MEMOPAD

Volume 0011 Number 2

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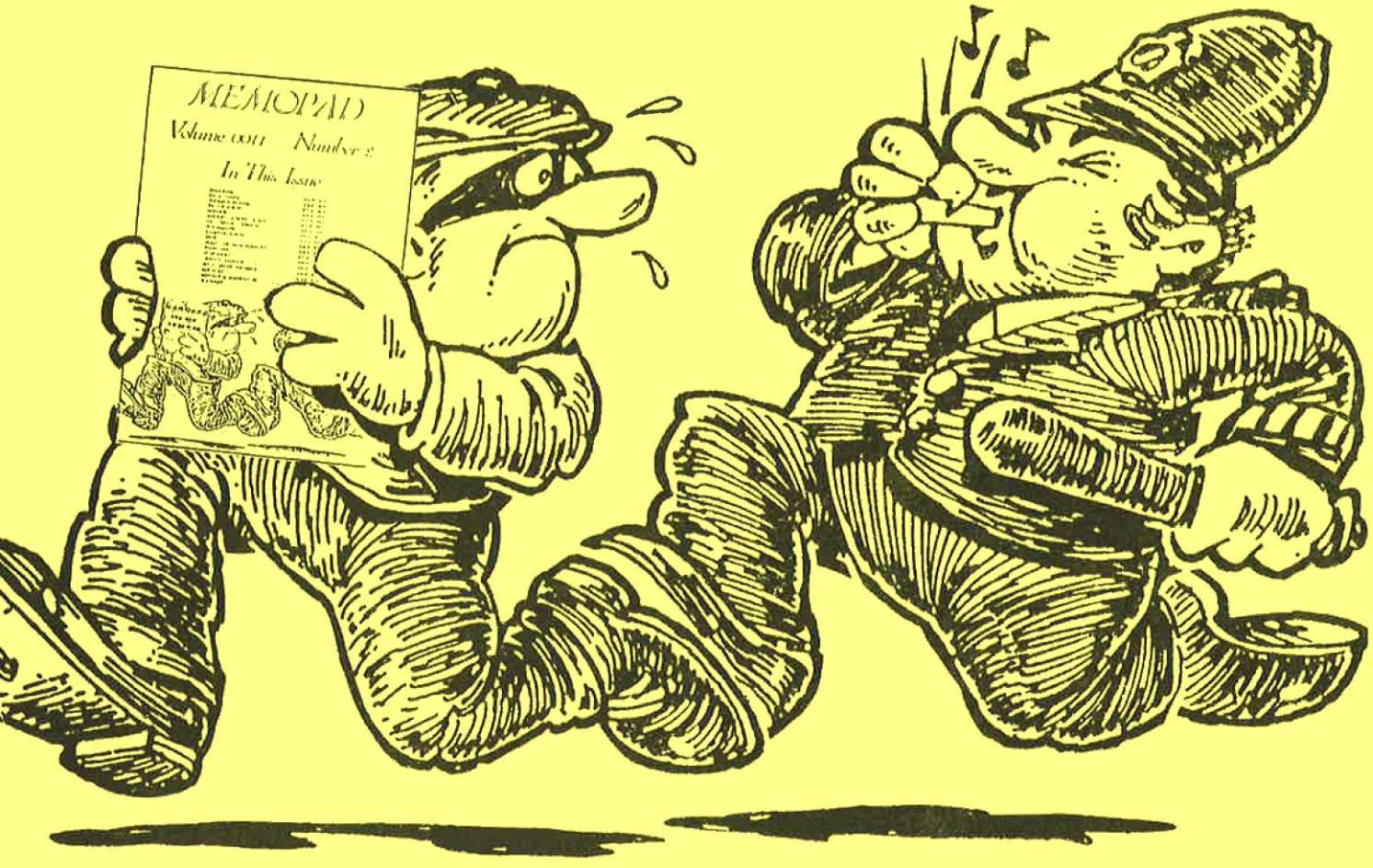

MEMOPAD

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Editorial

The clocks have been put back and the dark nights are now drawing in. Soon, it will be Hallowe'en and time for all you tappers to take advantage of Black Beauty by spending comfortable nights close to the fire-side rather than playing darts in the pub.

We have two new programs to offer you this month - **QUEST ONE & TYPESET.** Typeset is a utility package that allows you to design different print fonts and interface them to NewWord in a similar manner to the .Dot commands. This program represents a few hundred hours development and comes from the same programmer who designed Memosketch. At this moment in time it is only available to users with the 250K SDX system but we are trying our best to integrate it to all packages. A full review will follow in the next issue.

Quest One is an adventure game which can be played using a joystick or cursor keys. The game has over 10K of program text, is menu driven and is rather unique in the way you enter your commands. There is a save and load feature so that you do not need to 'go to start' every time you boot up. The general idea is to discover who murdered Lord Grove, and having uncovered the perpetrator of this dastardly deed, you must then state their motive.

Don't forget that all you CP/m buffs can take advantage of the INFOCOM series of adventures such as: ZORK, SUSPENDED, WISHBRINGER, SORCERER and many more. As most of you know, Infocom adventures are the ultimate in text orientated games.

Syntaxsoft is off to Holland during November for the Computer Show at Utrecht. Last year was a tremendous success, and with the demise of the Dutch User Group we are looking forward to meeting our friends, and we hope to assure them that we will continue to support them from England.

It is now time for me to eat humble pie. I must apologise for an article published in the last edition. O.k. Anyone can make a mistake but most people don't have to suffer the verbal lashing dispensed by KH. So, all the Memopad helpers apologise for the FORTH listing - it was completely fouled up and presented in a totally wrong format. We have not published PT2 as we shall start from scratch with the article next month and hope that we can then do justice to the author who presented a marvellous piece for the magazine but we managed to mess it up. Sorry !

By the way, anyone wondering why COBRA was number one last month, the answer is simple - as most of you know, Xaversiene pulled out of the computer field many months ago and Syntaxsoft bought all their stocks - last month we had a big order for Cobra from the Middle East and our charts are plotted on sales data supplied by Syntaxsoft.

It is amazing. I wish you could be here. It is now 4.25 in the morning and Syntaxsoft's offices are like a football ground - programmers are scurrying about, heads down and bumping into each other, and occasionally one can hear the " ...there's no reason why the b..... thing shouldn't work." Most of the lads have worked 36 hour shifts, gone to bed and then done another 24 hours of programming. Even I have to utilise the early hours in order to get computer time. This is the result of companies such as Activision, Mastertronics, Virgin, Global etc. relying on Syntaxsoft to get their conversions ready for the Christmas build up. Never mind, these same programs will eventually end up on Black Beauty - this is the deal Keith sets up. ★

TM

Volume 011 memopad Memotech Computer User Group Number 2

SOFTWARE REVIEWS

Write-Hand-Man Poor Person's Software CP/M £29.95

'Write-Hand-man' is a CP/M 2 version of a program better known as the Borland 'Sidekick' for the IBM PC. Like Sidekick, it offers a selection of utility programs accessible during the execution of another program by typing a predefined trigger character at the keyboard. The concurrent operation is quite illusory, but extremely convincing. The utilities include a notepad, a 14-day calendar a phonebook (which can be linked to a modem for auto-dialing or to the CP/M LST: device), a 4-function calculator, a Hex calculator and an ASCII code table.

The program is very well designed, and differs from Sidekick only in the compromises which it makes with the more limited memory available to the CP/M TPA. The driver program occupies only about 2Kb of the TPA.

WHM works with any program which actually uses CP/M to drive the terminal (i.e. it DOESN'T work with FDXB or SDXB7). With some program such as Newword or Wordstar some selection of a suitable trigger character may be needed.

I think one could become quite fond of this gadget. Far from being an Executive Toy for Computer Yuppies, its uses seem to be limited only by one's own imagination (you can add your own extensions) and people who do much serious programming may well think that on-line hex and decimal calculators, a notepad and a code table are themselves worth #29.95.

Pascal-80 Hisoft Ltd CP/M 2 £39.95

Pascal-80 is the latest version of the series of Pascal compilers produced by Hisoft, and is a lineal descendant of the compiler on the MTX Pascal ROM. It is supplied with a full-screen editor called ED80. To be precise, the disc which I bought has two versions of both the compiler and the editor, as Hisoft are currently in the process of updating it (the latest full documentation has not arrived yet).

ED80 is best summned up by saying that it behaves like the non-documented mode of Newword or Wordstar, and uses the same control codes, although either of the word processors is a little easier to use (more HELP messages). The upgraded compiler is supplied with an 'interactive' version of ED80, which allows immediate return to the editor in event of a compilation error (as in the Pascal ROM). You have to install ED80 or HPE for the Memotech - the terminal codes are all in the CP/M User Guide and most users will not want to change the control codes in view of their similarity to those of Newword. You can configure the MTX function keys by writing a .KBD file to use as a parameter of F.COM.

HP.COM (the latest version of HP80.COM) is a nearly full implentation of the Jensen-Wirth standard and supports FILES of any reasonable (or unreasonable - I tried some rather strange things like FILES OF ARRAY OF SET -) type, and also record variants, although I suspect that there are restictions upon the nesting of variant fields (the full documents have not yet arrived). A CHAIN command allows run-time

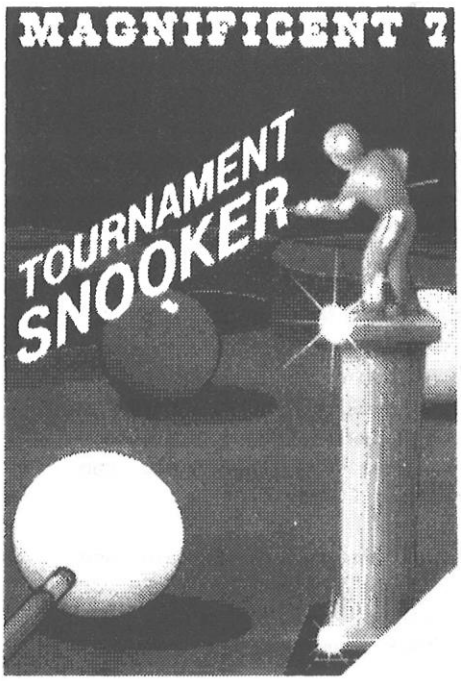
overlays to be used, and, while there are no machine-specific features and, therefore, no graphics (it is a classical Pascal compiler in that respect), MTX users will not find it difficult to write suitable library extensions as system programming facilities are provided via PEEK, POKE, ADDR, SIZE, INLINE, USER and a CP/M command which can access the CP/M BDOS functions as well as the compile time option to relocate the run-time stack. A very full set of compiler options includes the possiblity of excluding the TRANSCENDENTAL and REAL library functions to optimise the size and speed of object code in programs using only integer maths. Error messages are verbal rather than numeric, and the bug in the ROM version which aimed the error-pointer at the next line rather than at the relevant line has been fixed. Pointers still have to be declared iteratively - the most obvious non-standard feature - but list processing addicts will be pleased to know that the procedure DISPOSE is now provided as well as mark and RELEASE. File-handling is about as standard as in any Pascal System, and the addition of a second parameter to RESET and REWRITE giving the drive and the CP/M filename is an improvement on many 'standard' approaches.

Both HP80.COM and HP.COM are case sensitive as the MODULA-2 compiler, but without the latter's whimsical distribution of upper and lower case in its RESERVED words. As far as I know, this is allowed by the Pascal standards, but is unusual. You can now do some very unpleasant things, such as declaring 'I' to be an integer variable and 'i' to be a FILE OF RECORD, but in the interest of your own sanity and that of other people you should not!

Pascal-80 is a direct native-code compiler with no intermediate P-code or linking stage, and it compiles very rapidly for a disc-based system. The usual facilities for external compilation are provided. HP.COM may be used either interactively or non-interactively, and in the latter case the source code may be written with Newword, Wordstar or with ED.COM.

Pascal-80 is a very impressive tool indeed. At about half the cost of Turbo-PASCAL it can only be compared with it. Both are not quite full versions of the language. Both offer facilities for some system programming. Both are non-standard in some respects, but whereas Turbo-PASCAL is quite idiosyncratic, the Hisoft compiler has now very standard syntax indeed - you could get away with a lot on the earlier compilers which will not work on this one! Pascal-80 is about 15% faster then Turbo-PASCAL and can generate source-code which may be up to 30% smaller.

Both of these programs are marketed by: The Software Toolshop
The Old School
Greenfield
BEDFORD MK45 5DE
Tel.: (0525) 718271 ✶



This Superb Game Is Only £7.95 To Members

Order now before stocks run out!

SYNTAXSOFT LIMITED
THE NORTHBRIDGE CENTRE, ELM STREET,
BURNLEY BB10 1PD
TELEPHONE (0282) 38596

Legible Listing by Gary Dickinson

This program is designed to help make listings more legible and has the following functions.

1. Text can be changed from upper to lower or visa versa by pokeing 64080 with 1 (lower to upper case), 2 (upper to lower case) or 0 (leave as it is).

2. Any command can be highlighted by pokeing 64081 with the command mode or with 0 to highlight none of the commands.

The keyword Tokens can be found from locations 9531 onwards.

3. Multi-Statement lines are split up which makes lines much easier to understand.

4. Any machine code in a program is just listed as "code" therefore you don't have to read large amounts of code.

5. Keywords can be changed by pokeing 64079 with the keyword to be changed and 64078 with the keyword to change to.

This is very useful for example if you want to direct any text to the printer by changing PRINT to LPRINT.

Please note that if the keywords are the same then the program will not be altered.

6. The program prints out the amount of memory used.

Some of the Sub-routines could be used in other Z80 based programs, for example the routine between #80C3 and #80FF prints a number between 1 and 65535 given the number in 'HL'.

Another routine you could use is the routine between #809A and #80C1 this changes a letter given 'HL' points to the letter) only if the letters are between a to z and A to Z, any other characters are ignored.

Although the program looks long it only occupies 360 bytes, if however you find it a daunting task to type in I can send you a copy for #1.00 to cover the tape and postage and packing.★

Send to GARY DICKINSON
4 Station Cottages
KIPPAX
Nr. Leeds
LS25 7LP

```
0 GOTO 3
1 CODE

800E           RST 10; VS 4:CLS
800F           DB #4C
8010           LD HL,32768
8013 DOIT:     INC HL
8014           INC HL
8015 SYSLP:    PUSH HL
8016           CALL DOLINE
8019           CALL ENTER
801C           POP HL
801D           DEC HL
801E           LD B,(HL)
801F           DEC HL
8020           LD C,(HL)
8021           ADD HL,BC
8022           LD A,(64172)
8025           CP L
8026           JR NZ,DOIT
8028           LD A,(64173)
802B           CP H
802C           JR NZ,DOIT
802E END1:     DEC HL;PRINT
802F           CALL ENTER;LENGTH OF
8032           LD BC,32768; PROGRAM
8035           SBC HL,BC
8037           CALL JP
803A           RST 10
```

```
803B            DB #8C," Bytes used."
8048            RET
8049 JP:        PUSH HL
804A            JP DOHL
804D            RET
804E DOLINE:    CALL PLINE;PRINT THE
8051            CALL SPACE; BASIC LINE
8054            INC HL
8055            INC HL
8056 LP2:       LD A,(HL)
8057            CP 255
8059            RET Z
805A            CP 34
805C            JR Z,QUOTE
805E            CP 128
8060            JR Z,REM1
8062            LD C,A
8063            SUB 128
8065            JR C,LTHAN
8067            LD A,C
8068            CALL FTOKEN
806B            CALL SPACE
806E            JR INCREASE
8070 REM1:      CALL FTOKEN
8073            JR REM
8075 LTHAN:     LD A,C
8076            CP 58
8078            JR NZ,CHR
807A            CALL ENTER
807D            RST 10;PRINT 5 SPACES
807E            DB #85,32,32,32,32,32
8084 CHR:       LD A,C
8085            CALL PRINT
8088 INCREASE:  INC HL
8089            JR LP2
808B QUOTE:     CALL PRINT
808E REM:       INC HL
808F            LD A,(HL)
8090            CP 255
8092            RET Z
8093            LD C,A
8094            SUB 127
8096            LD A,C
8097            CALL NC,FTOKEN
809A            LD B,16;THIS ROUTINE
809C            LD DE,24699; CHANGES
809F            LD A,(64080);lower TO
80A2            CP 1;UPPER OR
80A4            JR Z,CMP; VISA VERSA
80A6            LD DE,16475; GIVEN 'HL'
80A9            LD B,240; PNTS TO CHR
80AB            CP 2;AND 64080=
80AD            JR Z,CMP;CASE CHANGE
80AF            JR NOCH
80B1 CMP:       LD A,(HL)
80B2            SUB D
80B3            JR C,NOCH
80B5            LD A,(HL)
80B6            SUB E
80B7            JR NC,NOCH
80B9 CHANGE:    LD A,(HL)
80BA            SUB B
80BB            SUB B
80BC            LD (HL),A
80BD NOCH:      LD A,(HL)
80BE            CALL PRINT
80C1            JR REM
80C3 PLINE:     PUSH HL; THIS ROUTINE
80C4            LD C,(HL); PRINT A LINE
80C5            INC HL; GIVEN 'HL'
80C6            LD B,(HL); PNTS TO LINE
80C7            LD H,B
80C8            LD L,C
80C9 DOHL:      LD E,0; OR ENTER
80CB            LD BC,10000; HERE WITH
80CE            CALL PR; 'HL'=LINE
80D1            LD BC,1000; BUT PUSH HL
80D4            CALL PR; FIRST
80D7            LD BC,100
80DA            CALL PR
80DD            LD BC,10
80E0            CALL PR
80E3            LD BC,1
80E6            CALL PR
80E9 END:       POP HL
80EA            RET
80EB PR:        CALL NUMBER
80EE            CP E
80EF            RET Z
80F0            LD E,250
80F2            ADD A,48
80F4            JP PRINT
80F7 NUMBER:    XOR A; RETURNS WITH
80F8 LLP:       SBC HL,BC; A=NUMBER OF
80FA            INC A;'BC's IN 'HL'
80FB            JR NC,LLP
80FD            ADD HL,BC
80FE            DEC A
80FF            RET
8100 FTOKEN:    PUSH HL
8101            LD E,A
8102            LD BC,(64078)
8106            CP B
8107            JR NZ,NTTHS
8109            LD (HL),C
810A NTTHS:     LD D,1
810C            LD HL,64081
810F            CP (HL)
8110            CALL Z,HIGH
8113            LD A,E
8114            CP 194
8116            JR NZ,NOT
8118            LD E,194
811A NOT:       LD B,128;FIND & PRINT
811C            LD HL,9530; TOKEN GIVEN
811F LTOKEN:    CP B;GIVEN 'A'=
8120            JR Z,CODE; TOKEN
8122            INC HL
```

```
8123            LD C,A
8124 LBACK:     LD A,(HL)
8125            SUB 90
8127            JR NC,CONT1
8129            INC HL
812A            JR LBACK
812C CONT1:     LD A,C
812D            INC B
812E            JR LTOKEN
8130 CODE:      INC HL
8131 LCODE:     LD A,(HL)
8132            SUB 90
8134            JR C,CONT
8136            LD A,(HL)
8137            RES 7,A
8139            CALL PRINT
813C            INC D
813D            LD A,3
813F            CP D
8140            CALL Z,HIGH
8143            CALL SPACE
8146            POP HL
8147            LD A,194
8149            CP E
814A            RET NZ
814B            POP HL
814C            RET
814D CONT:      LD A,(HL)
814E            CALL PRINT
8151            INC HL
8152            JR LCODE
8154 HIGH:      LD HL,65443; CHANGE
```

```
2 RETURN
3 REM START HERE
10 INK 15: PAPER 1: CLS
15 POKE 64081,194
20 REM"QWEEEEEEEEEEEEEEE"
25 POKE 64080,1
30 POKE 64078,128: POKE 64079,144
50 GOSUB 1
60 GOTO 60
```

```
8157            RRC (HL); COLOUR CODES
8159            RRC (HL)
815B            RRC (HL)
815D            RRC (HL)
815F            INC D
8160            RET
8161 PRINT:     LD (CPRINT),A;'A'=CHR
8164            RST 10
8165            DB #81
8166 CPRINT:    DB 0
8167            RET
8168 ENTER:     RST 10;PRINT
8169            DB #83,13,10,32; CHR 13
816D            RET; & 10
816E SPACE:     LD A,32
8170            JR PRINT
8172            RET

Symbols:
CODE8130LCODE8131
CONT814DPRINT8161
CPRINT8166LBACK8124
CONT1812CLTOKEN811F
FTOKEN8100PR80EB
NUMBER80F7LLP80F8
PLINE80C3REM808E
LTHAN8075INCREASE8088
CHR8084LP28056
END80E9QUOTE808B
NOT811ADOLINE804E
SYSLP8015END1802E
DOIT8013REM18070
DOHL80C9JP8049
HIGH8154ENTER8168
SPACE816ENOCH80BD
CHANGE80B9NTTHS810A
CMP80B1
```

Typing Errors

In Issue 11+12 of MEMOPAD there was a program by John Simpson. This program, titled "Corners, Circles and Axes", had 1 or 2 typing mistakes.

Line 120 should read,

```
120 PLOT 185,46
```

and lines 380 & 390 should look like this,

```
380 CIRCLE 135,96,X
390 NEXT X
```

We would like to apologise for any inconvenience caused.

Also, the article a few issues ago entitled "Noddy" had quite a few typing errors which we would also like to apologise for.

View Letters TO THE EDITOR Point

Dear Sir,

I started computing about six years ago on a second hand 8K Commodore Pet. After about six months I was finding the Pet very limiting with its 8K memory and no high resolution graphics so I sold it. I then went for a long time just buying computer magazines reading all the tests on the different machines looking for the one I wanted to upgrade to. In the end after many months I decided on the Memotech MTX 512 which had all the points I was looking for. When I bought my machine it cost #315.

At the time I was quite happy paying this amount, I have since become rather upset at the new prices which keep on dropping. Why keep dropping the price of the computer and not the rest of the hardware?

I am sure the computer would still be a bargain if sold at a price of say #130 instead of its new price of #80. If the extra #50 was taken off the price of a disc drive instead at least those of us who were original buyers would get some benefit after paying the development costs of the computer. After all the Black Beauty is so well built, (Mine has been used daily for three years and never broke down, never not loaded first time etc.etc.), I will never get the benefit of the new prices at this rate.

When I visited your old offices a few months ago, I spoke to Keith and he said the new owner was trying to do something for those of us who had kept the faith, we are all still waiting!

Finally, when I purchased my machine Memotech said they were bringing out a Flight Simulator, this did not appear. A few months ago in Memopad you stated there was going to be a Flight Simulator, don't say this one is going to fly the way of the old one!

After reading this letter I have to ask myself why I keep the faith.

Yours sincerely

N.J.S.Woodger

Can anyone give Gary Wilkinson from Bury, Lancs, any help on the adventure 'Caves of Orb'. He writes in with the following questions:

1) How do you kill Medusa?

2) How do you pick up the magic wand?

3) How do you get past the lazer?

4) How do you break off the extra jagged edge from the jagged room?

Unfortunately, nobody at the office can give any help or assistance because no-one has played the game. If anyone can answer these questions please write to Memopad and we will publish the answers in the next issue. Also, if anyone else has any queries relating to adventures on the Memotech you can write in and we will include them in VIEWPOINT for any other readers to answer.

E. Nankivell from Lewes, Sussex wrote in with the following comments.

Dear Sir,

I was prompted to write after reading Alan Rothwell's letter in praise of the reliability of the Black Beauty, for this has not been my experience.

I have one of the first MTX/FDX systems. Both parts have been back to the works a few times.

However, I, too, have praise for the helpfulness of Paul Parry, and I am glad he has continued to work for the Company following the receivership and buyout.

I think the main problem has been sorted out, but not without many lost files, tearing of hair, ruing the day I set eyes on Black Beauty, visits to and from Securicor, etc, and going up a few blind alleys!

The problem was the crashing of Newword on Saving. It would crash into ROM mode, and sometimes wouldn't reset into FDX without much switching on and off, hitting, unpluging and repluging of the comms board, etc. Usually the edit would be lost, with the hated BDOS error coming up.

It took so long, because I tried various cures, which always seemed to work for about 4 weeks, then the fault would creep back again, very intermittent at first, but progressively worse with time. Then another cure would be found which would work for about 4 weeks.

After much toing and froing, and it took a long, long time to come up with this cure, Paul soldered the comms board to the main board. This really did fix it. I reckon the real cause is Memotech's non-use of gold contacts.

Anyroad, in the meantime we fixed all the other problems except one. So I am wondering if I am the only one who has this. It is a problem with (Disk) Newword. When printing a file, it often (but not always) puts part of a form feed between page 1 and 2. The actual length varies, but it is usually a half to 3/4 of a page. I have to be ready with fingers on CTRL and P keys in case it does it. It only happens between pages 1 and 2. This means I can't ask for, say, 5 copies of a document of 2 or more pages, and go away and leave it printing. The same documents don't do it when transferred to MSDOS by COMPAT and printed on the IBM PX AT at my work, under Wordstar. The version of Newword I have is version 2.02 MEM 75-040531.

On the subject of Newword, I wonder if there have been any updates. Compared with the version of Wordstar I use at Work, I notice some improvements of NW over WS, but a couple of useful features NW lacks are.

(a) ^N which converts the Block facilities to "Column" mode. I can't emphasise enough how useful this facility is for me.

(b) The ability simultaneously to print one document and edit another.

Recently I had a problem of CP/M renaming my files, which it then could not find. Lower case characters would appear in the displayed filename. They would be according to DIR and the size would be right according to STAT but they could not be TYPEd, found by Newword, or ERAsed. I phoned your office and someone advised me (you?) to look at the cards in the FDX. I inplugged all the easily

unpluggable cards, smeared electrolube on their edge connectors, and replaced. So far this has entirely fixed the problem - thanks.

Turning now to Supercalc, is there a graph-plotting utility for it. I would like it to be able to go to table of figures in a spreadsheet, and plot a series of graphs from it. My version is 1.12, S/N-016926

Turning now to Dbase II, which I don't have, I guess I would pay about #100 for it, do you think there's is a chance its price will fall to this level, or below? I might also be intrested in a DRDRAW type graphics program, (with save to disc) but ideally one that accepted an input from a graphics tablet. Have you used DRDRAW? I use it on the AT: it's very user friendly, and it's only shortcoming from my point of view is its inability to draw fractals. (If that's the word.) It only draws pictures made from straight lines, or arcs of circles, it does not have the equivalent of freehand.

It is one of my ambitions to obtain a modem and communicate with bulletin boards, etc, with the ultimate aim of E-mail, to the USA, Austrailia, and New Zealand. A lot quicker and perhaps cheaper then the GPO or whatever it currently calls itself. I have a lot of correspondence from a few people in those countries. But I don't want to be a pioneer in this! I want to be told what to get and how to set it up - when it's feasible.

Apologies for allowing this letter to ramble - I hope the genuine queries can be easily found from within the waffle. Now, it may be that my subs are now due. I think my number is 000618. Could you confirm this and let me know what the subs are? I certainly want to keep reciveing MEMOPAD.

Yours faithfully
E. Nankivell

In reply to your MEMOPAD query, your membership is now due for renewal and the membership fee is now #18.00. The answer to your other question regarding SuperCalc, there is no graphic-plotter utility available.

I am proposing a Memotech users get-together for March or April 1987. Keith Hook of Syntaxsoft, and Phil Ayres of the Memotech Owners Club have pledged their support and I have been in contact with Geoff Boyd of MCL with a view to gaining his support.

I am offering to organise the event at cost, so the rest is up to you! ------ READ ON.

THE EVENT - A weekend show, with current hardware and software in action, plus the chance to meet other users and, hopefully those of you with your own contributions will bring these along.

THE VENUE - To be decided, and to suit the majority.

THE COST TO YOU - Total cost divided by total attending, so the greater the support, the less the individual cost.

WILL IT HAPPEN? - Only if there is sufficent response from you!

INFORMATION - Please fill in the questionnaire below and return it to me before the end of December. Depending upon the number of positive replies, further details will be published in the January U.G. magazines.

Please do not worry Keith, Phil or Geoff for information - all queries should be sent to me, with an S.A.E. for the reply.

THE QUESTIONNAIRE

1. I am interested in attending, prefe ably in the ☐ North ☐ South

2. I have a Hardware item I can bring along and demonstrate ☐Y ☐N

3. I have a Software item I can bring along and demonstrate ☐Y ☐N

4. I have a Programming / other skill and will be willing to give a short chat on the subject ☐Y ☐N

Please enclose details if you have answered yes to items 2-4, or if you have any ideas you wish to propose.

5. Your Name
   Address
   Tel No

Replies to:- C.M.Taylor, 25 Newleaze Park, Broughton Gifford,
Melksham, Wilts. SN12 8PL.

The rest is up to you!

STOP PRESS - G. Boyd has assured his support.

Dear Sir,

I would be grateful if you could print the following request in some future issue.

Can any reader tell me how to get through the door in the ninth level of Lords of Time. Presumably I have failed to collect some required item(s), or should I use a password?

Please telephone after 6 p.m. on 099386502.

Keep up the good work!

Cheers

John Tordoff.

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A F Wilson
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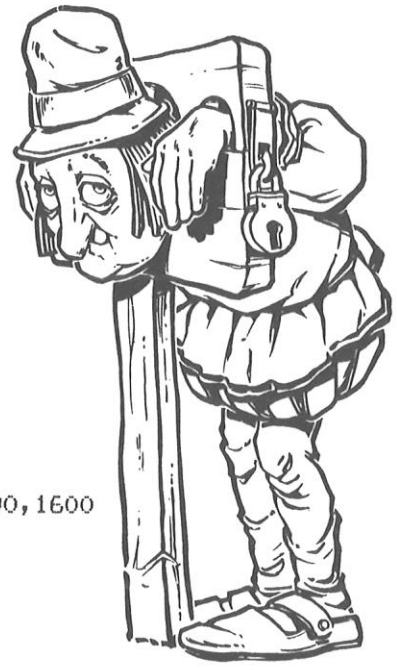
Tangiers Street
Whitehaven
Cumbria
CA28 7UZ

Hangman by M. Iqbal

```
140 REM ************************
150 REM **       M.IQBAL       **
160 REM **         1985        **
170 REM ************************
180 CTLSPR 1,1: CTLSPR 2,10: CTLSPR 5,10: CTLSPR 6,2
190 DIM R$(64),C$(64)
200 GOSUB 2046
210 VS 4: GOSUB 930: GOSUB 1300
220 IF M=0 THEN GOSUB 1400
230 ON M GOSUB 1200,1250
250 CLS : LET D=0: LET E=0: GOSUB 910
270 CSR 14,0: PRINT "HANGMAN"
280 CSR 2,2: PRINT "THE NUMBER OF LETTERS IN THE "
290 CSR 2,3: PRINT "WORD ARE INDICATED BY A DASH."
300 CSR 2,5: PRINT "YOUR CLUE IS, ";C$
310 LET L=LEN(R$)
320 CSR 16,11: FOR I=1 TO L: PRINT CHR$(45);: NEXT I
330 CSR 17,7: PRINT "       ": CSR 2,7: INPUT "YOUR GUESS IS ?";Y$
350 LET F=0: CSR 16,11
360 FOR C=1 TO L
370 IF SPK$=Y$ THEN GOTO 330
380 IF R$(C)=Y$ THEN GOSUB 1000
390 NEXT C
400 IF F>0 THEN LET D=D ELSE LET D=D+1
410 LET E=E+F
420 IF E=L THEN GOTO 510
450 IF F=0 THEN GOSUB 900
460 IF D<10 THEN GOTO 330
470 CSR 16,13: PRINT "THE WORD IS :-"
480 CSR 16,14: PRINT R$
490 PAUSE 3000: GOTO 520
510 CSR 16,16: PRINT "WELL DONE !!": PAUSE 3000
520 GOSUB 1010: CSR 16,18: PRINT "PLAY AGAIN ?"
530 LET A$=INKEY$: IF A$="Y" THEN GOTO 1700 ELSE GOTO 530
900 CSR 15+D,9: PRINT Y$;
910 COLOUR 0,1: COLOUR 1,15
920 ON D GOSUB 1500,1510,1520,1530,1540,1550,1560,1570,1580,1590,1600
930 PAPER 12: COLOUR 0,4: COLOUR 1,15: COLOUR 4,12
940 SOUND 3,32,999,0,-15,55,1: RETURN
1000 CSR 15+C,11: PRINT Y$: LET F=F+1
1010 SOUND 0,300,990,100,-15,55,1: RETURN
1200 LET WC=WC+1: IF WC=25 THEN GOSUB 1400
1220 READ R$,C$: RETURN
1250 CLS : CSR 6,6: PRINT "PLEASE ENTER THE WORD": CSR 12,8: INPUT ">";R$
1260 CSR 6,12: PRINT "NOW ENTER YOUR CLUE ": CSR 12,14: INPUT ">";C$
1270 CLS : RETURN
1300 CLS : CSR 1,8: PRINT "WHICH MODE DO YOU WISH TO PLAY"
1310 CSR 5,10: PRINT "SOLO OR WITH A PARTNER": CSR 15,13: INPUT M$: LET M=10
1320 IF M$(1)="S" THEN LET M=0 ELSE IF M$(1)="P" THEN LET M=1
1330 IF M$(1)<>"S" AND M$(1)<>"P" THEN GOTO 1310
1340 CLS : RETURN
1400 CLS : LET WC=0: CSR 1,10: INPUT "ENTER MEM.DATA No. 0-4 ";DB
1410 IF DB<0 OR DB>4 THEN GOTO 1400
1420 IF DB=0 THEN GOTO 1440 ELSE IF DB=1 THEN GOTO 1450 ELSE IF DB=2 THEN GOTO 1460 ELSE
  IF DB=3 THEN GOTO 1470 ELSE IF DB=4 THEN GOTO 1480
```



```
1440 RESTORE 3000: RETURN
1450 RESTORE 3100: RETURN
1460 RESTORE 3200: RETURN
1470 RESTORE 3300: RETURN
1480 RESTORE 3400: RETURN
1500 FOR Y=9 TO 22: CSR 2,Y: FOR I=1 TO 12: PRINT CHR$(32);: NEXT I: NEXT Y: RETURN
1510 FOR Y=10 TO 21: CSR 3,Y: PRINT CHR$(129);: NEXT : RETURN
1520 FOR X=4 TO 8: CSR X,10: PRINT CHR$(129);: NEXT : RETURN
1530 FOR Y=11 TO 12: CSR 8,Y: PRINT CHR$(132): NEXT Y: RETURN
1540 SPRITE 1,4,72,79,0,0,1: SPRITE 2,1,72,79,0,0,15: RETURN
1550 ADJSPR 3,1,71: RETURN
1560 ADJSPR 3,1,63: SPRITE 3,2,72,63,0,0,15: RETURN
1570 ADJSPR 3,1,55: RETURN
1580 ADJSPR 3,1,47: SPRITE 4,3,72,47,0,0,15: RETURN
1590 ADJSPR 3,1,39: RETURN
1600 ADJSPR 2,1,88
1610 SPRITE 5,1,72,79,0,0,8
1620 SPRITE 6,2,72,63,0,0,8
1630 SPRITE 7,3,72,47,0,0,8
1640 FOR S=5 TO 7: ADJSPR 5,S,245: NEXT S: PAUSE 7000: RETURN
1700 IF D<4 THEN GOTO 230
1710 IF D=10 THEN LET D=8
1720 FOR S=1 TO INT(D/2): ADJSPR 3,S,212: NEXT S: GOTO 230
2046 GENPAT 1,129,255,255,255,255,255,255,255,255
2048 GENPAT 1,132,3,3,3,3,3,3,3,3
2050 GENPAT 4,1,2,8,16,20,49,49,16,19
2052 GENPAT 5,1,8,7,3,3,30,32,96,224
2054 GENPAT 6,1,192,32,16,80,24,24,16,144
2056 GENPAT 7,1,32,192,128,128,240,8,12,14
2058 GENPAT 4,2,225,225,225,225,225,225,225,225
2060 GENPAT 5,2,225,97,63,19,31,16,16,16
2062 GENPAT 6,2,142,14,14,142,14,14,142,14
2064 GENPAT 7,2,14,12,248,144,240,16,16,16
2066 GENPAT 4,3,18,18,18,18,18,18,18,18
2068 GENPAT 5,3,18,18,18,18,30,12,252,252
2070 GENPAT 6,3,144,144,144,144,144,144,144,144
2072 GENPAT 7,3,144,144,144,144,240,96,126,126
2074 GENPAT 4,4,0,0,0,0,0,0,0,0
2076 GENPAT 5,4,255,255,255,255,255,255,255,255
2078 GENPAT 6,4,0,0,0,0,0,0,0,0
2080 GENPAT 7,4,255,255,255,255,255,255,255,255
2082 RETURN
```

```
3000 DATA BALL,BOUNCY,APPLE,FRUIT,ORANGE,FRUIT,PUSSY,CAT,PUNCH,AND JUDY,HAT,CAP,RING,ROUND,RED,C
OLOUR,BABY,CHILD,DOLL,TOY,BUN,CAKE,TEDDY,BEAR,DISH,PLATE
3100 DATA SLEEP,NAP,ROUND,CIRCLE,STONE,PEBBLE,FUNNY,JOKE,DRESS,FROCK,MAT,CARPET,DOG,PET,LOT,MUCH
,DAISY,FLOWER,LEAP,JUMP,LEAFY,TREE,BUCKET,PAIL,SIMPLE,EASY
3200 DATA ELBOW,JOINT,CRAFTY,SLY,SMALL,TINY,POLITE,CIVIL,FAST,QUICK,WEALTH,RICHES,SAILOR,MARINER
,MYTH,FABLE,VALUE,WORTH,BUSH,SHRUB,RESIDE,LIVE,ADHERE,STICK
3300 DATA VIBRATE,SHIVER,VERBAL,SPOKEN,UNDO,LOOSEN,SEETHE,BOIL,TRIBE,FAMILY,SYCAMORE,TREE,PAMPER
,SPOIL,DEPEND,RELY,ANTICIPATE,EXPECT,IMITATION,COPY
3400 DATA FATUOUS,INANE,INFINITE,VAST,GUARANTEE,INSURE,KNAVE,VILLAIN,LABYRINTH,MAZE,NEUTRAL,IMPA
RTIAL,SAUNTER,STROLL,ANIMOSTY,MALICE,EPOCH,ERA,FALLACIOUS,UNTRUE
```

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The Z80 Counter Timer Circuit (CTC)

by A. F. Wilson

The Z80 CTC is a chip device providing four independently programmable timing circuits or channels. Each of which may be operated as an interval timer driven by a Master Z80 system clock, or as an event counter where an external signal is used to control the timing logic. An interrupt to the Z80 CPU will be requested after a pre-set time has elapsed or a pre-set number of events has occured.

The Z80 CTC can be visualised as consisting of an Interrupt Vector Register and four Counter/Timer channels (channels 0-3) each consisting of:

1. A Control Register
2. A Time Constant Register
3. A Down Counter Register

The Interrupt Vector Register is associated with Channel 0.

The Z80 CTC assumes the Z80 CPU is operating in Interrupt Mode 2 and the Interrupt Vector Register contains the Address Byte to be transmitted upon receiving an Interrupt acknowledgment from the Z80 CPU. When in Interrupt Mode 2 the sequence is :

1. The Peripheral interrupts the CPU with an Interrupt request.
2. The CPU acknowledges the request and the Pheripheral then supplies a 1 Byte Vector word.
3. The CPU uses this as the Low Byte of an address fetching the High Byte from the I Register.
4. The two Bytes stored at this address are them loaded into the program counter and CPU execution continues.

The Control Register contains the Control Code defining the operational parameters for the channel. Each is independant from another.

The Time Constant Register contains an initial counter or timer constant which is maintained unaltered until overwritten with a new value. Its contents are copied into the Down Counter Register at the beginning of a Counter/Timer operation, which is then decremented by either external or systems clock stimulus, depending on the channel's mode of operation.

OPERATING MODES

1. Timer Mode

a) Select time mode with appropriate control code.
b) Load time constant.
c) Timer is started, depending on control code sent: either by the system clock pulse following the loading of the time constant register, or by external stimulus. When the timer starts the down counter register is loaded from the time constant register.
d) The down counter register is then decremented every 16th or 256th (determined by control code) system clock pulse. With a 4MHz (250 nano second clock) the down counter register is decremented every 4 or 64 micro seconds.
e) When the down counter register decrements from 1 to 0 a time-out occurs. If the channel interrupt is enabled, an interrupt request is sent to the CPU while the time constant register is re-loaded into the down counter register and the sequence repeats from e.

COUNTER MODE

1. Select counter mode with appropriate control code.
2. Load time constant.
3 Counter is started by first active transition of external input. The External Source Active Transistion is defined by the control code as: The signal going low-to-high OR signal going high-to-low.
4. The time constant register is copied to the down counter register.

5. The down counter register is then decremented every time the external input makes an active transition (see 3).
6. When the down counter register decrements from 1 to 0 a count-out occurs. If the channel interrupt is enabled, an interrupt request is sent to the CPU while the time constant register is re-loaded into the down counter register and the sequence repeats from 5.

The external inputs to the Z80 CTC on the MTX are:

CHANNEL	SOURCE
0	VDP interrupt
1	4 MHz/13
2	4 MHz/13
3	Cassette input

NOTE:If a new time constant is written to a channel after a control code specifing continued operation two situations may occur:

1. If a timer is running nothing happens until the next time out when the new time constant is loaded into the down counter register.

2. If a time out is in progress with the down counter register being re-loaded, then an undefined value will be loaded into it. However, the new time constant will be correctly loaded at the next time out after an undefined time interval.

PROGRAMMING THE Z80 CTC

Basically the steps required to control the CTC are:

1. To send it an interrupt vector.

2. For each active channel to send one or more control codes, initially to set counter/timer operations and to load the time constant register, and subsequently to start/stop the channel, change the time constant or re-define a channels's operation.

In the MTX, the four channels are addressed through I/O ports as follows:

CHANNEL	I/O PORT
0	8H
1	9H
2	AH
3	BH

INTERRUPT VECTOR

The interrupt vector is written as one byte of data to channel 0 as follows:
Bit 7
Bit 6
Bit 5:Address bits determined by
Bit 4:Programmer
Bit 3
Bit 2
Bit 1:Must be zero
Bit 0

When the interrupt vector is sent to the Z80 CPU during an interrupt sequence Bits 2 and 1 are set by the CTC to indicate the channel causing the interrupt as follows:

BIT 2	BIT 1	CHANNEL
0	0	0
0	1	1
1	0	2
1	1	3

In memory the interrupt vector table must start on an 8-byte boundary and stores four 2 byte adresses as follows:

ADDRESS	STORES
FFF0H	Interrupt handler start address for channel 0
FFF2H	Interrupt handler start address for channel 1
FFF4H	Interrupt handler start address for channel 2
FFF6H	Interrupt handler start address for channel 3

INTERRUPT LOGIC

Each channel has its own interrupt logic (each to be individually enabled/disabled under software control) allowing it to generate an interrupt request when the channel times are count out. The CTC handles the phase where more than one channel requests an interrupts simultaneously, and asigns priorities with channel 0 having highest priority and channel 3 the lowest.

CONTROL CODE

The control code is written as one byte of data which is interpreted as follows:

BIT 7	1-channel interrupt enabled 0-channel interrupt and disabled
BIT 6	1-counter mode 0-timer mode
BIT 5	1-In timer mode, decrement down counter register every 256th system clock pulse 0-In timer mode, decrement down counter register every 16th system clock pulse
BIT 4	1-Trigger on rising edge (high true) 0-Trigger on falling edge (low true)
BIT 3	1-In timer mode, if timer stopped then start external pulse 0-In timer mode, if timer stopped then start on next clock pulse after receiving time constant
BIT 2	1-Next data byte is time constant to channel 0-No time constant follows
BIT 1	1-Reset. Stop current channel operation - re-start using new control code 0-Continue channel operation
BIT 0	Must be 1 to indentify control code byte.★

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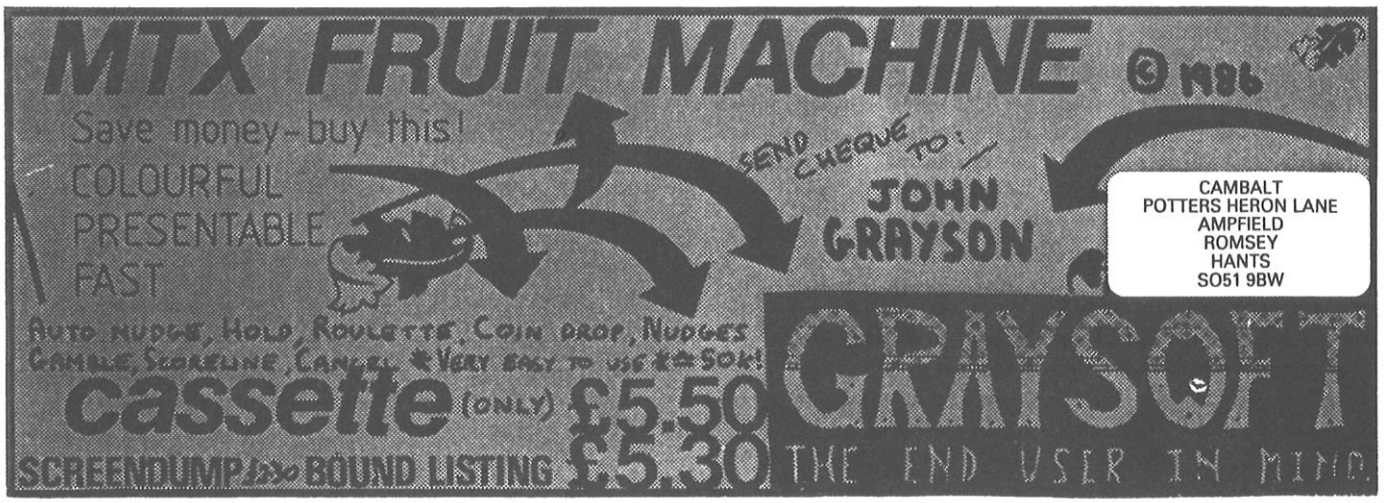
Fish Tank by N Woodger

```
100 REM**********************************
102 REM**********************************
104 REM**                              **
106 REM**          FISH TANK           **
108 REM**              by              **
110 REM**          N.WOODGER           **
112 REM**                              **
114 REM**        28th April '86        **
116 REM**                              **
118 REM**********************************
120 REM**********************************
122 REM
124 DIM FPO(25),FPA(25),FCO(25),FDI(25)
125 FOR X=1 TO 25: LET FPA(X)=1: NEXT X
126 DIM BPO(2),BPA(2)
128 CTLSPR 2,32
130 CTLSPR 1,1
132 CTLSPR 6,2
134 GENPAT 4,1,0,0,192,96,96,51,63,63
136 GENPAT 5,1,63,63,51,96,96,192,0,0
138 GENPAT 6,1,224,112,112,112,120,254,250,255
140 GENPAT 7,1,255,248,254,120,112,112,112,224
142 GENPAT 4,2,0,0,96,32,48,27,31,31
144 GENPAT 5,2,63,63,51,96,96,192,0,0
146 GENPAT 6,2,224,112,112,112,120,254,250,255
148 GENPAT 7,2,255,252,250,120,112,112,112,224
150 GENPAT 4,3,0,0,112,48,24,27,15,15
152 GENPAT 5,3,15,15,27,24,48,112,0,0
154 GENPAT 6,3,224,112,112,112,120,254,250,255
156 GENPAT 7,3,255,254,248,120,112,112,112,224
158 GENPAT 4,4,7,14,14,14,30,127,95,255
160 GENPAT 5,4,255,31,127,30,14,14,14,7
162 GENPAT 6,4,0,0,3,6,6,204,252,252
164 GENPAT 7,4,252,252,204,6,6,3,0,0
166 GENPAT 4,5,7,14,14,14,30,127,95,255
168 GENPAT 5,5,255,63,95,30,14,14,14,7
170 GENPAT 6,5,0,0,6,4,12,216,248,248
174 GENPAT 7,5,248,248,216,12,4,6,6,0
176 GENPAT 4,6,7,14,14,14,30,127,95,255
178 GENPAT 5,6,255,127,31,30,14,14,14,7
180 GENPAT 6,6,0,0,14,12,24,216,240,240
182 GENPAT 7,6,240,240,216,24,12,14,0,0
184 GENPAT 4,7,2,5,2,32,80,32,0,16
186 GENPAT 5,7,40,16,4,10,36,81,34,1
188 GENPAT 6,7,32,80,32,8,20,72,160,64
190 GENPAT 7,7,4,10,36,80,32,0,128,0
192 GENPAT 4,8,4,10,4,16,40,18,5,2
194 GENPAT 5,8,32,80,36,10,4,0,1,0
196 GENPAT 6,8,64,160,64,4,10,4,0,8
198 GENPAT 7,8,20,8,32,80,36,138,68,128
200 GENPAT 1,130,170,85,170,85,170,85,170,85
300 VS 4: PAPER 1: COLOUR 4,1: CLS
310 PAPER 11: ATTR 2,1
320 LET Y=0
330 FOR X=1 TO 25 STEP 2
340 LINE X,Y,254-X,Y
350 LET Y=Y+1
360 NEXT X
365 ATTR 2,0: PAPER 1
370 INK 14
380 LINE 25,13,25,191
390 LINE 254-25,13,254-25,191
400 INK 12
410 PAPER 11
420 FOR X=1 TO 30
430 LET X1=INT(RND*204)+25
440 LET Y1=INT(RND*6)
450 LINE X1,Y1,X1 Y1+6
460 LINE X1,Y1,X1-4,Y1+5
470 LINE X1,Y1,X1+3,Y1+7
```

```
480 NEXT X
485 PAPER 1
500 FOR X=1 TO 25
510 LET FPO(X)=INT(RND*180)+25
520 LET CO=INT(RND*14)+2
530 LET FPA(X)=INT(RND*3)+1
540 SPRITE X,FPA(X),FPO(X),X*6.8+10,0,0,CO
550 NEXT X
570 FOR X=6 TO 10
580 INK 12
590 LINE X,16,X,191
600 NEXT X
605 INK 3: PAPER 12
610 FOR Y=22 TO 23
620 CSR 0,Y: PRINT CHR$(130);CHR$(130);
630 NEXT Y
650 LET BPO(1)=10: LET BPO(2)=90
655 LET BPA(1)=7: LET BPA(2)=8
660 SPRITE 26,7,10,BPO(1),0,0,15
670 SPRITE 27,8,10,BPO(2),0,0,15
1000 REM*START MOVEMENT*
1010 GOSUB 3000
1030 GOTO 2000
1040 GOTO 1000
2000 LET F=INT(RND*25)+1
2005 IF FPA(F)=1 THEN GOTO 4000
2010 IF FPA(F)=2 THEN GOTO 5000
2020 GOTO 1040
3000 LET BPO(1)=BPO(1)+1
3010 LET BPO(2)=BPO(2)+1
3020 FOR X=1 TO 2
3030 IF BPO(X)=190 THEN LET BPO(X)=10
3035 NEXT X
3040 ADJSPR 3,26,BPO(1)
3050 ADJSPR 3,27,BPO(2)
3060 IF BPA(1)=7 THEN LET BPA(1)=8 ELSE LET BPA(1)=7
3070 IF BPA(2)=7 THEN LET BPA(2)=8 ELSE LET BPA(2)=7
3080 ADJSPR 0,26,BPA(1)
3090 ADJSPR 0,27,BPA(2)
3100 RETURN
4000 LET FPO(F)=FPO(F)+2
4010 IF FPO(F)>=245 THEN LET FPA(F)=2: LET FPO(F)=244: GOTO 5000
4020 LET PA=INT(RND*3)+1
4030 ADJSPR 0,F,PA
4040 ADJSPR 2,F,FPO(F)
4050 GOTO 1040
5000 LET FPO(F)=FPO(F)-2
5010 IF FPO(F)<=20 THEN LET FPA(F)=1: LET FPO(F)=21: GOTO 4000
5020 LET PA=INT(RND*3)+4
5030 ADJSPR 0,F,PA
5040 ADJSPR 2,F,FPO(F)
5050 GOTO 1040
```



Smart EPROM Decoder

Dear Memopadders,

I first wish to apologize for the typing errors which were published in issue 11 + 12. I honestly thought there weren't any. Please don't blame my English teacher; their life is already a mess as it is!

First let me help out a fellow reader, Mr D Clement from somewhere city, UK.

He is a victim of the versitality of our BLACK BEAUTY. He noticed to his horror, that the screen colours are reset whenever the MEMOTECH expects a line or commaand from the user. This is frustrating, but unfortunately can not be changed in BASIC. The first things the computer will do on entering the EDITOR is to restore all SCREENS. This data is usually stored in ROM and can not be altered by us humans. The only thing we can do is to write an interrupt driven program which restores YOUR colour. This has one big disadvantage. Upon entering the EDITOR, the screen will quickly change to BLUE/WHITE and back to your selected colours. In other words: the screen will blink!

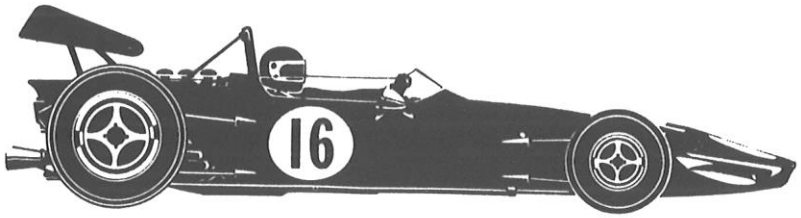
If you don't find this annoying here is a program to preform the task:

```
4007        LD A,£C3
4009        LD (£FA98),A    ;Install JP opcode
400C        LD HL,INT
400F        LD (£FA99),A    ;The address to jump to
4012        LD HL,£FD5E     ;The USERINT location
4015        SET 4,(HL)      ;Make it a 'user' interrupt
4017        RET
4018 INT:   DI              ;Disable interrupts
4019        LD A,(£FØØØ)    ;Address 61440 contains colour
401C        OUT (£Ø2),A
401E        LD A,£87        ;Address VDP register 7
4020        OUT (£Ø2),A
4022        EI              ;Install pending interrupts
4023        RET
```

The next entry is an intelligent EPROM bank. The decoder will allow 6 EPROMS to be decoded ranging from ROM 2 to ROM 7. Hardware buffs will see that ROM 0 and 1 are meant to be for INTERNAL use. The card uses the R0, R1, R2 and GROM decoder lines from the MTX edge connector. The IC's used are 74LS00 and the 74LS138. The latter is the REAL decoder. This chip is a 8 out of 3 decoder. This chip uses the R0, R1 and R2 as its select input together with the INVERTED GROM. The GROM signal is fed to ALL EPROMS without decoding. Its task is simply to enable the output of the EPROM. The CE is applied to only one EPROM at the time so this causes no problem! A byte can only be read from the selected EPROM if both CE and OE are LOW. Of course the EPROMS only work in the area #2000-#4000. If you wish to insert AUTO-RUN EPROMS in the sockets, be sure that the AUTO-RUN EPROM you wish to start from is in the socket with the lowest select-line.

```
10 REM ************************
20 REM * VARIABLEDUMP MTX-512 *
30 REM ************************
40 REM
50 GOTO 60
55 CODE
8081            LD DE,£BF80
8084            XOR A
8085            LD (DE),A
8086            LD HL,(£FA7B)
8089            RST 10
808A            DB £8B,"Variables",£0D,£0A
8097 LOOP:      LD A,(HL)
8098            CP £FF
809A            RET Z
809B            CP £80
809D            JR NC,VAROUT
809F STORE:     LD (DE),A
```

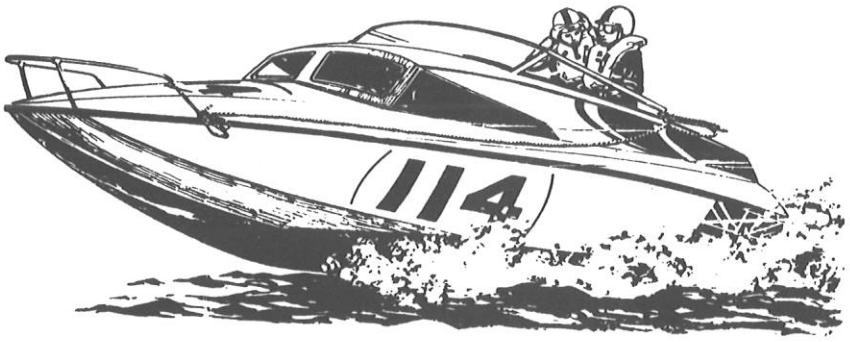
```
80A0            INC DE
80A1            INC HL
80A2            JR LOOP
80A4 VAROUT:    PUSH AF
80A5            AND £E0
80A7            CP £80
80A9            JR Z,STR
80AB            CP £A0
80AD            JR Z,STRIND
80AF            CP £C0
80B1            JR Z,SIMPLE
80B3 IND:       POP AF
80B4            AND £1F
80B6            ADD A,£40
80B8            CALL £0CAB
80BB            CALL BUFFER
80BE            RST 10
80BF            DB £83,"(),"
80C3            INC HL
80C4            JR LOOP
80C6 SIMPLE:    POP AF
80C7            AND £1F
80C9            ADD A,£40
80CB            CALL £0CAB
80CE            CALL BUFFER
80D1            INC HL
80D2            RST 10
80D3            DB £81,","
80D5            JR LOOP
80D7 STRIND:    POP AF
80D8            AND £1F
80DA            ADD A,£40
80DC            CALL £0CAB
80DF            CALL BUFFER
80E2            RST 10
80E3            DB £84,"$(),"
80E8            INC HL
80E9            JR LOOP
80EB STR:           POP AF
80EC                AND £1F
80EE                ADD A,£40
80F0                CALL £0CAB
80F3                CALL BUFFER
80F6                RST 10
80F7                DB £82,"$,"
80FA                INC HL
80FB                JP LOOP
80FE BUFFER:        LD DE,£BF80
8101 BLOOP:         LD A,(DE)
8102                OR A
8103                RET Z
8104                CALL £0CAB
8107                INC DE
8108                LD A,(DE)
8109                OR A
810A                JR Z,EXIT
810C                JR BLOOP
810E EXIT:          PUSH HL
810F                LD HL,£BF80
```



;Restore variable type found in table
;Only the first 5 bits count for the name
;Make it a readable ASCII character
;The ROM 'CHR$' routine (Preserves HL)
;Store in my buffer for eventual reversion

;Print the index brackets

;Print ',' to indicate end of varname



;Just some space below the COMMON BLOCK
;Read buffer contents
;Is buffer empty?
;If so, return to caller
;Print character in buffer
;Advance to next character

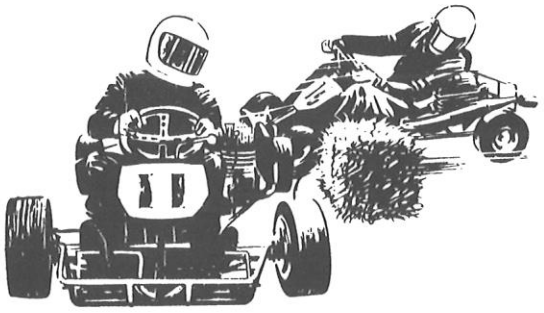
;Save character pointer in vartable
;My buffer

```
8112            LD DE,£BF81         ;It's a well known trick
8115            XOR A
8116            LD (HL),A           ;Clear buffer cell
8117            LD BC,£004F         ;Still 79 locations to go
811A            LDIR
811C            LD DE,£BF80         ;I want my buffer back!
811F            POP HL
8120            RET
```

This little utility handles all existing variable types of the Memotech with one condition! The variable name is NOT to exceed 80 characters. Personally I don't think that anyone should need a variable name that long, but I am surely not the crank to try it out just to see what happens.....

You didn't really think this was all, did you? Bad luck.

Next on this show, the TAPE utilities. Get ready.....



```
10 VS 4:CLS:PAUSE 1000
20 CODE

8016            LD HL,£0000         ;Start of VRAM address. (VRAM=Video RAM)
8019            LD A,L              ;We still own an 8-bit system
801A            OUT (£02),A         ;Setup the RAM-address in the VDP
801C            LD A,H              ;The MSB bits
801D            SET 6,A             ;Indicates a write procedure for the VDP
801F            OUT (£02),A
8021            LD B,£32            ;Give the VDP some time
8023 WAIT:      DJNZ WAIT
8025            LD C,£18            ;There are 24 lines to load
8027 LOOP:      PUSH BC
8028            CALL LOAD
802B            LD HL,BUFFER
802E            LD B,£00
8030 INNER:     LD A,(HL)
8031            OUT (£01),A
8033            INC HL
8034            DJNZ INNER
8036            POP BC
8037            DEC C
8038            LD A,C
8039            OR A
803A            JR NZ,LOOP
803C            RET
803D LOAD:      XOR A
803E            LD (£FD67),A
8041            INC A
8042            LD (£FD68),A
8045            CALL £0BEF
8048            LD HL,BUFFER
804B            LD DE,£0100
804E            CALL £0AAE
8051            LD DE,£0000
8054 STOP:      DEC DE
8055            LD A,D
8056            OR E
8057            JR NZ,STOP
8059            RET
805A BUFFER:    DS 200
8122            DS 56
```

The TAPE handling if the MTX has been reviewed in the 'MEMOPAD' some time ago, so I'm not getting into detail of this. The program saves a GRAPHICS screen to the tapewith out any header or name. By the time your program reaches the save-command your recorder should be in 'RECORD' mode. This program saves only the pattern-generation tables and not the colour tables.

Of course you want to load a screen back into the MTX so you also need:

```
10 CODE

8007            LD HL,£0000
800A            LD A,L
800B            OUT (£02),A
800D            LD A,H
800E            OUT (£02),A
```

```
8010          LD C,£18
8012          LD B,£00
8014 LOOP:    PUSH BC
8015          LD HL,BUFFER
8018 INNER:   IN A,(£01)
801A          LD (HL),A
801B          INC HL
801C          DJNZ INNER
801E          CALL SAVE
8021          POP BC
8022          DEC C
8023          LD A,C
8024          OR A
8025          JR NZ,LOOP
```

```
8027          RET
8028 SAVE:    XOR A
8029          LD (£FD68),A
802C          CALL £0BEF
802F          LD HL,BUFFER
8032          LD DE,£0100
8035          CALL £0AAE
8038          LD DE,£0000
803B WAIT:    DEC DE
803C          LD A,D
803D          OR E
803E          JR NZ,WAIT
8040          RET
8041 BUFFER:  DS 200
8109          DS 56
```

Did you discover the blooper also? The latter routine is the SAVE routine and the first is the LOAD routine. I'm sorry! These things happen from time to time.

And for the games enthusiasts, a listing of the game OBSTACLE. This game has been published in an infite number of books, magazines etc. But mine comes from a friend who possesses a TRS-80. I played the game quite a number of times and won most often despite of his innumerous cheat-keys! To make a short story a little longer; this game is dedicated to Mr P.M. Nieuwdorp. I adapted the game for the MTX for one reason only: to test whether or not graphic characters could be read using SPK$ for collision testing. The game is for by 2 players. May you have as much fun and laughter as I did.

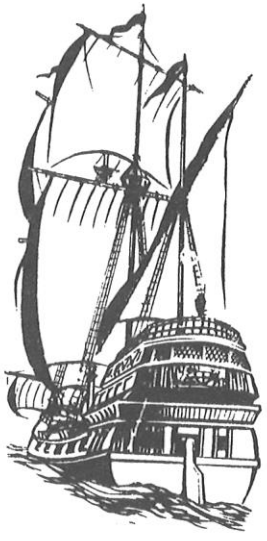
```
0 GOTO 3
1 CODE
```

```
800E          JR START
8010 KEY1:    DB £00     ;Stores keypress from player 1 'A,S,D,Q'
8011 KEY2:    DB £00     ;Make your guess
8012 SCAN:    OUT (£05),A     ;Ask Mr P.Knaggs, he knows all about it
8014          IN A,(£05)
8016          CPL
8017          RET
8018 START:   LD A,£F7
801A          CALL SCAN
801D          AND £01
8021          JR NZ,F2
8023          LD HL,KEY1
8026          LD (HL),"Q"
8028 F2:      LD A,£DF
802A          CALL SCAN
802D          AND £02
802F          CP £02
8031          JR NZ,F3
8033          LD HL,KEY1
8036          LD (HL),"D"
8038 F3:      LD A,£DF
803A          CALL SCAN
803D          AND £01
803F          CP £01
```

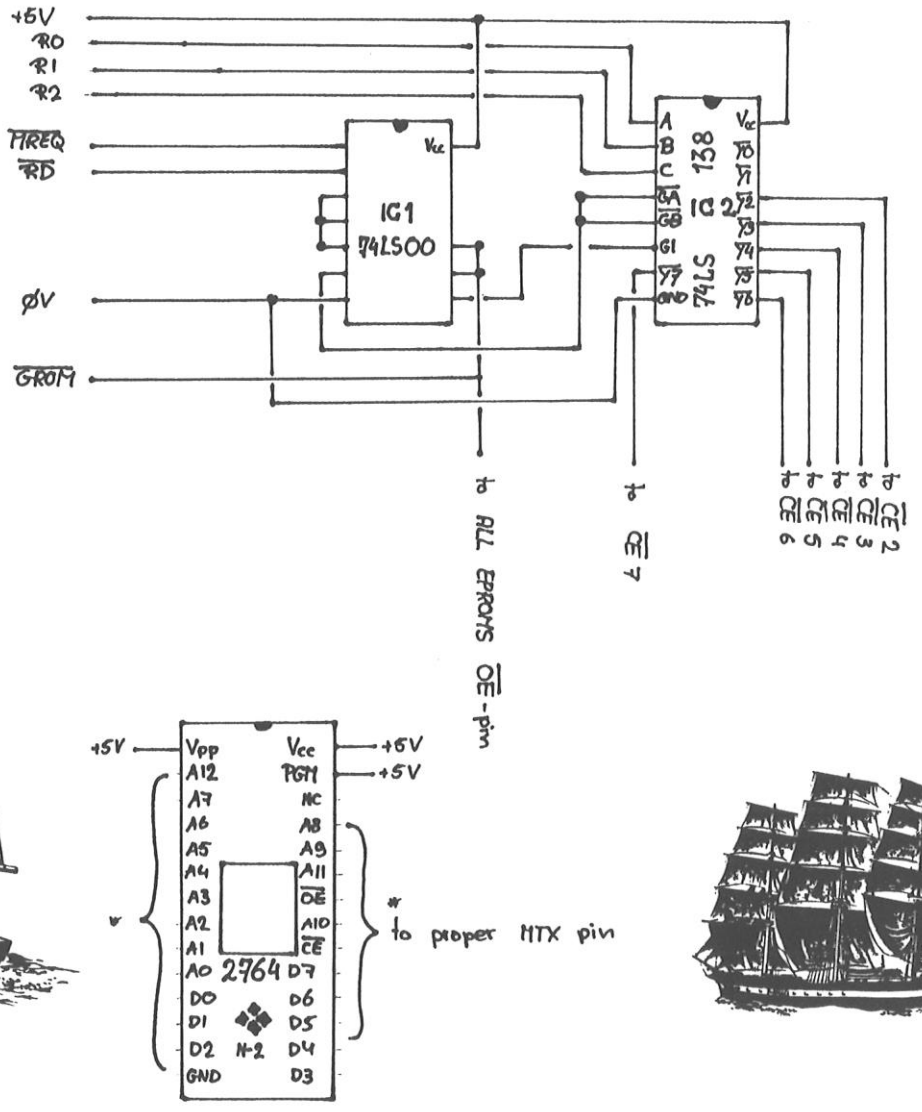
```
8041          JR NZ,F4
8043          LD HL,KEY1
8046          LD (HL),"A"
8048 F4:      LD A,£EF
804A          CALL SCAN
804D          AND £02
804F          CP £02
8051          JR NZ,S1
8053          LD HL,KEY1
8056          LD (HL),"S"
8058 S1:      LD A,£FB
805A          CALL SCAN
805D          AND £20
805F          CP £20
8061          JR NZ,S2
8063          LD HL,KEY2
8066          LD (HL),"P"
8068 S2:      LD A,£DF
```

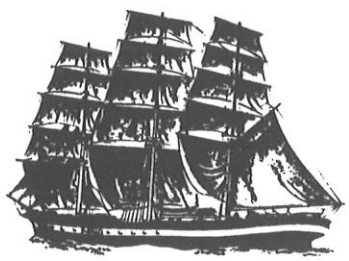
```
806A          CALL SCAN
806D          AND £10
806F          CP £10
8071          JR NZ,S3
8073          LD HL,KEY2
8076          LD (HL),"L"
8078 S3:      LD A,£DF
807A          CALL SCAN
807D          AND £08
807F          CP £08
8081          JR NZ,S4
8083          LD HL,KEY2
8086          LD (HL),"J"
8088 S4:      LD A,£EF
808A          CALL SCAN
808D          AND £10
808F          CP £10
8091          RET NZ
8092          LD HL,KEY2
8095          LD (HL),"K"
8097          RET

Symbols:
START 8018 KEY1 8010
KEY2  8011 SCAN 8012
F2    8028 F3   8038
F4    8048 S1   8058
S2    8068 S3   8078
S4    8088
```

```
2 RETURN
3 VS 4: PAPER 1:INK 14:CLS :INPUT  "PLAYER 1?";S1$:INPUT "PLAYER 2?";S2$:LET SC1=1Ø:LET
SC2=1Ø
4 LET X1=12:LET Y1=11:LET X2=2Ø:LET Y2=11:LET DX1=Ø:LET DY1=Ø:LET DX2=Ø:LET DY2=Ø
5 GENPAT 1,147,255,129,129,129,129,129,129,255:GENPAT 1,148,255,171,213,171,213,171,213
,255
6 GENPAT 2,147,142,142,142,142,142,142,142,142:GENPAT 2,148,199,199,199,199,199,199,199
,199
7 VS 4:PAPER 5:INK 14
8 POKE 164ØØ,Ø:POKE 164Ø1,Ø
10 VS 4:COLOUR 4,7:PAPER 4:INK 1:CLS
20 FOR X=1 TO 8:PAPER 8:PRINT "                                ";:NEXT X   (32 spaces)
30 FOR X=1 TO 8:PAPER 14:PRINT "                                ";:NEXT X  (32 spaces)
40 FOR X=1 TO 8:PAPER 4:PRINT "                                 ";:NEXT X   (32 spaces)
50 FOR X=Ø TO 14:PAPER 14:INK X:CSR 11,11:PRINT CHR$(147);" OBSTACLE ";CHR$(148);: CSR
11,13:PRINT "Press a key.";:NEXT X
60 LET A$=INKEY$:IF A$="" THEN GOTO 60
70 VS 4:COLOUR 4,14:PAPER 1:CLS
75 LET F1=Ø:LET F2=Ø
80 CSR X1,Y1:PRINT CHR$(147);
90 CSR X2,Y2:PRINT CHR$(148);
95 PAUSE 100
100 GOSUB 1:LET A$=CHR$(PEEK(164ØØ))                    Change to 32784 for MTX 500
110 GOSUB 1:LET B$=CHR$(PEEK(164Ø1))                    Change to 32785 for MTX 500
120 IF A$="Q" THEN LET DY1=-1:LET DX1=Ø:LET F1=1
130 IF A$="A" THEN LET DY1=1:LET DX1=Ø:LET F1=1
140 IF A$="S" THEN LET DX1=-1:LET DY1=Ø:LET F1=1
150 IF A$="D" THEN LET DX1=1:LET DY1=Ø:LET F1=1
160 IF B$="P" THEN LET DY2=-1:LET DX2=Ø:LET F2=1
170 IF B$="L" THEN LET DY2=1:LET DX2=Ø:LET F2=1
180 IF B$="J" THEN LET DX2=-1:LET DY2=Ø:LET F2=1
190 IF B$="K" THEN LET DX2=1:LET DY2=Ø:LET F2=1
200 IF DX1=Ø AND DY1=Ø AND DX2=Ø AND DY2=Ø THEN GOTO 100
220 LET X1=X1+DX1:LET Y1=Y1+DY1
230 LET X2=X2+DX2:LET Y2=Y2+DY2
240 IF X1<Ø OR X1>31 OR Y1<Ø OR Y1>23 THEN GOTO 500
250 IF X2<Ø OR X2>31 OR Y2<Ø OR Y2>23 THEN GOTO 600
260 IF X1=X2 AND Y1=Y2 AND(DX1=-DX2 OR DY1=-DY2) THEN GOTO 700
270 CSR X1,Y1:IF SPK$=CHR$(147) AND F1=1 THEN GOTO 500
280 CSR X1,Y1:IF SPK$=CHR$(148) THEN GOTO 500
290 CSR X2,YÆ:IF SPK$=CHR$(147) THEN GOTO 600
300 CSR X2,Y2:IF SPK$=CHR$(148) AND F2=1 THEN GOTO 600
310 GOTO 80
500 VS 4:PAPER 1:INK 14:CLS
```



```
510 LET SC1=SC1-1:IF SC1=Ø THEN GOTO 1000
520 CSR 1Ø,11:PRINT S1$;" LOSES"
530 CSR 12,11:PRINT S1$,SC1
540 CSR 12,14:PRINT S2$,SC2
550 LET DX1=Ø:LET DY1=Ø:LET DX2=Ø:LET DY2=Ø:LET X1=12:LET Y1=11:LET X2=2Ø:LET Y2=11:
POKE 164ØØ,Ø:POKE 164Ø1,Ø:REM Change to 32784-32785 for MTX 500
560 PAUSE 2ØØØ:VS 4:PAPER 1:CLS:GOTO 75
570 REM *** PLAYER 2 ***
600 VS 4:PAPER 1: INK 14:CLS
610 CSR 10,11:PRINT S2$;" LOSES"
620 LET SC2=SC2-1:IF SC2=Ø THEN GOTO 1000
630 GOTO 530
700 VS 4:PAPER 1:INK 14:CLS
710 CSR 10,1:PRINT "YOU BOTH LOSE!"
720 LET SC1=SC1-1:LET SC2=SC2-1
730 IF SC1=Ø OR SC2=Ø THEN GOTO 1000
740 GOTO 530
1000 VS 4:COLOUR 4,7:PAPER 5:INK 15:CLS
1010 IF SC1=Ø AND SC2=Ø THEN CSR 10,1:PRINT "IT'S A DRAW....."
1020 IF SC1=Ø THEN CSR 10,1:PRINT S2$;" WINS!"
1030 IF SC2=Ø THEN CSR 10,1:PRINT S1$;" WINS!"
1040 CSR 12,11:INPUT"ANOTHER GAME ";A$
1050 IF A$="J" THEN RUN
1060 IF A$="N" THEN VS 5:CLS:VS 4:CLS
1070 GOTO 1040
```





Yours sincerely

EUGEN KASCHUBINSKY

The NODDY pages ONLY contain instructions so these will be published in the next issue.

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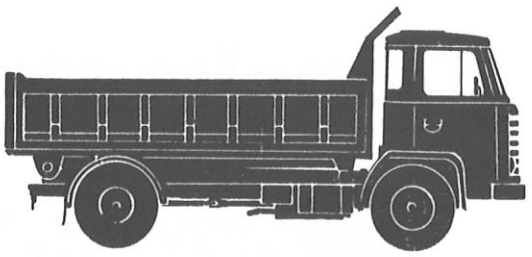
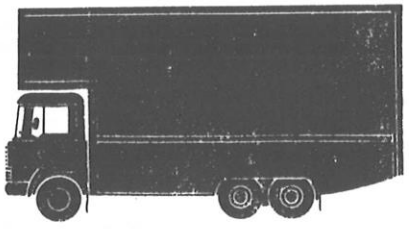
HURRY! HURRY!

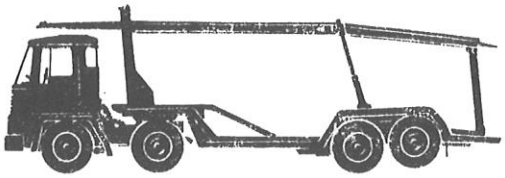
Station Master

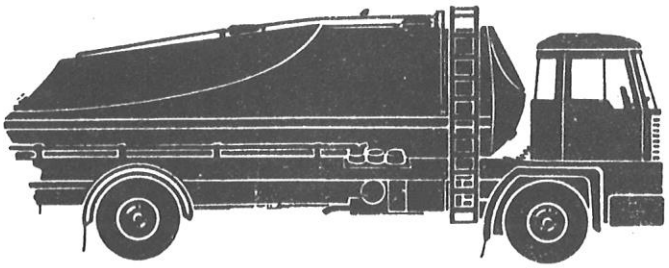
```
1 CLEAR : RAND -5
2 VS 4: CLS
3 GOSUB 9000
4 GOSUB 7000
10 GOSUB 8000
15 IF NU=11 THEN GOTO 4000
20 COLOUR 4,7: COLOUR 2,15: COLOUR 0,15: COLOUR 3,6: CLS
140 FOR T=0 TO 31
150 CSR T,1: PRINT CHR$(147)
160 NEXT T
170 FOR T=191 TO 183 STEP -1: LINE 0,T,254,T: NEXT T
175 COLOUR 3,1
180 FOR T=43 TO 41 STEP -1: LINE 0,T,254,T: NEXT T
181 COLOUR 1,6
185 FOR T=0 TO 31 STEP 4: CSR T,19: PRINT CHR$(131): NEXT T
187 COLOUR 3,14
188 LINE 0,44,254,44
190 LET R=INT(RND*12+2)
200 SPRITE 7,1,224,60,0,0,1: SPRITE 8,2,224,60,0,0,R
205 COLOUR 0,15: COLOUR 1,10
210 FOR T=2 TO 4: CSR 25,T: PRINT "O": NEXT T
215 LET X=0
216 COLOUR 3,14
220 FOR T=0 TO 255 STEP 16
230 LINE T,0,128,32
240 NEXT T
250 LINE 254,0,128,32
251 SPRITE 1,4,75,50,0,0,1: SPRITE 2,4,75,82,0,0,10: SPRITE 3,4,75,114,0,0,1: SPRITE 4,4,75,146,
0,0,10
253 SPRITE 5,5,100,160,0,0,4: SPRITE 10,7,100,160,0,0,10
260 COLOUR 3,4: CIRCLE 202,132,20
270 COLOUR 3,1
271 ANGLE 0
272 PLOT 202,149: PLOT 202,150: PLOT 202,124: PLOT 202,123
273 FOR T=1 TO 4: PLOT 202,132: DRAW 18: PHI PI/2: NEXT T
280 FOR T=100 TO 104: LINE T,53,T,103: NEXT T
290 FOR T=100 TO 98 STEP -1: LINE 105,T,185,T: LINE 105,(T-45),185,(T-45): NEXT T
300 FOR T=186 TO 190: LINE T,103,T,53: NEXT T
305 COLOUR 3,11
310 FOR T=97 TO 56 STEP -1: LINE 106,T,183,T: NEXT T
320 COLOUR 0,11: COLOUR 1,1
330 CSR 14,12: PRINT W$
340 COLOUR 0,15
350 CSR 23,20: PRINT "SCORE ": CSR 28,20: PRINT SC
1000 CLOCK "000000"
1004 LET Q$=""
1005 LET P=13
1010 COLOUR 0,11: COLOUR 1,1
1270 COLOUR 3,2: PLOT 202,132
1280 ANGLE 0
1295 PLOT 202,132
1296 IF TIME$="000030" THEN COLOUR 3,8
1300 DRAW 16
1310 PHI .021
```



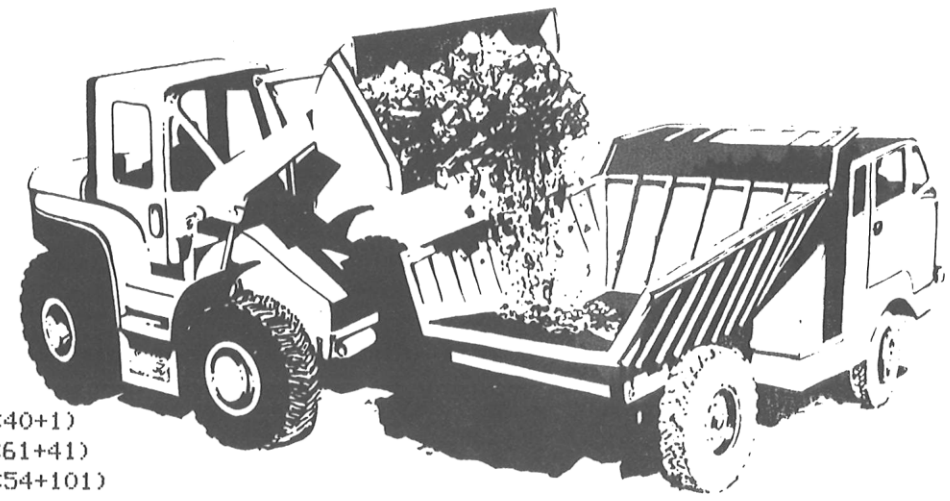


```
1315 IF TIME$="000100" THEN GOSUB 3000
1320 LET I$=INKEY$
1325 IF ASC(I$)<65 OR ASC(I$)>90 THEN GOTO 1360
1330 IF ASC(I$)>=65 AND ASC(I$)<=90 THEN LET P=P+1
1340 IF ASC(I$)>=65 AND ASC(I$)<=90 THEN CSR P,15: PRINT I$: SOUND 1,300,239: PAUSE 50: SOUND 1,
0,0
1350 LET Q$=Q$+I$
1355 PAUSE 200
1360 IF LEN(Q$)=LEN(X$) AND Q$=X$ THEN GOSUB 2000
1370 IF LEN(Q$)=LEN(X$) AND Q$<>X$ THEN GOSUB 3000
1380 PAUSE 75: IF Z=1 THEN GOTO 1295
1500 IF Z=0 THEN GOTO 10
2000 REM SUCCESS
2330 LET SC=SC+1
2334 COLOUR 0,15
2335 CSR 28,20: PRINT SC
2340 SPRITE 10,8,100,144,0,0,13: SPRITE 5,6,100,144,0,0,4
2359 FOR T=1 TO 3
2360 SOUND 0,20,239: SOUND 1,50,239: SOUND 2,70,239: PAUSE 900: SOUND 0,0,0: SOUND 1,0,0: SOUND
2,0,0: PAUSE 150
2361 NEXT T
2395 ADJSPR 4,7,252
2396 ADJSPR 4,8,252
2397 LET A=202
2400 FOR T=1 TO 17
2410 SOUND 3,5,15: PAUSE 300: SOUND 3,4,15: PAUSE 200: SOUND 3,0,0: PAUSE 500
2414 IF T/2=INT(T/2) THEN SPRITE 12,20,A,74,2,5,14
2415 IF T/2<>INT(T/2) THEN SPRITE 9,18,A,74,2,5,14
2416 LET A=A-14
2420 NEXT T
2510 LET Z=0: RETURN
3000 REM WRONG ANSWER
3010 SOUND 1,1000,239: SOUND 0,900,239: PAUSE 1500: SOUND 1,0,0: SOUND 0,0,0
3012 SBUF 10: SOUND 0,0,239,10,160,160,1: SPRITE 12,19,224,192,0,-15,1
3014 PAUSE 2600: SOUND 0,0,0: SPRITE 12,17,224,60,0,5,14: SOUND 3,6,14: SPRITE 7,14,224,60,0,0,1
: SPRITE 8,15,224,60,0,0,R
3016 PAUSE 1500: SOUND 3,0,0
3020 FOR T=1 TO LEN(X$)
3030 FOR F=1 TO LEN(X$)
3040 IF W$(F)=X$(T) THEN GOTO 3100
3050 NEXT F
3053 LET W$(F)="*"
3055 NEXT T
3056 PAUSE 500
3060 LET Z=0: RETURN
3100 IF F=T THEN GOTO 3200
3110 IF F<T THEN GOTO 3300
3120 IF F>T THEN GOTO 3400
3130 GOTO 3053
3200 FOR J=13 TO 15
3210 CSR (F+13),(J-1): PRINT " ": CSR (F+13),J: PRINT X$(T): SOUND 0,200,239: PAUSE 100: SOUND 0
,0,0
3220 NEXT J
3230 GOTO 3130
3300 FOR J=13 TO 14
3310 CSR (F+13),(J-1): PRINT " ": CSR (F+13),J: PRINT X$(T): SOUND 0,200,239: PAUSE 100: SOUND 0
,0,0
3320 NEXT J
3330 FOR J=F TO T
```

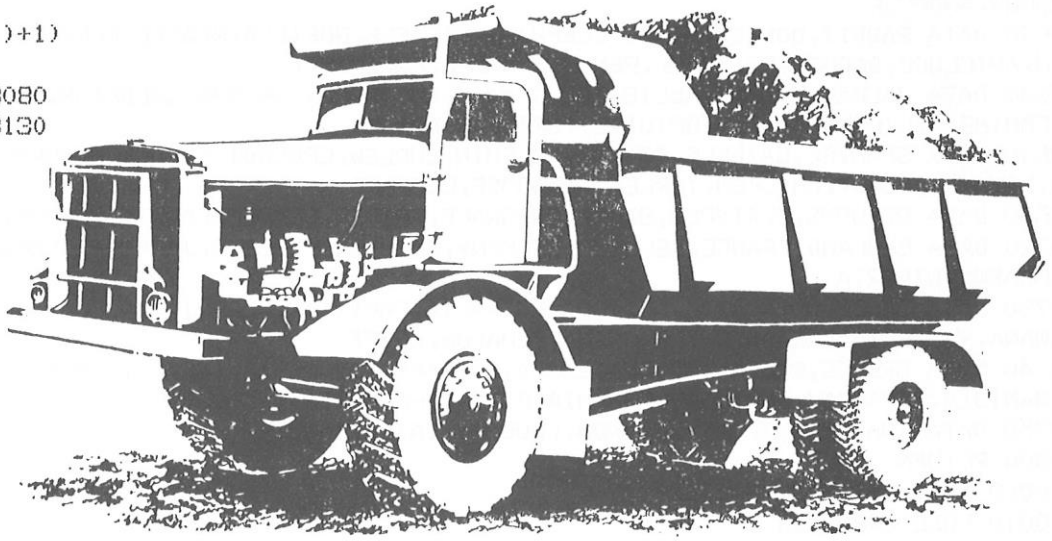




```
3340 CSR (J+12),14: PRINT " ": CSR (J+13),14: PRINT X$(T): SOUND 0,200,239: PAUSE 100: SOUND 0,0
,00
3350 NEXT J
3360 CSR (T+13),14: PRINT " ": CSR (T+13),15: PRINT X$(T)
3370 GOTO 3130
3400 FOR J=13 TO 14
3410 CSR (F+13),(J-1): PRINT " ": CSR (F+13),J: PRINT X$(T): SOUND 0,200,239: PAUSE 100: SOUND 0
,0,0
3420 NEXT J
3430 FOR J=F TO T STEP -1
3440 CSR (J+13),14: PRINT X$(T): SOUND 0,200,239: PAUSE 100: SOUND 0,0,0: CSR (J+13),14: PRINT "
 "
3500 NEXT J
3510 CSR (T+13),14: PRINT " ": CSR (T+13),15: PRINT X$(T)
3520 GOTO 3130
4000 COLOUR 0,15: COLOUR 1,1: COLOUR 2,15: COLOUR 3,1: COLOUR 4,7: CLS
4001 CTLSPR 2,20: CTLSPR 5,20: CTLSPR 6,3
4010 FOR T=1 TO 30: CSR T,1: PRINT CHR$(141): CSR T,22: PRINT CHR$(141): NEXT T
4020 FOR T=2 TO 21: CSR 1,T: PRINT CHR$(141): CSR 30,T: PRINT CHR$(141): NEXT T
4030 COLOUR 1,6: CSR 9,12: PRINT "YOUR SCORE": COLOUR 1,4: CSR 19,12: PRINT SC
4040 COLOUR 1,12: CSR 6,18: PRINT "ANOTHER GAME? <Y/N>"
4050 SPRITE 7,1,128,140,0,0,1: SPRITE 8,2,128,140,0,0,R
4070 LET Z$=INKEY$
4075 IF Z$="" THEN GOTO 4070
4080 IF Z$="Y" THEN GOTO 4100
4090 NEW
4100 RUN
7000 REM TITLE
7005 CTLSPR 2,20: CTLSPR 5,20
7010 COLOUR 0,7: COLOUR 1,1: COLOUR 2,7: COLOUR 3,1: COLOUR 4,15
7020 CLS
7030 FOR T=0 TO 31: CSR T,4: PRINT CHR$(140): CSR T,8: PRINT CHR$(140)
7040 NEXT T
7050 CSR 9,6: PRINT "STATION MASTER"
7060 COLOUR 1,12: CSR 4,14: PRINT "A GAME FOR YOUNG CHILDREN"
7070 COLOUR 1,4: CSR 1,16: PRINT "WRITTEN BY MIKE MAJOR <C> 1984"
7075 GOSUB 9500
7080 PAUSE 6000
7090 PLOD "PROG1"
7100 INPUT O
7110 VS 4: CLS
7130 RETURN
8000 REM WORD SELECT
8001 LET W$=""
8002 LET X$=""
8003 LET NU=NU+1
8004 LET Z=1
8005 CTLSPR 0,1
8006 CTLSPR 1,2
8007 CTLSPR 2,20
8008 CTLSPR 5,20
8009 CTLSPR 6,3
8010 IF O=1 THEN LET X=INT(RND*40+1)
8011 IF O=2 THEN LET X=INT(RND*61+41)
8012 IF O=3 THEN LET X=INT(RND*54+101)
8020 FOR T=1 TO 10
8025 IF C(T)=0 THEN GOTO 8050
8030 IF X=C(T) THEN GOTO 8010
8040 NEXT T
8050 LET C(T)=X
```



```
8060 FOR T=1 TO 9
8061 LET A=ASC(A$(X,T))
8062 IF A=0 THEN GOTO 8065
8063 LET X$(T)=A$(X,T)
8065 NEXT T
8066 FOR T=1 TO 9: LET CH(T)=0: NEXT T
8070 FOR T=1 TO LEN(X$)
8080 LET X=INT(RND*(LEN(X$))+1)
8090 FOR F=1 TO LEN(X$)
8100 IF X=CH(F) THEN GOTO 8080
8110 IF CH(F)=0 THEN GOTO 8130
8120 NEXT F
8130 LET CH(F)=X
8140 LET W$=W$+X$(X)
8160 NEXT T
8170 RETURN
9000 REM INITIALIZE
9001 CTLSPR 0,1
9002 CTLSPR 2,20
9003 CTLSPR 5,20
9004 CTLSPR 6,3
9030 LET SC=0
9040 LET NU=0
9050 DIM C(11)
9060 DIM CH(9)
9065 LET Z=1
9070 GENPAT 4,1,0,0,0,0,0,0,0,3: GENPAT 5,1,50,50,0,0,255,0,214,97: GENPAT 6,1,0,0,0,0,0,0,0,206
: GENPAT 7,1,95,64,0,0,223,32,223,142
9080 GENPAT 4,2,0,0,0,0,0,0,0,0: GENPAT 5,2,0,0,255,255,0,255,0,0: GENPAT 6,2,0,0,0,0,0,0,0,0: G
ENPAT 7,2,0,31,223,223,0,223,0,0
9100 GENPAT 1,147,48,48,126,254,254,254,254,254
9110 GENPAT 2,147,246,246,246,246,247,247,247,247
9120 GENPAT 4,4,0,0,0,0,0,0,0,0: GENPAT 5,4,0,0,0,0,0,0,0,0: GENPAT 6,4,255,129,129,129,255,193,
161,145: GENPAT 7,4,137,133,131,255,129,129,129,255
9125 GENPAT 4,5,0,0,0,0,0,128,192,255: GENPAT 5,5,255,255,120,72,72,72,120,0: GENPAT 6,5,0,0,0,0
,0,0,0,247: GENPAT 7,5,239,247,0,0,0,0,0,0
9130 GENPAT 4,6,3,127,71,71,127,3,3,3: GENPAT 5,6,3,3,3,2,1,3,3,3: GENPAT 6,6,224,192,128,128,12
8,128,128,128: GENPAT 7,6,128,128,128,128,0,128,128,128
9133 GENPAT 4,7,0,0,0,0,0,0,0,0: GENPAT 5,7,0,0,0,48,48,48,0,0: GENPAT 6,7,0,0,0,0,0,0,0,8: GENP
AT 7,7,16,8,0,0,0,0,0,0
9137 GENPAT 4,8,0,0,56,56,0,0,0,0: GENPAT 5,8,0,0,0,1,2,0,0,0: GENPAT 6,8,0,0,0,0,0,0,0,0: GENPA
T 7,8,0,0,0,0,128,0,0,0
9138 GENPAT 1,130,14,49,66,132,72,72,72,48
9182 GENPAT 1,131,48,48,48,252,252,0,0,0
9190 GENPAT 4,14,0,0,0,0,0,7,4,4: GENPAT 5,14,64,224,64,0,0,0,16,16: GENPAT 6,14,0,0,0,0,0,128,1
32,142: GENPAT 7,14,2,2,2,129,192,192,16,24
9200 GENPAT 4,15,0,0,0,0,0,0,0,0: GENPAT 5,15,8,24,58,118,236,92,40,0: GENPAT 6,15,0,0,0,0,0,0,0
,0: GENPAT 7,15,28,60,92,110,54,26,12,0
9210 GENPAT 4,17,1,3,3,7,15,7,3,1: GENPAT 5,17,7,15,15,7,3,1,0,0: GENPAT 6,17,0,228,252,252,248.
252,240,248: GENPAT 7,17,240,248,240,248,248,224,224,96
9220 GENPAT 4,18,0,0,0,0,0,0,0,0: GENPAT 5,18,0,0,1,3,63,95,116,96: GENPAT 6,18,0,0,0,0,0,0,0,0:
 GENPAT 7,18,32,224,224,224,192,0,0,0
9230 GENPAT 4,19,2,3,3,3,1,1,3,7: GENPAT 5,19,7,7,7,7,7,7,3,1: GENPAT 6,19,64,192,192,192,128,12
8,192,224: GENPAT 7,19,224,224,224,224,224,224,192,128
9240 GENPAT 1,140,0,49,66,156,124,36,0,0
9250 GENPAT 1,141,0,0,3,34,127,127,32,2
9260 GENPAT 4,20,0,0,0,1,7,30,15,15: GENPAT 5,20,31,63,124,60,62,120,224,192: GENPAT 6,20,0,0,0,
0,128,0,128,128: GENPAT 7,20,128,192,0,0,0,0,0,0
9300 RETURN
9500 DIM A$(154,9)
```



```
9510 FOR T=1 TO 154: READ A$(T): NEXT T
9550 DATA LONDON,BRIGHTON,DUNSTABLE,OXFORD,CARDIFF,LIVERPOOL,NORWICH,TAUNTON,PLYMOUTH,HARROW,SWA
NSEA,GLASGOW,BRISTOL,EXETER,IPSWICH,BEDFORD,WARWICK
9560 DATA EDINBURGH,CARLISLE,BLACKPOOL,CHESTER,NEWBURY,GATESHEAD,WAKEFIELD,WATFORD,CAMBRIDGE,DOV
ER,LEICESTER
9570 DATA WIGAN,WEYMOUTH,NEWCASTLE,DUNDEE,DONCASTER,BANBURY,SALISBURY,SLOUGH,FALMOUTH,NEWPORT,SA
NDOWN,ANDOVER
9620 DATA RABBIT,DONKEY,HORSE,ELEPHANT,GIRAFFE,GORILLA,WEASEL,FERRET,BULLDOG,CHEETAH,HYENA,OSTRI
CH,ANTELOPE,BADGER,REINDEER,PENGUIN,WHALE,PHEASANT,
9630 DATA JACKAL,MONKEY,ALLIGATOR,CAYMAN,BUTTERFLY,SALMON,GOLDFISH,PUFFIN,OKAPI,VULTURE,SWALLOW,
LEMMING,PELICAN,PARROT,TORTOISE,TURTLE,SPARROW
9640 DATA SPANIEL,GAZELLE,IGUANA,DOLPHIN,CURLEW,CROCODILE,CUCKOO,DORMOUSE,CAMEL,HEDGEHOG,KANGARO
O,LIZARD,LOCUST,CHICKEN,TURKEY,MONGOOSE,LEOPARD
9650 DATA OCTOPUS,PLATYPUS,SCORPION,SNAKE,SPIDER,BEAVER,EARWIG,WALRUS,PORPOISE
9720 DATA ENGLAND,FRANCE,BELGIUM,GERMANY,AMERICA,FINLAND,JAMAICA,DENMARK,ICELAND,NORWAY,POLAND,Z
IMBABWE,NIGERIA
9730 DATA SCOTLAND,BRAZIL,MEXICO,AUSTRALIA,PAKISTAN,ALGERIA,ANGOLA,ARGENTINA,AUSTRIA,BOLIVIA,BOT
SWANA,BULGARIA,CANADA,CHILE,CHINA,ECUADOR,EGYPT
9740 DATA GREECE,GREENLAND,GUATEMALA,HUNGARY,INDONESIA,ISRAEL,ITALY,KENYA,KUWAIT,LEBANON,MOROCCO
,NAMIBIA,PARAGUAY,PORTUGAL,ROMANIA,SINGAPORE,SYRIA
9750 DATA THAILAND,TURKEY,UGANDA,URUGUAY,ZAIRE,ZAMBIA
9900 RETURN
10000 SAVE "STATION MASTER"
10010 POKE 64862,13
10020 RUN
```

Newword Tips by B. Houghton

As most readers will know, Newword has a number of undocumented commands, and several others which are poorly described. The .X commands have been thoroughly aired in MEMOPAD, but the following ones may be less familiar:

~QE :cursor to left of top line on screen;
^QX :cursor to end of bottom screen line;
(these are useful for setting block markers)

NEWWORD Do-it-Yourself says (once) that there are several print drivers available, but it doesn't tell you how to use them. This is a pity, as the disc output driver can save you miles of paper if you are as sloppy a typist as I am, and the command syntax is quite unlike the Wordstar equivalent and not at all obvious unless you know what you are looking for. To use it, do as follows:

1. From the opening menu, select 'P' or 'M'
2. Enter an appropriate filename
3. Answer ALL of the prompts (<RET> for defaults):dc NOT TYPE <ESC> TO END THE PROMPT SEQUENCE. There will be a pause as the NWPRINT overlay loads.
4. In response to 'Name of printer?' type PRVIEW (yes! - not prEview)

You will get the usual screen messages, but it is the disc-drive rather than the printer which will operate.

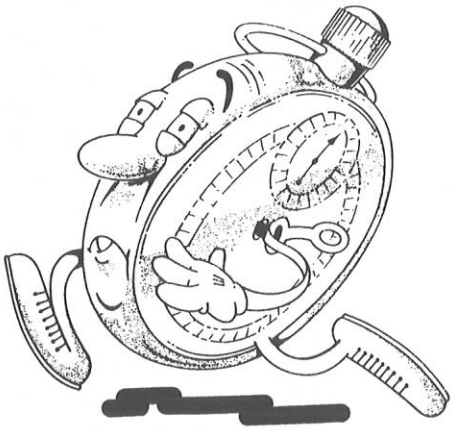
You will be left with an extra file called PREVIEW.NW which is a simulation of your hard-copy output with all of the non-display features you may have chosen such as headers, footers, offsets and any of the Mailmerge commands which you have set up.

^R (F7) normally scrolls the screen up by one screen window, but given in response to a screen question it recalls the last response to a similar question. ^R is described as 'RECALL' in some help messages, but not in the user guide.

It is quite useful to make a list of the few major differences between Newword and Wordstar. Information about Newword is limited to the rather unsystematic and poorly-indexed user guide and the expensive Newword Encyclopedia, but Wordstar must be one of the most thoroughly documented applications programs which have ever been written, and most of this information is equally applicable to Newword. ★

Anagram by T. Hallam

```
5 PRINT CHR$(28)
10 DIM D(30)
20 PRINT : INPUT "ENTER WORD ";A$: LET L
=LEN (A$): LET X=L: IF X>30 THEN  GOTO 2
0 ELSE  GOSUB 30: GOTO 20
30 LET D(X)=X
40 IF X>2 THEN  LET X=X-1: GOSUB 30
50 IF X=2 THEN  PRINT A$,;
60 LET A$=A$(X)+A$(1,X-1)+A$(X+1,L-X)
70 LET D(X)=D(X)-1: IF D(X)>0 THEN  GOTO
 40
80 LET X=X+1: RETURN
```



The listing above is a recursive program that prints all combinations of the word entered.

The maximum number of characters is 30, but as 7 characters has five thousand combinations and takes six minutes to list words longer than this seem never ending.

The listing below is the same program with lines thirty to eighty in machine code, which reduces the time taken by 80%.

The comments refer to the BASIC line numbers the code replaces.

```
10 CODE

4007            LD HL,START
400A            LD (#FA8C),HL
400D            RET
400E X:         DS 2
4010 LEN:       DS 2
4012            RET
4013 SHUFFLE:LD HL,#8000
4016            LD A,(X)
4019            LD L,A
401A            LD C,A
401B            LD B,0
401D            DEC C
401E            LD D,H
401F            LD E,L
4020            DEC HL
4021            LD A,(DE)
4022            LDDR
4024            LD (DE),A
4025            RET
4026 PRINTAS:LD A,(LEN)
4029            LD B,A
402A            LD HL,#8001
402D LOOP:      LD A,(HL)
402E            CALL #0CAB
4031            INC HL
4032            DJNZ LOOP
4034            LD A,9
4036            CALL #0CAB
4039            RET
403A START:     LD HL,#8100;LINE 30
403D            LD A,(X)
4040            LD L,A
4041            LD (HL),A
4042 FOURTY:    LD A,2;LINE 40
4044            CP L
4045            JR NC,JP1
4047            LD A,(X)
404A            DEC A
404B            LD (X),A
404E            CALL START
4051 JP1:       LD A,(X);LINE 50
4054            CP 2
4056            CALL Z,PRINTAS
```

```
4059          CALL SHUFFLE;LINE 60
405C          LD HL,#8100;LINE 70
405F          LD A,(X)
4062          LD L,A
4063          DEC (HL)
4064          XOR A
4065          CP (HL)
4066          JP C,FOURTY
4069          LD A,(X);LINE 80
406C          INC A
406D          LD (X),A
4070          RET
```

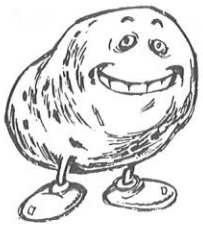
```
Symbols:
SHUFFLE4013X400E
LEN4010PRINTAS4026
LOOP402DSTART403A
FOURTY4042JP14051
```

```
20 PRINT CHR$(28)
30 PRINT : INPUT "ENTER WORD ";A$: POKE
16398,LEN (A$): POKE 16400,LEN (A$): FOR
 X=0 TO LEN (A$): POKE X+32769,ASC(A$(X+
1)): NEXT X
40 CODE

41F2          LD HL,(#FA8C)
41F5          JP (HL)
41F6          RET

Symbols:


50 GOTO 30
```



The above program will only run on the 512, because it uses #8000 to store A$.

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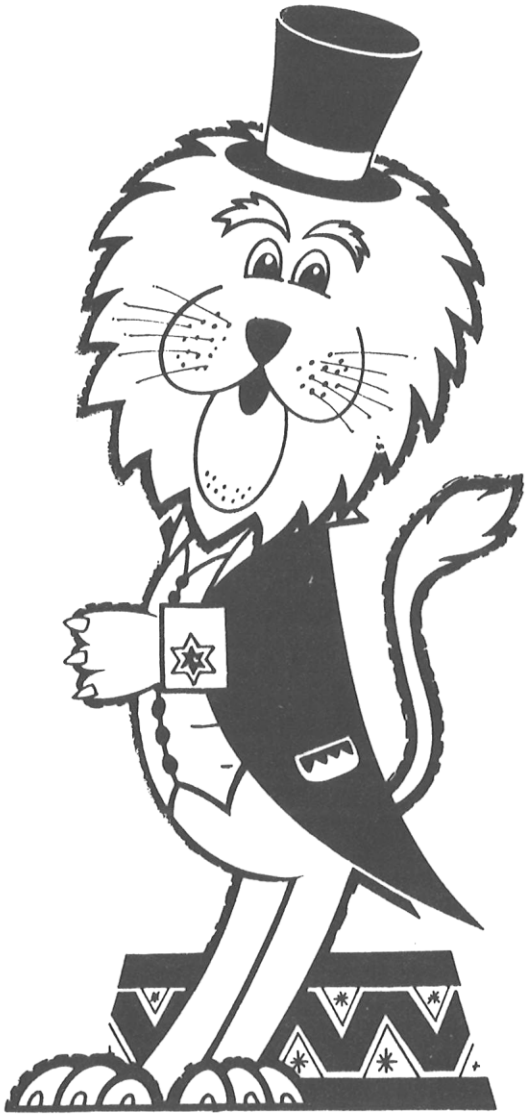

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STOCK NO.	MANUFACT. REFERENCE	TITLE	TYPE	RETAIL PRICE INCL.VAT	MEMBERS PRICE INCL.VAT
7279	00032	LITTLE DEVILS	G	6.61	5.95
7280	00024	LORDS OF TIME	G	9.95	8.96
7300	00035	MISSILE COMMAND & ARCADIANS	G	6.61	5.95
7301	00070	MAN FROM GRANNY	G	6.61	5.95
7302	00104	MANIC MINER (TEMPORARY NOT AVAILABLE)	G	7.72	6.95
7305	00022	MATHS 1	E	9.94	8.95
7306	00013	MAXIMA	G	7.72	6.95
7307	00086	MEMOCHEQUE	U	7.72	6.95
7308	00075	MEMOSKETCH	U	8.83	7.95
7309	00075D	MEMOSKETCH SDX (DISC)	U	9.94	8.95
7310	00089	MINER DICK	G	7.72	6.95
7311	00044	MISSION ALPHATRON	G	6.61	5.95
7312	00030	MISSION OMEGA	G	6.61	5.95
7313	00054	MURDER AT MANOR	G	8.28	7.45
7314	00010	MUSIC PAD	U	7.72	6.95
7333	00003	NEMO	G	7.72	6.95
7334	00131	NETWORK LOADER	U	9.94	8.95
7354	00112	OBLITERATION ZONE	G	7.72	6.95
7355	00045	OBLOIDS	G	7.72	6.95
7356		ONE MAN AND HIS DROID	G+J	5.50	4.95
7375	00129	PAINTBOX	U	6.61	5.95
7376	00001	PAYROLL	U	23.61	21.25
7377	00005	PHAID	G	7.72	6.95
7378	00061	PHYSICS 1	E	9.94	8.95
7380	00012	PONTOON & BLACKJACK	G	7.72	6.95
7381	00009	POT HOLE PETE	G	7.72	6.95
7382	00040	PURCHASE LEDGER	B	14.17	12.75
7402	00048	QOGO	G	7.72	6.95
7403	00076	QOGO 2	G	7.72	6.95
7404	00095	QUANTUM	G	6.61	5.95
7405	00109	QUAZZIA	G	7.72	6.95
7427	00064	RETURN TO EDEN	G	9.95	8.96
7428	00020	REVERSI	G	8.83	7.95
7429	00114	ROLLA BEARING	G	7.72	6.95
7430	00100	RUTHLESS B.	G	3.83	3.45
7450	00002	SALES LEDGER	B	17.50	15.75
7451	00029	SALTY SAM	G	6.61	5.95
7452	00113	SEPULCRI SCELERATI	G	7.72	6.95
7453	00101	SLOOPY'S CHRISTMAS	G	3.83	3.45
7454	00116	SMG	G	7.72	6.95
7455	00049	SNAPPO	G	7.72	6.95
7456	00140	TOURNAMENT SNOOKER	G	8.83	7.95
7457	00023	SNOWBALL	G	9.95	8.96
7458	00036	SON OF PETE	G	7.72	6.95
7459		SOUL OF THE ROBOT	G+J	5.50	4.95
7460		SPELLBOUND	G+J	5.50	4.95
7461	00026	SPELLI-COPTER	G	7.72	6.95
7462	00017	STAR COMMAND	G	7.72	6.95
7463	00014	SUPA CODER	U	8.83	7.95
7464	00084	SUPER BIKE	G	6.61	5.95
7465	00004	SUPER MINEFIELD	G	7.72	6.95
7466	00093	SURFACE SCANNER	G	7.72	6.95
7490	00039	TAPE TO DISC	U	7.72	6.95
7491	00007	TAPEWORM	G	7.72	6.95
7492	00088	TARGET ZONE	G	7.72	6.95
7493	00118	THE DESIGNER	U	9.95	8.96
7494	00128	THE WALL	G	6.61	5.95
7495	00051	THE ZOO GAME	G	7.72	6.95
7497	00006	TOADO	G	7.72	6.95
7500	00018	TURBO	G	7.72	6.95
7520	00117	USER BASIC	U	9.95	8.96
7521	00117D	USER BASIC SDX (DISC)	U	11.05	9.95
7522	00079	USER EXTEND	U	8.83	7.95
7523	00027	UTILITIES 1	U	7.72	6.95
7524	00027D	UTILITIES SDX (DISC)	U	11.05	9.95
7542	00091	VERNON & VAMPIRES	G	6.61	5.95
7566	00060	WORD & PICTURE	E	9.94	8.95