,DEF$)
110 PRINT DEF$
120 FOR A=0 TO 7
130 B1$=SEG$(DEF$,A+A+1,1)
140 CALL HEX2(B1$,B1)
150 B2$=SEG$(DEF$,A+A+2,1)
160 CALL HEX2(B2$,B2)
170 A$=A$&CHR$(16*B1+B2)
180 NEXT A
190 PRINT A$
200 STOP
210 SUB HEX2(B$,A)
220 H$="0123456789ABCDEF"
230 A=POS(H$,B$,1)-1
240 SUBEND

```

WREXHAM/CHESTER WORKSHOP

MIKE GODDARD

=====

The second Wrexham/Chester workshop was held as promised on Saturday 24th February at the Plas Madoc Leisure Centre at Wrexham and I think it is fair to say that all those who attended enjoyed themselves.

Stephen Shaw did us proud in demonstrating version 4:23 of Funlweb the latest in the excellent series of utilities by Will and Tony Mc Govern of Australia. Mark Wills THE British programmer (well has anyone heard of anymore ?) from Shrewsbury demonstrated some very good games he has written, well done Mark keep it up! and yours truly had a zenoboard working on a caseless console so all the workings can be seen, so far only the clock and memory are in action but they do work very well and its nice to switch the console off and find the clock still running on switch on.

There will be another later in the year but probably not until after the summer in the meantime of course if anyone else is thinking of attempting such a foolhardy feat if its not too far away I would be glad to pop along.

TRANSPORTING HARDWARE

MIKE GODDARD

=====

Many of you who send hardware to me for various reasons usually pack it extremely well but one or two don't follow the rules and it can make life very difficult this end. They are the ones who pack the gear in polystyrene foam chips PLEASE could you put the gear Disk Drives especially into a polythene bag or similar and seal it before putting it into the poly chips, it is quite amazing how those chips work their way into electronic equipment and in the case if drives usually means it has to be completely stripped down to extracate the little Blighters a time consuming and avoidable job with a little thought. Thanks in anticipation.

CASSETTE REVIEWS.....

NICKY GODDARD

All of the games reviewed here are available from the group cassette library at the current library terms.

STAR RATING GUIDE.

One star = terrible, Two stars = "OK", three stars = quite good, Four stars = very good, Five stars = Brilliant.....

FUN-PAC2/ESCAPE THE MUGGER

LIBRARY NO. G112

You are trapped in a room with a vicious mugger who carries the key to the door.

As you are chased by the mugger he drops some of his loot (handbags and wallets) which you pick up by going over them. You score 30 points for the wallets and 10 points for the handbags.

Eventually the mugger will also drop the key. Once you have the key you can leave at will provided you can get to the door.

To delay the mugger you can build walls by pressing the "Q" key at any time also any of the directional keys (fire on the joystick) will leave a wall where you have just been but don't start building walls like there is no tomorrow because you have a limited number of bricks. The keys are U=UP, N=DOWN, H=LEFT, AND J=RIGHT. A good game for joystick or keyboard.

STAR RATING ***

FUN-PAC2/STARSHIP SUPERNOVA

LIBRARY NO. G112

Cruising through space seeking salvage and scrap to take back to Earth you come across an alien space ship heading directly towards a super nova and certain destruction..

Thinking that it might be worth millions back home you send out a signal to the ship but there is no reply on any frequency.

Then you decide to go aboard, thinking that if you can shut off the engines you would be able to take it back to Earth.

Therefore your task is to find the engine controls and shut them down.

You enter the ship via the airlock. When you arrive the airlock doors shut and lock behind you causing you to be trapped on the ship.

Now you are trapped you must find the engine controls before the ship plunges into the supernova.

You move by typing in "GO NORTH" (alpha lock up) to go north etc.

To take an object you have to type in "TAKE OBJECT" (alpha lock up) to take whatever is in the room, e.g. "TAKE HAMMER" (alpha lock up) to take the hammer, and if you want to see what you are carrying type in "TAKE INVENTORY" (alpha lock up).

You can also type in "HELP" (alpha lock up) if you are really stuck.

If you want to you can save the game by typing in "SAVE" (alpha lock up), then before a game the computer will ask you if you want to load a previous encounter.

A good Extended Basic game.

STAR RATING ****

FUN-PAC2/GUNFIGHTER

LIBRARY NO. G112

Gunfighter is a game for 1-6 players set in the old wild west.

Using your wits and guns you battle it out against a few pretty mean characters.

If there is only one player he or she will be up against characters controlled by the computer. If there are more than one player they could find themselves up against each other.

As this game is a fight to the finish the last man standing will win.

In fighting you can choose to "SHOOT IT OUT", "MOVE CLOSER FOR A BRAWL" or "RUN". Each cowboy is given a rating for courage, fast draw, shooting accuracy and muscle power. I recommend you to note

these down as they could help you with your planning in the game.

You have in your command a colt 45 pistol and a rifle. The pistol will do more damage but it is less accurate and its range is limited to 100 yards. No cowboy can fire more than 6 shots without reloading.

The controls are : STAGE 1 - R=RUN and F=FIGHT.

STAGE 2 - R=RELOAD, M=MOVE, S=SHOOT and B=BRAWL.

STAGE 3 - C=COLT AND R=RIFLE.

A very good Extended Basic keyboard game for budding cowboys
STAR RATING ****

FAN SILENCER FOLLOW UP

NICKY GODDARD

The article I wrote on silencing the fan has provoked some widespread interest Doug Moller from Queensland Australia wrote to tell me he has fitted a pukka fan speed controller (as used on ceiling fans in their country) and made the control accessible by drilling a hole on the top of the inner case so it can be adjusted with a screwdriver.

George Bell of Cornwall has also written to say when he tried it it didn't work I can only assume George has a 250 volt fan fitted which will reduce the effect of this modification. George tells me he is going to experiment with an electronic control so the result should be interesting.

Of course the original speed controller was meant as a simple but effective solution to the problem and I can't help thinking that the more complicated it gets then the bigger chance of a breakdown still time will tell.

Some five years ago I "went disc", knowing nowt about it. Peter Brooks provided me with a supply of disc based programmes, and patiently taught me how to use them on the console. A badly written set of instructions on the way to put the discs into the drive (on a disc envelope!!) led me to reporting that a perfectly good set-up would not work - honest, all that was wrong was that the discs were upside down, and I was too scared of the gear to risk trying any change. Luckily Peter had similar envelopes, saw the problem and we were in business.

One of the discs he sent to me contained a programme carrying a mini Bach concert, which I eventually managed to load, with Call Files(1), but when I tried to run it - came to the conclusion that the console had locked up. So I tried again, same result. Actual reason - my impatience and by far the longest prescan I had ever experienced. So we set to work trying to reduce this delay. So successful were Geoff and I that the prescan and load became near enough instantaneous, and eventually we got it onto a cassette.

Was very satisfied with this until Stephen Shaw introduced me to the Harrison music discs, the quality of the reproduction they had achieved was of an excellence I never expected to hear on a computer, and replaced the cassette mini Bach concert I intended to use in this article in my esteem - and were 'disc only', so the cassette prog is available to anyone who would like it.

The "messaging about" we had done, we continued to use of course, and it can be deduced from the following programme. (A more detailed account of the way we went about cutting out delay can be supplied.)

In 1985 PARCO published a programme called "Turn of the Card" (Vol 2 Issue 1) based on TV series called "Play your Cards right" with Bruce Forsyth. I liked this programme but one or two things could be improved (I felt). It was written in TIBas, and any slip up meant that the displayed format shifted and went out of register. Altered to ExBas, this went, but made alterations to the lay-out necessary, as did the odd improvements (Well, I think they were!). One annoying snag with the programme was that the 5 card display got as far as 4, but paused half way over the last one. Try as we might, attempts to stop this eluded us for many days, then one day - BINGO! - and I sent this on to Stephen, hoping that he might find it of interest.

And so he did, and when he mentioned it in Rambles (Issue 18 TI*MES) revealed that even the great "Regina" who had noted this anomaly in 1981 and again in 1987, had given an incorrect fix!! We felt that we had made a useful (if minor) contribution at last.

At the last AGM, Frances Parrish who holds copyright on PARCO programmes was good enough to give me permission to "mess about" with the programme, and publish in TI*MES if desired. Thanks Mathew, hope you like, or at least, do not regret condoning, the result.

```

100 CALL CLEAR :: GOTO 140
110 CALL SCREEN :: CALL KEY
:: CALL COLOR :: CALL HCHAR
:: CALL VCHAR :: CALL SOUND
:: CALL CHAR
120 I :: S :: K :: DEL :: A$
:: SET :: HSC :: T :: BONUS
:: BON :: X2 :: A :: B
:: C :: G2 :: F2 :: R :: X :
: D :: F2 :: E2 :: W :: Z ::
M$ :: B$ :: G
130 !@P-
140 CALL CHAR(35,"000C121038
101038"):: CALL SCREEN(15)
150 FOR I=1 TO 8 :: CALL COL
OR(I,5,1):: NEXT I
160 DISPLAY AT(5,1):" T
URN OF THE CARD": : : "
AUGUST 1984": : : "
BY PHILIP ORD"
170 DISPLAY AT(15,1):"(MODS
BY J AND G BALLINGER)"
180 DISPLAY AT(22,1):" INS
TRUCTIONS? (Y OR N)"
190 CALL KEY(0,K,S)
200 IF S=0 THEN 190
210 IF K=89 THEN 230
220 IF K=78 THEN 280 ELSE 19
0
230 CALL CLEAR
240 DISPLAY AT(1,1):" TRY T
O GUESS IF THE NEXT": " CA
RD IS HIGHER OR LOWER":
:" THAN THE ONE BEFORE."
250 DISPLAY AT(8,1):" YOU S
TART WITH £250 AND": " RIS
K AS MUCH AS YOU WISH":
:" ON THE TURN OF THE CARD.
"
260 DISPLAY AT(16,1):" THE
CARDS ARE DISPLAYED": " IN
3 SETS OF 5 AND YOU": " C
AN CHANGE THE FIRST": " CA
RD IN EACH SET IF YOU": "
SO WISH"
270 FOR DEL=1 TO 3000 :: NEX
T DEL
280 CALL CLEAR :: CALL SCREE
N(15):: RESTORE 290 :: FOR I
=96 TO 126 :: READ A$ :: CAL
L CHAR(I,A$):: NEXT I
290 DATA 0,000000E0E0E0E0E,E
0E0E0E0E0E0E0E,E0E0E0E0E0E,0
000001F1F1F,000000F8F8F83838
300 DATA 383838F8F8F8,000000
3F3F3F3838,3838383F3F3F,0000
00FCFCFC
310 DATA 383838F8F8F83838,00
00003838383838,383838383838
838,00C0C0F8F8F8C0C,3838383F
3F3F3838,383838383838
320 DATA 000000FEFEFEFC6C,C6
C6C6C6C6C6C6,C6C6C6FEFEFE0
000,0000001F1F1F0101
330 DATA 000000FCFCFC0C,010
10101010101,C0C0C0C0C0C0C
C,0101013F3F3F,C0C0C0C0C0C,1
C1C1C1C1C1C1C
340 DATA 38F8F8F8F8F8C0C,393
F3F3F3F3F3F3F,0000000E1E3E7C
F8,F0E0C0808080C0E
350 DATA F0F87C3E1E0E,0
360 CALL CHAR(128,"FFFFFFFF
FFFFFFFF"):: CALL CHAR(136,"A
55AA55A55AA55AA5"):: FOR
SET=9 TO 12 :: CALL COLOR(SE
T,7,16):: NEXT SET
370 CALL COLOR(13,13,1):: CA
LL COLOR(14,5,15):: HSC=0
380 CALL CLEAR :: T=250 :: B
ONUS=0 :: BON=0 :: X2=1
390 IF X2=4 THEN 1940
400 FOR I=8 TO 18 :: CALL HC
HAR(I,7,128,18):: NEXT I ::
CALL HCHAR(6,5,42,22)::
CALL HCHAR(20,5,42,22):: CAL
L VCHAR(7,5,42,14):: CALL VC
HAR(7,26,42,14)
410 RESTORE 420 :: FOR I=0 T
O 9 :: READ A,B :: CALL VCHA
R(A,B,136,3):: NEXT I
420 DATA 10,9,10,10,12,10
,13,10,15,10,16,10,18,10,19,
10,21,10,22,K,K
430 DISPLAY AT(15,10)SIZE(7)
:" SET "&STR$(X2)
440 DISPLAY AT(19,4)SIZE(20)
:"SCORE TO BEAT="&STR$(HSC)
450 G2=0 :: F2=0
460 IF F2=0 THEN 510
470 DISPLAY AT(3,2):"CHANGE
THIS CARD?(Y OR N)" :: CALL
SOUND(1,2000,10)

```

```

480 CALL SOUND(100,660,5)
490 CALL KEY(0,K,S):: IF S=0
THEN 490
500 IF K=89 THEN 510 ELSE 57
0
510 R=10 :: C=9 :: G2=0 :: F
OR I=10 TO 13 :: CALL HCHAR(
I,9,128,2):: NEXT I :: CALL
HCHAR(4,1,32,32)
520 RANDOMIZE :: X=INT(RND*1
3)+1
530 ON X GOSUB 760,820,890,9
60,1030,1100,1170,1240,1310,
1380,1450,1520,1600
540 G2=1 :: IF C<>21 THEN 56
0
550 X2=X2+1 :: F2=0 :: CALL
CLEAR :: GOTO 390
560 F2=F2+1 :: IF F2=1 THEN
460
570 IF F2>1 THEN 590
580 CALL HCHAR(4,1,32,32)
590 CALL HCHAR(21,1,32,32)
600 CALL HCHAR(22,1,32,32)
610 DISPLAY AT(22,7):"TOTAL
=E"&STR$(T)
620 DISPLAY AT(24,6):"YOUR S
TAKE? E" :: ACCEPT AT(24,20)
:E2
630 IF E2>T THEN 640 ELSE 69
0
640 CALL CLEAR :: CALL SOUND
(200,220,0)
650 DISPLAY AT(12,1):" SOR
RY YOU INPUTTED TOO": : "
MUCH,NOW YOU MUST START": :
:" ALL OVER AGAIN" :: FOR
DEL=1 TO 1000 :: NEXT DEL :
: GOTO 380
660 FOR D=1 TO 1000
670 NEXT D
680 GOTO 380
690 CALL HCHAR(21,1,32,128)
700 DISPLAY AT(22,9):"(H OR
L)?"
710 CALL SOUND(100,550,5)
720 C=C+3
730 CALL KEY(0,K,S)
740 IF S=0 THEN 730
750 IF (K=76)+(K=72) THEN 520
ELSE 730
760 REM ACE*****

```

```

770 W=1 :: CALL HCHAR(R,C,10
3):: CALL HCHAR(R,C+1,101)::
CALL HCHAR(R+1,C,110):: CAL
L HCHAR(R+1,C+1,106):: CALL
HCHAR(R+2,C,111):: CALL HCHA
R(R+2,C+1,111)
780 IF G2=0 THEN 810
790 IF Z=14 THEN 1660
800 IF Z<14 THEN 1810
810 Z=14 :: RETURN
820 REM KING
830 W=13 :: CALL HCHAR(R,C,1
07):: CALL HCHAR(R,C+1,124)::
: CALL HCHAR(R+1,C,123):: CA
LL HCHAR(R+1,C+1,125):: CALL
HCHAR(R+2,C,111):: CALL HCH
AR(R+2,C+1,126)
840 IF G2=0 THEN 880
850 IF Z=13 THEN 1660
860 IF Z<13 THEN 1810
870 IF Z>13 THEN 1910
880 Z=13 :: RETURN
890 REM QUEEN
900 W=12 :: CALL HCHAR(R,C,1
03):: CALL HCHAR(R,C+1,101)::
: CALL HCHAR(R+1,C,108):: CA
LL HCHAR(R+1,C+1,108):: CALL
HCHAR(R+2,C,104):: CALL HCH
AR(R+2,C+1,122)
910 IF G2=0 THEN 950
920 IF Z=12 THEN 1660
930 IF Z<12 THEN 1810
940 IF Z>12 THEN 1910
950 Z=12 :: RETURN
960 REM JACK
970 W=11 :: CALL HCHAR(R,C,1
15):: CALL HCHAR(R,C+1,116)::
: CALL HCHAR(R+1,C,117):: CA
LL HCHAR(R+1,C+1,118):: CALL
HCHAR(R+2,C,119):: CALL HCH
AR(R+2,C+1,120)
980 IF G2=0 THEN 1020
990 IF Z=11 THEN 1660
1000 IF Z<11 THEN 1810
1010 IF Z>11 THEN 1910
1020 Z=11 :: RETURN
1030 REM TEN*****
1040 W=10 :: CALL HCHAR(R,C,
107):: CALL HCHAR(R,C+1,112)
:: CALL HCHAR(R+1,C,108):: C
ALL HCHAR(R+1,C+1,113):: CAL
L HCHAR(R+2,C,111):: CALL HC

```

```

HAR(R+2,C+1,114)
1050 IF G2=0 THEN 1090
1060 IF Z=10 THEN 1660
1070 IF Z<10 THEN 1810
1080 IF Z>10 THEN 1910
1090 Z=10 :: RETURN
1100 REM NINE*****
1110 W=9 :: CALL HCHAR(R,C,1
03):: CALL HCHAR(R,C+1,101)::
: CALL HCHAR(R+1,C,104):: CA
LL HCHAR(R+1,C+1,106):: CALL
HCHAR(R+2,C,100):: CALL HCH
AR(R+2,C+1,102)
1120 IF G2=0 THEN 1160
1130 IF Z=9 THEN 1660
1140 IF Z<9 THEN 1810
1150 IF Z>9 THEN 1910
1160 Z=9 :: RETURN
1170 REM EIGHT*****
1180 W=8 :: CALL HCHAR(R,C,1
03):: CALL HCHAR(R,C+1,101)::
: CALL HCHAR(R+1,C,110):: CA
LL HCHAR(R+1,C+1,106):: CALL
HCHAR(R+2,C,104):: CALL HCH
AR(R+2,C+1,102)
1190 IF G2=0 THEN 1230
1200 IF Z=8 THEN 1660
1210 IF Z<8 THEN 1810
1220 IF Z>8 THEN 1910
1230 Z=8 :: RETURN
1240 REM SEVEN
1250 W=7 :: CALL HCHAR(R,C,1
00):: CALL HCHAR(R,C+1,101)::
: CALL HCHAR(R+1,C,96):: CAL
L HCHAR(R+1,C+1,108):: CALL
HCHAR(R+2,C,96):: CALL HCHAR
(R+2,C+1,111)
1260 IF G2=0 THEN 1300
1270 IF Z=7 THEN 1660
1280 IF Z<7 THEN 1810
1290 IF Z>7 THEN 1910
1300 Z=7 :: RETURN
1310 REM SIX*****
1320 W=6 :: CALL HCHAR(R,C,1
03):: CALL HCHAR(R,C+1,105)::
: CALL HCHAR(R+1,C,110):: CA
LL HCHAR(R+1,C+1,101):: CALL
HCHAR(R+2,C,104):: CALL HCH
AR(R+2,C+1,102)
1330 IF G2=0 THEN 1370
1340 IF Z=6 THEN 1660
1350 IF Z<6 THEN 1810

```

```

1360 IF X>6 THEN 1910
1370 Z=6 :: RETURN
1380 REM FIVE*****
1390 W=5 :: CALL HCHAR(R,C,1
03):: CALL HCHAR(R,C+1,105)::
: CALL HCHAR(R+1,C,104):: CA
LL HCHAR(R+1,C+1,101):: CALL
HCHAR(R+2,C,100):: CALL HCH
AR(R+2,C+1,102)
1400 IF G2=0 THEN 1440
1410 IF Z=5 THEN 1660
1420 IF Z<5 THEN 1810
1430 IF Z>5 THEN 1910
1440 Z=5 :: RETURN
1450 REM FOUR*****
1460 W=4 :: CALL HCHAR(R,C,1
07):: CALL HCHAR(R,C+1,96)::
CALL HCHAR(R+1,C,108):: CAL
L HCHAR(R+1,C+1,96):: CALL H
CHAR(R+2,C,104):: CALL HCHAR
(R+2,C+1,109)
1470 IF G2=0 THEN 1510
1480 IF Z=4 THEN 1660
1490 IF Z<4 THEN 1810
1500 IF X>4 THEN 1910
1510 Z=4 :: RETURN
1520 REM THREE*****
1530 W=3 :: CALL HCHAR(R,C,1
00):: CALL HCHAR(R,C+1,101)::
: CALL HCHAR(R+1,C,100):: CA
LL HCHAR(R+1,C+1,106):: CALL
HCHAR(R+2,C,100):: CALL HCH
AR(R+2,C+1,102)
1540 IF G2=0 THEN 1580
1550 IF Z=3 THEN 1660
1560 IF X<3 THEN 1810
1570 IF Z>3 THEN 1910
1580 Z=3 :: RETURN
1590 RETURN
1600 REM TWO
1610 W=2 :: CALL HCHAR(R,C,1
00):: CALL HCHAR(R,C+1,101)::
: CALL HCHAR(R+1,C,103):: CA
LL HCHAR(R+1,C+1,102):: CALL
HCHAR(R+2,C,104):: CALL HCH
AR(R+2,C+1,105)
1620 IF G2=0 THEN 1650
1630 IF Z=2 THEN 1660
1640 IF Z>2 THEN 1910
1650 Z=2 :: RETURN
1660 CALL SOUND(1000,440,10)
:: CALL COLOR(13,5,1):: CALL

```

```

HCHAR(22,1,32,32):: T=T-E2/
2 :: BON=BON+1 :: DISPLAY AT
(22,1):" A PAIR,LOSE HALF YO
UR STAKE"
1670 FOR DEL=1 TO 400 :: NEX
T DEL
1680 IF W=1 THEN 810
1690 IF W=13 THEN 880
1700 IF W=12 THEN 950
1710 IF W=11 THEN 1020
1720 IF W=10 THEN 1090
1730 IF W=9 THEN 1160
1740 IF W=8 THEN 1230
1750 IF W=7 THEN 1300
1760 IF W=6 THEN 1370
1770 IF W=5 THEN 1440
1780 IF W=4 THEN 1510
1790 IF W=3 THEN 1580
1800 IF W=2 THEN 1650
1810 IF K=76 THEN 1830
1820 IF K=72 THEN 1870
1830 FOR I=1100 TO 110 STEP
-110 :: CALL SOUND(100,I,10)
:: NEXT I
1840 CALL COLOR(13,7,1):: CA

```

```

LL HCHAR(22,1,32,32):: DISPL
AY AT(22,4):"SORRY! THATS WR
ONG"
1850 FOR DEL=1 TO 400 :: NEX
T DEL :: T=T-E2 :: IF T=0 TH
EN 380
1860 GOTO 1680
1870 FOR I=110 TO 1100 STEP
110 :: CALL SOUND(100,I,10):
: NEXT I :: CALL COLOR(13,13
,1):: CALL HCHAR(22,1,32,32)
:: T=T+E2 :: BON=BON+1 :: IF
BON=15 THEN 1890 ELSE 1900
1880 !
1890 BONUS=5000
1900 DISPLAY AT(22,10):"CORR
ECT" :: FOR DEL=1 TO 400 ::
NEXT DEL :: GOTO 1680
1910 IF K=76 THEN 1870
1920 IF K=72 THEN 1830
1930 GOTO 1680
1940 CALL CLEAR
1950 IF T>HSC THEN 1960 ELSE
1970
1960 HSC=T+BONUS :: GOSUB 20
40
1970 DISPLAY AT(10,1):" YOU

```

```

SCORED £ ";T;" " : :"" : "
PLUS A BONUS OF £";BONUS;"":
:" FOR A TOTAL OF £";T+BON
US
1980 DISPLAY AT(18,1):" THE
BEST SCORE SO FAR": " IS
£";HSC;" BY ";B$
1990 DISPLAY AT(22,1):" PLA
Y AGAIN? (Y OR N)"
2000 CALL KEY(0,K,S):: IF S=
0 THEN 2000
2010 IF K=89 THEN 380
2020 IF K=78 THEN 2030 ELSE
2000
2030 END
2040 REM HIGHEST SCORE
2050 DISPLAY AT(10,1):" WEL
L DONE, YOU'VE SCORED": " T
HE HIGHEST SO FAR THIS": "
SESSION": " WHAT IS YOUR
NAME?"
2060 ACCEPT AT(20,5):B$
2070 RETURN

```

R A M B L E S

by Stephen Shaw
Written for TI*MES April 1990.

Welcome to another Rambles, which includes bits and pieces for all owners. Even a bit that at first sight you may feel is not appropriate to you is still worth a quick scan...

CONSOLE ONLY MEMBERS are encouraged to write in and ask questions or give a highly detailed note of what they wish to see. As none of you write to me, it makes it very hard for me to write for you! From this issue I am starting to review the many modules which still remain available. Be sure to let me know if this is helpful, if you require more or less or different detail and so on!

Contact me at:

10 Alstone Road, STOCKPORT, Cheshire, SK4 5AH.

An SAE is always useful! Please allow 7-10 days for a reply! If you havent heard from me within 3 weeks, I have not received your letter!

We are starting this issue with a test which is valid in any language and that includes CONSOLE ONLY OWNERS. I have an answer to this test in Basic and know it can be done. It is an interesting test for programmers in other languages, and is certainly suitable for c99 and Pascal.

Here we go...

If I write 7^2 , that means SEVEN SQUARED, or put another way, SEVEN TO THE POWER OF TWO, also $7 * 7$.

Equally 7^3 is SEVEN TO THE POWER OF THREE or $7 * 7 * 7$.

Get the idea?

OK. Your test is to write a program, in any language, which will determine the first power of seven which has a result containing six sevens in succession-eg "777777". Clue: The result has MORE than 15 digits!

To make checking easy, your program should print the result:

"SEVEN TO THE POWER OF N IS" where of course N is the first power that gives a result matching our requirements, and also of course giving the actual result.

Programmers in the faster languages may wish to determine if there is a second power of seven with six consecutive sevens in it- and will need to adjust their algorithm slightly to avoid an error message...

Acknowledgement to ACE magazine for this excellent programming test.

As ever no prizes but please submit your entries to me for possible publication. My address:

10 Alstone Road, STOCKPORT, Cheshire, ENGLAND, SK4 5AH.

Old timers who remember a reviewer of TI programs who signed with the initials PB who had trouble with an intriguing software house may sympathise with ACE magazine who were said to have faced a possible injunction to prevent publication of their January issue; loss of advertising worth thousands, and a potential claim for damages for loss of income- eg they got leant on REAL heavy by a large UK software company who did NOT appreciate a review suggesting their BIG GAME for Christmas was only going to be played for a month...

Congratulations TI on winning a patent on the microchip after all these years, giving a hefty boost to corporate income...

IBM got it wrong again, after really faulty maths in the first IBM PC we now have a problem with PS/2 Model 30 machines, a temporary cure for which is to plug the keyboard into the mouse port... and still IBM get to set the standards...

In this issue you will find news of the forthcoming venue for our 1990 AGM. Chester has a fairly good rail service from many parts. No place is very far from the railway station, but there is a regular bus service from the Station to the Town Hall, which is on Northgate Street, prior to which the bus passes the Bus Station, near the northern end of Northgate Street- Northgate Arena is nearer this first Bus Station. Walk North past Northgate, over the Ring Road and Victoria Road is very close to the Northgate, heading North.

Chester is a compact city- your whole family can benefit from a visit, as there is a regular bus service from behind the Town Hall to Chester Zoo; the seaside at Rhyl is only 29 miles away (with a train service); the Cathedral is well worth a visit; and the River Dee is a splendid place for a walk or just to take a river boat trip. The shopping centre is excellent, and do not forget the unique double decker "Chester Rows". Chester is a walled Roman city and you can walk ALL the way round.

Grosvenor Park is a good picnic place. There is the museum, a splendid canal (horse drawn boats)... (dont forget the worlds largest Matchbox toy collection!) but dont forget to visit the AGM!!! This group is made up of its members, to serve its members. If there is anything you like OR do not like, come and tell everyone. If there is anything you want done, say so... and remember, volunteers are worth many conscripts! Come and meet your fellow users, have a chat, see one or two new things, help your Group to remain together for many years yet.

The TI99 was established in 1979, and "killed off" in 1983, yet here we all are in 1990, and still with new software- including new modules.

Hotels in Chester go from around ten pounds each B&B upwards- the hotels around or under 15/night have the most character!

Tourist Information Centre is at the Town Hall, Northgate Street, Chester, Cheshire, telephone 0244 318356.

The UK version of Computer Shopper gave such a lovely description of the fourth Alternative Micro Show (held in Nov 89) that I must share it with you... "...should have been a hit but it was poorly publicised and held somewhere between Valhalla and Oblivion, Staffs. ... the crowds stayed away... well off the beaten track". And yes, the fifth one is scheduled for the same venue. What started life as a very good idea has been lost- and the next AMS will have the machine it started off as being an alternative to! Yes the IBM PC will be there... pity. It WAS a good idea, just badly put together and terribly publicised.

RED AND GREEN TEST... page 18 issue 26... John Seager has kindly submitted a c99 answer, which works swiftly and well. c99 owners will be aware that c99 code can be lengthy, AND you need a disk system to use it, and as space remains a little cramped even in this issue, I cannot print Johns solution here, but many thanks anyway, at least one reader had a go! Good patterns to start with are lines at screen top and bottom or screen left and right, or a frame all around the screen. (Disk owners- send for a copy of Johns solution, just send one disk and return postage to me. sjs.).

ERROR: ISSUE 26: PAGE 29 : MANDELBROT ALGORITHM.

Sorry 'bout this. For step H please read:

TEMP=XTEMP-YTEMP+XCONST

(or alternative) then

YY=2*XX*YY+YCONST; XX=TEMP; C=C+1;

MYARC HDFC-from Jan Alexandersson I hear one of our members hit a snag with this expansion card- he has only ONE physical disk drive, and having activated "DSK1 EMULATION" found that he no longer had access to the Myarc Disk Manager which he ONLY had on disk, in a form which REQUIRED Drive One- he was entirely locked out of his HFDC! Jan makes the comment that "it is thus VERY IMPORTANT to have several copies of DMS with DIFFERENT RELOAD paths. A subdirectory on the hard disk is OK as a load path". Before you deactivate drive one, make sure you can carry on with another drive!

M H Robinson is asking for articles on the use of Extended Basic sprites, games graphics, CALL JOYST, sprite movement and coincidence checking. We have the Miller Smart Programming Guide in the publications library. Do we have any XB programmers out there to take this a step further?

Mark Wills is interested in hearing from all our members to find out WHY they still use such a vintage computer. (He is also amongst our dwindling number of ACTUAL PROGRAMMERS, take a bow Mark...). Me first:

Way way back, when I first thought of buying a computer, I had a very good think about what I wanted one for, what I might need one for, and so on, prioritising everything. There was only one choice then available- the TI99/4, which at that time had not yet been released in a UK version! I waited for the UK version, and bought a fully expanded system- one of my prime uses was for data, and I saw no future in trying to use a cassette for data!

Many years later, looking back to my original requirements, I still find the TI99/4 (now with an A) to be the best suited to my requirements-

A friendly operating system.

Good educational software.

Very rugged construction.

Good choice of languages to learn and use.

Capable of everything I want! in games and utilities.

The competition is actually very thin on the ground in 1990- Atari ST, Amiga and PC seems to be about it. The PC in many ways would be a very retrograde step, and the ST and Amiga require a dedicated monitor for worthwhile results, and are by no means so friendly or easy to program as the TI.

I really dont fancy trying to write a 500k program, or prepare 256 colour graphics! And a slow machine with limited ram makes you learn to program effectively, to do in 16k what other people might take 200k for!

I have a stack of things still to do with this vintage computer, books to read, programs to convert or write, languages to learn and experiment with, many commercial utilities to come to grips with. About another twenty years worth I guess...

Why move on to fresh pastures when this one still has so much to offer!

Thanks to Stan Phillips for sending me a TI flier about the talking advert mentioned last time- I see that the chip was only included in SELECTED editions of the magazine, not the full circulation - must have kept costs down a little!

DATABASE DATABASE DATABASE

Would members- especially unexpanded members!- please note that Frances Parrish and his family are no longer involved in DATABASE, which took over from PARCO ELECTRIC as UK supplier of modules. DATABASE is now operated by: Martin Blythe, DATABASE, Bronfa, LLANYBYDDER, Dyfed, SA40 9UB. Telephone 0570 481079. Contact Martin for current stock and price details.

ENGELSE TI-DAG IN CHESTER:

De jaarlijkse gebruikersdag van onze engelse zustervereniging TI99/4A Users Group UK vindt dit jaar plaats op zaterdag 26 mei in de engelse stad Chester. De zaal voor dit evenement is te vinden in de Northgate Arena.

A magazine recently commented on crossover of technical words into general use, and mentioned a usage my own 6 year old makes use of... the concept of "rewinding" your memory - rather more effective and positive than simply forgetting (if you dont play back) and an interesting way of remembering something (if you play back). The magazine also mentioned the verb "flame" which refers to a simple innocent comment generating a massive overkill in verbal response- a destruction (verbally) of the poor offender. This form of somewhat anti-social behaviour is apparently common on bulletin boards - possibly as a result of the rather tenuous link between individuals.

I have commented lightly on some rather yucky comments made in various user group newsletters in the past, and checking back I find that those who have lashed out have in ALMOST every case been heavy bulletin board users. So perhaps using a bulletin board creates conditions liable to generate undue touchiness and once generated this form of behaviour spills out into the "real" world... perhaps bulletin boards should carry health warnings...

There is an interesting correlation- the nicest, friendliest, helpfulest TI users I have come across have absolutely nothing to do with bulletin boards.

Before I get flamed may I add that I am not knocking bulletin boards merely commenting on something which IS happening, and your comments are welcome, especially if you use bulletin boards and have been flamed- or have flamed someone else (did you realise how severe you were being?).

Long before 800x800 pixel animated colour graphics arrived I queried the connection between computers and pornography and was totally ignored... so does anyone have any comment on this new topic!

(And yes, HM Customs can confiscate published porn, but unless your packaging has PORN written all over it, disks will always get through....).

I received a package of disks from Jim Peterson in February, correctly declared as having a value of \$3.50, and HM Customs decided that the Public Domain disks had a REAL value of fifty quid and whacked on the vat and handling charge... I have appealed for a refund- last time this happened, with SUPER BUG from Ed Dohman, I got a refund after several weeks! Sometimes they let commercial disks through and sometimes they just go mad....

I have a couple more fractal programs but in the absence of any feedback regarding those published already will hold them over. I also have a "Fractal Music" tape- not strictly fractal music, it is a collection of sounds produced on a VERY expensive synthesiser, as directed by two treatments of a fractal image (hence a musical rendering of a fractal image rather than true fractal music). The effect is rather like a mix of Cage, Glass, and Stockhausen- especially Stockhausen, who would probably quite enjoy it. If you fancy a sample, although copyright permission is granted to copy subject to documentation being copied also... so for a copy, send me a C60 or C90 tape plus return postage plus an extra 20p stamp to cover documentation. Something different anyway!

DO NOT FORGET TO COME TO THE A.G.M. and tell us what you like/ dislike about the group, what changes you wish etc, and vote on any topics that require voting on, such as the appointment of your officers for the next year. Chester is a delightful place to visit so you can happily bring your family along in the knowledge that they will find something to divert them - if they are not also somehow hooked on the TI. **MAY 26TH. CHESTER. NORTHGATE ARENA. BE THERE.** (And for help with that difficult bit of software, bring it with you, with the docs!).

Want something in TI*MES? Any questions? Why not drop me a line and tell me how boring/fascinating you find Rambles/TI*MES? An SAE is always appreciated for a quick direct reply! My address:

Stephen Shaw. 10 Alstone Road. STOCKPORT. Cheshire. SK4 5AH.

IN THIS ISSUE you will find an advertisement placed by our friends in the East Anglia Region 99ers, who in exchange for a donation to their funds are offering the chance of winning a prize which we felt may well be desired by our members - so, if you fancy it, why not have a go?

The organisation of the raffle is undertaken entirely by EAR 99ers to whom any enquiries should be made.

Our apologies to any member who may be offended by the inclusion of gambling within our pages, the concept of a raffle is widely acceptable. If you feel strongly please write in and we can take your views into account should any further offer crop up.

Any grouches? Dont bottle them up, write me or the Gen Sec- we don't want to just find you dropping out - we'd at least like a chance to remedy our errors and try to do better....

Here's to another ten years.... Stephen Shaw

In line with the raffle advertised in this issue... would members who are already using Prestel, and wish to share their MBX numbers, kindly send details to me for publication in a future TI*MES as a members Prestel mailbox directory feature. Ta. Stephen.

TIPS FROM THE TIGERCUB

#53 & 54 Copyright 1988 and also Tips # 55
TIGERCUB SOFTWARE 156 Collingwood Ave. Columbus, OH 43213
Distributed by Tigercub Software to TI-99/4A Users Groups for promotional purposes and in exchange for their newsletters. May be reprinted by non-profit users groups, with credit to Tigercub Software.

Over 120 original programs in Basic and Extended Basic, available on cassette or disk, NOW REDUCED TO JUST \$1.00 EACH!, plus \$1.50 per order for cassette or disk and PP&M. Minimum order of \$10.00. Cassette programs will not be available after my present stock of blanks is exhausted. The Handy Dandy series, and Color Programming Tutor, are no longer available on cassette. Descriptive catalogs, while they last, \$1.00 which is deductible from your first order.

Tigercub Full Disk Collections, reduced to \$5 post-paid. Each of these contains either 5 or 6 of my regular catalog programs, and the remaining disk space has been filled with some of the best public domain programs of the same category. I am NOT selling public domain programs - they are a free bonus!
TIGERCUB'S BEST, PROGRAMMING TUTOR, PROGRAMMER'S UTILITIES, BRAIN GAMES, BRAIN TEASERS, BRAIN BUSTERS!, MANEUVERING GAMES, ACTION GAMES, REFLEX AND CONCENTRATION, TWO-PLAYER GAMES, KID GAMES, MORE GAMES, WORD GAMES, ELEMENTARY MATH, MIDDLE/HIGH SCHOOL MATH, VOCABULARY AND READING, MUSICAL EDUCATION, KALEIDOSCOPES AND DISPLAYS

NUTS & BOLTS DISKS

These are full disks of 100 or more utility subprograms in MERGE format, which you can merge into your own programs and use, almost like having another hundred CALLS available in Extended Basic. Each is accompanied by printed documentation giving an example of the use of each. NUTS & BOLTS (No. 1) has 100 subprograms, a tutorial on using them, and 5 pp. documentation. NUTS & BOLTS No. 2 has 108 subprograms, 10 pp of documentation. NUTS & BOLTS #3 has 140 subprograms and 11 pp. of documentation. NOW JUST \$15 EACH, POSTPAID.

TIPS FROM THE TIGERCUB

These are full disks which contain the programs and routines from the Tips from the Tigercub newsletters, in ready-to-run program format, plus text files of tips and instructions.

TIPS (Vol. 1) contains 50 original programs and files from Tips newsletters No. 1 through No. 14. TIPS VOL. 2 contains over 60 programs and files from Nos. 15 thru 24. TIPS VOL. 3 has another 62 from Nos. 25 through 32. TIPS VOL. 4 has 48 more from issues No. 33 through 41. NOW JUST \$10 EACH, POSTPAID.

NOW READY

TIPS FROM TIGERCUB VOL.5 Another 49 programs and files from issues No. 42 through 50. Also \$10 ppd

TIGERCUB CARE DISKS #1,#2,#3 and #4. Full disks of text files (printer required).

No. 1 contains the Tips news letters #42 thru #45, etc. Nos. 2 and 3 have articles mostly on Extended Basic programming. No. 4 contains Tips newsletters Nos. 46-52. These were prepared for user group newsletter editors but are available to anyone else for \$5 each postpaid.

The Extended Basic Manual did a very poor job of showing us how to use USING. My thanks to Karl Romstedt for telling me how to do it with DISPLAY AT - put a semicolon directly before USING -

```
100 CALL CLEAR :: DISPLAY AT
(12,5):USING "###.##":1.23
```

Other commands can go either before the AT or after the parameters -

```
110 DISPLAY ERASE ALL BEEP A
T(12,5):USING "###.##":1.23
120 DISPLAY AT(12,5)ERASE AL
L BEEP:USING "###.##":1.23
```

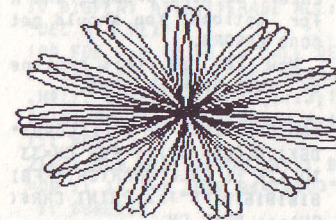
However, to output to a printer, put a comma before USING -
120 OPEN #1:"PIO" :: PRINT #
1,USING "###.##":1.23

The trouble with PRINT USING "###.##" is that it will print nothing but asterisks if the integer contains more digits than the number of # left of the decimal, and will leave blanks between the # and the first digit if the integer contains less digits than the number of ## left of the decimal. This algorithm will correctly print dollars and cents values of ANY size, rounded off to the nearest cent and with the dollar sign directly before the first digit or decimal.

```
100 INPUT A :: PRINT USING "
$"&SEG$(RPT$( "#",LEN(STR$(IN
T(A))))),1-(INT(A)=0),255)&".
###:A :: GOTO 100
```

This truly remarkable one-line disk cataloger tinygram by John Martin was published in the Jackson County news-letter -

```
1 IF F THEN INPUT #1:A$,A,J,
K :: IF J THEN PRINT A$;TAB(
12);J;TAB(18);SEG$(B$,ABS(A#
2)+1,2);K;TAB(27);A<0 :: GOT
D 1 ELSE RUN ELSE B$="AVDFDV
IFIVPB" :: INPUT "DSK":F ::
OPEN #1:"DSK"&STR$(F)&".",IN
TERNAL,RELATIVE,INPUT :: GOT
D 1 ! BY JOHN M
```



```
Here is the world's short-
est tic-tac-toe game, by R.
Walters, converted to a tiny
gram by Jim Peterson
2 DISPLAY AT(5,1)ERASE ALL:"
LET'S PLAY TIC-TAC-TOE": :T
HE BOARD IS NUMBERED": :TAB
(10);"1 2 3": :TAB(10);"8 9
4": :TAB(10);"7 6 5":
3 A=9 :: GOSUB 8 :: S=B
4 DEF F(X)=X-4+4*SGN(B.5-X)
5 C=F(S+1):: GOSUB 6 :: C=F(
S+3):: GOSUB 6 :: C=F(S+6)::
IF S/2=INT(S/2)THEN 7 :: DI
SPLAY AT(20,1):"I MOVE TO";F
(S+4):"":"THE GAME IS A DRAW
" :: STOP
6 A=C :: GOSUB 8 :: H=B :: I
F H<>F(C+4)THEN 7 ELSE RETUR
N
7 DISPLAY AT(20,1):"I MOVE T
O";F(C+4);"AND WIN!" :: END
8 DISPLAY AT(20,1):"I MOVE T
O";A: "":"WHERE DO YOU MOVE T
O?" :: ACCEPT AT(22,23)VALID
ATE("12345678"):B :: RETURN
=====
```

The Tigercub has dipped a cautious paw into the cold dark mysterious waters of assembly, while still keeping a firm grip on trusty old Extended Basic. The result is an XBasic program that writes an assembly program!

The following subprogram, when merged into any program which has reidentified characters, and called after the characters have been reidentified, will write a source code which can be assembled into object code, loaded from XBasic and linked to instantly access the character set.

The source code is based on 2FONTS/S by Barry Traver, who gives credit to Mac McCormick, David Migicovsky and Karl Schuneman.

```

19000 SUB CHARSUB(HX$( ))
19001 DISPLAY AT(12,1)ERASE
ALL:"Source code filename?":
"DSK" :: ACCEPT AT(13,4)SIZE
(12)BEEP:F$ :: OPEN #1:"DSK"
&F$,OUTPUT
19002 DISPLAY AT(15,1):"LINK
ABLE program name?": ACCEP
T AT(16,1)SIZE(6):P$
19003 DISPLAY AT(18,1):"Rede
fine characters from ASCI
I to ASCII"
19004 ACCEPT AT(19,7)VALIDAT
E(DIGIT)SIZE(3):F
19005 ACCEPT AT(19,21)VALIDA
TE(DIGIT)SIZE(3):T
19006 PRINT #1:TAB(8);"DEF";
TAB(13);P$ :: PRINT #1:"VMBW
EQU >2024" :: PRINT #1:"
STATUS EQU >837C"
19007 NB=(T-F+1)*8 :: CALL D
EC_HEX(NB,H$):: A=768+F*B ::
CALL DEC_HEX(A,A$)
19008 FOR CH=F TO T :: IF CH
<144 THEN CALL CHARPAT(CH,CH
$)ELSE CH$=HX$(CH)
19009 IF FLAG=0 THEN PRINT #
1:"FONT":: FLAG=1
19010 FOR J=1 TO 13 STEP 4 ::
M$=M$&" "&SEG$(CH$,J,4)&"
" :: NEXT J :: M$=SEG$(M$,1,
23)&" *"&CHR$(CH)

```

```

19011 PRINT #1:TAB(8);"DATA
"&M$ :: M$="" :: NEXT CH
19012 PRINT #1:P$;TAB(8);"LI
R1,Font" :: PRINT #1:TAB(
8);"LI R0,>"&A$ :: PRINT #
1:TAB(8);"LI R2,>"&H$
19013 PRINT #1:TAB(8);"BLWP
@VMBW":TAB(8);"CLR @STATUS"
:TAB(8);"RT":TAB(8);"END" ::
CLOSE #1
19014 SUBEND
19015 SUB DEC_HEX(D,H$)
19016 X$="0123456789ABCDEF"
:: A=D+65536*(D>32767)
19017 H$=SEG$(X$(INT(A/4096
)AND 15)+1,1)&SEG$(X$(INT(A
/256)AND 15)+1,1)&SEG$(X$(I
NT(A/16)AND 15)+1,1)&SEG$(X$
,(A AND 15)+1,1):: SUBEND

```

Now to try it out. You probably know that CALL CHARSET will restore reidentified characters below ASCII 96 to normal form, but not those above, so let's write a routine to restore those. Clear the memory with NEW, merge in the above, which you should have SAVED with - SAVE DSK1.CHARSUB, MERGE by MERGE DSK1.CHARSUB. Add a line - 100 CALL CHARSUB(HX\$()) and RUN. Answer the filename prompt with DSK1.OLDLOW/S, the next prompt with OLDLOW and select ASCII 97 to 127.

When done, insert the Editor/Assembler module and its disk Part A. Select Assembler, Y to load assembler, give the source code DSK1.OLDLOW/S, object code DSK1.OLDLOW/O, just press Enter at next prompt, and R for options. You should get 0000 ERRORS.

Now key in this routine to test your program.

```

100 CALL INIT :: CALL LOAD("
DSK1.OLDLOW/O"):: FOR CH=33
TO 126 :: CALL CHAR(CH,"FFB1
B1B1B1B1FF"):: PRINT CHR$(
CH):: NEXT CH
101 CALL KEY(0,K,S):: IF S=0
THEN 101 ELSE CALL CHARSET
102 CALL KEY(0,K,S):: IF S=0
THEN 102 ELSE CALL LINK("OL
DLOW")
110 GOTO 110

```

Press any key to restore the upper case characters by CALL CHARSET, any key again to use the CALL LINK.

You are now ready to use the routine to copy all kinds of character sets from the programs in your library. You don't have any such programs? Not to worry. You don't have to reidentify characters one by one with one of those graphics editor programs. You can just manipulate the existing hex codes of the normal characters. I have created nearly 50 different character sets by that method!

The space occupied by a character on the screen is really an 8x8 square of 64 tiny dots. Various dots are turned on (colored) and off (transparent) to create a pattern - just the opposite of light bulbs on a scoreboard.

And those on-and-off dots are really the binary numbers which the computer uses. But fortunately the computer lets us use hexadecimal numbers rather than binary. The following will print out a reference chart of decimal to binary to hexadecimal. You can easily convert it to dump to a printer.

```

10 DISPLAY AT(6,1)ERASE ALL:
"DEC BIN HEX"
100 FOR J=0 TO 15 :: CALL DE
C_BIN(J,B$):: CALL DEC_HEX(J
,H$):: DISPLAY AT(J+8,1):J;T
AB(5);B$;TAB(10);SEG$(H$,4,1
):: NEXT J
21020 SUB DEC_BIN(D,B$):: D
=D@ :: IF D=0 THEN B$="0000"
:: SUBEXIT
21021 IF D=1 THEN 21022 :: X
=D/2 :: B$=STR$(ABS(X<INT(
X)))&B$ :: D=INT(X):: IF D>
1 THEN 21021

```

```

21022 B@="1"&B$ :: B$=RPT$(
"0",4-LEN(B@))&B$ :: B@="
" :: SUBEND
21039 SUB DEC_HEX(D,H$)
21040 X$="0123456789ABCDEF"
:: A=D+65536*(D>32767)
21041 H$=SEG$(X$(INT(A/4096
)AND 15)+1,1)&SEG$(X$(INT(A
/256)AND 15)+1,1)&SEG$(X$(I
NT(A/16)AND 15)+1,1)&SEG$(X$
,(A AND 15)+1,1):: SUBEND

```

And this routine will show you how each letter is formed, by binary 0's (off) and 1's (on), for each key you press. I put it in merge format so you can MERGE it into any program and CALL it to examine the characters.

```

17000 SUB CHARVIEW
17001 !programmed by Jim Pet
erson Feb 1989
17002 DISPLAY AT(1,1)ERASE A
LL:"CHARACTERS IN BINARY & H
EX":: "Press any key to see
the binary representation
of thescreen character and
its hexcode."
17003 DISPLAY AT(8,1):"Press
Enter to see the char-acter
."
17004 CALL KEY(0,K,S):: IF K
=13 THEN 17005 ELSE IF S=0 O
R K<32 OR K>143 THEN 17004 E
LSE 17007
17005 CALL CHAR(48,"FF"&RPT$(
"B1",6)&RPT$("FF",9))
17006 CALL KEY(0,K,S):: IF S
<1 THEN 17006 ELSE CALL CHAR
(48,"0038444444444444380010301
010101038"):: GOTO 17004
17007 CALL CHARPAT(K,CH$)
17008 R=12 :: FOR J=1 TO 15
STEP 2
17009 H$=SEG$(CH$,J,1):: CAL
L HEX_BIN(H$,B$)
17010 DISPLAY AT(R,B):B$
17011 H$=SEG$(CH$,J+1,1):: C
ALL HEX_BIN(H$,B$)
17012 DISPLAY AT(R,12):B$ ::
DISPLAY AT(R,18):SEG$(CH$,J
,2):: R=R+1 :: NEXT J :: DIS
PLAY AT(22,6):CH$ :: GOTO 17
004
17013 SUBEND
17014 SUB HEX_BIN(H$,B$):: H
X$="0123456789ABCDEF" :: BN$
="0000X0001X0010X0011X0100X0
101X0110X0111X1000X1001X1010
X1011X1100X1101X1110X1111"

```

```

17015 FOR J=LEN(H$) TO 1 STEP
-1 :: X$=SEG$(H$,J,1)
17016 X=POS(HX$,X$,1)-1 :: T
$=SEG$(BN$,X*5+1,4)&T$ :: NE
XT J :: B$=T$ :: T$="" :: SU
BEND

```

And to reidentify a character, you just change the numbers and letters in the 16-digit hex code which represents the binary pattern. By writing little routines to switch those digits around, all kinds of things can be done.

For instance, the normal characters always have the top row of dots turned off, to provide spacing between lines of text on the screen. If you want taller characters you will have to double-space the lines, but you can create them by making the numerals and upper case characters consist of the 2nd-7th rows, the 7th row again, and the 8th row - it just happens to work out.

```

18000 SUB HIGHCHAR :: FOR CH
=48 TO 90 :: CALL CHARPAT(CH
,CH$):: CALL CHAR(CH,SEG$(CH
$,3,10)&RPT$(SEG$(CH$,13,2)
,2)&SEG$(CH$,15,2)):: NEXT CH
:: SUBEND

```

I made that a subprogram so you can MERGE it in and use it to modify other character sets.

If we take the hex code apart, 2 digits at a time, and reassemble it backward,

```

100 CALL CLEAR :: FOR CH=33
TO 90 :: CALL CHARPAT(CH,CH$
):: FOR J=1 TO 15 STEP 2 ::
CH2$=SEG$(CH$,J,2)&CH2$ :: N
EXT J :: CALL CHAR(CH,CH2$)::
CH2$="" :: NEXT CH
110 DISPLAY AT(12,1):"?NWOD
EDISPU": "VT EHT DENRUT OHW !
YEH" :: GOTO 110

```

That one was in my first Tips newsletter, years ago, but it is much more effective at assembly speed.

This one shades characters on their left edge by turning on the pixel to the left of the leftmost "on" pixel, if any. Also try it in combination with HIGHCHAR.

```

18001 SUB NEWCHAR3 :: FOR CH
=48 TO 122 :: CALL CHARPAT(CH
H,CH$):: FOR J=1 TO 15 STEP
2
18002 CH2$=CH2$&SEG$("0367CD
EF",POS("01234567",SEG$(CH$,
J,1),1),1)&SEG$(CH$,J+1,1)::
NEXT J :: CALL CHAR(CH,CH2$
):: CH2$="" :: NEXT CH :: SU
BEND

```

This one uses HIGHCHAR to heighten the character and then blanks out three rows. Try following it with NEWCHAR3.

```

18030 SUB NEWCHAR10 :: A$="0
0" :: FOR CH=48 TO 90 :: CAL
L CHARPAT(CH,CH$):: CH$=SEG$
(CH$,3,10)&RPT$(SEG$(CH$,13,
2),2)&SEG$(CH$,15,2)
18031 CH$=SEG$(CH$,1,4)&A$&S
EG$(CH$,7,2)&A$&SEG$(CH$,11,
2)&A$&SEG$(CH$,15,2):: CALL
CHAR(CH,CH$):: NEXT CH :: SU
BEND

```

The next one, which works only on ASCII 97-122, makes tall characters ridiculously elongated above.

```

18050 SUB NEWCHAR20 :: FOR C
H=97 TO 122 :: CALL CHARPAT(CH
,CH$):: CALL CHAR(CH,SEG$(CH
$,7,2)&RPT$(SEG$(CH$,9,2),
4)&SEG$(CH$,11,6)):: NEXT CH
:: SUBEND

```

This one has the characters raised by one line, widened one column at left and two columns at right to make a full 8x8 character which must be double-spaced horizontally and vertically.

XB ONLY

```

18090 SUB NEWCHAR27 :: FOR C
H=48 TO 122 :: CALL CHARPAT(CH
,CH$):: CH$=SEG$(CH$,3,10)
&RPT$(SEG$(CH$,13,2),2)&SEG$
(CH$,15,2):: FOR J=1 TO 15 S
TEP 2
18091 CH2$=CH2$&SEG$("014589
CD",POS("01234567",SEG$(CH$,
J,1),1),1)&SEG$("0129",POS("
04BC",SEG$(CH$,J+1,1),1),1)
18092 NEXT J :: CALL CHAR(CH
,CH2$):: CH2$="" :: NEXT CH
:: SUBEND

```

Those who have my Nuts & Bolts disks will see how valuable this assembly can be to make instantly available the routines for double height and double width characters, etc., etc. And if you have Todd Kaplan's amazing ALSAVE routine from the Genial Traveler Vol. 1 No. 3, you can imbed them in your XBasic program for fast loading.

And you can merge CHARSUB into any character editor or sprite defining program and, with a bit of modification, use it to convert your creations into fast-loading assembly.

These assembly loads are compatible with my BXB, so you can also load character sets into sets 15 and 16, ASCII 144-159. However, the CHARPAT statement cannot

access ASCII above 143, so in this case you must dimension an array in the program you are copying from, as DIM HX\$(159), and place the hex codes in the array using the ASCII as the subscript number, such as

```

CALL CHAR(CH+64,CH$) ::
HX$(CH+64)=CH$, so that
they will be passed to the
subprogram. And don't CALL
INIT after you have called
BXB!

```

So, now you try creating your own screen fonts!

Memory full,

Jim Peterson

(The disk library has 127 fonts created by Jim either on 2 disks archived or on six disks ready for use.

BXB and ALSAVE are on these disks. Stephen).

DISK LIBRARY REPORT

Stephen Shaw, 10 Alstone Road, STOCKPORT, Cheshire, SK4 5AH

A selection of some recent additions to the disk library- faithfully used by a small number of disk owners, and yet to be discovered by many! Disks are copied for one pound each side, and are supplied SSSD. If you wish the library to also supply the disks there is an extra charge of one pound per disk which also makes a contribution to extra packaging costs- we wrap 'em well don't we regular users! Then there is a flat one pound per order how ever many disks- to cover basic packaging, bus fare to post office, etc etc. So if you send the disks and want 5 disks the cost is six pounds! OK?

>TETRIS (HULPKE)- at last a MACHINE CODE version of this new classic game, with smooth sprite operation, nine speeds (fast is FAST), and the opportunity- within the time available- to select the next shape to fall. Uses number keys for control to rotate the shape, drop it, move it left or right, change the next shape, or to pause. VERSION 2.0. Allows use of joystick for all except pause. No high score feature so write your scores down. Good habituating game. Might be worth trying the ExBas versions in the library first as they are a little slower!

=====

EIGHTY COLUMN CARD OWNERS:

The following programs are for 80 column cards only, and should work with Mechatronics and Diji cards as well as the Geneve.

>FUNLWEB 4.21 80 COLUMN, THREE DISKS. Lots of additions and variations including a double tab which you can switch between, and a modified assembly editor which puts assembly labels and commands in capitals and comments in lower case without having to use the shift key! Lots lots more. See notes on 40 column version below which MAY be relevant! Remember to specify 80 col!

>XHi...TWO DISKS...EX BAS HI RES GRAPHICS SUPPORT VN 3.6 by A Hulpke. Allows use in ExBas of graphics modes 6 (212x512 x6col) and 7 (212x256 x256 colours) by means of CALL LINKS. Includes SAVE and LOAD which is compatible with MYART files without conversion, and a utility to load TI ARTIST into this format. Plus magnify and reduce, print utility, draw commands, etc etc.

Note: The print utility is stated to be usable without an 80 column card but does not work on my system.

This disk ALSO has an 80 column INFOCOM adventure loader.

Documentation in original German plus English translation.

=====

>FUNLWEB 4.21 40 COLUMN, THREE DISKS.

Main addition, DISK REVIEW, is an enhanced disk cataloguer which will list disk contents, and allow you to select and RUN any runnable file- DF80, XB or memory image, also to look at sector contents of files. Protect/Unprotect files. Other additions and variations: Two tabs now available and switched with new command ST. Faster text manipulation (move, copy) and better error handling if buffer space short. Improved assembly editor. Different show directory allows file protect/unprotect. Please note now requires THREE disks! READ DOCS before loading a DF80 file using the LOADERS! For best results change all Fnlweb files (except SYSCDN) at the same time. Vn 4.20 had several problems and was not offered by this library.

>HARDCOPY. This is a special TI99/4A 40 column version of a utility included on XHi (see above) which allows owners who do NOT have 80 column capability to print out MyArt pictures (16 and 256 colours). You may define your own patterns for each colour- printing is in monochrome. Pictures supplied on this disk and those below will print out OK without having to set up print tones.

----> continued----

Pictures can be clipped, and many magnifications are possible, so if you clip little bits and magnify them all a lot you can have a nice detailed poster! This disk contains a picture of a ball on a chequer board, and a lovely dragon called DRACO, who prints beautifully- for a full page print set control variables to H=3, V=6, S=1.(256 colours? Set H & V the same, else for 16 colour pics, set V=2*H). STOP PRESS!!! JUST as I was printing this the postman brings an update, NOW called SmARTCopy! As well as printing Myart pics as above, it can now also print TI Artist pics (including colour tones!) and pictures in Myart data format but larger (eg 424 lines such as converted MacFlix pics). Super duper prog.

STATISTICS MODULE ON DISK!!!! (FOUR DISKS REQUIRED). Far too big to cram into ram all at once here is a friendly and well split set of disks courtesy of David Brown. Some readme notes BUT you really do need to know your stats for this to be useful. Allows data files to be created for analysis- descriptive stats (mean, std dev etc); correlation; linear regression; inferential stats incl t-tests and analysis of variance, and why not throw in a significance level calculator as well!

FOUR DISKS PLEASE!!! Once cost over 40 quid!

>DIJIT...nearly a full disk of text which should answer your queries on the DIJIT AVPC 993B expansion card which gives you 80 columns on a suitable monitor.

=====

>THE MISSING LINK LIVE DEMO DISK is "free" just send a disk and return postage. This disk demonstrates the commercial Texaments program THE MISSING LINK and shows you how, using Extended Basic, you can have 32 sprites, bit map graphics, load and print (Epson) TI Artist pictures, see a Greeked TI Writer document, and even use 60 column text (about as small as you can read on a tv set!). The secret is embedded machine code in an XB program, and the use of lots of CALL LINKS. Even if you dont want the program get the demo and see what it does! NOT COMPATIBLE WITH MYARC XB.

=====

MY ART PICTURE DISKS for use on a TI with HARDCOPY, or for use on a TI with 80 column card using XHi, or for use on a Geneve with MyArt.

MA1...KRIS1..topless lady
MA2...SABER2 (aircraft), SWAN2, TIGER (different to MacFlix/RLE tiger)
MA3...JANE2, KRISTINI, RED1 (topless ladies) and UFO2 (solo bubble)
MA4...GRNDRAGON, REDDRAGON, HAWK2, HUNICORN (winged variety).
MA5...GARFIELD21, DDIE1, CHICKEN, FOX, SESAM (Sesame Street characters),
MA-L&TRAMP, CHARLIEB2 (actually Bloom County cartoon).
MA6...GOBLIN2, WDRKUGEL (ball on patterned board).
MA7...BALLET2 (dancer), KARTE (world map), TRIANGLE.
MA8...HOUSDREAM2 (nice house), HWOLF (wolves howling), Rabbit (cartoon)
MA9...CITY2/MY (cityscape), SNOOPY.

Note that lower case files on the above are colour/texture data files to be loaded with Hardcopy Option 5 for a better printout.

=====

>MUDIE 3- disk B6/3, which follows on from the earlier pair of disks we have. This disk contains object code for an enhanced 40 column mode for ExBas program using CALL LINKS- added since B6/2 are sounds and colours. There is also a short routine to detect (and warn of) alpha lock key position, a routine to load machine code into high ram from exbas, and a routine to add POKEV,PEEKV and POKER to ExBas, allowing you to inspect and change VDP Ram and to change VDP registers.

>DUTCH DEMO... various graphics routines in machine code, including SKY which is already on our DEMO disk... there is also a fast flashing multi colour mode display, a LINES program which is nothing like the TI Lines program but has lots (LOTS) of graphics made up of lines... and a receding square tunnel to boggle you... lots of source code including for dsrlnk, gp1lnk and kscan.

>ROMSTADT LINKS 1...assembly routines to load using ExBas (CALL LOAD) and use with CALL LINKS, including a multi line accept at; instant change a range of color sets; font amendment routines; a unique routine to GET the colours of colour sets; a routine which will change any upper case in a string to lower case; a routine to place character patterns 63 to 143 into a string array; a routine to place screen contents into a string array; and a routine to place up to five screens into low mem for instant access. There is also a LOAD program with inbedded machine code for that extra touch (for XB Programs or to read text files or even print a catalog!). FULL COMMENTED SOURCE CODE.

>ROMSTADT LINKS 2...More assembly routines to use from ExBas... two text screen dumps, single size double density (4 cycles/line) and double sided double density(5 cycles/line, omitting first and last screen columns. A routine to insert spaces between letters of text; four non-horizontal display routines; and a suite of eight routines to use 40 column mode. FULL COMMENTED SOURCE CODE.

>JAPANESE... Don Shorock SAMPLE DISK... Don publishes a lengthy catalogue of "multiple choice" programs, largely language based. This one is for JAPANESE and includes the Kanata text. If you are interested in using your TI with a multiple choice quiz to learn languages, OR have an interest in Japanese text, why not have a look at this one.

>TONY KNERR MUSIC... Dont Let the Sun Go Down (Elton John); Root Beer Boogie, Toccata in D Min, A Whiter Shade of Pale, and another whose title I cannot make out from the 10 character file name... 322 sectors in all anyway.

>UTIL 23 is now VERY full with the addition of: T-SHELL, by Travis Watford (remember RLE!) this is a super embedded machine code ExBas program that gives you a background environment- for XB programmers who would like -from the XB command line- while programming to catalog a disk to screen or printer, read a text file on screen or printer, sweep a disk, copy or rename a file, and protect or unprotect a file, without having to load a program which will destroy their XB program...; a routine by Bud Wright to be used in ExBas which changes lower case letters in a string to upper case (the opposite of a Romstadt routine above); and SPEECODER by Michael Zapf of Germany-a complex (!) utility for programming speech using the speech synth, enabling you to examine existing phrases in the synth, or in modules, and change the pitches, volumes and sounds, resaving the results to disk for later reuse, including in data statements in XB programs.

>127 SCREEN FONTS/ARCHIVED...TWO DISKS. (Archiver required).

>127 SCREEN FONTS/NOT ARCHIVED...SIX DISKS...

Please specify clearly! From Jim (Tigercub) Peterson, and by his request, free of copying fee if you wish (but you must supply full return packaging AND postage AND disks if you choose that option!). For ExBas programmers who can select up to five fonts they like and load them into low memory, then a simple CALL LINK and WHAP your new font is in use. Redefines the character sets. Specify archived or not and send enough disks! Archiver program to unpack is on UTIL21.

MINI MEMORY MADNESS

by Peter Hutchinson.

WRITING MINI-MEMORY ASSEMBLER PROGRAMS.

There are two kinds of machine code programs, those that can be run from Easy Bug using the E (Execute) command, and those with a BASIC interface e.g. CALL LINK.

According to the Editor Assembler manual (p.440/441) you must start and end your programs as follows:

```
SV DATA 0      save return address here
WS BSS >20      workspace registers are stored here
ST EQU >B37C    address of status register
SR MOV R11,@SV  save return address
                LWPI WS      set workspace area
*
* your routine goes here
*
CLR RO
MOVB RO,@ST    clear status register
MOV @ST,R11    restore return address
B *R11         return to basic etc
END
```

In most cases your routine would need parameters passing to it via CALL LINK. This is where the ROM routines will come into use. The most useful are as follows (see mini memory manual).

NUMREF...Get numeric parameter (p.54)

RO-array element number. Usually 0 for simple variables.

R1-parameter number in CALL LINK statement

>B34A-floating point accumulator (FAC) area, 8 bytes long.

This is where your number is stored.

STRREF...Get string parameter (p 54)

RO-array element number. Usually 0 for simple variables.

R1-parameter number as item appears in CALL LINK statement.

R2-address of memory of where string is to be stored.

MUST be CPU memory (Mini mem >7000 to 7FFF).

CFI...Convert floating point number to integer (p.49)

input...FAC containing FP number to be converted, 8 bytes long.

output..FAC, containing a 16 bit integer.

FOR EXAMPLE the following code fetches the first parameter of a program called DEMO:

```
10 CALL LINK("DEMO",105)
```

```
FC EQU >B34A    address of fac
NM DATA 0     number is stored here
DM CLR RO      array element number is zero
LI R1,1        first item in argument list
BLWP @>6044    get numeric parameter and store in fac
BLWP @>601C    call xmlnk routine
DATA >1200     convert number in fac to integer
MOV @FC,RO    put number into RO
MOV RO,NM     store it!
```

To get your program to run in BASIC you must also store the program name in the ref/def area. If you examine the area starting at >7FEB you will notice that there are three names there already...

```
ADDRESS: NAME: EXECUTE ADDRESS:
>7FEB LINES >7D9E Lines demo program
>7FF0 OLD >71AC LBL assembler
>7FFB NEW >71A6 LBL assembler
```

In most cases if there is only one routine to save put your entry over the LINES entry as follows:

```
AORG >7FEB
TEXT 'DEMO must be six characters long! MUST BE!
DATA >7D50 start address of where DEMO PROGRAM begins, not data
*
```

If you want to add more entries then you must use the First Free Address (FFAM) and Last Free Address (LFAM) variables. FFAM is at >701C and LFAM is at >701C.

Normally FFAM contains >7FB2 and LFAM contains >7FEB. First subtract FFAM from LFAM and if the result is greater than 7 bytes then you can add another entry. Therefore subtract 8 from LFAM and store the result in LFAM. For example if I wanted to add another routine called DEMO2 I would first examine FFAM and LFAM (using M (memory) command (M701C) from Easy Bug, or in LBLA:

```
AORG >701C
BSS 4 this will display contents of >701C to >701F,
normally >7FB2 and >7FEB
* LFAM-FFAM: >7FEB->7FB2 = >0036 or 54 bytes
* LFAM- 8 : >7FEB->0008 = >7FE0
* NOW we can store the routine name like this...
```

```
AORG >7FED the new LFAM address
TEXT 'DEMO2 name of routine
DATA >7E80 execution address
```

I hope this will be a lot of use to Mini Memory owners confused by the complex descriptions given in the manuals.

My address:
6 Moorlands View, Free School Lane, Savile Park, HALIFAX, UK, HX1 2XQ



EDUCATIONAL MODULES...

Trying to decide which educational modules to buy is made a little difficult as the US educational system differs from ours a little (what is 5th grade!) and also some modules cover a very wide age range.

The following is indicative only, and in general, ages quoted are POSSIBLY a little older than they might be. For reading titles, a fairly basic grasp of reading is required, and the starting age will vary from child to child, perhaps more so than for the math titles.

UP to age FIVE, you can start with EARLY LEARNING FUN and EARLY LOGO LEARNING FUN. For the second module- which requires no expansion and no Logo, you will find it useful to make up some "cue cards".

If you have or can find the MBX Expansion unit, three other modules are suitable, but these REQUIRE the MBX Unit- Terry Turtles Adventures, I'm Hiding, and Honey Hunt. If you can find it, SUPER SKETCH goes down well, and to a lesser extent in this age range, TI ARTIST(Disk).

From Age FIVE:

EARLY READING, READING FUN(Requires speech synth), READING RAINBOWS, STORY MACHINE, and SOUND TRACK TROLLEY(Requires MBX Unit).

HANGMAN, SPEAK AND SPELL(not a module, a disk,requires speech synth). NUMBER READINESS, NUMBER MAGIC, NUMERATION 1, ADDITION AND SUBTRACTION 1 AND 2, ALIEN ADDITION. LOGO II (Requires 32k ram).

VIDEO GRAPHS, PICTURE PARTS, FACE MAKER. STORY MACHINE.

TI Artist (Disk) is also highly suitable, as is Super Sketch if you can find it. A-MAZE-ING is popular in the game range.

From Age EIGHT:

BEGINNING GRAMMER, READING ROUNDUP, READING ON, READING TRAIL, SCHOLASTIC SPELLING 3 AND 4, MULTIPLICATION 1, ALLIGATOR MIX, METEOR MULTIPLICATION, MINUS MISSION (last three could be used earlier).

From Age TEN:

READING RALLY, READING CHEERS, READING POWER, READING ADVENTURES, READING FLIGHT, READING WONDERS, SCHOLASTIC SPELLING 5 & 6, WORD RADAR, WORD INVASION, DIVISION 1, DEMOLITION DIVISION, NUMERATION 2, FRACTIONS 2, DRAGON MIX, PYRAMID PUZZLER, STAR MAZE, NUMBER BOWLING, SPACE JOURNEY. MUSIC MAKER. BEGINNERS BASIC TUTOR. Most of these could probably be used earlier.

From Age 14 (or much earlier!):

VIDEO CHESS; TOUCH TYPING TUTOR; PHYSICAL FITNESS (Not before 12); WEIGHT CONTROL AND NUTRITION; TEACH YOURSELF BASIC, TEACH YOURSELF EXTENDED BASIC.

For most ages- say 5-14 or so:

ADDISON WESLEY COMPUTER MATH GAMES 2 AND 6. (There were no others!).

ALL MILLIKEN MATH SERIES: Percents,Decimals(req speech);Addition,Subtraction, Laws of Arithmetic, Multiplication, Equations, Numeration, Division, Fractions, Measurement Formulas, Integers - NOTE: A lot of these titles are VERY similar to other TI titles listed above! but are QUITE different.

Some of the READING ... titles were released privately by the company that wrote them, AFTER TI pulled out, and are thus very hard to get hold of. The MBX Unit similarly was released after the pull out and is fairly hard to obtain. Contact Mike Goddard, Gordon Pitt or Martin Blythe for speech synth, 32k ram, expansion boxes and disk drives; ; Contact Edward Shaw or Martin Blythe for modules. Contact Stephen Shaw for disks.

Good games of strategy are Yahtzee, Mancala(Disk), Othello, Connect Four. Stephen Shaw Dec 89.

```

50 REM TI BASIC GAME
51 REM
52 REM RULES
53 REM
54 REM CARRY PEOPLE TO ROOF
HELIFAD
55 REM lift carries maximum
of six people
56 REM use keys e and x
57 REM
58 REM game ends when ten
people have fallen into
lift shaft or died in lift
due to overloading
59 REM
60 REM
100 REM LIFT ATTENDANT
110 REM BY Rod LANE
111 REM
112 REM from
Home Computing Weekly
22nd November 1983
113 REM
114 REM
120 REM INITIAL VALUES
130 CALL KEY(3,A,B)
140 CALL CLEAR
150 F=31
160 S=31
170 T=31
180 FT=31
190 FIF=31
200 SX=31
210 MET=0
220 LOST=0
230 DET=0
240 TOT=0
250 RANDOMIZE

260 REM DRAW CHARACTERS
270 CALL CHAR(128,"080808080
8080808")
280 CALL CHAR(129,"087F557F5
57F557F")
290 CALL CHAR(136,"001030103
8102868")
300 CALL CHAR(137,"001030103
8102C24")
310 CALL CHAR(132,"000000CE1
42378FF")
320 CALL CHAR(144,"FFFF00000
000FFFF")
330 CALL COLOR(14,6,1)
340 CALL COLOR(15,9,1)
350 CALL COLOR(3,8,1)
360 CALL COLOR(4,8,1)
370 CALL SCREEN(16)

380 REM SET UP SCREEN
390 CALL VCHAR(1,4,30,24)
400 CALL VCHAR(2,6,30,23)
410 CALL VCHAR(1,5,128,24)
420 P=INT(24*RND)+1
430 CALL HCHAR(P,5,129)
440 FOR ROW=4 TO 24 STEP 4
450 CALL HCHAR(ROW,7,30,25)
460 CALL HCHAR(ROW-1,6,32)
470 NEXT ROW
480 CALL HCHAR(2,7,144,4)
490 M$="MET"
500 C=11
510 GOSUB 560
520 M$="LOST"
530 C=21
540 GOSUB 560
550 GOTO 610
560 FOR L=1 TO LEN(M$)
570 CALL HCHAR(2,C+L,ASC(SEG
$(M$,L,1)))
580 NEXT L
590 RETURN

600 REM MOVE LIFT
610 CALL KEY(3,K,ST)
620 IF ST=0 THEN 920
630 IF K=69 THEN 660
640 IF K=88 THEN 830
650 GOTO 920
660 P=P-1
670 IF P<=0 THEN 720
680 CALL HCHAR(P+1,5,128)
690 CALL HCHAR(P,5,129)
700 CALL SOUND(150,-7,0)
710 GOTO 610
720 P=1
730 TOT=TOT+MET
740 MET=0
750 CALL HCHAR(2,16,48)
760 FOR I=1 TO LEN(STR$(TOT)
)
770 CALL HCHAR(1,6+I,ASC(SEG
$(STR$(TOT),I,1)))
780 NEXT I
790 CALL HCHAR(1,6+I,136)
800 CALL SOUND(150,659,3)
810 CALL SOUND(100,880,0)
820 GOTO 920
830 P=P+1

```

CONTINUED →

```

840 IF P>=25 THEN 890
850 CALL HCHAR(P-1,5,128)
860 CALL HCHAR(P,5,129)
870 CALL SOUND(150,-7,0)
880 GOTO 610
890 P=24
900 GOTO 610

910 REM DECIDE ON FLOOR
920 C=INT(10*RND)+1
930 ON C GOTO 940,990,1040,1
090,1140,1190,1240,1250,1260
,1270
940 ROW=3
950 COL=F
960 GOSUB 1290
970 F=COL
980 GOTO 610
990 ROW=7
1000 COL=S
1010 GOSUB 1290
1020 S=COL
1030 GOTO 610
1040 ROW=11
1050 COL=T
1060 GOSUB 1290
1070 T=COL
1080 GOTO 610
1090 ROW=15
1100 COL=FT
1110 GOSUB 1290
1120 FT=COL
1130 GOTO 610
1140 ROW=19
1150 COL=FIF
1160 GOSUB 1290
1170 FIF=COL
1180 GOTO 610
1190 ROW=23
1200 COL=SX
1210 GOSUB 1290
1220 SX=COL
1230 GOTO 610
1240 GOTO 610
1250 GOTO 610
1260 GOTO 610
1270 GOTO 610

1280 REM MOVE PASSENGERS SUB
ROUTINE
1290 CALL HCHAR(ROW,COL+1,32
)
1300 IF (COL=5)+(COL-1=5)THE
N 1400

1310 CALL HCHAR(ROW,COL,136)
1320 COL=COL-1
1330 CALL SOUND(60,880,0)
1340 CALL HCHAR(ROW,COL+1,32
)
1350 CALL HCHAR(ROW,COL,137)
1360 CALL SOUND(100,587,0)
1370 COL=COL-1
1380 RETURN

1390 REM CHECK FOR LIFT
1400 CALL GCHAR(ROW,5,GET)
1410 IF GET<>129 THEN 1510
1420 CALL SOUND(100,440,0)
1430 MET=MET+1
1440 IF MET>6 THEN 1680
1450 FOR I=1 TO LEN(STR$(MET
))
1460 CALL HCHAR(2,15+I,ASC(S
EG$(STR$(MET),I,1)))
1470 NEXT I
1480 COL=31-DET
1485 IF COL>8 THEN 1490
1486 COL=8
1490 RETURN

1500 REM MISS PASSENGER

1510 FOR SOUND=880 TO 220 ST
EP -20
1520 CALL SOUND(50,SOUND,0)
1530 NEXT SOUND
1540 DET=DET+3
1550 LOST=LOST+1
1560 FOR I=1 TO LEN(STR$(LOS
T))
1570 CALL HCHAR(2,26+I,ASC(S
EG$(STR$(LOST),I,1)))
1580 NEXT I
1590 IF LOST>10 THEN 1640
1600 COL=31-DET
1610 IF COL>8 THEN 1630
1620 COL=8
1630 RETURN
1640 FOR DELAY=1 TO 2000
1650 NEXT DELAY
1660 GOTO 1780

1670 REM OVERLOAD SEQUENCE
1680 FOR E=ROW TO 24
1690 CALL HCHAR(E,5,32)
1700 CALL SOUND(50,-6,0)
1710 NEXT E
1720 CALL HCHAR(24,5,132)

```

CONTINUED →

```

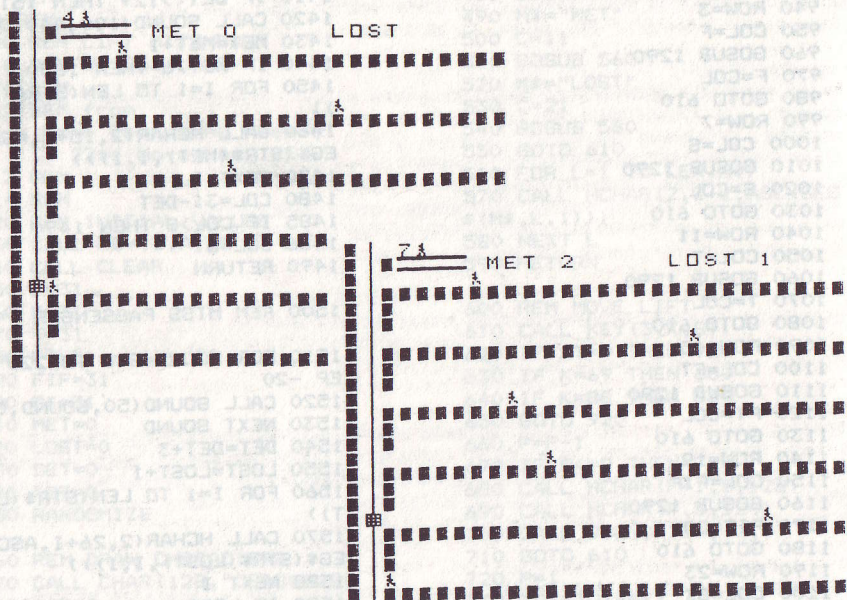
1730 CALL SOUND(350,-7,1,110
,0,115,0,120,0)
1740 FOR DELAY=1 TO 2000
1750 NEXT DELAY
1760 CALL CLEAR
1770 PRINT "YOU OVERLOADED T
HE LIFT." : :
1780 PRINT "YOU ELEVATED";TO
T;"PASSENGERS":"YOU LOST";LO
ST+MET;"LIVES." : : :

```

```

1790 INPUT "PRESS ENTER TO S
TART AGAIN":A#
1800 GOTO 140
1810 END

```



REVIEW: DISK SOFTWARE: WAR ZONE: ASSEMBLY GAME :

Written by Quinton Tormanen (Age 14)

Published by COMPRODINE. US\$10. Postage \$3.50

Pay by money order only.

COMPRODINE. 1949 Evergreen Ave, FULLERTON, Ca, USA, 92635.

A good old fashioned shoot em up game this one, with a gradually increasing level of difficulty. High scores are kept on disk and there is a demo mode. In short, you operate a ship at the bottom of the screen, which has a limited degree of vertical movement, and also moves left and right, through joystick control.

Scrolling down the screen at various rates are tanks and other -bad- planes which you must shoot before they shoot you. Watch out for the tanks, they can shoot backwards too!

To shoot a tank you move your plane until the tank is centred in a cross hair which is located a fixed distance in front of your plane - to shoot enemy planes you merely line up below them. Fire button covers both instances.

Very simple really! Every five levels there is a fast and furious bonus screen which is not unlike space invaders/galaxian, with alien tanks and planes en masse.

By no means a sophisticated game, this is for maybe younger owners or older ones with frustraions to take out on something!

=====

REVIEW: DISK SOFTWARE: ARTIST PRINT SHOP by Paul Coleman.

Distributor: Comprodine. US\$25 plus \$3.50 postage. Money order only.

This is a three disk package for use with TI Artist Instances and Fonts, also using special Border files which have _B suffixes.

This package covers three areas of usage, and allows you to print out letter headings (or footings!), A4 posters, or Banners.

The letterheads have optional use of instances, to the left, to the right, or on both sides of text. Instances may have a row x column total up to 300.

The text, which is centred, may have one line in any size font, plus up to three lines in one of the many TI Artist fonts which are "one character high" - the manual lists 26 possibilities, and one is included. Then you have the option of a line between the letterheading and your letter. The program then prints as many copies as you wish, and you may then photocopy if required, and refeed the paper into your printer to add your letter.

The Banners may have an instance on the left, the right, or both sides, and as with the letter heading, the instances may be normal or mirror image - and if two are used you may use two different instances or one normal and the other mirrored. The total printing width of an 80 column printer is 60 characters, and this limits the amount of magnification- an instance 12 characters high (eg 96 pixels high) can be printed with 5X magnification to fill the paper width, but if the instance is 7 characters high, maximum magnification will be INT(60/7) = 8X, with a little white space.

BANNERS may be centred or be placed as you wish. They may be "solid" or made up of black squares surround by white frames (eg blocks).

NOTE that TI Artist fonts are usually defined as being in the upper portion of a number of characters, and a font which is 33 pixels high, is going to be treated as 5 characters (40 pixels) high, with white space at the bottom.

Signs are A4 - you can do smaller ones of course, but if you opt for a border, the border will always be A4! Inside the border the sign is made up of mixed text and instances, with pretty much the same layout as for banners, BUT if you want instances on the left and right of text, they must be identical!

Signs can use two fonts- one any size, the other one character high. Each line may be single or double size. This also applies to instances. If you wish a line to have a single graphic and no text, you can repeat it (and centre it).

---> continued ----->

There are also four utilities which are useful to have-

i. Font Reader-Short: This reads all font files on a specified drive, and for each one prints out its name, the total number of characters in the font file, the number of characters high the font is (NOT letter height! see ii) and the computer memory required for storage - this package can handle larger font files than TIA but not as large as TIAP! - Signmaker=max 4800 bytes, Banner Maker max=5500 bytes, and Stationery Maker=5060 bytes.

ii. Font Reader-Long: For each font file on the disk you specify this will print the font name, and for each character in the file, its height and width in characters, and its width in pixels including any proportional spacing added to the definition- eg the distance between the start of that letter and the start of the next, not necessarily the printed character width.

This program does not reset your printer before printing out, so if you have printed graphics using other elements of the package, you need to reset line spacing- by for instance turning your printer off and on- before using this utility!

A note on "character" height and width- TIA fonts are defined on disk in terms of character definitions, including a height and width in characters, which are the usual 8x8 size. The proportional spacing is given by a number for the number of pixels to skip between the character start and the next character start. This is the information that this utility reads and prints out. Thus a character listed as being "4" high may in fact be anything from 25 to 32 pixels high. The TIA font file does NOT contain pixel height information.

You need to know the height of a font in characters to make good use of the Banner program, as you can quickly determine the range of magnifications available- though the Banner segment will tell you this anyway when you load the font in that segment.

iii) Font Printer- this prints out the first six characters in the font in graphics mode- eg as they look!- with the file name underneath. Only a single file is printed as specified by you. Handy to quickly check the look of a font.

iv) Instance Printer- this will print an instance specified by you, and below that will print the instance name, and then its size in character rows x columns.

The programs are in c99, and operate pretty quickly. They are fairly easy to use and you will be able to obtain acceptable results first time round, and you may possibly even be able to get results without reading the 20 page manual, but of course you are recommended to read it.

ONLY EPSON PRINTERS ARE SUPPORTED, so if you do not have Epson emulation, dont bother! OUTPUT IS TO PIO.CR.

There are similarities between the Signmaker portion of this program and PagePro from Asgard, which sells at the same price. Here are the major differences:

PagePro is limited to two fixed sizes of fonts (8 x 12 pixels and 16 x 24 pixels) - Signmaker uses two fonts per page of which one must be eight pixels high, but the other may be any size.

Signmaker further allows each of the two fonts to be in either of two magnifications, giving you in effect maybe four sizes of font on the same page. PagePro uses 8 pixels width for each small character, whereas Signmaker uses the proportional spacing normal with TI Artist fonts.

PagePro presents you with a "what you see is what you get" screen display, whereas with Signmaker, you have to plan ahead and visualise the page in your head- or in a trial run.

PagePro allows up to 28 different instances per page whereas Signmaker is limited to just 5 instances, although there is limited scope for repeating them.

----> continued ---->

PagePro allows instances to be placed anywhere on the page whereas Signmaker limits you to placing instances to the left of text, to the right of text, or on both sides of text. Signmaker allows instances to be double or single size whereas with PagePro you have only the original size.

Signmaker uses TI Artist fonts and instances without conversion, whereas PagePro requires you to first use a conversion utility.

PagePro has a set of line characters to draw boxes, while Signmaker has a fixed size border- available in a range of patterns.

PagePro within limits allows DV80 files to be imported whereas Signmaker insists on each line being typed in!

I think that just about covers the more significant differences- other uses will probably want to add more! The two programs are NOT alternates, merely similar, but if your needs are not too defined just yet, perhaps consideration of these differences may help you to define your needs!

REVIEW: DISK SOFTWARE: TETRIS- by Alexander Hulpke.

From User Group Disk Library.

Written in assembly language.

This is one library program I have to review. It is absolutely brilliant. With UK sales topping five million for versions of Tetris on other machines, and at least four versions for the TI, this classic program from the Soviet Union is now available in a smooth machine code version which VERY closely matches the original Mirror-soft release.

Tetromino shapes fall from above, and you can rotate them and move them left and right. You must pack them tightly, and when a line is full of tetromino bits, it is wiped off the screen and all rows above move down one. Naturally you must try to keep the lines moving and prevent them reaching the top of the screen, 'cos that spells GAME OVER.

The next shape to fall is previewed on screen, and as an extra touch, this version allows you to change the next shape to fall- during the same time you are moving and rotating the shape then falling. If you do not wish to use this extra facility, ignore it and play the original game!

TETRIS is also available as a coin-op arcade game, and anything that has people putting in their 20p's must be worth looking at!

Music plays continuously (turn the sound off!) and the screen also displays the number of lines moved off screen, the level of play, and stats on the number of each colour square to be moved off. In this version the level of play is fixed at the start. Level one is quite hard. I think most of you will find level 9 distinctly impossible!

Control is by means of the original keys- 7,8,9 move left, rotate, move right. Space causes the shape to fall quickly once you have the right orientation and position (as does key 4). Key 6 is pause, while key 1 changes the next shape.

A classic game, written in 9900 code for the Geneve, and converted down to the TI99/4a (!!!!!), it plays superbly, is very inexpensive, and is an absolute must, even if you do not usually play computer games.

UPDATE: Version 2.0 allows joystick control- left and right move block left and right, fire rotates it, down drops it and up changes next item. Much kinder to the fingers and keyboard but higher levels of play (for which read faster) could make for heavy joystick action!

NOTE: This is a FREENARE game, which does not mean it is free- it means if you play it, you should send funds on to Alexander (or to me for forwarding). The requested sum is US\$10/15, DM20-30, UK7 to UK10 - just look how much disks of this game are on sale for the ST and Amiga. Send funds to S Shaw if you wish, for forwarding.

=====

REVIEW- DISK SOFTWARE- THE GEOMETERS APPRENTICE by Mike McCann 1989. US\$39.95
 Published by McCann Software, P O Box 34160, Omaha, NE, USA, 68134.
 Also available from COMPRODINE.

This program has been available for some little time, but so far seems to have escaped review. It comes from the same stable as The Printers Apprentice, and in common with that, is written in forth, and is a fairly difficult program to get into. The advertisement does not really say what the program does- and the sample illustrations are not easy to do - indeed I can't think how to do them with the program!

TGA does several things:

i. CAD- computer aided drawing. You can define a shape to be rotated around its left edge to produce a sort of sphere, which can then be drawn in wire frame (see through or visible wires only), and can be shaded with or without segment boundaries- you choose the shading effects. The object can be moved around the screen, including rotation in three planes, and also the single light source which defines shading effects can be moved in three planes. Objects are drawn singly, but merely by not clearing the bit map screen you can create a multi-object picture.

Variables available include aspect ratio, so a drawn circle can be easily made to look like a true circle instead of an oval!

TI Artist pictures can be loaded and drawn over, and the final result can be saved in TI Artist Picture format, or TPA Extern file format.

In addition to spherical objects (SPIN objects) it is also possible to draw a shape and have it "extruded"- which merely means it is given a third dimension of thickness. This can then be manipulated as with spheres, and can be mixed with spheres and TIA pictures.

So if your 3d pictures can be created using spheres (no matter how distorted!) and shapes with thickness, you can create 3d pics. Each individual shape can be stored as individual "object" files for reuse later. And if you think you might have difficulty drawing a semicircle using the arrow keys, to create a perfect circle there is fortunately an "auto" mode!

Actually using the program is quite difficult at first but you will soon get the hang of it if you persevere- rather like TPA really!

There is an interesting HARDCOPY or PRINT feature which allows you to print out the image you have just drawn, or to load a TIA picture and print that- this section is interesting, as it allows you to load TIA pics directly, without conversion, unlike TPA. You may then "clip out" a section you want to print- you do not need to print all of it! Print densities of single, double and quad are available, also with a double pass for extra darkness if you wish.

Like TPA you may define the pixel size and shape to print with- at its simplest this will print one dark dot for every pixel in your picture. You may print 64 dark dots instead (8x magnification) or by filling in an 8x8 grid print your picture with many variations in distortion, degrees of darkness, or using a sailey face for each on screen pixel.... and so on! Pics may be printed upright or lengthways, so there is a good banner capability here.

There is also a command language, using DV80 files, this allows you - having done your experimentation! - to automatically create a series of pictures, and save them in TIA format for animation. The language can also be used to load and display TIA pictures as a slide show. Access is given to VDP Register 7 for "pro" users.

----> continued ---->

This program is NOT inexpensive as TI programs go- it IS inexpensive compared to programs for other machines. Despite having waited what seems like ages for a review which never came before making my purchase, I still received only Version 1.0 - and all current McCann software seems to be for the Geneve only, so there may not be any revisions, and supply may by now be limited! It is a fascinating program if you are into graphics, especially shaded spheres! but is otherwise slightly impractical. You do have the ability of creating quite different demo routines, but need to spend lots of time on them!

REVIEW: DISK SOFTWARE: BEYOND VIDEO CHESS. Utility.

Written by Harry Wilhelm.

Published by ASGARD. US\$10. Postage \$5.00

Pay by money order only.

Also available from:

COMPRODINE. 1949 Evergreen Ave, FULLERTON, Ca, USA, 92635.

This disk based assembly utility is ONLY of use to you if you have the VIDEO CHESS MODULE. It is not compatible with the disk based version of that module. BVC is an interrupt driven auto-start utility, and requires certain special hardware OR a very very easy modification to your chess module, details of which are supplied.

In essence, you load BVC -supplied in both DF80 "Load and Run" format as well as PROGRAM memory image format, and it automatically installs itself. It then waits while you insert or select the Chess module - this is where the various hardware mods are required - as you insert the module you must not reset the system, which is what usually happens when you insert a module!

On my system the reset line to the module port has an extra switch to select it out. If you do not have a modified console, you can open up the module and cut on wire as indicated, which has the same effect. Or you can use a Navarone Widget or equivalent. There are other ways to do it too.

WHAT DOES IT DO?

1. It allows you to use a joystick to move the pieces. This is actually the weakest part of the program. The docs warn you about dirty fire button contacts instead of telling you there is no software debounce! It works sort of...
2. It allows you to print the screen to printer (you select the control codes so it should work with most printers with graphics modes).
3. It allows you to list the game moves to printer- and you can interrupt at any stage to print the board as illustration then carry on.
4. It allows you to save and load games TO DISK.

Note that it is a case of either or here- if you have games on cassette and now wish to transfer them to disk, you must first list the moves MANUALLY after loading into the ordinary module, then using BVC enter them as a TWO PLAYER GAME and then save them to disk. With BVC installed you cannot load from tape!

Is it worth it? If you have or can obtain a VIDEO CHESS module (not too easy to find but check out our module librarian!) then you will find this an essential program. And the Chess Module is the best Chess program for our computer.

| MOVE | WHITE | BLACK | |
|------|-------|-------|---|
| 1 | C2-C3 | G7-G6 | 8 |
| 2 | H2-H4 | A7-A6 | 7 |
| 3 | B2-B4 | C7-C6 | 6 |
| 4 | A2-A4 | E7-E5 | 5 |
| 5 | F2-F4 | D8-C7 | 4 |
| 6 | G2-G3 | F8-G7 | 3 |
| 7 | F1-H3 | E7-E5 | 2 |
| | | | 1 |

REVIEW: DISK SOFTWARE: GIANT ARTIST POSTERS. Graphics Utility.
Written by Paul Coleman in c99.
Published by COMPRODINE. ,US\$15. Postage \$3.50
Pay by money order only.
Available from:
COMPRODINE. 1949 Evergreen Ave, FULLERTON, Ca, USA, 92635.

THE POSTER PROGRAM. Forget Banners, go for posters! and make a real BIG impact. This utility works with full screen TI ARTIST Instances ONLY (they occupy about 70 odd disk sectors).

It then prints them in your choice of 9 sizes, and can "glue" two full screen instances together, side by side (making 18 sizes I suppose!), especially useful for text.

Each instance takes around 75 seconds to load, then printing takes a little longer, depending on the size of your poster.

The smallest poster, 10" x 14", uses four sheets of paper, and takes around 8 minutes to print. The largest, with two instances glued together, at 64" by 200" (no, not a printing mistake- nearly seventeen feet long!) uses up 152 sheets and will take you maybe a little over 6 hours, excluding glue and stick time!

This program prints continuously and is NOT suitable for using with cut-sheets. It is OK with fan fold, and will ignore the perfs. Roll paper will give the best results.

It only takes account of 80 column paper, so using a wider printer will not help. And it is up to YOU to stick the bits together. The longest edge of the picture is printed sideways, so if you go for the 64x200" poster, you will have 8 strips of paper 200 inches long to stick together, somehow.

You could always go into the custom wallpaper business...

Incidentally you have a choice when printing of using solid blocks (8x8 per character position) or unsolid blocks, which are 6x6 blocks in an 8x8 area- this does give a SLIGHTLY spotty effect, but allows the eye to better "round" otherwise unduly obvious corners better.

=====

REVIEW: DISK SOFTWARE: PIX PRO. Graphics Utility.
Written by Jim Reiss.
Published by ASGARD. US\$15. Postage \$5.00
Pay by money order only.
Also available from:
COMPRODINE. 1949 Evergreen Ave, FULLERTON, Ca, USA, 92635.

Pix Pro is a multi-conversion utility in machine code, with two new formats for intermediate (and fast) use, and the ability to print MacFlix pictures with rather better aspect ratio's (eg proportion) than MacFlix itself.

Pix Pro can read a MacFlix picture OF ANY SIZE from disk and either PRINT it, or convert it to an intermediate format, called Pix. Printing a MacFlix digitisation of the Mona Lisa with PixPro I found that Pix Pro Bit Image format gave a picture proportion mid way between MacFlix "Low Density" print and "Mid-Density" print. The PixPro picture was the closest to the correct proportions. MacFlix pictures are not displayed on screen, only a converted file (or files) can be displayed.

For conversions it can READ and DISPLAY graphics in GRAPHX, TI Artist PICTURE, TI Artist INSTANCE, Picasso, Page Pro, RLE, or Pix formats. It cannot read pictures from Joypaint or MyArt.

Having loaded the picture, you can then save a part of the picture- essential if you wish to save a picture larger than 192x256 to TI Artist, and useful if you want to clip an instance.

----> continued ---->

MOBILE REVIEWS:

If the picture is larger than screen size you can move around the picture by moving the window.

SAVE formats are: TI Artist pictures, TI Artist instances, Graphx, PagePro, Picasso, and two Pix formats (IF32 and DF12B).

Why save and load a new Pix format? 'Cos PixPro will load that format faster than any other as Pix format was designed PURELY for speed of loading; also Pix format files may only be half the size of original files! And no, the documentation does not indicate WHY there should be two different Pix formats!

PixPro can only handle pictures up to 480 pixels wide, so very wide MacPaint pics, which can be 576x720 but usually are not, are right truncated. By comparison, PagePro pics are limited to 480x792 pixels.

The program is supplied with some nice artistic MacPaint pics, including the Mona Lisa.

I have found that Pix Pro will happily print pictures from MacPaint which MacFlix is unable to display or print- if MacFlix gives you problems, switch to Pix Pro! Read MacFlix docs on how to force-load pics, but note full width pics are moved one third left while PixPro handles everything nicely.

An essential purchase to print MacFlix pics with the "right" proportions!

UPDATE: MACFLIX: MacFlix has now been updated to MacFlix Pro, which can now handle any size picture regardless of memory configuration, as pictures are loaded from disk as required (eg as PixPro). Unlike PixPro, MacFlix can display pictures ON SCREEN, if required loading extra data from disk as you window around. Invert picture is now available, as is the ability to save parts of the picture as TI Artist Instances (as available-indirectly through Pix format-with PixPro) in addition to TI Artist Pictures.

MacFlix will not handle files which PixPro is happy with (you can force them to load but if they are full width, they will be scroll-wrapped by about one third, giving the left-most third at extreme right, the rest of the picture shifted left. Not too good!)- while PixPro can manage all MacPaint files I can get my hands on, MacFlix can display on screen those pictures it can load. PixPro has a better printed aspect ratio (prop- ortion). PixPro can convert MacPaint pictures to PagePro format directly.

=====

REVIEW: DISK SOFTWARE: THE LIVING TOMB. Graphic maze adventure.
Written by Quinton Tormanen. (Age 14!).
Published by COMPRODINE. US\$15. Postage \$3.50
Pay by money order only.
Available from:
COMPRODINE. 1949 Evergreen Ave, FULLERTON, Ca, USA, 92635.

An assembly speed graphic maze adventure, with lots of creatures to attack you and lots of treasure to collect. Lots of traps which are easy to avoid if you pay attention to where you are going. Joystick operation.

In something like 1300 moves I remained totally lost (I gather you are supposed to map these places!) but was still alive and looking for a trap door down, with the meagre rank of Peon.

Fighting the monsters is fairly simple- first check to see if they are friendly, once in sight, by calling a greeting, then if that fails, approach and click like mad on the fire button! At level one I don't think I took any hit points when attacking unfriendly monsters!

The report system makes use of a multi-window overlay display, quite a professional job here.

You like wandering mazes or you dont I suppose.

REVIEW: DISK SOFTWARE: MUSIC PRO. Music Utility.
Written by David Caron. (Ottawa UG).
Published by ASGARD. US\$18. Postage \$5.00
Pay by money order only.
Also available from:
COMPRODINE. 1949 Evergreen Ave, FULLERTON, Ca, USA, 92635.

Music Pro allows you to enter up to three voices of music by placing notes on a music staff, using the computer keyboard as an alternate to a piano keyboard, with the note duration based on how long you hold the key down. Not the fastest way to enter music but not so bad once you get used to the idea.

A separate data file is created for each voice, and a separate program (compiler) then adds them together and plays them together. There is also a stand-alone XB program you can use to load and play your files, but it uses a rather slow CALL LOAD method of inserting machine code rather than using embedded code as we are now getting so used to elsewhere.

You CAN print "music" one voice at a time and it looks very interesting, but I defy anyone to play from it, with no time signature, and no bars!

The program has one very interesting feature- "phrasing" - when two notes of the same frequency occur together, on OTHER music programs you are stuck with EITHER the notes added together for a single long one OR two notes sounding when you wanted one. MUSIC PRO gives you both options, very nice.

You may define a "block" of music to transpose, copy, or play. There are just 8 volume settings available -still better than many other Music programs but giving rather large jumps in volume for more delicate emphasis.

THERE IS NO TEMPO CONTROL. The music plays at a set rate- your only control is to use longer notes, and you can use the transpose facility to do this.

As usual notes may not go below 110Hz, which limits use of the base clef a little.

With MUSIC PRO you can, with a minimum of practice and no musical knowledge, transform a fairly simple music score to a tune. Sticking to one voice MAY give better results than trying for harmony due to the way our sound chip works and sounds!

An interesting program, you will find this useful if you have some sheet music you would like to hear played and no handy musician. Try also the music programs in the group library which operate in rather different ways.

NOT GENEVE COMPATIBLE.

REVIEW: DISK SOFTWARE: HARDCOPY Graphics Utility.
Written by Alexander Hulpke
Available from Group Disk Library.

This is a special utility which allows ordinary TI99/4A owners to print MYART pictures- Geneve owners can already use MyArt! And as Geneve owners are porting over GIF pictures (Graphics Interchange Format) into MyArt format, that means even more large pics for us to use. HARDCOPY differs considerably from all other graphics printing programs in that it does a very good job of transferring colour information into monochrome texture information. HARDCOPY can deal with both 16 and 256 colour MyArt pics.

Flexibility is provided in that the user may amend the texture of any colour, and colour/texture data files can be saved for reuse perhaps with other pictures. It is also possible to print just one colour at a time (more suitable for 16 colour pictures!) by defining all except one colour as blank texture- the ultimate in colour separation work!

What is more, you may define parts of a picture to print, and also the degree of magnification, with horizontal and vertical magnification specified separately. I have printed one picture out at 2 feet by 3 feet, and the result is astoundingly good, a lovely poster!

The group disk library has nine disks of MyArt pictures at the time of writing, and there are two included on this disk. Very highly recommended to any graphics freak.

MODULE REVIEWS.

As many modules remain available, and it has been some considerable time since reviews of modules appeared, I am taking up a little space to look at some modules in each issue. Please let me know if you want more/less/different details- your comments will be of great help. Requests for reviews of specific modules will be honored if space allows!

A few modules are going to be very hard to find, but may appear from time to time as second hand items- which you may pass up if you dont know about them. The first module comes into this "rare" category...

MODULE REVIEW- DRIVING DEMON - FUNWARE MODULE.

Driving Demon, like most Funware modules, starts off fairly easy and gets progressively tougher as you go along.

Your task is to drive a car, which is at the bottom of the screen, and can be driven left or right. Speed is controlled with joystick up/down, and fire changes gears upwards (auto-down).

Perils to avoid are: Cars to overtake- you NEED to overtake cars in order to extend the limited time you have available! These have a habit of wobbling around the screen a bit- and when two come down screen side by side, you need to think fast! Cars come down the screen towards you at varying speeds, but you can control that speed by speeding up or slowing down yourself using joystick up/down.

Oil spills- these can make you spin off the track. You have a warning beep before these appear- first the beep, then a car to overtake, then the oil patch. Overheating- failing to change up despite the red marker and warning squeal! And of course driving off the track!

You have a time limit, which goes down with time and up with each car passed. You have a limited number of cars to write off which are increased with super high scores!

This is an enjoyable game, not too demanding, but requiring fast reactions for those really high scores. Graphics are slightly blocky but adequate, and control is good.

MODULE REVIEW- JAWBREAKER - TI MODULE PHM3194

Written by Sierra On Line- then just starting, now famous for PC Adventure games such as Leisure Suite Larry.

Jawbreaker is very nearly a variant on that old favorite PacMan, with just a touch of humour thrown in! The screen is divided into horizontal passages, divided by lines which have open doors which slide backwards and forwards. Thus to pass from the top row to the next you must move to (or wait for) a moving door before you can pass down.

YOU are a set of teeth, eagerly munching on boiled sweets, dead easy so far huh! Pity about those tooth despoiling baddies who roll along trying to make your teeth fall out! Your defences are i) avoid them! and ii) Go to one of the four power points in the four screen corners, then you have a limited time to eradicate the baddies (temporarily) and roll up the score (see, just like pac man!).

If you manage to clear a screen, there is personal hygiene to be taken care of, and on screen comes a tooth brush which will give your teeth a rub before you move on to a slightly faster screen!

There are also bonus items which appear for a little while in the middle of the screen. The pac man cherries would be more appropriate perhaps than gulping an umbrella and what have you...

Not too original, graphics are adequate but not mind blowing (apart from the opening title screen), music can get tedious! - this module is made more effective I feel by that toothbrush! It is fun to play, and given rather fewer pills to eat than Pacman, is probably easier for younger players. Still a challenge to get a really high score though!

MODULE REVIEW- MINER 49er - TIGERVISION.

Another rarity, this one was a sideways module which plugged into the RIGHT HAND SLOT of the console.

This one is a platform game- Bounty Bob has to cover every bit of floor while avoiding the perils of the mine- apparently radioactive mutants whose touch is death! He can however eradicate them by first touching a variety of treasures with which the mine is littered (for a limited period the monsters can then be wiped out, when they look to me very like walking floppy disks!).

There are ladders to go up and down, slides to slide down- not always deliberately!- even LIFTS (to use a lift, enter it and press a number button, 1 is ground floor while 4 is top floor). There are a large number of variations on how to move around! You can jump across small distances, but trying to jump down too far tends to be fatal.

Positioning of the character for some jumps is pixel precise, which is how some of the later screens become very hard indeed. You score for each element of floor covered, and for each treasure taken, and there is a counting down bonus awarded at the completion of each screen.

Graphics are reasonable, control sometimes seems a little too precise! and action is fast enough. When you hit a problem area it can be VERY frustrating as you must solve the problem before you can go any farther.

MODULE REVIEW- MUNCHMOBILE- TEXAS INSTRUMENTS PHM3146.

This module is relatively unknown but still available, and is one which I personally find rather cute to play. The basic idea is that of scenery scrolling down the screen while you drive along it...

Your car is MOST unusual- it has hands! which you operate to pick up a number of treasures, including extra fuel to keep you going! You MUST keep to the road. At cross roads you must move the car not only left and right, but up and down in order to avoid hitting traffic going across your road! Jump the traffic lights at your own risk.

To pick up an item- not easy- the car has two eyes, only one of which is open at a time. Press fire and an arm comes out of the side with the open eye. Hold fire down until the hand is extended far enough, and when over the item, press fire again to retract the arm. To make the arm come out on the opposite side of the car, press fire to extend the arm a little, then press fire to retract it and hold fire down until arm is extending on opposite side!

Your arm can collide with bushes and waste bins, this delays matters a little but is not fatal. Watch out going over the covered bridge, there are a couple of cars coming the opposite way to avoid.

The graphics on this game are blocky, but adequate. The car is CUTE. There are several different roads to traverse, getting harder as you go along. And of course you must watch your petrol! I like this one. (Driving into the garage at the end of the road can be tricky!).

MODULE REVIEW- SNEGGIT - TI MODULE PHM3145

Released in the second half of 1983 - the final year- this is an odd module which generates some very mixed feelings indeed- either satisfaction or total derision. The name does not help, being derived from "snake eat", yuck.

In essence you operate a chicken which has the job of collecting eggs, scattered all over the screen, putting them inside cosy nests, and waiting for them to hatch- when they do a little chick flies out (very advanced chicks) and promptly metamorphoses back into an egg somewhere else on the screen. There are a number of obstacles on the screen which you have to go around.

Picking the egg up and placing it in the nest does require a little care as regards positioning, and you can smash an egg if you are too heavy handed.

>>>>>>> continued ---->

On to that title... you are fighting a losing battle with a snake, slithering around the screen, eating eggs, whether they are in a nest or otherwise. The snake will generally avoid you and you can use the hen to direct it away from a nest or an egg- but beware, you can trap the snake into eating YOU!

A very strange game indeed with fairly static and unimaginative graphics, and fairly limited strategic play. However, the concept is fairly unique (I can't think of anything like it!) and if you can find it at the right price it is worth taking a look at!

MODULE REVIEW- ST NICK- FUNWARE MODULE (Fairly rare).

Lovely animated opening sequence, and a pretty difficult game, played out on a layout of several rooms (a simple maze I suppose!). Two goblins wander around dropping toys, then when they have finished it is your job to pick the toys up. Easy huh? Two difficulties: There are two witches trying to catch you. And there are four different types of toy which MUST be collected in a specified order (eg pick up all the trumpets first, then all the balls...) and if you pick up a wrong one, all action stops while the goblins come out and drop MORE toys. There is also a clock running against you!

The goblins also drop the letters S A N and T from time to time, and if you can pick up enough to spell SANTA's name, the witches freeze for a while, and you can pick up ANY toys regardless of order.

As the game progresses there are more and more toys to pick up, and it really does get very very hard indeed!

MODULE REVIEW- VIDEO CHESS- TI MODULE - PHM 3008

A fairly difficult module to get hold of, this is an early module, based upon ideas by British Chess Master David Levy, who found working with TI so inspiring he vowed never to touch them again, and went on to make his own home computer, the Enterprise (remember it?).

The module operates, at its HIGHEST level, at about the level of a mediocre county player, and as such is more suited to more inexperienced players.

The board display is clear, and clocks are provided for each player. Optional hints are available and will be given at the level of play the computer is then using. You may also swap sides, and if you wish two players may play together (eg using the computer as a display and clock). Castling is supported.

It is possible to set up a board position instead of the standard start positions, and you may save and load games to/from CASSETTE ONLY.

(A disk utility BEYOND VIDEO CHESS is on sale to allow disk storage, Epson printouts and joystick use).

This is really the only practical Chess program for the TI99/4A, and while stand alone chess games are available for around thirty pounds which offer a higher standard of play, TI owners who play chess occasionally will find this module of some interest if they can find it!

MODULE REVIEW- AMBULANCE- FUNWARE MODULE (Hard to find).

This is a two-screen game in which you drive an ambulance around town to pick up casualties and deliver them either to the hospital or to a casualty station (which may only be used once per screen). The hospital is on the other side of a fairly busy railway! and there are other cars on the road you must avoid.

Pulling up to pick up a casualty can be tricky but is quickly mastered. Once the alarm sounds you have a time limit to get the injured to medical treatment.

The game ends after either you run out of ambulances following collisions, or you lose too many patients due to being too slow! In common will all Funware modules, the games becomes faster and faster as you go along.

Quite an interesting game, original in concept, and interesting to play. If you can find it, go for it!

MODULE REVIEW- BARRAGE- DATABIOTICS MODULE

A newish module, not easy to find (Tex Comp have it at \$17). This is an EXCELLENT copy of an old arcade game you may have seen. From above fall meteorites which you must blast before they hit various vehicles below.

You move a cross-hair on the screen and from one of two laser bases a laser beam shoots out- not instantaneous so you have to fire in front of your target. Action is fast and gets faster and faster and faster. Points are awarded for each meteorite shot down, with bonus points for each vehicle left at the end of each round- and bonus vehicles are added as the score mounts. Bonus points are awarded for getting more than one meteorite with one shot- as they explode, they can trigger other meteorites which are within explosion range!

If you can find a good trackerball you can emulate the arcade game even more closely! This is a first class fast game which will keep you on your toes. Highly recommended at any price.

MODULE REVIEW- ANTEATER- ROMOX MODULE

Another newish and hence scarce module which you will enjoy (Try L L Conner at \$10 +post). You operate an anteater who must collect eggs from screen top left, and transfer them to your nest in screen bottom right. Easy.

Pity about the anteaters which are chasing you- more of them with each level. The screen starts as solid earth which you must tunnel through, gaining points for each bit of tunnel. There are a few rocks as well. The anteaters will ONLY run through tunnels. You can trap them by creating dead ends for them to run into. You can also tunnel under stones so that the stone falls just as an anteater passes underneath (bye bye anteater!).

A fun game which gets progressively harder as the number of anteaters keeps increasing.

MODULE REVIEW-BEYOND PARSEC and BLACK HOLE are TWO modules from Databiotics, gathered together here as they are very similar- they are two player games, in which each player operates a spaceship and tries to shoot the other. Beyond Parsec is extremely simplistic and the name terribly misleading! In Black Hole there is a gravity well in screen centre which will curve your orbits somewhat. Graphics are minimal. If you need a two player shoot up game, there are these two, available from TexComp. If you dont, avoid them!

MODULE REVIEW- BURGER TIME- TI MODULE PHM3233

What an excellent module this one is! As master chef in your favorite fast food joint all you have to do is make a few burgers. Dead easy. Pity about those rotten (salmonella active?) pickles and eggs that are out to get you. Once they touch you you meet a very nasty animated end! Your weapons are a limited supply of pepper which allows you to pass them without harm (only effective for a limited time once thrown), and the possibility of dropping bits of burger on to them, or for a really good bonus, getting them to step onto a bit of burger just as you drop it down....

The baddies in this game walk all over the place to get you, along platforms and up and down ladders!

Burgers are built up in columns, as you walk over each bit it falls down- if the space below is empty. From time to time bonus objects appear on screen which you can collect for more pepper. The coffee cup appears to be invisible in the module version. There are several screen layouts for you to work out how to drop all the bits without being trapped by the creatures, but after a time it does become a little monotonous. Great for initial play but not really a long term player. Get it if the price is right, the animation is fun, and being attacked by a fried egg is a different experience!

MODULE REVIEW- BURGER BUILDER- DATABIOTICS MODULE.

A different burger builder game with the same essential idea but simpler graphics and no animation to speak of. Try TexComp at \$17. The baddies here just move at random along the various platforms, and are not overtly hostile, just dont touch one! You move from level to level by going up and down ladders, and can be totally safe by staying on a ladder exactly midway between levels, as the wicked pickles cant get you there! You must of course clobber them by dropping bits of burger on to them. Really only one screen on this game, so a little less fun than Burgertime, and not as long lasting pleasure. Originally a disk based game at \$10- this Group has purchased copying rights to the disk version.

MODULE REVIEW- BIG FOOT- MBX/TI MODULE

Try LL Connor at \$15+post. This is one of the modules produced by Milton Bradley for use with their MBX Expansion Console.

If you have a speech synth there is good speech.

If you have an (optional) MBX unit, you have the speech, and can use the special MBX joystick. The MBX unit really IS optional with this one!!!!

In Big Foot, you have to climb a mountain, collect treasures, and cage a Bigfoot, who is chucking snowballs at you! There is also an eagle ever ready to snatch you from your rope ladder...

You must climb up rope ladders, which you throw, and can climb down them one jump down one level only. You alternate picking up food and gold until all are gone, then head for the mountain top, and once there lower a cage onto BigFoot by moving the joystick forward (or pressing E, keyboard can be used too!), then lift it off screen by pulling back.

You lose a life by being hit by a snowball- you can shelter under some ledges, on a rope if required. You lose a life by being carried off by an eagle- you can avoid this by noticing that the eagle will carry away the left-most rope on the level you are on, so just throw up a dummy rope, then another to its right, and use that. You lose a life by falling more than one level (idiot!).

There are six mountains, each with their own pattern of ledges, offering different strategic problems. Sound effects are good if you have speech synth OR MBX Unit.

MODULE REVIEW- BUCK ROGERS PLANET OF ZOOM- TI MODULE

This is a license from Sega. In this game which can be played using joysticks or keyboard, there are four screens. The first two involve flying over a planets surface, with good 3D effects which make it unwise to play the game after a large trifle, as all that high speed swerving may overcome you... in screen one, the task is simple, just fly between two posts as they come towards you, growing from tiny dots on the horizon. Easy. Just dont collide with any.

After flying through enough, the hoppers come to get you, and you must shoot them without colliding with them or the still present posts. The hoppers move left and right AND up and down, and you must be in the right position and at the right height to get them- NOT too easy with an angled view of a 3d world. Pass this test and zoom up into space for some target practice with the alien saucers. DO NOT collide with these shifty blighters! Get them all (and if you have enough fuel left!) have a go at the Mother Ship, which is relatively easy to blast. Then do it all again but faster and with the posts closer together.

MODULE REVIEW- CENTIPEDE- ATARISOFT MODULE

A SUPER copy of an old arcade game. Blast away the obstacles AND those creepers coming down the screen and the bugs which sometimes run across the screen... you move around the bottom part of the screen, and fire and fire away! Screen action is fast and furious.

This one really is a classic, and will probably give many hours of totally frustrating play. My top score is a quite appalling 19694, which I am sure you can beat (let me know!).

MODULE REVIEW- ALPINE- TI MODULE PHM3056.

The fore-runner for Bigfoot in someways, in Alpiner you have several mountains to climb, of ever increasing size. It is better to have a speech synth to enjoy the effects of bumping into a skunk, and to receive due warning of various perils, which include snakes, bears, skunk, snakes, falling rocks, fires and so on, easy-peasy for an experienced mountain climber...

Unlike BigFoot which has the whole mountain on screen, in Alpiner the screen scrolls downwards, allowing for really chunky graphics. You can incidentally hit the bear- there is a tiny FLASHING target on his paw, and if you hit it when it is on you score highly (and deserve to. Hit it when off and its down the hill you go!). Fun for a while!

MODULE REVIEW- BLACKJACK AND POKER- TI MODULE.

What can one say about programs which have been written and rewritten ad infinitum in every language available for every computer! Play cards with your computer and see who has the sharpest skills! If you don't know Blackjack, the idea is to draw cards and see who can get closest to a score of 21 -going over 21 and you are BUST. Poker is a well known American card game.

The graphics are just about adequate but could have been sharpened up fairly easily, and the pace of the games is on the slow side. Nevertheless, reasonable implementations, comparable to the many Basic versions which have appeared over the years. If you dont fancy writing your own basic programs to do this, and can get the module cheaply, go for it!

MODULE REVIEW- CAR WARS- TI MODULE PHM3054

This is a fairly good copy of what was once a favorite arcade game. The track you drive along is made up of concentric squared rings, scattered with dots which you must clear by driving over them. YOU race anticlockwise, and your computer competitor(s) drive clockwise trying to collide with you. You must use your skill in changing tracks and speed (two available) to avoid these collisions.

Your initial selection is from three different starting speeds for your car and three choices of how early the computer car(s) speed doubles. JOYSTICK IS REQUIRED for this module. After each screen is cleared it is on to a different set of opponents, starting in different positions- I have only made it to clear two screens so I dont know if there is more than three different starting positions!

An excellent simulation of an arcade classic you will like or not.

MODULE REVIEW- CHISHOLM TRAIL- TI MODULE PHM3110

I've read the manual, I've played the game (sort of) and still I don't really know what is going on with this one, or how to play it. Nevertheless I have managed a high score of 2700, I just dont know how! Running around the screen there are things to shoot at which shoot back. It is all very obscure and symbolic, not at all my sort of game. Perhaps someone out there understands and enjoys playing this game and could write to tell us about it? It isnt one I enjoy.

MODULE REVIEW- CONNECT FOUR- MB-TI MODULE- PHM3038

Can anyone be unaware of the Milton Bradley game of the same name? In which players take it in turns to drop counters down columns to try to get four in a row? This is the classic MB game, with one or two variants thrown in, especially for two players. You can happily play against the computer, which at the highest level is relatively hard to beat! If you like the game, why not try the module? If you have never played it, it is slightly harder than noughts and crosses, but is otherwise very similar- this module version even marks the pieces O and X for you! Good quiet game for those relaxing moments and worth it if you can buy it cheap!

MODULE REVIEW- ESPIAL- TIGERVISION MODULE.

This is a rarity. It is a sideways module which plugs into the right hand port of the console rather than the usual module port. Espial is an excellent game with two major drawbacks- it insists on joystick 2, which is difficult if you only have one which cannot be reconfigured, and the colour choices are appalling, resulting in a lack of contrast in both colour and monochrome which makes the game fairly difficult. As far as I can tell there is nothing actually rendered invisible...

You control a spaceship at screen bottom, and shoot alien ships coming from screen top before they shoot you. You must also blast alien bases by dropping bombs on them, which you do by placing a cross hair over them and firing. The fire button both fires at approaching alien ships AND bombs bases. Quite a number of screens and fairly difficult in play, but once you get used to so little screen contrast it is fairly playable.

MODULE REVIEW- FACE CHASE - ? MODULE.

If you see this one, which is fairly rare, dont bother too much, there is a basic flaw in the game design which enables you to clock up very high scores without any risk at all. The basic idea is good- you collect treasures and return them to your base while avoiding nasty things. You score by collecting treasures but ALSO merely by moving. Just move back and forth a space or so and watch the score mount...

MODULE REVIEW- FACE MAKER- TI MODULE PHM3177.

Not too sure if this one belongs here, as TI listed it in the EDUCATIONAL section. By Spinnaker, the TI version (of several) seems to have been the best, with better graphics and more choices.

In essence you build up a face (like Potato Man!) from selections of hair, eyes, ears, nose, mouth- and two skin colours- and then select from....

Program face- an interesting introduction to the notion of programming! Using listed abbreviations you animate the face which can smile, frown, wink, cry, stick its tongue out, waggle its ears, and just wait!

PLAY A GAME!!! Which is why I list it here- the game is a SIMON type echo-game, using the face and its various animations. Start off with one element and if you get it right go on to two then three and so on. For example, the computer winks, winks, cries, frowns- then you press the appropriate keys to do the same. Not too hard with four items, but as it gets longer, can you keep everything in mind!

Definitely the best SIMON-type program ever. Not sure if you can train your short term memory to be more retentive, but if you can try this program for the job!

MODULE REVIEW- FATHOM- TI MODULE PHM 3222

One of the very last modules TI released, this is quite a hard one, which makes you work very hard indeed to get to what I feel is a distinct downer of an ending.

You play the part of a seagull or a dolphin. As a seagull, enter clouds and pick up treasures to make up keys. As a dolphin go for those seahorses for more keys. Got them all? OK now find your way around a seaweed maze to discover and free a mermaid. If you have a speech synth you are lucky to get a very offhand "Thanks mortal" as your entirely ungrateful mermaid swims off. Now I know it had to be a U-cert module, but it that really the best ending after all that work? You then go round again at a higher level to set the silly creature free again!

Provided you dont worry too much about the game end, the actual game is quite different, as you press FIRE to fly, trying to stay on the screen and avoid various hazards. You need to go through three clouds on a screen to collect a key- fly off the screen and if you havent flown through the three clouds, you start that screen again. The seaweed maze- a downward maze for a change- can be hard, as you know, dolphins are air breathers! so time is limited. Nice for a change but not one that interested me for more than a couple of days.

ONTPLOPPER

MACHINE CODE FOR EX BAS PLUS 32K or E/A PLUS 32K.

While I do not understand Dutch, I really cannot help but be attracted by a short program called ONTPLOPPER. Say it out loud! Not having any idea what it did I keyed it in, then had to find a program that demonstrated what it did! Well, here it is, first in Source Code, and then, for any members who have 32k but no disk drives, it is given in ExBas CALL LOAD format (using the excellent Italian ACE program). For XB+32k use just key in and run the CALL LOAD program, then run the DEMO program but delete the DEMO program CALL INIT and CALL LOAD lines. If you leave CALL INIT in, it will just erase everything you have just CALL LOAded!

- * ONTPLOPPER by Koen Holtman 1989
- * from Tijdingen No 47, Dec 89
- * CALL LINK("PLOP")
- * CALL LINK("OUT")
- * EX BAS if not compressed or Ed/As
- * Auto start only available with EDAs

```

DEF PLOP,OUT
PLOP LI R0,P1
STEL MOV R0,@B3C4
WEG RT
OUT CLR R0
    JMP STEL
P1 LI R1,>0100
    CB @>B3CE,R1
    JNE WEG
    LI R0,P2
    A R1,R1
LAAD MOV B R1,@B3CE
    JMP STEL
P2 LI R0,P3
    CLR R1
    JMP LAAD
P3 LI R0,P1
    MOV B R1,@B3CE,R1
    JNE STEL
    LI R1,>0100
    JMP LAAD
* END PLOP for ed/as autostart
END
+++++

1 CALL INIT
2 CALL LOAD(16368,79,85,84.3
2,32,32,36,254)
3 CALL LOAD(16376,80,76,79,8
0,32,32,36,244)
4 CALL LOAD(8194,37,48,63,24
0)
5 CALL LOAD(9460,2,0,37,2,20
0,0,131,196,4,91,4,192,16,25
1,2,1,1,0,144,96,131,206 )
6 CALL LOAD(9482,22,248,2,0,
37,24,160,65,216,1,131,206,1
6,240,2,0,37,32,4,193,16,249
)
7 CALL LOAD(9504,2,0,37,2,20
8,96,131,206,22,231,2,1,1,0,
16,241,62,192)
8 CALL LINK("OUT")
9 CALL LINK("PLOP")

====now see what it does====

100 CALL INIT ! not if you have
used above CALL LOADS!
110 CALL LOAD("DSK1.PLOP/0")
!(if not using LOADS)
120 FOR T=1 TO 10
130 CALL SOUND(100,120,10)
140 NEXT T
150 FOR T=1 TO 500 :: NEXT T
160 CALL LINK("PLOP")
170 FLAG=FLAG+1
180 IF FLAG=1 THEN 120
190 FLAG=0
200 CALL LINK("OUT")
210 GOTO 120
    
```



FRACTAL GRAPHICS AGAIN...

The first set of programs generates planets or balls - this enables you to create animated sequences just a little bit like the NASA pics! Unlike the skeleton globes you often see generated by computer, frequently see-through wire frames only, these programs generate a true planet, and map all parts but only show what should be shown. Thus you may go into any orbit you wish, polar or equatorial or (with tiny adjustment) any other. You may approach or depart from the planet, and can set the speed of planetary revolution, and even decide whether the poles are to be vertical or horizontal. With a tiny tweak you can set the poles at an angle.

The global mapping algorithm is by Mark Datko, July 1989, and appeared in Issue 4 of Fractal Report, which is available on subscription only, for UK residents at Ten Pounds for Six Issues (irregular but about 6 issues a year) from Reeves Telecommunications Laboratories Ltd., West Towan House, Porthtown, CORNWALL, TR4 BAX.

The first listing is in MYARC EXTENDED BASIC and requires that language- a program for standard TI ExBas plus JBM103 (from disk library) follows...

```

{take care of off-screen plots;}
100 ON ERROR 110 :: GOTO 120
110 ON ERROR 110 :: RETURN N
EXT
120 RANDOMIZE
130 CALL GRAPHICS(3)
140 REM SEEDS:
{k high, a low seems to
give more detail-
experiment!!!! }
150 K=RND*.5 :: A=RND*.01
160 CALL WRITE(1,1,1,"&STR
$(K)&"&STR$(A))
170 REM DENSITY OF IMAGE:-
180 NUMITS=42
190 REM VIEWPOINT:-
200 MYLAT=RND*180
210 MYLONG=RND*180
220 CALL WRITE(1,2,1,"&STR
$(MYLAT)&"&STR$(MYLONG))
230 RADIUS=64
240 PIBY2B=PI/2B
250 PIPTB=PI+0.8
260 TWOPI=PI*2
270 TWOPI10=TWOPI/10
280 CONRAD=0.0174533
290 MYLAT=MYLAT*CONRAD
300 REM This sort of thing
reduces processing
time-honest...:-
310 SINMYLAT=SIN(MYLAT)
320 COSMYLAT=COS(MYLAT)
330 MYLONG=MYLONG*CONRAD
340 FOR H=1 TO 8
350 CALL DCOLOR(H+2,1)
360 FOR V=TWOPI10 TO TWOPI10
*8 STEP TWOPI10
370 X=H*3 :: Y=V
380 FOR I=1 TO NUMITS
390 X=X-K*SIN(Y)
400 Y=Y+X*(1-A*X)
410 IF Y>TWOPI THEN Y=Y-TWOPI
I :: GOTO 410
420 IF Y<0 THEN Y=Y+TWOPI ::
GOTO 420
430 LAT=(X-14)*PIBY2B
440 LONG=Y+PIPTB
450 COSLAT=COS(LAT)
460 SINLAT=SIN(LAT)
470 LONG=LONG-MYLONG
480 SINLONG=SIN(LONG)
490 CLCL=COS(LONG)*COSLAT
500 IF CLCL*COSMYLAT+SINLAT*
SINMYLAT<0 THEN CALL POINT(1
,26+RADIUS*(SINLONG*COSLAT+1
),22+RADIUS*(1+CLCL*SINMYLAT
-SINLAT*COSMYLAT)+30)
510 NEXT I
520 NEXT V
530 NEXT H
540 CALL WRITE(1,24,1,"PRES
S SPACE FOR ANOTHER")
550 CALL KEY(5,A,B):: IF NOT
B THEN 550
560 RUN

-----
Now in TI EXTENDED BASIC
using JBM103:

100 REM PLANET FOR JBM103
110 REM requires jbm103 disk
from group library
120 CALL LOAD(-31890,56,0)
130 CALL LOAD(-31964,56,0)
140 CALL CLEAR
150 RANDOMIZE
160 K=RND*0.5
170 A=RND*0.01
180 NUMITS=30
190 MYLAT=RND*180
    
```

```

200 MYLONG=RND*180
210 RADIUS=60
220 PIBY28=PI/28
230 PIPT8=PI+0.8
240 TWOPI=PI+PI
250 TP10=TWOPI/10
260 CONRAD=0.0174533
270 MYLAT=MYLAT*CONRAD
280 SINMYLAT=SIN(MYLAT)
290 COSMYLAT=COS(MYLAT)
300 MYLONG=MYLONG*CONRAD
310 CALL LINK("CLEAR")
320 CALL LINK("SCR2")
325 CALL SCREEN(16)
330 FOR H=1 TO B
340 COLR=H+2
350 FOR V=TP10 TO TP10*B STEP
  TP10
360 X=H*3 :: Y=V
370 FOR I=1 TO NUMITS
380 X=X-K*SIN(Y)
390 Y=Y+X*(1-A*X)
400 IF Y>TWOPI THEN Y=Y-TWOPI
  I :: GOTO 400
410 IF Y<0 THEN Y=Y+TWOPI ::
  GOTO 410

```

=====

The affine graphic program I have given earlier can be extended to include formulae which will generate curves. Here is a modified program:

AFFINES

```

100 REM WRITTEN FOR MYARC XB
  BY STEPHEN SHAW SEPT 89
  based on
110 REM FRACTAL REPORT ISSUE
  3
120 REM KEITH WOOD AFFINES /
  POLYNOMIAL PAIRS
130 REM AUTO DIM(10) ALLOWS
  UP TO 10 TRANSFORMATIONS
140 RANDOMIZE
150 RN=RN+1 :: ON RN GOTO 16
  0,230,280,360,410
160 RESTORE 180 ! ROSE
170 M=6 :: GOTO 420
180 DATA .5,.866,-.866,.5,0,
  0,.4
190 DATA .5,.289,-.289,.5,0,
  0,.11
200 DATA -1,0,0,1,0,0,-.12
210 DATA -1,0,0,-1,0,0,-.12
220 DATA 1,0,0,-1,0,0,-.12

```

```

420 LAT=(X-14)*PIBY28
430 LONG=Y+PIPT8
440 COSLAT=COS(LAT)
450 SINLAT=SIN(LAT)
460 LONG=LONG-MYLONG
470 SINLONG=SIN(LONG)
480 CLCL=COS(LONG)*COSLAT
490 IF CLCL*COSMYLAT+SINLAT*
  SINMYLAT>0 THEN 510
500 CALL LINK("POINT",COLR,2
  6+RADIUS*(SINLONG*COSLAT+1),
  50+RADIUS*(1+CLCL*SINMYLAT-S
  INLAT*COSMYLAT))
510 NEXT I :: NEXT V :: NEXT
  H
520 REM
530 REM SAVE PICS
540 PIC=PIC+1
550 PIC$="PIC"&STR$(PIC)&"_P
  "
560 S$="DSK2."&PIC$
570 CALL LINK("SAUVE",S$)
580 CALL LINK("SCR1")
590 GOTO 140

```

```

230 RESTORE 250 ! LARCH
240 M=4 :: GOTO 420
250 DATA .8,0,0,.8,0,.2,.6
260 DATA -1,0,0,1,0,0,.27
270 DATA 0,0,0,-.5,0,0,.03
280 RESTORE 300 ! BIG BANG
290 M=7 :: GOTO 420
300 DATA .966,-.259,-.259,.96
  6,0,0,.25
310 DATA .966,-.259,-.259,.96
  6,0,0,.25
320 DATA .8,0,0,-.8,0,0,.18
330 DATA 0,1,-1,0,0,0,.08
340 DATA 0,-1,1,0,0,0,-.08
350 DATA -1,0,0,-1,0,0,.08
360 RESTORE 380 ! STAR2
370 M=4 :: GOTO 420
380 DATA .309,.951,-.951,.30
  9,0,0,.3
390 DATA .309,-.951,-.951,.30
  9,0,0,.3
400 DATA 0,-1.051,0,0,-.1,.30
  9,.2
410 RN=0 :: GOTO 150
420 REM
430 PT=0
440 FOR J=1 TO M-1

```

```

450 READ A(J),B(J),C(J),D(J)
  ,E(J),F(J),PK
460 PT=PT+PK :: P(J)=PT
470 NEXT J
480 FOR J=M TO 10
490 P(J)=PT
500 NEXT J
510 REM
520 REM 192 X 180 PLOT
530 CALL GRAPHICS(3)
540 YS=80 :: XS=80 :: YD=96
  :: XD=120 :: X,Y=0
550 REM
560 FOR N=1 TO 9940
570 PK=RND
580 IF PK<=P(1) THEN K=1 ELSE
  IF PK<=P(2) THEN K=2 ELSE IF
  PK<=P(3) THEN K=3 ELSE IF PK
  <=P(4) THEN K=4 ELSE 690
590 NXNT=A(K)*X+B(K)*Y+E(K)
600 YNXT=C(K)*X+D(K)*Y+F(K)
610 X=NXNT :: Y=YNXT
620 IF N>10 THEN CALL POINT(
  1,Y*YS+YD,X*XS+XD)
630 NEXT N
640 REM NEXT LINE REQUIRES
  JB/OBJ FROM MYARC UTILITY
  DISK FROM GROUP LIBRARY
650 CALL LINK("DUMP",0,16)!
  SINGLE SIZE TO PIO
660 GOTO 110
670 REM
680 END
690 IF PK<=P(5) THEN K=5 ELSE
  IF PK<=P(6) THEN K=6 ELSE IF
  PK<=P(7) THEN K=7 ELSE IF PK<
  =P(8) THEN K=8 ELSE IF PK<=P(
  9) THEN K=9 ELSE 710
700 GOTO 590
710 REM POLYNOMIAL PAIRS:
720 REM POLYNOMIAL PAIR D
  ECIDED BY VALUE OF RN
730 ON RN GOSUB 760,790,820,
  850,760
740 GOTO 610

```

```

750 STOP
760 NXNT=.125*(7-X*X-X-X)
770 YNXT=.217*X*X-.144*X-.36
  1
780 RETURN
790 NXNT=-.186*Y*Y-.654*Y+.8
  3
800 YNXT=.457*Y*Y-.251*Y-.00
  6
810 RETURN
820 NXNT=.1*X+.9
830 YNXT=.1*(1-X*X)
840 RETURN
850 NXNT=1.902*Y*Y-.951
860 YNXT=0.309
870 RETURN

```

The "polynomial pair" lines will only be branched to if the total probability for the sets of data (last item in each data line) fails to add up to exactly 1, thus this program can be used for the data given in the earlier program.

You may wish to try the following sets of ordinary affine data as well, which are additional to the earlier program:

ARROW:

```

M=4 :: GOTO 420
DATA 0.766,0,0,0.766,0.234,0,0.6
DATA -0.5,0.42,-0.42,-0.5,0.234,-0.04,0.2
DATA -0.5,-0.42,0.42,-0.5,0.234,0.04,0.2

```

TREE:

```

M=5 :: GOTO 420
DATA 0.8,0,0,0.8,0,0.2,0.75
DATA 0,0.4,0,0.1,0,0.1,0.1
DATA 0,-0.4,0,0.1,0,0.1,0.1
DATA 0,0,0,0.3,0,0,0.05

```

=====

This is yet another graphics program, in Myarc XB, which either draws flowers with varying numbers of petals, or it draws spirals. As it stands it selects at random, and will pause after approximately every 180 degrees for you to press space to continue or any other key to halt. After drawing terminates a star appears at screen bottom left. Press space to re-run program or any other key to print out (assuming you have loaded JD/OBJ from the disk library!).

```

10 REM STEPHEN SHAW MYARC XB NOV 89
100 XS=16 :: YS=21 :: Z=3.15
110 XOF=90 :: YOF=126
120 RANDOMIZE :: CALL GRAPHICS(3)
130 CALL POINT(0,XOF,YOF)
140 FLAG=0
150 ON ERROR 160 :: GOTO 170
160 ON ERROR 160 :: RETURN NEXT
170 MULT=INT(RND*32)+1
180 IF RND<0.3 THEN MULT=RND*12 :: IF MULT<1 THEN 180
190 IF MULT<15 THEN YS=YS/2 :: XS=XS/2 :: IF MULT<8 THEN YS=YS/3 :: XS=XS/3
200 IF MULT<4 THEN YS=YS/1.5 :: XS=XS/1.5
210 IF RND<0.3 THEN FLAG=1 :: MULT=0
220 TEMP=RND*0.12+0.01
230 FOR T=0 TO 6*PI+.05 STEP 0.025
240 IF T=Z OR T=2*Z OR T=3*Z OR T=4*Z OR T=5*Z THEN CALL PAUSE(P) :: IF P=20 THEN T=20
250 IF FLAG=0 THEN R=R+RR :: RR=SIN(T*MULT) ELSE R=TEMP+R
260 REM
270 IF RND<0.8 AND FLAG=1 THEN RR=SIN(MULT*T) ELSE IF FLAG=1 THEN RR=RR+TEMP
280 REM
290 CALL DRAWTO(1,SIN(T)*R*XS+XOF,COS(T)*R*YS+YOF)
300 NEXT T
310 REM
320 CALL WRITE(1,24,28,"*")
330 CALL KEY(0,A,B) :: IF B<1 THEN 330
340 IF A=32 THEN RUN ELSE CALL LINK("DUMP",0,16)
350 OPEN #1: "PI0"
360 PRINT #1: " ": "MULT=";MULT : "FLAG=";FLAG : "TEMP=";TEMP : " ": ""
370 CLOSE #1 :: RUN
380 STOP
390 SUB PAUSE(P)
400 CALL WRITE(1,24,4,"*")
410 CALL KEY(5,A,B)
420 CALL WRITE(1,24,4," ")
430 IF B<1 THEN 400
440 IF A=32 THEN P=0 ELSE P=20
450 SUBEND
460 END

```

Nothing too grand really but if you want to draw spirals or flowers, thats how you do it!

=====

Stephen

```

J REM FOR MYARC XB 11/89 NEVER BEFORE PUBLISHED! RANDOM 3D DESIGNS BASE
D ON DISTORTED GRAPH PAPER
2 REM STEPHEN SHAW 1982
3 FOR CT=1 TO 8 :: RANDOMIZE :: RN(CT)=RND :: NEXT CT :: CH=INT(RND*21+1)
4 CALL CLEAR :: GW=INT(RND*8+4) :: AC=INT(RND*6+1)
5 CC=SQR(2)/2 :: GOSUB 13 :: OX=96 :: OY=62 :: FOR X=XU TO XL STEP -6*XM :: GOSUB 17
6 FOR Y=YL TO YU STEP AC*YM :: GOSUB 19 :: GOSUB 22 :: NEXT Y :: Y=YU :: GOSUB 19 :: GOSUB 22 :: NEXT X
7 X=XL :: GOSUB 17 :: FOR Y=YL TO YU STEP AC*YM :: GOSUB 19 :: GOSUB 22 :: NEXT Y
8 FOR Y=YL TO YU STEP GW*YM :: GOSUB 18
9 FOR X=XL TO XU STEP AC*XM :: K=(X+TX)/XM*CC
10 GOSUB 19 :: GOSUB 22 :: NEXT X :: K=(XU+TX)/XM*CC :: GOSUB 19 :: GOSUB 22 :: NEXT Y
11 Y=YU :: GOSUB 18 :: FOR X=XL TO XU STEP AC*XM :: K=(X+TX)/XM*CC :: GOSUB 19 :: GOSUB 22 :: NEXT X
12 CALL WRITE(1,24,1,"SPACE") :: CALL KEY(0,A,B) :: IF A=32 THEN RUN ELSE 12
13 PRINT " ": "0<X<130": "0<Y<180": "-80<Z<80" :: XL=RND*3.0 :: XU=XL+RND*2.6+.7
14 YL=RND*.7 :: YU=YL+RND*4+.7 :: ZL=(YL+XL/2)-3 :: ZU=ZL+RND*4+2.4 :: PRINT "X";XL;XU : "Y";YL;YU : "Z";ZL;ZU :: FOR CT=1 TO 700 :: NEXT CT
15 ZM=(ZU-ZL)/60 :: XM=(XU-XL)/60 :: YM=(YU-YL)/55
16 TX=0-XL :: TY=0-YL :: TZ=-80*ZM-ZL :: CALL GRAPHICS(3)
17 K=(X+TX)/XM*CC :: Y=YL :: GOSUB 19 :: U=I :: V=J :: RETURN
18 X=XL :: K=(X+TX)/XM*CC :: GOSUB 19 :: U=I :: V=J :: RETURN
19 ON CH GOSUB 36,37,38,39,40,41,42,43,44,45,46,36,36,36,37,36,38,36,42,36,38,36
20 I=OX+(Y+TY)/YM-K :: J=OY-(Z+TZ)/ZM+K :: IF I<20 THEN I=20
21 I=MIN(I,180) :: J=MIN(J,160) :: J=MAX(J,10) :: RETURN
22 IF (U=10 AND I=10) OR (U=160 AND I=160) OR (V=10 AND J=10) OR (J=160 AND V=160) THEN U=I :: V=J :: RETURN
23 IF (U=10 AND I=10) OR (U=160 AND I=160) OR (V=10 AND J=10) OR (J=160 AND V=160) THEN U=I :: V=J :: RETURN
24 X2=U :: X3=I :: Y2=V :: Y3=J :: U=I :: V=J :: GOSUB 25 :: RETURN
25 DX=X3-X2 :: DY=Y3-Y2 :: IF (DX=0)+(DY=0) THEN 29
26 IF ABS(DX)>ABS(DY) THEN 28
27 FOR LCV=Y2 TO Y3 STEP SGN(DY) :: R=INT(.5+LCV) :: C=INT(.5+X2+DX/DY*(LCV-Y2)) :: GOSUB 34 :: NEXT LCV :: RETURN
28 FOR LCV=X2 TO X3 STEP SGN(DX) :: C=INT(.5+LCV) :: R=INT(.5+Y2+DY/DX*(LCV-X2)) :: GOSUB 34 :: NEXT LCV :: RETURN
29 IF (DX=0)-(DY=0) THEN 31
30 RETURN
31 IF DY=0 THEN 33
32 C=INT(.5+X2) :: FOR LCV=Y2 TO Y3 STEP SGN(DY) :: R=INT(.5+LCV) :: GOSUB 34 :: NEXT LCV :: RETURN
33 R=INT(.5+Y2) :: FOR LCV=X2 TO X3 STEP SGN(DX) :: C=INT(.5+LCV) :: GOSUB 34 :: NEXT LCV :: RETURN
34 REM PLOT SUBROUTINE
35 CALL POINT(1,R,C) :: RETURN
36 Z=4*RN(1)*SIN(4*RN(2)*X)*2*COS(X)-3*SIN(RN(3)*4*Y)*2*SIN(Y)*2*RN(4)-1.3*SIN(X)*3*RN(5)+SIN(Y*RN(6)*3)+LOG((X+Y)/RN(7))-(Z>ZL) :: RETURN
37 Z=2*RN(1)*COS(X)*SIN(Y*2*RN(2))-2*(Z>ZL)+2*(Z<ZU) :: RETURN
38 Z=COS(X*RN(3))+COS(Y)-(Z>ZL)+2*(Z<ZU) :: RETURN
39 Z=EXP(SQR(X^3*RN(4)+Y^3*RN(5)))-INT(EXP(SQR(X^3*RN(1)+Y^3*RN(2))))-(Z>ZL)+2*(Z<ZU) :: RETURN
40 Z=COS(X*Y/SQR(X^4*RN(1)+Y^4*RN(1)))-2*(Z>ZL)+2*(Z<ZU) :: RETURN
41 Z=COS((X+Y)/3*RN(6))*LOG(ABS(X*Y)+RN(1))-2*(Z>ZL)+2*(Z<ZU) :: RETURN
42 Z=COS((ABS(X)+RN(1))^Y*4*RN(2))-2*(Z>ZL)+2*(Z<ZU) :: RETURN
43 Z=COS(Y/ABS(X)+RN(5))-2*(Z>ZL)+2*(Z<ZU) :: RETURN
44 Z=SIN(X-Y)/4*RN(7)+COS(Y)-3*(Z>ZL)+2*(Z<ZU) :: RETURN
45 Z=SIN(X)+COS(Y/4*RN(2))+SIN(X+Y)-COS(ABS(X-Y)+.1)-(Z>ZL)+(Z>ZU) :: RETURN
46 Z=SIN(ABS(X-Y))+SIN(ABS(RN(1)-SIN(X*3*RN(4))))+COS(Y/4*RN(2))-(Z>ZL)+(Z<ZU) :: RETURN
47 END

```


TI-SORT

THE ULTIMATE IN FILE SORTING

WORKS WITH ANY TYPE OF FILE

TI-BASE DATA-BASES
VARIABLE FIELD RECORDS
FIXED FIELD RECORDS
BASIC AND EX-BASIC FILES



TI-SORT PHYSICALLY REORDERS THE RECORDS IN YOUR DISK FILES.

Specifically designed for TI-Base data-bases, yet flexible enough to allow data to be manipulated in most any type of file.

ALLOWS NON TI-BASE FILE STRUCTURES TO BE DEFINED AND SAVED FOR FUTURE USE.

FEATURES

FAST

NESTED SORTING UP TO 8 FIELDS
SORTS UP TO 32767 RECORDS
WORKS WITH ANY TYPE OF FILE
ON-LINE HELP

APPROXIMATE SORTING TIMES FOR 128 BYTE RECORDS

| # RECORDS | FLOPPY | RAM DISK |
|-----------|------------|-----------------------|
| 500 | 6 minutes | 2 minutes, 40 seconds |
| 1000 | 12 minutes | 5 minutes, 20 seconds |
| 1500 | 17 minutes | 8 minutes |

\$14.95 plus postage & handling

INSCEBOT, INC.
P.O. BOX 291610
PT. ORANGE, FL 32129
(904)767-3922

TI-BASE

Version 2.03 (As at Oct 89)

FEATURES

Customized record definitions
Free interchange of data
Extensive command language
Global data processing
Local variables
On-Line help
Character manipulation

| Data Types | Sorted Records | Math Capability |
|-------------|---------------------|-----------------|
| - Character | - Sequential | - Arithmetic |
| - Numerical | - "Find" Capability | - Trig |
| - Date | - Nested Sorts | - Logical |
| - Literals | | - Boolean |

| Disk Directives | Command Language |
|--------------------|------------------------|
| - Initialize Disks | - Nested Command Files |
| - Catalog Disks | - CASE Statements |
| - Copy Files | - IF, THEN, ELSE |
| - Delete Files | - WHILE loops |
| | - Window Scrolling |

\$24.95
plus postage and handling

INSCEBOT, Inc.
P.O. Box 291610
Pt. Orange, FL 32029
(904)767-3922

Requires 32k memory expansion and a minimum of one disk drive.
Loads with Ex-Basic, Ed/AS, or Mini-memory modules.

TI-ARTIST PLUS! by Chris Faherty. INSCEBOT. VERSION 1.0

This is a thorough rewrite of THE TI99/4A Graphics program, TI Artist, and involves some entirely new things, some improvements, and inevitably some losses.

The manual is 38 pages long- and there is an important update file on disk which you must print out!- , and the program is supplied on THREE disks- yes, if you only have a single disk system you are going to be doing a little disk swapping. There are more program segments, which means more waiting for segments to load - use of a ram-disk is even more useful now!

Let us look at each segment in turn, in the order they are presented in the manual, with comparisons to the original TI Artist (Version 2).

TI ARTIST- the drawing mode. We now have nine cursor speeds selected by pressing a number key, and also a very useful single-step key, which moves the cursor one step without auto-repeat, very handy for detail work.

We have lost the ability to write on the picture in this mode, but instead we can select background/foreground colours from the drawing screen, instead of having to go back to the menu.

We have lost the capability of printing from this mode (PRINT is now a separate mode-see below) but instead have an ARC function, which draws a quarter ellipse between two points. All you do is select the points- if they are vertically or horizontally lined up, they are connected by a straight line. If you move them out of that alignment, you get a preset arc between them. I have not been able to work out the advantages of a preset quarter ellipse- the approach taken by Graphx remains superior!

There is a "spray paint" option which some may find of use, and if you wish you may amend the screen (background) colour, although this has no effect on storing or printing the picture.

As PRINT is now a separate section, it is no longer possible to directly print a ZOOMed portion of screen, you must first SAVE it when in ZOOM mode and then reload it.

ENHANCEMENT section has changed only a little- we still have copy, move, slides, and instances, but FONTS have been moved to a separate section of progra.

FONTS is a new section of program. By placing it in a separate section, it is possible to use longer font files, so in some cases we no longer need to keep lower case and upper case in separate files! and with very large fonts, we can now fit all of A to Z in one file!

The entry screen is multi-line, the use of which is going to be limited to placing very short messages on screen, as you may now enter messages which will NOT fit! There is no length check on entering, only when you Test it and see you have most of your message missing.

Also the input line is shorter, which is bad news if you use fairly small fonts, and already found the input line on the short side! Each single line of entry may be left or right justified or centred - again, lacking WYSIWYG or any other indication of what text will fit, apart perhaps from CENTRE this is going to be of limited use.

There are three columns for each entry line, which contain the letters NNC. Unusually unfriendly for TI Artist users- there is no indication of the meaning of this cryptic display! What these do is to allow you to choose to OUTLINE the letters (as per TIA), SHADOW the letters, (or outline AND shadow the letters!), and the final figure selects Right/Left/Centre.

TOP
↑

ROTATED. "HALF"
LOW DENSITY. 1X PIC

SHADOW
OUTLINE

SHADOW
OUTLINE

SHADOW
OUTLINE

NOT ROTATED

ROTATED. 2PIC. HIGH DENSITY. "HALF"

HI DENSITY. 2X PIC. ROTATED "HALF"

TOP↑ 2X PIC LOW DENSITY ROTATED "V" SCRUNCHED

A B C D E

F G H I

J K L M

N O

P Q

R S T U V W X Y Z

The new modifications to the fonts greatly extend the already huge choice of fonts available, and shadow-outline is very effective with some fonts.

VECTOR

The manual doesn't really try to describe this, and a couple of items I remain unsure of their function, but I am sending in some sample prints! The main illustration is at the bottom of the page and each picture is marked A to Z or a to t. Details as follows:

A...Vector option ii above, selecting SPIN 150. As our picture is only 2-dimensional and spin is a 3-D operation, the effect is to narrow the picture, causing some distortion. Although we have 3D operators, there is NO 3D function available!

B...Vector option ii, ROTATE 90 degrees.

C...Vector option ii, ROTATE 180 degrees.

D...Vector option ii, ROTATE 210 degrees. Note distortion!

E...Vector option ii, SCALE Vert and Horiz, 71%. Note loss of pattern.

F...Vector option ii, TIP 210 degrees. Again a 3D operator, merely causing some fore-shortening.

G...Vector option ii, SCALE Vert and Horiz 114%. Note distortion to pattern!

H...Vector option i, SCALE enlargement, note break up of pattern!

I...Vector option i, SCALE reduction.

** Note reduction and enlargement is available as in two ways! One way changes what is on screen, the other changes a saved image and then places it in a selected location. **

J...Vector option ii, "HORIZONTAL 150 degrees". No idea!

K...Vector option ii, ROTATE 45 degrees.

L...Vector option ii- unchanged original image.

M...Vector option ii, "VERTICAL 145 degrees". No idea!

N...Vector option iii, Special Effect C, no change horizontally but producing two vertical squeezes- see stress lines in pattern!

O...Vector option iii, Special Effect A, reducing height of right hand side only

P...Vector option iii, Special effect F, no change to vertical scale but with a central horizontal squeeze- see stress lines in pattern.

Q...Vector option iii, Special effect H, tilting whole picture, here moving right side upwards.

a. Original font, letters TS.

b. Same letters outlined (Using FONT section)

c. as a but shadowed. (Using FONT section)

d. as a but outlined AND shadowed. (Using FONT section).

e. Rotate 180 degrees. f. rotate 20 degrees.

g. rotate 90 degrees. h. rotate 30 degrees.

i. rotate 45 degrees. j. spin 20 degrees.

k. tip 24 degrees. l. "horizontal 150 degrees"

m. opt ii scale 114% n. opt ii scale 82%

o. "horizontal 200 degrees"

p. opt ii scale- vertical 95%, horizontal 120%.

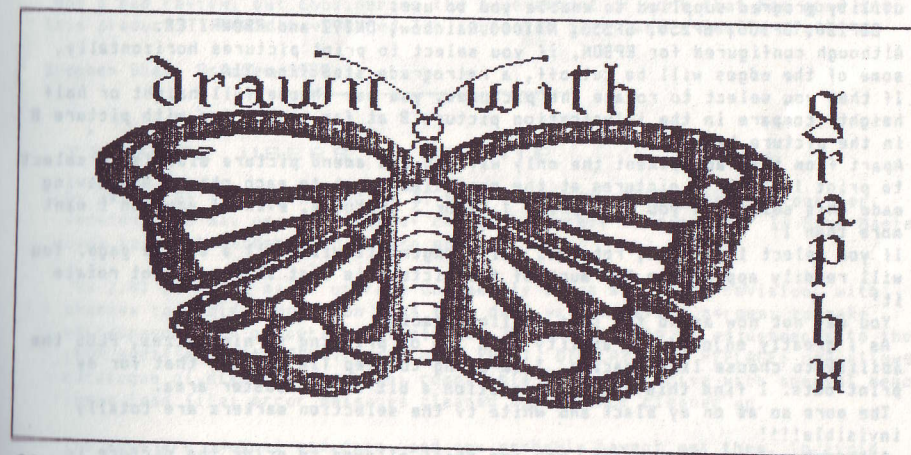
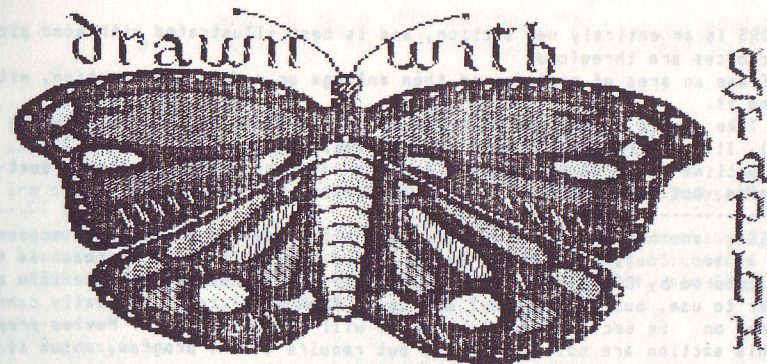
q. Special effect E, making bottom part fatter.

r. Special effect D, sliding top to right, instant italics!!!!

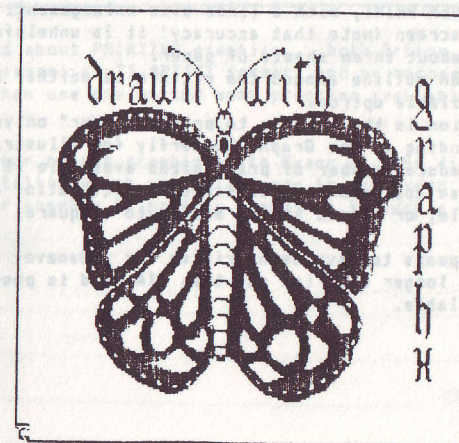
s. Special effect H, tilting down.

t. Special effect A, making right hand side taller.

There are a total of eight special effect, A to H.



2PIC. LONG 'V'



2PIC
"HALF" V



VECTORS is an entirely new section, and is best illustrated with some pictures! The choices are threefold:

- i. Frame an area of picture and then enlarge or reduce that section, without moving it.
- ii. Take a part of the picture out and save it into another file (using _V tail). It is then available for various manipulations.
- iii. Outline a bit of the picture and then distort it, using some preset patterns, but you have control over the amount of distortion.

MOVIES... another brand new section, and with a new animated title screen to demo it too. Could not get the hang of this one. I think my approach is too much colored by COMIC SHOW 4.0, which strikes me as being more flexible and easier to use, but then again I met Comic Show 4.0 first... I really cannot comment on this section except to say I will not be using it! Movies prepared by this section are not stand alone but require a PLAY program, which is supplied, and which is PUBLIC DOMAIN.

PRINT is now a separate section, and if you are used to TIA I think you may find this a retrograde step. Supplied for EPSON printers, but you can use a utility program supplied to enable you to use:

CGP220, GP100, GP250, GP550, NX1000 Rainbow, OKI92 and PROWRITER.

Although configured for EPSON, if you select to print pictures horizontally, some of the edges will be cut off, a retrograde step from TIA. If then you select to rotate the pictures, you may choose full height or half height- compare in the illustration picture B at far right, top with picture B in the picture below.

Apart from that adjustment the only way you can amend picture size is to select to print 1, 2, or 3 pictures at the same time- next to each other. And having made this selection you MUST print 1, 2 or 3 pictures, even if you don't want more than 1!

If you select 1 picture, rotated, full length, it will fill a single page. You will readily appreciate how much of the picture is lost if you do not rotate it!

You may not now amend the size of line spacing.

As I greatly enjoyed the ability with TIA of printing in nine sizes, PLUS the ability to choose line spacing, I am going to keep TIA and use that for my print outs. I find this new print section a bit of a disaster area.

The more so as on my black and white tv the selection markers are totally invisible!!!!

Although a separate segment, you are still allowed to print the picture in memory, as well as reading and printing disk files.

A new option is BANNER PRINT, with a fixed size enlargement. Approximately the middle third of the screen (note that accuracy! it is unhelpful!) can be printed sideways on about three sheets of paper.

The ability to put an outline around the picture is neither here nor there to me, but it is an available option.

One really good option is the ability to print "colour" on your monochrome printer, and I am sending in the Graphx butterfly for illustration. Note that with the very much reduced number of print sizes available it is not possible to obtain even a close approximation to screen aspect ratio- we have either super panavision style, or reduce the tv screen to a square!

The PRINT routine appears to have been written for a Geneve- with any option it takes VERY VERY much longer to print out than TIA, and is possibly the slowest screen dump now available.

As I say, I shall continue using TIA for my printouts!

DSRs are supplied to enable you to use a Geneve Mouse or a Mechatronic Mouse.

The original conversion routines are supplied- this portion is unchanged, and there has been no move to accomodate the new graphics formats introduced since 1985, which is a pity. You may convert Draw N Plot, Draw a Bit, and Graphx only.

Overall impression?

Well I am glad I have a ram disk. I think I shall be using this only when I need to use the odd new effect, and sticking to TIA for most of my graphics work, as too much useful has been lost. This IS only Version 1.0, and I shall be keeping an eye out for further versions...

Not a bad review, but considering the huge amount of work that has gone into this product, I would have hoped for a greater gain, and a smaller loss!

Stephen Shaw. October 1989.

TI BASE USERS : UPDATE

As at Nov 89 I have Vn 2.03 of TI BASE available. If you have an earlier version, you may upgrade free of charge by merely sending your TI Base Master Disk to me, together with return postage.

Vn 2.03 is not a major upgrade but merely a bug squashing revision, with changes to avoid truncation of X type data with trailing zeroes; to make edit/append work properly on fields of 25 length; lots of adjustments to the ;FOR modifier, with SUM (lotsabugs), PRINT, DISPLAY, and REPLACE; now allows catalogue of disk with no name; compatible with hard drive with special memory image load file; error messages cleaned up; REPLACE cleaned up.

The bugs are unusual and rare, and you probably haven't met them. To avoid meeting them just return your disk to me with return post! Stephen Shaw.

I have been asked about PRINTING graphics... both Triton XB and JBM103 have the ability to save images in TI ARTIST format, and my recommendation is to save your image and then use one of the many programs available to print- TI Artist, MAX-RLE, etc etc.

If you prepare your hi-res graphics with Myarc XB, the disk library can supply a machine code utility which will allow you to dump your screens to printer. Still waiting for someone to proffer a program to dump a Myarc XB pic to TI Artist format!

Stephen

DON'T GET MAD...



BUNYARD HARDWARE MANUAL FOR THE TI 99/4A

IT DESCRIBES:

- *CONSOLE DESIGN.....*TMS 9900 H/W ORGANIZATION
- *TMS 9900 INSTRUCTION SET.....*CONSOLE SCHEMATICS
- *INTERFACING PITFALLS.....*PEB CARD DESCRIPTION
- *GROM SIMULATOR DESIGN.....*CUSTOM CHIP OPERATION
- *EXTENDED BASIC MODULE..... description & schematics

SEND ORDER TO:
THE BUNYARD GROUP...PO BOX 62323...COLORADO SPRINGS, CO. 80962-2323

PLEASE SEND ME _____ COPIES OF THE HARDWARE MANUAL FOR THE TI99/4A.

→ U.S. PRICE \$21.95 (INCLUDES POSTAGE)
OUTSIDE U.S. \$26.00 (INCLUDES POSTAGE)...U.S. FUNDS ONLY ←
CHECKS OR MONEY ORDERS PAYABLE TO: "THE BUNYARD GROUP"

NAME: _____

ADDRESS: _____

CITY, STATE, ZIP CODE: _____

COUNTRY: _____

VECTOR GRAPHICS AND TRANSFORMATIONS.

Vector graphics are pictures drawn with lines - true perhaps of all pictures! but in vector graphics, the computer only knows the start and ending point of each line in the picture, and joins them up. It then becomes much easier to scale, rotate, or transform the picture.

In order to produce vector values, it is helpful to draw a picture on screen and have the computer store the values for us - and in order to use a bit map screen AND have a sprite pen marker we must use Myarc XB.

The first program below is to prepare a DV80 file of vector values for a picture drawn using the program.

When the program starts to run you will see a white marker on the screen and the word DN.

Turn the word to OFF by pressing the letter O key. Now move the white marker using keys ESD and X - the arrow keys. You will find a second darker marker. At most times the light marker is the "draw to" point and the dark marker is the "draw from" point. The draw from point will move as soon as you move the light pointer away from a marked point.

As you draw you will also see a number appear at screen bottom, keeping a score of the points - this listing allows a maximum of 100 but could be increased.

From the initial screen, turn ink off, move the white marker, then press key A (Add point) and when you move the white marker the darker marker will move to the point where you pressed A.

Press O to make the status word read ON, move the white marker and press A again. The two markers will be joined with a line. Continue sketching for a while!

Now press key P and the white marker will move back along your sketch. Press P again. Now move the white marker and press A - notice the line again starts from the dark marker and goes to the white one. Now press N a couple of times, move the white marker and press A. P=Previous, N=Next, to skip the white marker around already plotted points, leaving the dark marker on the last "from" point.

Made a mistake? If it is a bad one, key R (rub out) as many times as are required. Each time the drawing will be redrawn with one less line.

Tiny mistake - need to move the line just a little? Move the white marker a little, then press key F (fiddle!) and the previous line will jump to a new alignment.

Finished? Press T and then save the data as required.

To load data, from the start screen, press T, then load data as required.

Here is the program...

```

1 REM MAKE SHAPES
100 DIM C(100,2)
110 DEFINT DIM DM(101)
120 CALL SCREEN(15)
130 REM MYARC XB ONLY - NEEDS BIT MAP and SPRITE!
140 REM
150 REM program to produce vector drawings for use with auto-animation
160 REM original for apple by Phil Cohen
170 REM for ti99/4a by stephen shaw oct 1989
180 REM
190 CALL CLEAR
200 CALL SETUP
    
```

DON'T GET MAD...

```

210 REM APPLE SCREEN =          280 (ti 256) x 160 (192)    X
220 YS=256/281 :: XS=192/161
230 Y=140*XS :: X=80*YS
240 CALL SPRITE(#1,42,16,X,Y)
250 P=1
260 CP=0
270 C(0,1)=X :: C(0,2)=Y :: DM(0)=1
280 O=1 ! ON
290 GOSUB 620
300 CL=3 ! (NON O=DRAW ON )
310 CALL KEY(5,@,@) :: IF @@=0 THEN 310
320 X=X+(@=69)-(=@88)
330 Y=Y+(@=83)-(=@68)
340 IF Y>254 THEN Y=7 ELSE IF Y<7 THEN Y=254
350 IF X>192 THEN X=1 ELSE IF X<1 THEN X=192
360 REM
370 REM
380 REM
390 IF @=69 OR @=83 OR @=68 OR @=88 THEN 530
400 IF @=80 THEN GOSUB 970
410 IF @=78 THEN GOSUB 1060
420 IF @=82 THEN GOSUB 800
430 REM
440 IF @=84 THEN 1380
450 IF @=65 THEN GOSUB 650
460 IF @=70 THEN GOSUB 1140
470 IF @=79 THEN GOSUB 580
480 REM
490 REM
500 GOTO 310
510 REM
520 REM
530 CALL LOCATE(#1,X,Y)
540 CALL LOCATE(#2,C(P-1,1),C(P-1,2))
550 GOTO 310
560 REM
570 REM
580 REM NOTE USE OF LETTER O AS VARIABLE!
590 O=-(O<>1) ! neat trick this!
600 GOSUB 620
610 RETURN
620 IF O=0 THEN CALL WRITE(1,24,12,"OFF") ELSE CALL WRITE(1,24,12,"ON ")
630 RETURN
640 REM
650 REM ADD A
660 IF P>100 THEN RETURN
670 IF C(P-1,1)=X AND C(P-1,2)=Y THEN RETURN
680 C(P,1)=X :: C(P,2)=Y
690 DM(P)=O
700 REM
710 IF O=0 THEN GOTO 750
720 REM
730 CALL DRAW(1,C(P-1,1),C(P-1,2),X,Y)
740 REM
750 P=P+1 :: CP=P-1
760 CALL WRITE(1,24,18,STR$(P))
770 RETURN

```

```

780 REM
790 REM ERASE E
800 P=P-1 :: IF P=0 THEN P=1
810 CALL SETUP
820 REM
830 IF P=1 THEN 900
840 FOR I=1 TO P-1
850 IF DM(I)=0 THEN 880
860 REM
870 CALL DRAW(1,C(I-1,1),C(I-1,2),C(I,1),C(I,2))
880 NEXT I
890 REM
900 CP=P-1
910 X=C(CP,1) :: Y=C(CP,2)
920 CALL LOCATE(#1,X,Y)
930 GOSUB 620
940 RETURN
950 REM
960 REM PREVIOUS POINT P
970 REM
980 CP=CP-1
990 IF CP<1 THEN CP=1
1000 X=C(CP,1) :: Y=C(CP,2)
1010 O=1-DM(CP) :: GOSUB 580
1020 CALL LOCATE(#1,X,Y)
1030 RETURN
1040 REM
1050 REM NEXT POINT N
1060 CP=CP+1
1070 IF CP>P-1 THEN CP=P-1
1080 X=C(CP,1) :: Y=C(CP,2)
1090 O=1-DM(CP) :: GOSUB 580
1100 CALL LOCATE(#1,X,Y)
1110 RETURN
1120 REM
1130 REM FIX A POINT F
1140 IF CP=0 THEN RETURN
1150 REM ERASE POINTER
1160 REM
1170 CALL LOCATE(#1,1,1)
1180 REM
1190 REM ERASE LINE
1200 CALL DRAW(0,C(CP-1,1),C(CP-1,2),C(CP,1),C(CP,2))
1210 IF CP=P-1 THEN 1230
1220 CALL DRAW(0,C(CP,1),C(CP,2),C(CP+1,1),C(CP+1,2))
1230 REM
1240 DM(CP)=O
1250 C(CP,1)=X :: C(CP,2)=Y
1260 IF O=0 THEN 1290
1270 REM
1280 CALL DRAW(1,C(CP-1,1),C(CP-1,2),X,Y)
1290 IF CP=P-1 THEN GOTO 1330
1300 IF DM(CP+1)=0 THEN CALL POINT(1,C(CP+1,1),C(CP+1,2)) :: GOTO 1330
1310 REM
1320 CALL DRAW(1,X,Y,C(CP+1,1),C(CP+1,2))
1330 REM
1340 CALL LOCATE(#1,X,Y)
1350 RETURN
1360 REM
1370 REM
1380 REM
1390 CALL GRAPHICS(1)

```

```

1400 DISPLAY AT(3,3) : "S TO SAVE THIS DATA": " R TO READ NEW DATA"
1410 CALL KEY(5,@,@@) :: IF @@<1 THEN 1410
1420 IF @<>82 AND @<>83 THEN 1410
1430 IF @=82 THEN 1570 ELSE 1460
1440 REM
1450 REM
1460 DISPLAY AT(5,12) : "SAVE": "" : "SAVE TO": "(ENTER DSK1.FILE OR P10 etc
)"
1470 ACCEPT AT(12,5) : OUT$
1480 OPEN #1: OUT$
1490 PRINT #1: P-1
1500 FOR I=1 TO P-1
1510 PRINT #1: C(I,1) :: PRINT #1: C(I,2) :: PRINT #1: DM(I)
1520 NEXT I
1530 PRINT #1: -1,-1,-1
1540 CLOSE #1
1550 STOP
1560 REM INPUT DATA
1570 DISPLAY AT(5,12) : "INPUT DATA": "" : "INPUT FROM": "1. DISK": "2. KEYB
OARD"
1580 CALL KEY(5,@,@@) :: IF @@<1 THEN 1580
1590 IF @<49 OR @>50 THEN 1580
1600 IF @=50 THEN 1700
1610 REM INPUT FROM DISK
1620 DISPLAY AT(12,3) : "INPUT FROM DISK": "(ENTER DSK1.FILE etc)"
1630 ACCEPT AT(20,3)SIZE(15) : IN$ :: OPEN #1: IN$
1640 INPUT #1: @
1650 FOR I=1 TO @ :: INPUT #1: C(I,1) :: INPUT #1: C(I,2) :: INPUT #1: DM(I) ::
NEXT I :: P=@+2
1660 CLOSE #1 :: O=DM(P-2) :: CALL SETUP :: GOSUB 800 :: GOTO 310
1670 STOP
1680 REM
1690 REM
1700 REM
1710 REM INPUT FROM SCREEN
1720 CALL CLEAR
1730 DISPLAY AT(1,1) : "INPUT": " X Y :1 ON O OFF:"
1740 DISPLAY AT(8,1) : "LAST ENTRY TO BE -1 -1 -1"
1750 P=1
1760 ACCEPT AT(3,2)VALIDATE (DIGIT) : C(P,1)
1770 ACCEPT AT(3,7)VALIDATE (DIGIT) : C(P,2)
1780 ACCEPT AT(3,15)VALIDATE ("10") : DM(P)
1790 IF C(P,1)<0 OR C(P,2)<0 THEN O=DM(P-1) :: P=P+1 :: CALL SETUP :: GOSUB 800
:: GOTO 310
1800 SUB SETUP :: CALL GRAPHICS(3) :: CALL CHAR(42,"FO8080") :: CALL SPRITE(#1,4
2,16,1,1)
1810 CALL SPRITE(#2,42,3,1,1) :: SUBEND

```

Having drawn our picture we can recall and redraw it at any time. We could scale or rotate it...

To SCALE the picture, the X,Y coordinates are adjusted- perhaps more easily with reference to screen centre (x=95, y=125 say).

Thus to make the image twice the size say:

```

NEWX=95+(OLDX-95)*2
NEWY=125+(OLDY-125)*2

```

If we wish to reduce the image, the multiplier is a fraction such as 0.5
NOTE that although we can error trap plots outside the screen, the Myarc DRAW command will not properly draw any image which exceeds the size of the screen!!! There are ways of doing that by using CALL POINT should you wish to have a go!

For rotation, we use the general form:

```

NEWX= OLDX*COS(ANGLE)+OLDY*SIN(ANGLE)
NEWY= OLDY*COS(ANGLE)-OLDX*SIN(ANGLE)

```

To rotate around the central point 95,125, scaling by a factor S:
 $NEWX = S * (OLDX-95) * \cos(ANGLE) + S * (Y-125) * \sin(ANGLE) + 95$
 $NEWY = S * (OLDY-125) * \cos(ANGLE) + S * (X-95) * \sin(ANGLE) + 125$

You can introduce these transformations in line 1650, eg INPUT #1:C(I,1) :: X=C(I,1) :: (transformation) :: C(I,1)=X, and similarly dealing with C(I,2) for values of Y.

OK now onto the harder stuff- transformations! You probably see these quite often on tv, as they are the stuff of computer animation- especially the Channel 4 logo!

We can take ANY two pictures prepared with the above MAKE SHAPE program, and let the computer transform one into another, automatically! One major rule: each picture MUST have the same number of points!!! That is, as you press T(erminate) from MAKE SHAPE, each picture must have the same number on the bottom of the screen.

The points will be transformed IN THE ORDER THEY HAVE BEEN INPUT so you may have to think about your order of input! Point one of drawing one will become point one of drawing two.

If you have used INK OFF at any time, the ink must be off between like numbered points in each picture (not a fatal error, it just looks wrong if you dont pay attention to this!).

You can transform a shape with three points (a triangle) into a shape with four points (a square) quite easily, by adding an additional point somewhere in your triangle, either between points one and two say, or you can "overshoot" and add a 4th point after the third point- perhaps backtracking to do it. This gives you three essentially different transformations- they work, which do you prefer?

The computer cares nothing for shapes. It is merely taking points one and two of drawing one, and points one and two of drawing two, and moving them towards each other in a sequence of pictures. At each stage it will connect point 1 to point 2, which gives us, the viewer, the illusion of a moving line!

The transformations can be viewed using the transformation program below, saved to printer using the Myarc Utility disk from the library, or saved to TI Artist format using JBM103 library disk, and then perhaps put into an animated sequence with library disk COMIC SHOW 4.0 - so instead of an animated Channel 4 logo, you could have an animated 4A logo!

```

I REM VECTOR ANIMATION          FOR MAKE SHAPE PROGRAM      MYARC XB ONLY
100 DIM C(100,2),C1(100,2),DM(101)
110 DISPLAY AT(1,1)ERASE ALL : "INPUT FIRST FIGURE DEVICE/  FILENAME:" :: ACCEPT
AT(3,5) : ONE$
120 OPEN #1: ONE$
130 INPUT #1: @ :: FOR I=1 TO @ :: INPUT #1: C(I,1) :: INPUT #1: C(I,2) :: INPUT
#1: DM(I) :: NEXT I :: P=@+1 :: O=DM(P-1) :: CLOSE #1
140 PP=P :: DISPLAY AT(6,1) : "ONE MOMENT..."
150 FOR I=1 TO P-1
160 C1(I,1)=C(I,1) :: C1(I,2)=C(I,2) :: NEXT I
170 DISPLAY AT(6,1) : "INPUT LAST FIGURE DEVICE/  FILENAME:"
180 ACCEPT AT(8,3)SIZE(15) : TWO$ :: OPEN #1: TWO$ :: INPUT #1: @
190 FOR I=1 TO @ :: INPUT #1: C(I,1) :: INPUT #1: C(I,2) :: INPUT #1: DM(I) :: N
EXT I :: P=@+1 :: O=DM(P-1) :: CLOSE #1
200 IF P<>PP THEN DISPLAY AT(2,3)ERASE ALL : "DIFFERENT": "      NUMBER OF POINTS
" ELSE 220
210 FOR @=1 TO 400 :: NEXT @ :: RUN

```

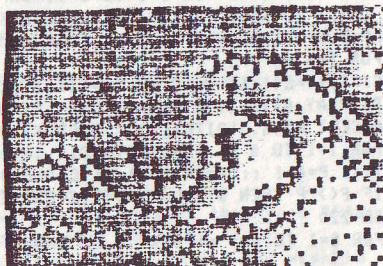
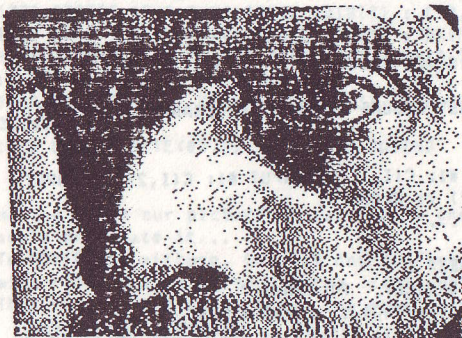
```

220 DISPLAY AT(12,1) : "IN HOW MANY STEPS?" :: ACCEPT AT(12,20)SIZE(2)VALIDATE (
DIGIT) : S
230 FOR ST=0 TO 9
240 Y=140*256/281 :: X=80*192/161
250 P1=(S-ST)/S :: P2=ST/S
260 REM
270 REM
280 CALL GRAPHICS(3)
290 REM
300 FOR I=1 TO P-1
310 DX=X :: OY=Y
320 REM
330 X=C1(I,1)*P1+C(I,1)*P2
340 Y=C1(I,2)*P1+C(I,2)*P2
350 IF DM(I)=0 THEN 370
360 CALL DRAW(1,DX,OY,X,Y)
370 NEXT I
380 REM
390 REM
400 REM SO FAR ONLY          DISPLAYS DIFFERENT PICS!
410 REM AT THIS STAGE SAVE TO DISK IN VECTOR DRAW          FORMAT. OR USE JBM103 T
0 SAVE IN TI ARTIST FORMAT          FOR SUBSEQUENT ANIMATION
420 REM USING COMIC SHOW          4.0
430 REM IF USING JBM103          ADD THE REQUIRED CALL LOADS AND CALL LINKS. ALSO ADD
A SUBPROGRAM:
440 REM SUB DRAW(A,B,C,D,E)
450 REM CALL LINK("LIGNE",15,B,C,D,E) :: SUBEND
460 REM AT VERY END OF          PROGRAM!!!
470 REM AND CHANGE CALL          GRAPHICS(3) TO CALL LINK("SCR2") :: CALL LINK("CLEA
R")
480 REM
490 REM PRESS SPACE FOR          NEXT PIC HERE IF REQD
500 REM
510 CALL GRAPHICS(3) :: NEXT ST :: CALL GRAPHICS(1) :: RUN
520 END

```

I would be very interested in seeing anything you produce with these programs!
Transform a cat into a dog, a tree into a house, anything!

Stephen Shaw October 1989



DIJIT AVPC 80 COLUMN CARD

(This was originally written for the user group in Sweden PROGRAMBITEN 89-1)

by Jan Alexandersson, Springarvagen 5, S-142 61 TRANGSUND, Sweden

1. GENERAL

I have installed an 80-column card from DIJIT with 192 kbytes RAM in the PE-box. It has an EPROM with 50 Hz PAL as default but I can change it to 60 Hz NTSC in a program. The card is always delivered with 50 or 60 Hz EPROM dependent of which country You live in. The card comes with an 8 pages manual which describes how You connect the card and modify the console. You will also get 3 disks with program and text files. There comes no help for a programmer with the card. If You want to write Your own programs which uses the special features of the video processor You must order a manual from Yamaha. Until now I have been unable to get this manual or any other guide for a programmer. Can anyone reading this help me. The same 9938 video processor is used in Myarc 9640 Geneve and Mechatronic 80 column card. This means that many programs for these may be used with the DIJIT AVPC card. MSX-2 and Nintendo also have the same 9938 video processor but they have another CPU than the TI-99/4A. You can order the AVPC from DIJIT Systems, 4345 Hortensia St., San Diego, CA 92103, USA. The prize is USD 250 with 192 kbytes RAM plus USD 10 air mail to Europe. You can also buy modified EPROM from DIJIT for the RS232 card from TI(USD 22), Myarc(USD 20) or Corcomp (USD 20 for 24 or 28 pins).

2. MODIFY THE CONSOLE

You must open the console and modify the mother board. This is well described in the manual. Usually You don't need to solder but I had to use the solder iron to get the two metallic screens apart from the mother board. You modify by cutting one trace on the card. The video processor 9929A (PAL in Europe) must be lifted up and one pin shall be bent out. You shall fasten a ready-made cable on this and also at two other places on the card. All this was easy to do. The most difficult thing was to press down the video processor which have a lot of pins. Look very carefully that no pins are bent and put the chip down very slowly. The pins will spread apart somewhat so You must press them together. You have the same problem if You want to change PROM in a unit like the RS232-card. The whole chip has a white cream which lead away the heat. It is important that this will remain and You may buy more of that.

3. RGB MONITOR

DIJIT recommends an RGB monitor with 10 MHz bandwidth and 0.50 mm CRT-pitch. You cannot use ordinary TV-sets with SCART for RGB because they are only good for 40 column display. I have a Philips CM 8833 monitor with SCART contact for RGB. I had to make a cable with SCART and 6-pins DIN. My cable looks like this:

| | |
|--------|---------|
| AVPC | Monitor |
| 6-pins | SCART |
| DIN | contact |

| | |
|----------|----------|
| 1 Blue | 7 |
| 2 Red | 15 |
| 3 Ground | 5, 9, 13 |
| 4 Green | 11 |
| 5 Csync | 20 |
| 6 +5 V | - |

Notice that pin 20 Csync is only mentioned in the english part of the manual and not in the part for Sweden or any other language. I had to press the button for RGB-status on the back of the monitor to get a picture on the screen with AVPC. This was not necessary with TI-99/4A with RGB-modulator. I have not connected pin 16 (blanking) of the SCART-contact. It may have the same function to connect it to +5 V as RGB-status but as it works anyway I will not try it.

The sound must be connected to the old 6-pins DIN-contact of the console. I made the cable like this:

| | |
|-----------|-------------|
| 99/4A PAL | Monitor |
| 6-pins | SCART |
| DIN | contact |
| 5 Audio | 2, 6 Stereo |
| 6 Ground | 4 |

Check very carefully that You have made the cable correct. Use magnifying glass so You can see the pin numbers which is engraved in the plastic around the contact. Use an ohm meter to verify the connections.

There is also an output for composite video that You can use with a high resolution monochrome monitor. You cannot use a colour monitor because the colours will not look nice.

Philips has up to now sold two types of monitors CM8833 (0.42 mm, 12 MHz) and CM8873 (0.31 mm, 18 MHz) but is now changing to 8CM852 (0.39 mm, 14 MHz) and 8CM875 (0.31 mm, 30 MHz). You must always get linear RGB, 15.6 kHz horizontal frequency, 50 and 60 Hz vertical frequency, Audio input. The AVPC has 15.75 kHz horizontal frequency but it will also work on a monitor for 15.6 kHz. You can ask if the monitor works with an Amiga before You buy it. You must always make the cable yourself. Philips is sold in the USA as Magnavox.

4. NEWS AND PROBLEMS

The AVPC reserves 16 bytes high up in VDP which results in that SIZE in Extended BASIC will show 11824 bytes in VDP-RAM. The card uses CRU >1400 which means that You cannot have any other card at the same address. You must have an other card at CRU >1100 like a disk controller. The power-up will not work if this is missing. The AVPC will after its own power-up do the power-up at CRU >1100. I don't know in which order the other cards are searched and if CRU >1000 will be done. I don't think that this is any problem but it can be useful to know that a 32 kbytes EM isn't enough. I hope there is no other card that takes over the power-up in the same way because two such cards could block each other.

A good news is that QUIT must be done with three buttons simultaneously, CTRL/FCTN/=. This will not work with a RAVE keyboard which only can sense two buttons.

DIJIT says that there may be programs that will not work with AVPC. All programs I have used has worked satisfactory. The picture is much more clear also in the usual graphics modes. In BASIC You will see some coloured or black stripes on the screen when an ERROR occurs. This problem is not seen in Extended Basic. MG Explorer, MG Diskassembler and Spellcheck will not load if I have run other programs before but if I shut down the PE-box before loading then all works perfect. You cannot activate the card by setting CRU >1400 with Easy Bug in Mini Memory because the AVPC works with interrupt. MG Diskassembler can despite of this disassemble the AVPC.

TI-FORTH must be changed so screen 54 row 11 becomes ... 07 4 VWTR. Graphics2 will not work otherwise. TURBO-PASC'99 must be changed so that sector >54 byte >25 becomes >54 (>50 before). The USA-version is correct but if You have bought it from Germany then You may have to change. I also have patches for Corcomp Manager version 2.1 and 2.3 if someone needs it.

5. PROGRAMS FOR AVPC

The three floppy disks have many useful programs and texts:

- Funnelweb 4.13 for 80 columns
- 11 different graphical demo programs
- Fractal
- Program for showing pictures from Geneve
- 7 pictures for Myarc Geneve
- Modified ROS for Horizon
- Set 99/4A which reserves the whole VDP
- CALL LINK for mouse with XB
- Interrupt for mouse with sprite 1
- DSR routine for TI-Artist with mouse
- SC-DOS for RAM >6000
- Modified TI-FORTH for 80 columns
- Cabling of ATARI Trackball
- Cabling of mouse and light pen
- Questions and answers about AVPC

There are also other programs which uses the new things in the 80 column card. TELCO for data communication also works with 80 column. This is very helpful because many data bases is made for 80 column computers. The version I am using have a bug that will show garbage characters on the screen but besides this it works. TELCO uses also AVPC as a RAM disk so different program modules in TELCO can be stored in AVPC RAM. The AVPC can hold up to 27 modules compared to 3 modules with an ordinary 99/4A.

Many programs which is made for Myarc Geneve may be used by the AVPC-card. This is the case for most programs in Geneve GPL-mode. I have used the program PALETTE from Micropendium february 1989 which works fine with my AVPC. The program give You the possibility to test all 512 colours in the common graphic mode which is used in Extended Basic. The colour is defined by setting a value of 0-7 for all the three basic colours red, green and blue. Black will be 0-0-0 and white 7-7-7. Dark yellow will be 6-6-1. You can change all the 16 colours numbered 1-16 in Basic.

6. GRAPHICS

The 80 column card with its 9938 video processor has 10 different graphics modes compared to 99/4A which has only the first four in the table below:

| Mode | pixels | chars | colours | sprite | memory |
|------------|---------|--------|---------|--------|--------|
| Multicolor | 64x48 | - | 16 | model | 4 kb |
| Graphics1 | 256x192 | 256 | 16 | model | 4 kb |
| Graphics2 | 256x192 | 768 | 16 | model | 16 kb |
| Text1 | 256x192 | 256 | 2 | - | 4 kb |
| Text2 | 512x212 | 256 | 4 | - | 8 kb |
| Graphics3 | 256x192 | 768 | 16 | mode2 | 16 kb |
| Graphics4 | 256x212 | bitmap | 16 | mode2 | 32 kb |
| Graphics5 | 512x212 | bitmap | 4 | mode2 | 32 kb |
| Graphics6 | 512x212 | bitmap | 16 | mode2 | 64 kb |
| Graphics7 | 256x212 | bitmap | 256 | mode2 | 64 kb |

You can always choose among the 512 different colours for all modes but You cannot use more than the table shows at the same time. You can have twice as many pixels vertically with interlace so You can have max 512x424 pixels. The picture is not stable on my monitor with interlace but rumors say that it will be better with a multisync monitor. Notice that Graphics4-7 have true bitmap so every pixel can have its own colour which is not the case with Graphics2. With Text2 You get 80 columns and 26.5 rows. Sprite model has single coloured sprites and max 4 sprites per pixel row. Sprite mode2 has multicoloured sprites and max 8 sprites per pixel row.

The 9938 has 24 control registers, 15 command registers, 16 colour registers and 10 status registers. The video processor has instructions to move memory VDP-VDP, CPU-VDP and VDP-CPU and can also draw lines and more. I have no manual for 9938 so I cannot describe this in more detail. I have used VDP register 9 to change 26.5/24 rows (bit 0), Interlace (bit 4) and PAL50Hz/NTSC60Hz (bit 6). You can try this in Extended Basic with a small CALL LINK routine which sets VDP register. These three have the decimal value 128, 8 and 2. If You write 138 to VDP-REG 9 then You have set 26.5 rows, interlace and PAL 50 Hz. The value 2 to VDP-REG 9 gives 24 rows, no interlace and PAL 50 Hz. Notice that also NTSC 60 Hz can be used very well.

7. MOUSE

There are instructions for cabling of the following mice: Amiga mouse, Atari mouse, Logitech P-7 Bus Mouse, Mouse System M4, Microsoft Bus Mouse (requires pull-up resistors) and Myarc mouse. Apparently there is no standard for a mouse cable so all these have different cables. I have a Commodore 1352 mouse with two buttons for an Amiga. I believe this is the easiest one to make a cable for because all shall be mirrored. This means that You draw the cable straight between two 9 pins DB and get it mirrored. Don't connect the mouse to AVPC without an adapter cable. Ground and +5V must be changed. AVPC has ground and +5V as Myarc Geneve but the other pins are different.

The video processor can sense two buttons on the mouse. Myarc Geneve mouse has three buttons because the CPU 9995 also can sense one button (No 1). A comparison gives this:

| CALL LINK XB | DIJIT AVPC mouse | Myarc Geneve mouse | TI-ARTIST |
|--------------|------------------|--------------------|-----------|
| 1 | 1 left | 3 right | fire |
| 2 | 2 right | 2 middle | space |
| 3 | 1+2 | 2+3 | - |
| 4 | - | 1 left | - |
| 5 | - | 1+3 | - |
| 6 | - | 1+2 | - |
| 7 | - | 1+2+3 | - |

In the demo program for the CALL LINK routine You can change for AVPC as follows:

```
row 160 ... IF B=3 THEN ...
row 170 ... IF B=1 THEN ...
```

The demo program for mouse that moves sprite 1 may be changed:

```
row 115 IF M2 AND M3 THEN ...
row 120 IF M2=1 THEN ...
row 122 IF M3=1 THEN ...
```

TI-Artist 2.01G has two DSR-routines for joystick, EXTDSR and JOYST. They are identical except that JOYST has an extra instruction CLR @RBAND at the beginning. This label RBAND is not mentioned in the manual. All DSR-routines for mouse or joystick may also use the arrow keys and ENTER.

8. RS232 CARD

There is a bug in all RS232 cards from TI, Myarc and Corcomp. If You will use terminal program for modem which uses interrupt then You must change the EPROM. There is one such program which don't use interrupt, OMEGA. I have changed EPROM on my Myarc RS232 card. This sits in a socket so it is easy to do it. If You have a TI RS232 this will be more difficult because it is soldered. You must cut the leads of the circuit (don't desolder) and then clear each hole with the soldering iron. You may then solder a new socket in which You mount the the new EPROM from DIJIT. If You have a TI card You must throw away the old PROM which can be saved for a Myarc card. Corcomp has also the EPROM in a socket from the beginning.

9. REFERENCES

Micropendium:

oct 1987: Mouse interface for Extended Basic
 nov 1987: Mouse input routine for TI-Artist
 jun 1988: A full screen FORTH editor
 sep 1988: Myarc, DIJIT rely on Yamaha 9938
 feb 1989: Use palette master to mix colors
 mar 1989: 80-column analog RGB monitors

JAN ALEXANDERSSON
 Springarvägen 5, 3 tr
 142 61 TRANGSUND
 ☎ 08 - 771 05 69