

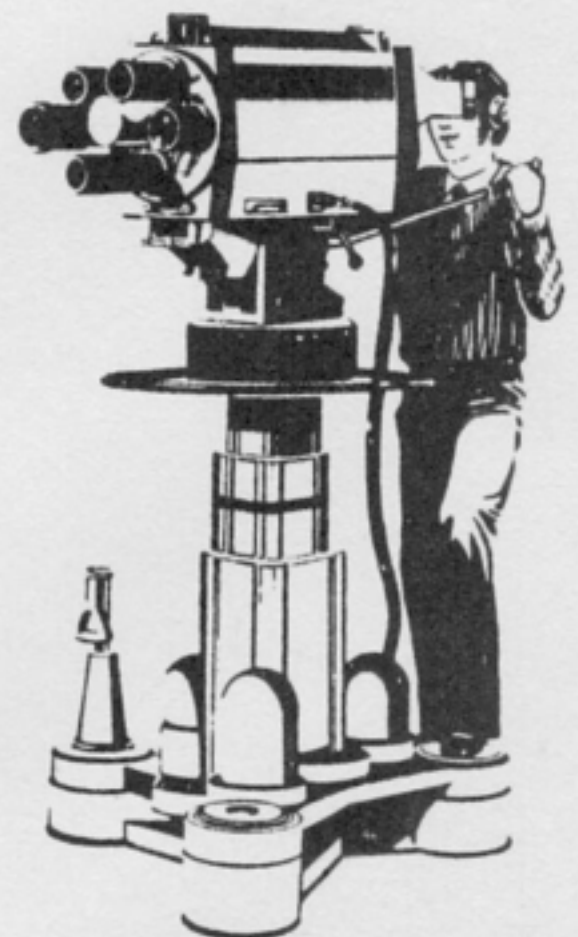
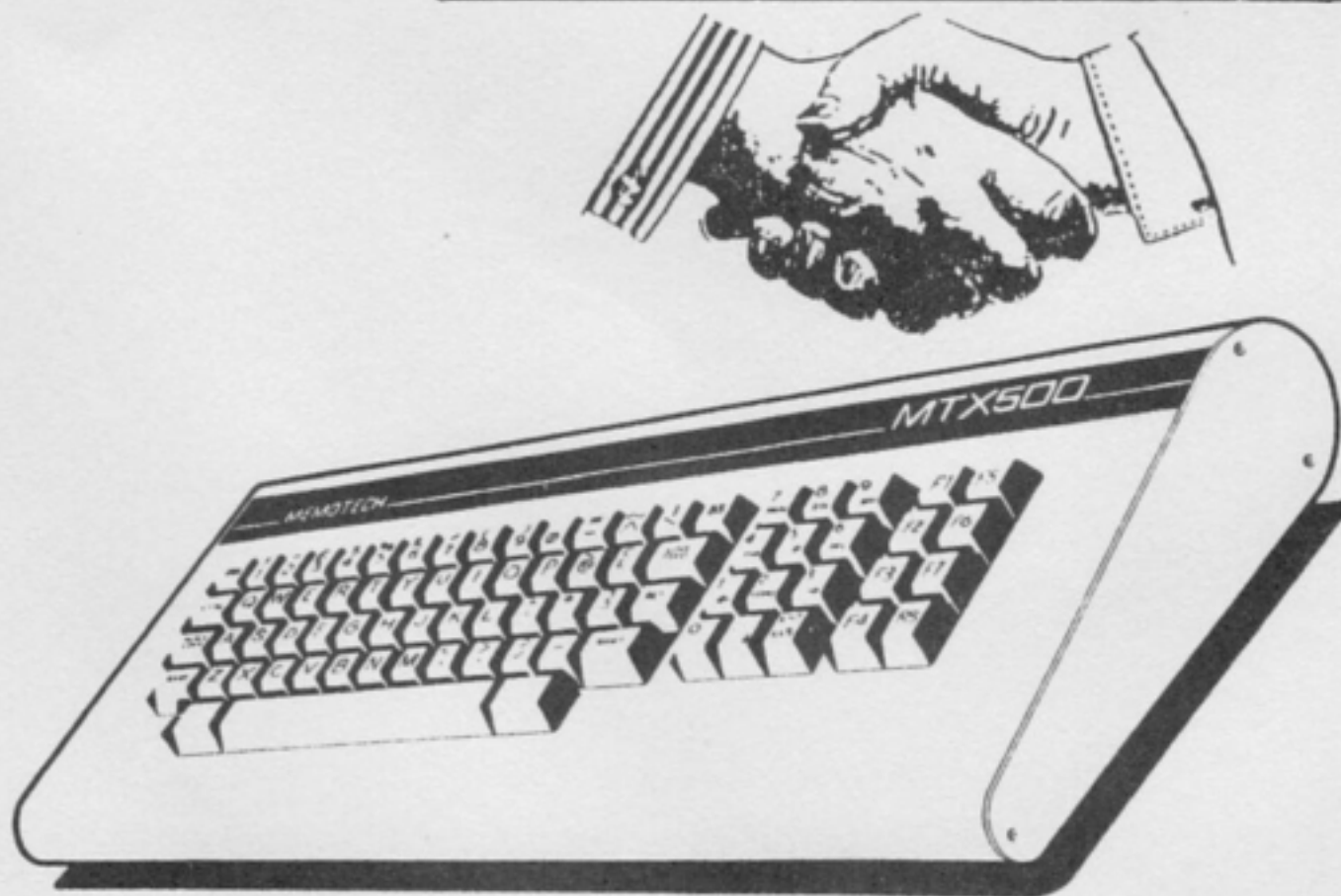
VOL 0010  
NUMBER 2

# memopad

Memotech Computer User Club Magazine

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## Editorial

Gradually the MTX is being recognised by software writers. This must be good news to all of us who have devoted time to this wonderful machine. Aviation Software have released a series of specialist programs that provide a look-up package for pilots and a tutorial for trainee pilots. The price has not yet been made clear but from what I have seen of the various programs they are excellent tutorials that cover such subjects as AIRSPEED, AIRCRAFT MAGNETISM, PILOT NAVIGATION, RELATIVE VELOCITY, MAPS AND CHARTS, INTRODUCTION TO MAPS AND CHARTS, and the initial release totals ten packages. I understand that there is to be a special computer that will plug into the MTX to give an interface between some of the future releases. We will definitely keep you posted on this subject as we obtain more information.

You will also be pleased to hear that we have tracked down, more by luck than good management, the authors of MCODER and have signed them to a contract we SYNTAXsoft. The program has now been updated and is given a new title SUPA-CODER. It is now available and for those of you who do not know the program, it is a INTEGER COMPILER that turns your programs into machine code by compilation, and will speed up your creations by a significant amount.

Another piece of good news: Memotech have agreed with our point of view and are intending to take full page adverts in the December editions (out November= of WHICH MICRO & P.C.W. Also, it is hoped that, jointly, Memotech and ourselves will advertise in the Spectrum orientated magazines with the hope of catching some of the Sinclair users who are looking to move from their existing toy to a better machine.

This month we are offering a £20.00 voucher to anyone who sells an MTX 512 at the new price of £129.00 to their friend or friends - if you are lucky to have more than one ! You can collect as many vouchers as you like ..... there are no restrictions.

It can almost be stated that the Amateur Dramatic Society has been promoted to a Repertory Company !

A final piece of good news & it looks possible that the Finnish Distributor has won the contract for the schools in Finland.

If Memotech will only have faith in their machine it is possible, just possible, that we may reach our ultimate objective.

You will also be pleased to hear that member renewals are running at 90% which has surpassed our predictions.

Finally, I am in the process of putting the finishing touches to a book which has not been announced called MACHINE CODE AND THE MTX. This is a tutorial that starts with how to use the assembler etc and then deals with machine code, an overview of the MTX, how use VRAM and the VDP and will be full of hints and tips. Because this book does not rely on any outside help, I can assure you that it will see the light of day. During the next three weeks I will be attending various meetings with people who I am under contract with, but I hope to have the book ready for sale by the end of November.

Keep on tapping !

*Zh*

## GENPAT HIT LIST ....

This chart is compiled purely on the sales of software within the Club and will be updated every month.

### arcade

1	MEMOSKETCH	SYNTAXSOFT
2	ESCAPE FROM ZARCOS	MEGASTAR
3	FELIX IN THE FACTORY	MICROPOWER
4	DENNIS AND THE CHICKEN	PANSOFT
5	EDASW	SYNTAXSOFT
6	DOGO 2	MEGASTAR
7	DR. FRANKIE	SYNTAXSOFT
8	SON OF PETE	MEGASTAR
9	CHAMBERLORDS	MEGASTAR
10	FLUMPOX	SYNTAXSOFT

### adventure

1	EMERALD ISLE	LEVEL 9
2	THE KEYS TO TIME	SENTIENT
3	MURDER AT THE MANOR	SENTIENT
4	SNOUGBALL	LEVEL 9
5	ADVENTURE QUEST	LEVEL 9

### educational

1	FIRST WORDS	CONTINENTAL
2	SPELLICOPTER	SENTIENT
3	HELLI MATHS	SENTIENT

## High Scores

Can you do better?

COLDRINE	12,250	Nic. Joynton
ASTRO-PAC	185,990	Richard Nash
BOUNCING BILL	128,142	Alan Dobson
SHARPO	126,688	Richard Franks
KNUDLES	990,990+	Sally Street
CHAMBERLORDS	Completed 6 wins	M. Allcorn
MIPO	17,610	Richard Nash
CONNA	8,924	Richard Nash
MISSION ALPHATRON	68,250	T. Eriksson
TAKEDOWN	175,980	Richard Franks
TOKOO	178,282	Capin Caunt and Nicholas Locke
POT HOLE PETE	106,630	Richard Franks
MAXIMA	500,000	Virginia Parton (5 ships left)
STAR COMMAND	140,430	Ian Nicholas
PAID	26,000	Sally Street
ORLOIDS	57,000	P. Crighton
KELOIDE	82,253	Richard Nash
3D TACHYON FIGHTER	10,700	Lena Winkler
CONTINENTAL RAIDERS	109,240	Sean Huerty
BLUEROO	148,283	Ellenbeth Nelson
QUANTUM	6	M. Allcorn
DOGO 2	205,000	R. Siddall
MINETOLD	1,500	David Nash
FLUMPOX	166,690	Andrew Miller
TURBO	15,630	N. Crighton
FATHERS DEEP	2,300	Leslie Banks
AGRIATOR	203,680	Richard Franks
FIREHOUSE FREDDIE	29,620	T. Eriksson
DOGO	43,960	T. Eriksson
ARCADIANS	25,900	Adrian Joynton
MISSILE COMMAND	27,500	Adrian Joynton
LITTLE DEVILS	34,320	Leslie Banks
FELIX IN THE FACTORY	11,050	Richard Nash
HUNCHY	7,008	R. Harmer
SON OF PETE	8,051	Gavin Gaunt
INAMURAS	16,000	T. Eriksson
ESCAPE FROM ZARCOS	36 Items	R. Siddall
SALTY SAM	40,842	Andrew Johnson
MISSION ODESA	9,350	R. Harmer
ICEBERG	17,431	Alan Dobson
SNOUGBALL	450	P. Crighton
EMERALD ISLE	300/1000	Richard Franks
SUPERPINE	23,964	B. Clark
REVERSI	beaten by 47	Richard Franks
DOXLEBAG	3,440	M. Allcorn
DR. FRANKIE	19,320	D. Banks
TARGET ZONE	8,795	M. Allcorn
PIRER DICK	22,520	R. Siddall
JUMPING JACK	12,000	Nic. Joynton
SURFACE SCANNER	10,000	Alan Banks

Nike Nash has completed Doko 2 and has quoted the final message - "At last, you have found the Dogen diamonds"



# Reviews

## Syntaxsoft

### QUANTUM

This is an excellent game, so do not be put off by the price. Though there is not much to the game, it is well designed. The title screen was created by the use of a very useful utility called Memosketch.

The object of the game is knock down the outer walls of four castles, and kill the 'kings' inside. This is done with the aid of your Quantum ball and your magic shield. Bouncing your ball off your shield will slow it down, but it is possible to catch the ball and re-aim it.

The graphics and colour are very good, being loaded as a screen prior to the game. The sound is only reasonable, and this lets it down a little. It is fairly easy to control, though when the ball speeds up, you may find it difficult to dodge, and thus get knocked out for a little while.

### Marks out of Ten

Graphics:	8
Colour:	8
Sound:	7
Control:	7
Value:	8

Reviewed by  
T. Smith

Altogether it is a very good game for the price the club is charging.

## PANsoft

### GHOSTLY CASTLE

This is an inexpensive game, and by inexpensive I do not mean poor quality. It is a good adventure, though there is much description, yet there seem to be many locations. If in some locations you get stuck, this is because you are not carrying the correct item/items.

So far, I can find no particular objectives for this game apart from collecting various useful and valuable objects, and find your way round.

The game is not very logical, as in certain situations you must use certain words otherwise it will not work, and over-all the vocabulary is quite limited. Because of the poor description there is not much atmosphere to the game. Even so it is quite good.

### Marks out of Ten

Storyline:	6
Logic:	6
Vocabulary:	5
Atmosphere:	5
Value:	7

Reviewed by  
T. Smith

Quite good if you do not want a serious adventure, but be prepared to spend a while finding out words.

## Megastar

### SURFACE SCANNER

When I first loaded the game I felt that I had seen this lot somewhere before. It had a very similar screen layout to MISSION ALPHATRON by the same author, a scene of mountains along the bottom of the screen with the space craft moving across from left to right. But when it ran - what a difference! This is one of the fastest games going with plenty of action. The craft can be controlled up or down



and it can be made to go left or right. (This last effect is rather disconcerting as the whole screen shifts to leave the craft at the trailing edge of the screen firing inwards).

The opposition is numerous, varied and very devious. There are simple boxes that fly in at an angle, parachute bombs floating gently around the screen, green things that hover round the mountain tops and the evil yellow crosses that move randomly all over the screen at great speed. With that lot there is little chance that you will see the second screen (I have only seen it once - the mountains change shape).

There are a number of little extras that help to make this game a cut above the rest. Each of the four craft has three "smart bombs" which will destroy all nasties shown on the screen. (Good for points!) The action can be frozen by the use of F4 as a toggle - a great help when the pace gets too hectic. But best of all are F1 and F5 which turn the sound on and off!

To sum up; a good arcade game with adequate graphics and sound, the format has been tried before with some success but this time it works exceedingly well. This is one for the collection

---

## PANsoft

### COMBAT

At the price of 2.95, this is not a bad game. It goes under the label of Pansoft, Syntaxsoft's low cost label. There is much change throughout the game yet it is still enjoyable.

The object of the game is to knock the bricks out of the wall, and either avoid them, or shoot them as they fall. If you are hit by a brick you will be killed. If you make a hole through the wall, then you will go onto the next screen. Occasionally, a strange blue thing will repair one level of bricks, and you will have to knock more bricks out.

The graphics are quite good, but unfortunately the colour is not of the same standard. There is little sound, though a few poor effects. The controls are easy to use, there being only three keys.

### Marks out of Ten

Graphics: 6  
Colour: 6  
Control: 7  
Value: 7

Reviewed by  
T. Smith

Not a bad game, and worth buying at this price.

---

## Syntaxsoft

### JUMPING JACK FLASH

This is an excellent game, and one the family can play and enjoy. A useful part of the game is being able to change the screen you start on, using the up and down cursor keys. The game is very good value, and don't go by first impressions.

The object of the game is to help Jack Jump through the many floors and of the underworld, which have holes in. Escape from one screen, and move onto a harder one. Hit your head, get run over, get blown up or have seaweed dropped on you, and you may have to begin the screen again. Try all fifty screens.

There are many graphics which are highly coloured and smoothly animated, (look out for the 'Skiing MTX'). There is a catchy tune throughout the game, and quite a few good sound effects. The game is easy to control on the lower levels but becomes more difficult as the game speeds up.

### Marks out of Ten

Graphics: 8

Colour: 8  
 Sound: 8  
 Control: 8  
 Value: 9

Reviewed by  
 T. Smith

This is a great game, but it doesn't look good on first impressions. Probably one of the best games for our computer at the moment.

## Syntaxsoft

### Memocheque

I found this program a very difficult one to get into, to start, but later with a lot of work I began to realise how good this program is.

Accounts can be laid out and debits such as standing orders can be removed from the current account automatically. Then cheque payments can be entered (but remember to put a - sign in).

Bar charts and pie charts can be used and data is entered into these automatically. Accounts can be made up weekly or monthly and it is important to do this.

There is a colour selection available, but this is only for preference of vision. I would have liked to see a selection of colour by account and possible to show when an account is in the red.

I feel that this is a good program, but it does take time to get into it. I am still learning how useful it is.

Reviewed by J.W. Smith

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# Syntaxsoft

# Special Offer



## EDASM PATCH

L R Whalley

EDASM SHORTCOMING

I have found that while EDASM is for me an excellent MACRO ASSEMBLER, there is a drawback, that is, you cannot save nor load program's without EDASM being present. This posed a problem as I wanted to run a program on a MTX500. Also I wanted to run it on my MTX512 without loading EDASM. After a while I came up with the program listed below. After first making a note of the start and end address of the EDASM originated program, you simply press the reset keys and load in the listing below. This will ask for the start address and then the length of the program, after entering these you type in save <RET> or load <RET>.

The program in the listing is about 400 bytes long, therefore it is assumed that the program to be saved/loaded is less than 32K long and is in memory at <8400 Hex> <33792 Dec> upwards, thus allowing it to run on both machines.

All values entered are to be in decimal

So to save an EDASM program enter the start address then the program length then save <RET>  
The program is then saved to tape as a data file. To load it enter the same parameters as before and load <RET>. Of course you need to specify the start and length on the load instructions of your program. ★

THE SAVING OR LOADING WILL START AFTER PRESSING <RET>  
TYPE IN SAVE OR LOAD FOLLOWED BY <RET>

THE SAVING AND LOADING OF EDASM ORIGINATED PROGRAM SO AS THEY WILL RUN ON BOTH MTX500 AND 512 WITHOUT THE NEED FOR EDASM BEING PRESENT.

By L.R.Whalley.

20 CODE

4007 DW 0; START ADDRESS  
4009 DW 0; PROG LENGTH  
400B RET

Symbols:

21 GOTO 25  
22 CODE

404A LD HL, (#4007); START ADDRESS  
404D LD DE, (#4009); PROG LENGTH  
4051 CALL #0AAE; SAVE/LOAD ROUTINE  
4054 RET

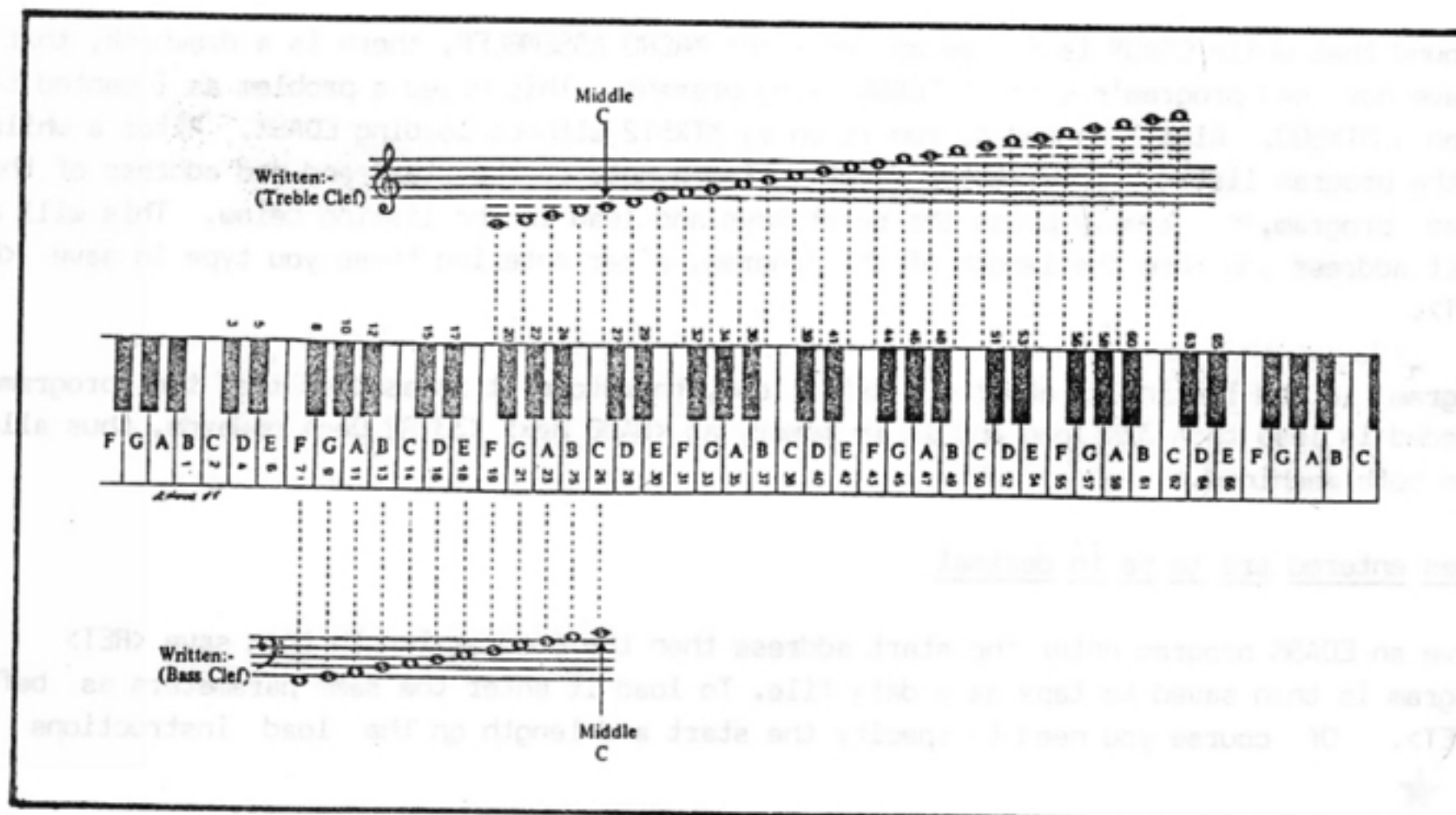
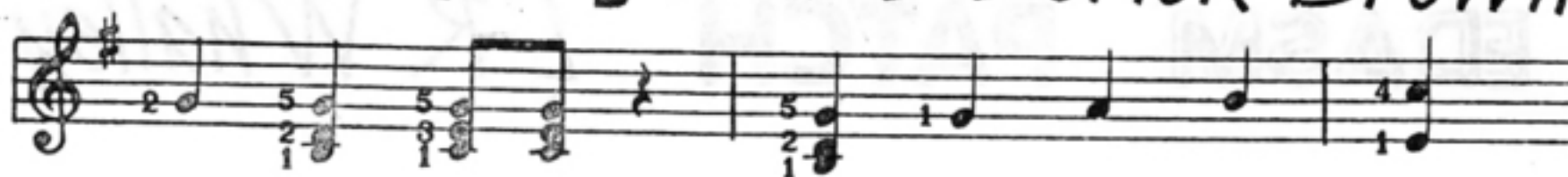
23 RETURN  
25 PLOD "PROG"  
30 CSR 0,18: INPUT "START ADDRESS ";SA  
40 INPUT "PROGRAM LENGTH ";PL  
60 POKE 16391,MOD(SA,256)  
65 POKE 16292,INT(SA/256)  
70 POKE 16393,MOD(PL,256)  
71 POKE 16394,INT(PL/256)  
72 PLOD "PROG2"  
74 CSR 0,12: INPUT SL\$  
76 IF SL\$="SAVE" THEN POKE 64872,0

77 IF SL\$="LOAD" THEN POKE 64872,1  
96 PAUSE 1000: CLS  
97 IF SL\$="SAVE" THEN CLS : CSR 0,10: PRINT "DATA SAVE FROM ";SA;" LEN ";PL  
98 CSR 0,11: PRINT "-----"  
99 IF SL\$="LOAD" THEN CLS : CSR 0,10: PRINT "DATA LOAD FROM ";SA;" LEN ";PL  
100 CSR 0,11: PRINT "-----"  
130 GOSUB 22  
140 CSR 0,18: PRINT "DONE ....."  
150 IF SL\$="SAVE" THEN GOTO 180  
160 RAND USR(SA)  
180 STOP  
190 SAVE "EDASM/ANY"  
199 GOTO 20



# Take A Note (any note) Derick Brown

## Part 2



To change music notation into numbers I use a miniature keyboard which covers all the notes within the range of the MTX. For ease of reference, the notes are numbered alongside. I made mine by cutting out a keyboard from an advertisement in a magazine, making several photostat copies and joining them until of the required length. If the Editor agrees to print one on the outside edge of a page I suggest you cut it out and mount it on some stiff cardboard. Some protection with clear cellophane will keep off grubby finger-marks when it is handled. To help the beginner, I have drawn in the musical staves exactly opposite the notes they relate to.

For those who cannot read music - why not learn now? It's not that difficult. Notes are read as letters - from A to G - the same sequence repeating over and over again. The black notes are sharps or flats - sharps carry the same letter as the white note to its left; flats carry the same letter as the white note to its right. We know that there are 12 semitone steps before we are back at our starting point, so for our purposes we can say that a tune can be pitched at 12 different levels (keys). By using our numbers the pitch or key of a tune can be changed very easily so long as we keep the same respective distance between the numbers.

Any kind of music can be used - hymn books, piano, piano accordion or even organ arrangements. To see if your particular choice is suitable, first check its highest and lowest notes. These should come within our available range. Next, if at all possible, make a photo-stat copy of the music as you will need to number the bars. Now take a look at the shortest (time value) note printed in any bar as this will determine the unit in which the notes can be represented. Most popular tunes are written in either common or 4/4, 3/4 or maybe 6/8 time. If in 4/4 and the shortest value note is a quaver then we shall require 8 units of note values per bar. In 6/8 time we can probably work in 6 units per bar. I have successfully transcribed "The Flight of the Bumble Bee" using 16 units per bar and am currently working on "The Arrival of the Queen of Sheba" which required 5.696 DATA numbers. You will need plenty of patience!

Having selected the tune we now require a system for writing down the corresponding note numbers and I use what are termed DATA sheets. Using a sheet of paper about the size of Memopad I draw a series of boxed grids, each being divided into 4 horizontal and 9 vertical sections. These are arranged in two columns of 9, the space between the columns approx. same as the vertical division which permits two adjacent boxes to be joined together by adding a few lines if one is required to work beyond 9 units per bar. Photostat copies are made from the original.



Each horizontal section is assigned to a sound channel. Four channels? Yes, we can use 0,1,2 and 4 as the numbers repeat again. On your first DATA sheet proceed to number OVER the boxes from 1 upwards. One box for each bar or part bar of the music. Later on, at the SIDE of each box, you will enter another number, this corresponding to the DATA line number in the listing, hence it will be easy to locate just where you are when it comes to sorting out the "bugs." I find that no matter how careful I am, there are always some errors which creep in particularly double commas between the DATA numbers, and they can be difficult to spot on the screen.

With the miniature keyboard suitably positioned, and having established the unit value per note, you are ready to begin entering the number(s) for the note(s). I prefer to use a pencil as errors can be changed easily. To avoid getting in a muddle, deal with the top notes of the upper stave first. These are usually the melody of the tune - enter them in the top row of each box. Tunes do not always begin on the first beat of the bar, in which case your first number will be positioned relative to where it occurs in the bar. Any rests (silence) encountered are entered according to their duration with 67. Should there be just one note for the length of the bar, enter that note's number in for each unit. Any two or more adjacent notes of the same pitch joined together with a slur are treated in the same way - enter in numbers for duration of their value. A long slur denotes phrasing - don't get confused. Beginners are reminded to be careful - music which shows no key signature at the beginning is said to be written in the key of C major (or A minor) and is played using only the white notes - unless there are accidentals (flats or sharps) inserted. This is the easiest key to work in. Where the key signature shows one sharp or one flat (or more in either case) remember this applies to ALL the notes of the same letter name, not just those on the line where the sharp(s) or flat(s) are printed. A natural  $\natural$  indicates that a note is restored to its former pitch, and is operative throughout the BAR in which it occurs. All notes of the same letter name will be affected.

Having entered the top (melody) line, go through the music again and do the same for the bottom line in each box - the bass. In piano music the left hand provides the rhythm which is usually note/chord/note/chord in 4/4 time. This permits one to enter a 3 note chord between two adjacent bass notes. You might find that there are more than 4 printed notes at any one time so one has to be selective. An elementary knowledge of chord construction will prove useful. A common chord requires three notes - its ROOT, THIRD and FIFTH - from the SCALE built upon the root note. Perhaps I should make it clear that these are not semitone intervals. The three notes of a chord can be in ANY order: example CEG : EGC : GCE will all sound the chord of C major. If a chord appears with 4 notes, any 2 of which are the same letter, it is usually the root note which has doubled. Seventh chords and diminished chords require 4 separate notes, as do many others, and to help you I'm including a table which shows how most of the more common chords are derived. The key of C major has been taken for illustration, but remember - the same principles apply to ALL keys.

Chords are shown in root position. The chords of the 9th, major 9th and 11th will be found in organ music where the root of the chord would be played by the pedals (hence it is not shown in the table). Note that the semitones from 13 onwards start the second octave - my table is the best way I can think of to explain how chords are formed. The last chord - the diminished - is different from all the others as the four notes of which it is comprised are the notes of three other diminished chords of the same letters. There are 3 DIFFERENT diminished chords notewise. Augmented chords are similar, there are 4 different ones.

To return to the DATA sheets - when all the notes have been entered fill any vacant spaces with 67. There must be a number in every unit - otherwise the values will be sent to the wrong channels. On the music, any 2 or more adjacent notes of the same letter will, unless joined by a slur, need to sound separately, so take a coloured pen (I use red) and draw a line between them in the boxes. Pay attention to the number of units per note as lines in the wrong place now will create havoc later on. Do this for each channel.

It might be as well at this stage to make a note over the boxes if a change in volume / speed of playing is called for as it is from the DATA sheets that the instructions for the listing are prepared. Assign a channel to each of the four lines: regard each column of 4 numbers as one X. Go through the boxes in numerical sequence. As you reach each coloured line make a note of the count and the channel to which it refers. The sound will need to be cut off at this point in the listing. Note the count for any volume/speed changes. The final total should be equal to the number of bars times the number of units per bar. If all is correct you can start the listing. ★

# SOUND INPUT From Cassette

## Peter Knaggs

The following is the source code to a routine that will accept sound from the cassette deck and report it to basic. If you take the MIC jack out and leave the EAR jack in your tape deck and then press record and play, you will have to push the anti-record lever at back left of the cassette bay, then this routine will operate.

I have written the routine to be completely position independant and as such once written into a CODE line there is no need to re-assemble it when adding code in front of it.

The method of accepting sound:

Firstly a quick delve into the Cassette I/O routines in the ROM will tell you that incoming sound is detected by the CTC which in turn gives the Z80 an Interrupt. I have programmed the CTC to give an interrupt after it has heard 10 sounds. When an interrupt occurs I add it to the noise length count (BC) and then go back to wait for another noise. If a sound is not registered for a given period then it is deemed that the sound has stopped, and the length of the sound is returned back to basic.

10 GOTO 200

100 CODE

```

4010      DI                      ; Disable interrupts
4011      IM 2                    ; Set CTC interrupt mode
4013      LD A,#FF
4015      LD I,A                  ; Set Hi byte of Jump Table
4017      LD A,#F0
4019      OUT (8),A               ; Tell CTC the low byte of Table
401B      NOP
401C      LD A,3
401E      OUT (8),A
4020      OUT (9),A               ; Turn CTC interrupt channels OFF
4022      OUT (10),A
4024      OUT (11),A
4026      NOP
4027      LD HL,#FD77             ; Point to some spare memory
402A      LD (H),HL              ; Set into Jump Table
402D      LD (HL),#2E             ; Place Interrupt code into memory.
402F      INC HL
4030      LD (HL),L               ; LD L,#F7
4031      INC HL
4032      LD (HL),#FB             ; EI
4034      INC HL
4035      LD (HL),#ED
4037      INC HL
4038      LD (HL),#40             ; RETI
403A      LD A,#C5
403C      OUT (11),A              ; Tell CTC to count TAPE input
403E      LD A,10
4040      OUT (11),A              ; Count for 10 sounds before giving Interrupt
4042      NOP
4043      LD BC,0                 ; Zero out length counter
4046 SLOOP: LD DE,#1000           ; Set Delay value
4049      LD L,E                  ; Reset interrupt flag
404A      EI                      ; Turn the Interrupts back on
404B      LD A,L                  ; Get interrupt flag
404C      OR A                    ; Has an interrupt occurred
404D      JR Z,NOINT              ; No test for end of sound

```



```

404F      INC BC      ; Add one to length counter
4050      JR SLOOP    ; Go back for another sound
4052 NOINT: DEC DE      ; No - Decrement delay value
4053      LD A,D
4054      OR E          ; Is it out of time
4055      JR NZ,LOOP    ; No - Loop around again
4057      NOP
4058      DI          ; Disable Interrupts
4059      LD A,#A5
405B      OUT (8),A      ; Set CTC up as for Basic (Count-down)
405D      LD A,#7D
405F      OUT (8),A      ; Tell CTC value to count from
4061      LD A,3
4063      OUT (11),A     ; Turn Cassette input OFF
4065      EI          ; Turn the interrupts back on
4066      RETI         ; Return to basic and Clear Interrupt condition
4068      NOP
4069      RET          ; Their silly RET (Not used)

```

## Symbols:

```

SLOOP 4046 LOOP 404B
NOINT 4052

```

```

200      LET X=USR(16400) : REM MTX-512 value 32784 on 500
210      IF X=0 THEN GOTO 200 : REM No sound - No - Loop back
230      PRINT X; : REM Yes - Display length
240      GOTO 200 : REM Loop back

```

## A word on the CODE:

The first part is turning off possible interrupts, I then set up the CTC to the Interrupt Jump Table (#FFF0), the high byte of the address goes into register I while the CTC has the lower byte (#4010 - #4019). I then turn off all current CTC functions (#401C - #4024). After this I place the actual interrupt handling code into a bit of un-used memory and set the Interrupt Jump table value to go there (#4027 - #4040). All this code will do is set the L register to a Non-zero value, so as to indicate to me that an interrupt has occurred. I am using L as an interrupt flag. The actual code placed into memory is:

```

FD77      LD L,#F7      ; Set interrupt flag
FD79      EI          ; Turn interrupts back on
FD7A      RETI         ; Return from and clear interrupt

```

The next section of code tests the interrupt flag (the L register) to see if an interrupt has occurred, if so then it will add one to the length of the sound counter (BC). If the CTC has not picked up a noise for a given length of time then the routine will return the value in BC back to basic. As such this routine is quite sensitive enough, but by altering the CTC set up count and delay you can alter its effect quite drastically (#4043 - #4055).

The last section is the exit back to basic, this has to reset the CTC interrupts back to the normal basic way. It does this by setting a count value 7D, every time the CTC counts down to 0 from 7D it will cause the Basic interrupt, try changing this value, it gives some interesting effects, (Try setting it to 1). Finally it turns off my interrupting and returns to basic clearing any interrupt condition (#4058 - #4066).

NOTE: The use of NOP's as separators as the assembler will not allow empty lines, they are of no use and can be removed.

NOTE: Although the code starts at #4010 this also has no meaning, so the location of the code does not matter.

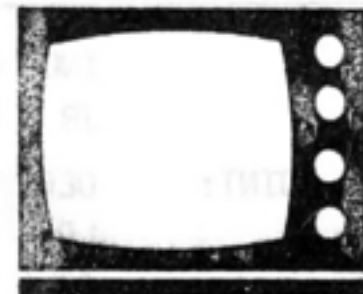
So far we have come up with few applications for this program, if you can think of one, then please use it or let us know.

P.Knaggs of MAX Software, 12 Seymour Rd., Chippenham, Wilts, SN15 3NH Tel: 0249 654940

Sorry forgot; As the BASIC part of this program is so small you can't BREAK out of it by simply pressing the BREAK key. To BREAK out of the program you will need to hold down the BREAK key and then register a sound from the tape deck!! ★

## Review

### THE FIDELITY CTM 1400 COLOUR TV/MONITOR, 14 " SCREEN



This is a pleasant looking unit, consisting of a colour (portable) TV styled like a monitor, with the facility to accept both RGB and composite video signals, and stereo sound, as well as conventional TV signals. As an adjunct to a TV aerial socket, the CTM1400 has what is probably the nearest thing to a standard connector - the SCART or Euroconnector - and my local computer shop was able to supply me with the necessary lead to connect the SCART socket to the composite video and hi-fi outputs of my MTX. (Audio packs, pack No. 668-020) (15 Pounds).

Eight TV channels are available, which may be used in any one of three settings. All eight may be used for TV reception; alternatively, channels 1-7 may be used for TV and channel 8 for computer input from the SCART socket. On the third setting, the unit acts solely as a monitor on all 8 channels.

The controls for volume, brightness, colour and contrast, as well as TV tuning and switching the SCART socket in and out, are hidden behind a hinged panel at the front of the unit, and can be rather fiddly to use though neatly stored.


Resolution is only standard, but the picture is crisp and all 16 of the MTX's colours display very nicely. Switching between TV and monitor modes is easy, and the ability to direct the MTX's hi-fi output through the Fidelity's (admittedly small) TV speaker is a definite improvement over the computer's standard TV sound output.

My only criticism of the actual unit concerns its rather awkward controls and its surprising depth - around 16 inches front to back. I have found it necessary to move my desk away from the wall in order to be able to position the CTM1400 far enough away from my seat for comfortable visibility.

The only failing I have experienced with the display is common to all TV sets to which I have connected my MTX - circles are shown as ovals! However I understand that a qualified television engineer should be able to rectify this annoyance.

Overall, a nice unit with a crisp, colourful display, and a versatile set offering a good compromise between TV and Monitor. The CTM1400 is widely available for around 225.00. A monitor-only version, the CM1400 costs 199.00. ★

CHRIS WHITELOCK



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A new Member would like some help with the following;

As a newly enrolled club member please can you help me with my new Memotech 512 Computer which I use coupled to an ordinary Television receiver.

The problem is I get continuous interference fringebands wandering up the screen, due I think to some local relay station having a channel near to the computer output channel.

This problem must have occurred to other members, is there any way the computer output channel can be moved to one side or the other by altering the tuning on the modulator panel, to cut out this interference which is very noticeable and irritating. (On my VHS Video provision is made for this). The fringebands only occur when the Computer is coupled to the television set which works O.K. on ordinary television broadcasts.

Mr. F. Harrison, 37 Zoar St., Morley, Leeds, LS27 8JB.

The prolific Dr. B. Houghton has discovered more hidden secrets;

#### NEWSTAR

I have been fighting with NewWord and the WordStar Manual, and some of the results may be unknown to some users. Actually, I was searching for Move and Delete Block: I suspect that this is impossible in the ROM version, but if anyone has found it then perhaps he/she would let me know. I have found the following commands:

- ^PD.Toggle on/off Doublestrike.
- ^PT.Toggle on/off Superscript.
- ^PV.Toggle on/off Subscript.
- ^M. Insert CR/Blank Line at cursor position (^N in WordStar).
- ^PD.Non-Break Space.
- ^PF.Phantom (alternative) space.
- ^PG.Phantom (alternative) delete
- ^PL.Force form feed with page break.

In addition to ^PQ and ^PR and their corresponding .XQ and .XR commands, NewWord appears to recognise.

^PE;

^PW;

^PA;

^PN; I assume that these have the same meanings as they have in WordStar, but have not found how to set them (any offers?).

There are also several 'orphan' commands:

^PK (there does not seem to be a 'header' or 'footer' facility).

^P] (!!?)

^P[ (!!!!??).

I append a listing of a very short BASIC graphics program (I'm getting a bit fed up with gigantic externally-compiled efforts!) which may amuse readers and their families: it draws patterns reminiscent of the pin-and-wire designs that used to be a sort of 1960's equivalent of the 'Three Falling Ducks'.

B.HOUGHTON

Paul Schofield of Switzerland has written in with the following comments about his Disc Drive:

Dear Keith, Having been busy converting from PDP to VAX at work recently, I have not devoted too much time to my MTX, however, the arrival of my SDX has generated new interest. In view of the recent correspondence in Viewpoint, you may be interested in a brief synopsis of the problems I encountered in obtaining the new drive.

I first placed an order for a 250K drive with free interface board in January quoting both my GENPAT and credit card numbers. No problem I was told, the drives are not yet ready for shipping, but I should expect delivery in about 2 months. Following the latest news in Memopad I was not too surprised when March came and passed, but by mid-April it seemed time to inquire again. The Sales Department had no record of my order, but assured me that it would have been passed to the Export Department and

suggested that I talk to them. Once again no record of the order. "Can I order one now then?" "Well, actually we were not planning to export these drives, we've not fixed an export price yet."

I'm not giving up that easily! "But I'm paying by credit card and a few pounds either way is not going to make any difference." "I suppose that's O.K., but we will have to get an export licence, so it could be 4 weeks before you get it." I'll be on holiday then, but with luck they keep it at the local Post Office for at least 2 weeks. I return home and rummage through the ton of unsolicited advertising. I find a Memopad and MOC Newsletter, but no slip from the PIT. It's now early in June, it's raining and as some obscure saint died today I don't have to go to work. Decision time; I ring Memotech to cancel my original order and buy an FDX Single Disk System instead. "Oh, Mr. Schofield, have you not received our letter yet? Your disk drive was despatched last Friday." The next day the letter arrives followed a week later by the disk itself.

In fairness, when you eventually get to talk to someone at Witney they are generally very polite and helpful. It's just that when the predicted delivery date has come and gone you don't know where you stand. Sinclair's little cards which invariably come instead of the equipment ordered get a lot of stick, but at least with those you know that your problem is the same as everyone's.

On the subject of phone calls to Memotech: has anyone else noticed that there now appears to be a standard response to technical queries and questions about new software products - "I don't know (or I'm not sure) you should talk to GENPAT." No wonder your phone is so busy!

PAUL SCHOFIELD

One of our members, from 19 Highfield Close, Amersham, Bucks., has the following comments to make:

Dear Sir,

While I am renewing my subscription I thought I would take the opportunity of giving you my views on the current Memotech situation.

In your last editorial you urged us all to become salesmen. Things really must be bad if we the computer users have to sell computers for a company who have failed to support us. Although Memotech have always supported me when I have had any problems with my MTX they have not supported me by promoting their rather good computer, so, with the exception of yourselves, leaving me the computer user with many unfulfilled promises, a small user base making 3rd party support small (when compared to other computers) and a feeling that I could have got better value for my money by buying a different computer. Do Memotech deserve us to sell their computers (and line their pockets) when they clearly don't want to sell the computers, or if they do they are going about it in a strange way.

Moving onto software, I would like to make the following points - I would suggest the poor software sales are due to the type of user attracted to the MTX computers. I would suggest most users bought their MTX not just for playing games but for actually doing something practical, which the MTX's have the potential to do but because of the above has not fully been achieved. Thus although there is a demand for games software, I think people are looking for something practical. You may argue that this type of software exists but I would like to make a further point which applies to all MTX software. This is that all the software seems to be of a similar nature e.g. there are a lot of utilities packages and "Pothole Pete" type games. There is very little original software. I would suggest that most users have a copy of a particular type of software so making the decision to buy a slightly better piece which does almost exactly the same thing a difficult one to justify.

Of course more could be done with (e.g. disc drives) and new users which will perhaps come about with the recent price cuts. But if this is to happen Memotech need to let people know their computers exist and not just leave it to the hard done by user.

Finally, I would like to say that if it had not been for Genpat I would probably have tried to sell my MTX, but I doubt if anyone would have bought it because they would know nothing about it!

Dave Elliot of Liverpool, has some tips for SDX users.

Dear Genpat,

Here is a tip that SDX users might find useful, concerning the renumber program provided with the system.

The program contains a few BASIC lines and then the rest of it is written in assembler which re-locates on running at F000 hex.

The problem with this program is that you cannot load it if you already have a BASIC program in memory. You have to shuffle programs about to and from disc in order to renumber the BASIC program. Here is a way round this:

LOAD & RUN the renumber program RENUM.BAS



Enter PANEL

D EFFC to display 4 bytes before the renumber program

Now type:

00 <RET>

F0 <RET>

32 <RET>

03 <RET>

This puts into these 4 bytes the start address and length of the renumber program

Now press <BRK>, 'B' & 'Y' to leave PANEL

Finally, enter USER WRITE "RENUMBER.RUN",61436,822

This creates on the disc the renumber program as a RUN file.

At any time, even with a BASIC program in memory, entering USER RUN "RENUMBER.RUN" makes the renumber program available without wiping out the BASIC program in memory.

★ R.Lovell has some strong ideas on the design of a new computer.

#### DESIGN OF A NEW COMPUTER

MEMOTECH already have a good design, which is well made and which can be expanded in a limited way. Where it falls down is in its RS232 and disc add-ons. They are expensive and the disc performance is three years out of date (a charitable statement). Because CP/M was too expensive for most amateurs, the Memotech effectively had no software bus, which significantly affected software availability. Any new machine must take account of these omissions.

Memotech has missed the boat on the 16 bit machines. It may be able to get in on the 32 bit processors, of which the 68020 is the one that is up-down compatible in the chip family and is not too difficult to interface to the Z80. It should also give ASSEMBLER compatibility with Apple and Sinclair, thus easing software needs.

The first question then is - should Memotech design a new 32 bit machine that cannot be interfaced to its existing MTX machines. As an amateur, domestic user I cannot afford that answer, so my suggestions for the new machine are as follows:-

1. As I see it, the Z80 can do anything needed in a domestic environment. The 32 bit will be for future intellectual and entertainment pleasure. For industry and commerce it will enable fast complex processing with a very large data base. Thus, the coming mass storage devices MUST BE ALLOWED FOR.
2. Design a tube, or tunnel, so that the new 32 bit can be used with the existing Z80 equipment.
3. Include either MSDOS or CP/M 86 as the operating system, i.e. STANDARD SOFTWARE BUS. A small company cannot afford to write up to date software, so standardisation is essential.
4. The discs to be 3 1/2" micro. They may be more expensive, but they are going to be the standard.
5. It must have a colour output to monitor. There is no doubt that colour graphics of stunning quality will become available for these machines.
6. Try to bundle DR GEM, or its equivalent.
7. Languages to be MS BASIC, BBC BASIC (Z80 based), FORTRAN, ASSEMBLY. These, of course, can be loaded from disc.
8. Interfaces must be provided for laser disc and interactive video. There should be a sufficiency of I/O with access to the busses for future expansion RS232 must be provided. The joysticks and centronics parallel port will be in the MTX.
9. Keep software up to date, attractive and useful. Ditto for hardware peripherals.

Having re-read the above, I don't think that this specification can be built at an acceptable cost. Perhaps the core of the machine could be (2,3,4,5) the remainder being sold as accessories. Thus the nucleus of a "system" computer could be supplied at an acceptable price (as is done with cameras).

One last piece of advice, should Memotech decide to use a 32 bit processor, then they must commit themselves to keeping the new computer technically advanced in the coming years. That includes peripherals and software. If it is not technically advanced enthusiasts will not buy it and spread the gospel. So encourage the enthusiast. (How about Memotech having an open day to show club members round and show off new goodies about to be released).

R.LOVELL

Derek Bergin has some ideas on the future development of the Memotech.

#### Where do we go from here

When I first joined Genpat about 10 months ago Memotech were going through their final phase of advertising the machine and trying to make it into a super-success 'a la Amstrad'. For a variety of reasons, none of which I believe have anything to do with product quality, this attempt failed, and so we are left with what PCW called a "low volume sales computer". To my mind this rather begs the question "where do we go from here?"

Before going any further I should explain from which point of view I am writing this. I am a self employed software engineer specialising in real time test equipment and telecomms., and I wanted a machine at home which would act as a back-up for my work and would also run the standard software for my business. The qualifiers were that the machine needed a decent keyboard, must run CP/M, and should be capable of serious development work, i.e. run Pascal and C compilers in the time it takes me to make a cup of tea, not the time needed to drink it. I also hoped to get a machine which would allow further expansion and had used some decent design techniques, primarily a bus-based unit with space left in the card cage. When I put all these thoughts together and added price I came up with the answer - Memotech.

As I implied above I am very happy with the quality of my machine, a twin disk FDX with 256K silicon disk, (with the exception of the abomination of a flat ribbon cable connecting the 5128 to disk FDX) and find it fulfils the uses for which it was bought. The question of where to go from here does, however, appear to be very much unresolved. There would seem to be four main directions in which the company could expand its business (and any number of combinations thereof):

- a) Continue to concentrate on the "traditional" games market with the present range of machines.
- b) Try and push the FDX range as business CP/M machines.
- c) Go for some form of IBM compatibility.
- d) Jump the 16 bit range and go to the current technology.

Option (a) is almost certainly a loser. Tape only machines are being ignored and the market base is shrinking anyway. The machines could probably be modified to take a 3 1/2" inch disk like the Amstrad but could it be made to the price? somehow I doubt it.

Option (b) could be started up by simply moving the processor and main memory into the FDX box and connecting the keyboard via a serial link - there is no way that the current design would stand up to serious office type use. The addition of CP/M 3 so that programs > 64K could be run would certainly enhance the attraction of the machine. There is a large existing base of CP/M users and a great deal of current software but it again is a shrinking market.

Option (c) would have to be aimed at what the Americans call the grey market. This isn't the supply of dodgy chips but the people who buy machines which are compatible with the ones they use at work. This is apparently prevalent in the States where being a workaholic is fashionable, however there is undoubtedly a similar if smaller market in this country. The FDX unit would again have to be fitted with the processor board - probably 80186 based as that is the cheapest and easiest way of crucifying the IBM on performance. Similarly it shouldn't be too difficult to have a dual processor system, leaving the CP/M unit intact.

Option (d) is by far the most exciting and one in which the company could definitely do well. In the States, Commodore have brought out the Amiga and Atari the ST520. They both have what is on the surface of it a similar specification, 16/32 bit processor, 256K - 1M ram, graphics etc; however, everything that I read and hear from across the pond (I'm linked into the International Unix Network - Usenet) says that the Atari achieves its much lower price by lower perceived quality, rather like comparing the MTX with a 464. (I should point out here that I am only giving an impression - I don't want Atari suing me!!) The result of this is that while people are screaming for Amigas, the developers I'm in contact with haven't stopped drooling over their early released ones yet, the Atari is piling up in the stores. So, Memotech, what about it? How about a 68020 based machine (32 bit for those who get lost in the new rash of numbers) with 512K RAM, 1M mini-floppy, 10M Winchester, and a decent multi-tasking operating system with sensible graphics? None of the basic components are that expensive any more (256K dynamic RAMS are selling for \$2.50) and see Meacomo for a similar operating system to the Amiga - or even licence the same one, after all it's based on the Tripos system from Cambridge University.



We aren't going to see the Amiga over here for quite a while and the ST520 is just a toy, so why not go for the serious market. The entry level machine needn't have the hard disk and so could be quite cheap. If the latest indications from America are anything to go by then the new machines are going to build a large software and user base very quickly indeed and the machine which everyone wants is the quality machine - and we know who builds the best quality machines - don't we?

P.S For anyone wanting a full description of the Amiga see PCW.

PPS. If Memotech read this and decide to produce such a machine - I want to be first on the list.

## Compiler Timing

One of the attractions of languages such as PASCAL & FORTH is that they are extensible in a way which is not seriously possible in BASIC.

Unfortunately, inefficient runtime speeds of user routines in both languages can produce serious delays when they are called repetitively or recursively in Pascal and can spread like a cumulative pollution over all higher levels of the FORTH compiler.

The appended debugging tools make it possible to access the MIX real-time clock in both of these languages and thus to time the run-time efficiency of one's extensions.

The following points should be noted with the Pascal routines:

1. They are written to be intelligible rather than economical : in practice TIME should be local to each procedure and CLOCK and TT be declared as literals in their relevant statements.
2. The odd value of -681 is the NEGATED 2's COMPLEMENT OF FD57 Hex (the SYSTEM address of the TIME\$ variable).
3. PEEK & POKE are Hisoft extensions, and may not have equivalents in other Pascal compilers.

PASCAL.

```

CONST
    CLOCK      = -681
TYPE
    TT         = PACKED ARRAY [1..6] OF CHAR;
VAR
    Time       = TT;

PROCEDURE ZerosClock;
VAR
    i          = integer;
BEGIN
    FOR i := 1 TO 6 DO
        Time [i] := '0';
    Poke (CLOCK, TIME)
END;
PROCEDURE READTIME;
BEGIN
    Time := PEEK (CLOCK, TT)
    write in (TIME)
END;
```

FORTH.

FORTH is designed to allow you to poke around in the operating system and the routines are therefore simpler:

```

FORTH DEFINITIONS HEX
    = 0TIME FD57 6 30 FILL;
    = .TIME FD57 6 TYPE SPACE;
DECIMAL
```

The fact that low-level FORTH routines commonly require access vectors or address offsets to be doubled is sufficiently well-known as a cause of Galloping Compiler Deceleration for PolyForth and Forth-83 to provide a special (i.e. FAST) left-shift for this particular emergency. The definition:

```
=2* DUP + ;
```

will run about ten times as fast as the (possibly) more obvious equivalent of "2\*".

Dr. Brian Houghton

# STARTING FORTH Keith Jones

This month I'm being lazy again. Some errors crept into last month's article so I'll start off by correcting them.

First of all OK which was on screen 2. Unfortunately the end of this routine was not included and it should read

```
: OK DUP 31 > ;
```

And on the same screen the colon is missing from the start of line 8. This omission will prevent compiling fully. So line 8 should be

```
: ! "
```

And that's all the errors.

Now I want to present a few screens which have been sent to me by Mr. L.R. Whalley. Here are the screens with an explanation at the end.

SCR # 1

```
C ( FORTH DECOMPLILER FOF THE MTX )
1 ( ***** )
2
3 : PICK 2 * SP@ + @ ;
4 : MYSELF LATEST PFA CFA , ; IMMEDIATE
5 O VARIABLE GIN
6 : ADDR
7 CR 3 PICK HEX 0 <# #S #> TYPE ." : "
8 GIN @ 2+ DUP GIN ! SPACES ;
9 : DIN
10 CR OVER 0 <# #S #> TYPE ." : " GIN @ SPACES ;
11
12
13
14
15 -->
```



SCR # 2

```
0 ( DECOMPILER CONT )
1
2 : GCHK
3 DUP @ 2+ ' COMPILE = IF 2+ DUP @ 2+ NFA ID. 2+ ELSE
4 DUP @ 2+ ' LIT = IF 2+ DUP @ SPACE . 2+
5 ELSE DUP @ 2+ DUP ' LIT = OVER ' BRANCH = OR OVER ' OBRANCH
6 = OR OVER ' (LOOP) = OR SWAP ' (+LOOP) = OR
7 IF 2+ DUP DUP @ + SPACE HEX 0 <# #S #> TYPE 2+
8 ELSE DUP @ 2+
9 ' (." ) = IF 2+ DUP
10 COUNT TYPE DUP C@ 1+ + ELSE 2+ THEN THEN THEN THEN
11 GIN @ 2 - GIN ! ;
12 -->
13
14
15
```



SCR # 3

```

0 ( DECOMPILER CONT )
1
2 : (GOESINTO)
3   DUP CFA @ ' : CFA @ = OVER ' ERROR = 0= AND
4   IF BEGIN DUP @ DUP ' ;S CFA = OVER ' (;CODE) CFA = OR 0=
5   WHILE 2+ DUP ADDR NFA ID. KEY DUP 81 =
6   IF CR ." BREAK" CR SP! QUIT ELSE 13 = IF MYSELF
7   ELSE DROP THEN THEN GCHK REPEAT
8   2+ DIN NFA ID. THEN DROP ;
9
10 : DECOM -FIND 0 > IF DROP CFA DUP 2+ 0 GIN !
11 (GOESINTO) ELSE CR ." NOT FOUND" CR THEN ;
12
13
14
15 ;S

```



I realise that this may seem a daunting task to type in but believe me it's well worth the effort.

I'd better tell you what it is. This set of words will decompile any word contained in the dictionary, provided that the word isn't a machine code primitive. The way to use is by typing

```
DECOM ccccc
```

Where ccccc represents the word you wish to see decompiled.

Pressing the Space bar will decompile just the word selected.

Pressing <RET> will decompile the word and also decompile the words which make up the sub-word. It will indent so that it is easier to read.

Pressing Q at any time will quit from the decompiler and return you back to FORTH.

I think that in order to make the usage of this word clearer I should show an example. So, supposing that I typed the following word in

```

DECIMAL ok
: J
RPO 6 + @ ; ok
: EXAMPLE
100 0 DO
  100 0 DO
    I J . .
  LOOP
LOOP ; ok

```

Now, at some later date you decide that you'd like to examine the words you used to make up EXAMPLE. You load DECOM and type

```
DECOM EXAMPLE
```

And using the space bar you end up with

```

64B1: LIT 64
64B5: 0
64B7: (DO)
64B9: LIT 64
64BD: 0

```



```

64BF: (DO)
64C1: I
64C3: J
64C5: .
64C7: .
64C9: (LOOP) 64C1
64CD: (LOOP) 64B9
64D1: ;S ok

```

So that's using the Space bar. Now using a different approach. Once more you wish to decompile EXAMPLE, but if a word appears which you don't know about (e.g. "J") then you wish to decompile that word as well. This time we'll use <RET> when we reach J.

#### DECOM EXAMPLE

( 64B1 to 64C1 are the same as above)

```

64C3: J
6499: RP@
649B: LIT 6
649F: +
64A1: @
64A3: ;S
( and so on as above )

```

Amongst these words is PICK which is useful on its own. It expects a number and will copy the number which is at that depth onto the top of the stack. An example will clarify this.

#### STACK BEFORE

```

1
2
3
4

```

#### 3 PICK LEAVES THE STACK

```

3
1
2
3
4

```

That's all for this month. I'd like to thank Mr. Whalley for DECOM and I think you'll all find it very useful. Please keep your letters coming and show me what you can do with FORTH. ★

The enclosed program is a short block delete routine which some readers may find useful.

It is surprisingly fast, even though it is in Basic, and it contains a couple of error checks to avoid silly mistakes. The program can be loaded in before starting or possibly merged when needed using previously published routines. It will even erase itself.

```

65526 CSR 0,0: INPUT "FIRST LINE , LAST LINE ";FL,LL: LET E=PEEK (64170)+PEEK(64171)*256: IF LL<FL
THEN GOTO 65526
65527 LET F=FL: GOSUB 65532
65528 LET S=E: LET F=LL: GOSUB 65532
65529 LET E=E+PEEK(E)+256*PEEK(E+1)
65530 POKE S+1,INT((E-S)/256: POKE S,MOD(E-S,256)
65531 PRINT "PRESS ";FL;" AND THEN PRESS ENTER ": STOP
65532 LET D=PEEK(E+2)+256*PEEK(E+3): IF D=F THEN GOTO 65535
65533 IF D>F THEN PRINT "WRONG LINE NUMBERS ": STOP
65534 LET E=E+PEEK(E)+256*PEEK(E+1): GOTO 65532
65535 RETURN

```



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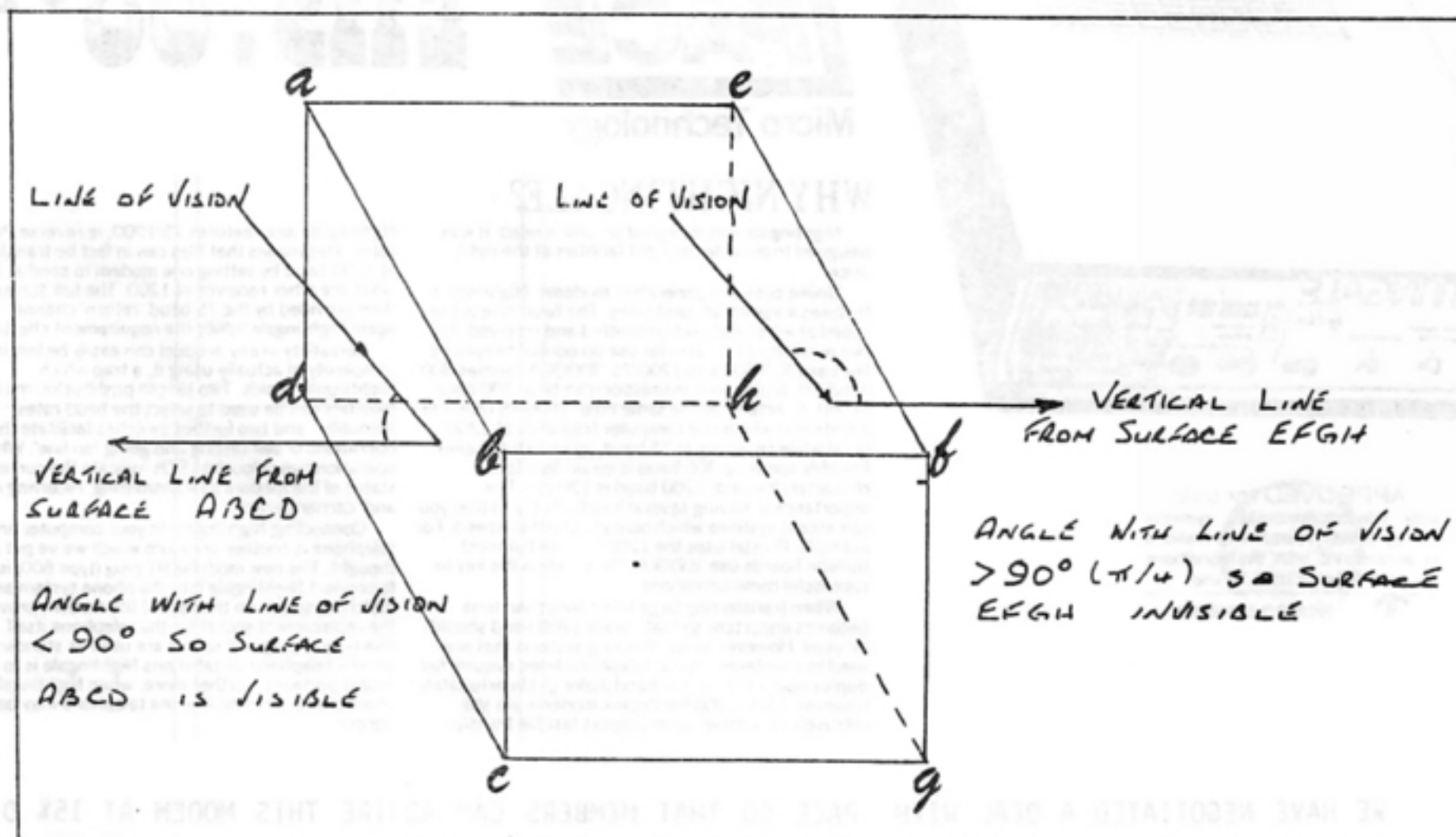


**SYNTAXSOFT**

## 3D Graphics

conclusion.....

*JR Majors*



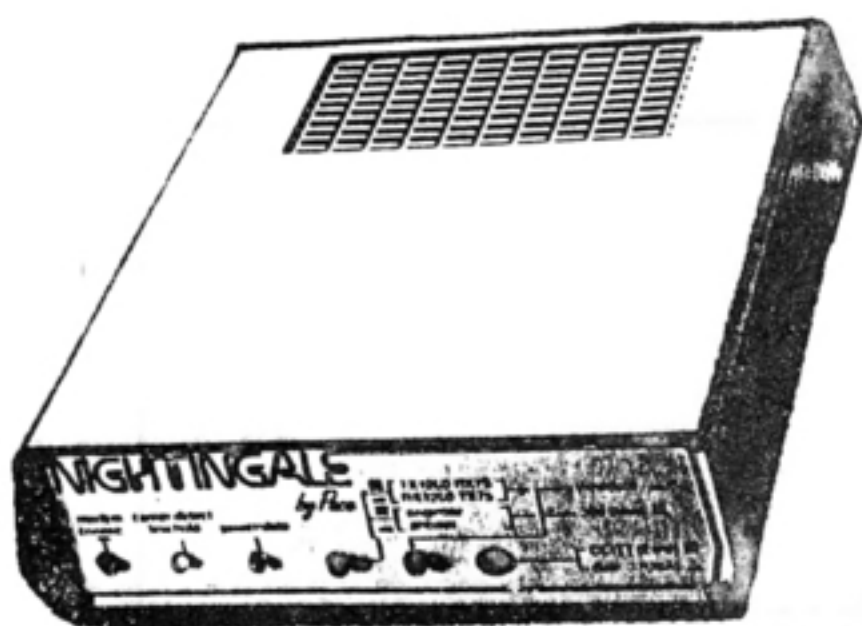
This part of the 3-D graphics articles introduces the program which was published in August's edition and was the original aim of the series - to define a 3-D image which can then be viewed from any angle - moving round it or looping over it by altering one or both of the relevant angles. If you have read the earlier articles you should be able to understand the program and modify it for use in your own programs as you wish.

The object represented is defined in line 130 of the program. The data given is sets of three co-ordinates, x,y,z for the vertices of the beginnings and ends of lines to define a cube. An extra set of co-ordinates is given at the end for a pyramid (lines 2900 and 3000). You will, of course, be able to substitute any set of data describing any object, remembering to change the loop indices and array dimensions in lines 145, 150, 1020 of the program to match the number of lines in your object.

To move the viewing point around the object, change the viewing angle theta, to move over and under the object change the viewing angle phi (spelt PHY in the program because phi is a basic instruction and so can't be used for a variable name). Now experiment with these objects and with your own.

The problems we are left with now are: firstly, if we define an object which is larger than the viewing area of the screen, our program will crash. This is simply fixed by including in this program calls to the routines given in previous articles for CLIPPING the lines to fit the screen. You should try to do this yourself as it is relatively easy to add the two sets of routines together. The second problem is that our objects are all transparent - if we want to have a more realistic view we must have a HIDDEN LINE routine which will work out if our lines are visible or not. In this article we will simply state the principles and give the maths and the routines in a later article.

Lines will be hidden not by other lines so much as by surfaces: an area of the screen which has no line on it will be, for example, part of a side of a cube, and any edge behind this surface will not be visible. So our approach here will be to set up a new array defining surfaces. We will set up an array which stores the edges belonging to these surfaces. Now we draw a line out at right angles to this surface. Look at the diagram. If we compare this line at right angles with our surface with the line representing the angle of view, then we can find the angle between the angle of view and our line from the surface. It should be obvious that if this angle we have calculated is greater than 90 degrees ( $\pi/2$ ) then this surface will not be visible and the edges stored in the relevant array not drawn. ★



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### WHY NIGHTINGALE?

Nightingale was designed to fulfill a need. It was designed to provide the right facilities at the right price.

Unlike previous generation modems, Nightingale features a variety of baud rates. The baud rate is the speed at which data is transmitted and received. The two most common rates for use on normal telephone lines are 300/300 and 1200/75. 300/300 denotes 300 baud full duplex, ie transmission can be at 300 baud in both directions at the same time. 1200/75 refers to a system in which one computer transmits at 1200 baud while receiving at 75 baud, again in full duplex. Roughly speaking 300 baud is equivalent to 30 characters/second, 1200 baud is 120 cps. The importance of having several baud rates is so that you can access systems which operate at either speed. For example, Prestel uses the 1200/75 rate but most bulletin boards use 300/300. Versatility is the key to successful communications.

When transferring large files connection time becomes important so that ideally 1200 baud should be used. However, error checking systems that are used to counteract 'noisy' telephone lines, require full duplex operation for the 'handshaking'. Unfortunately however, 1200/1200 full duplex modems are still relatively expensive, so to support fast file transfer,

Nightingale also features 75/1200, ie reverse Prestel rates. This means that files can in fact be transferred at 1200 baud by setting one modem to send at 1200 while the other receives at 1200. The full duplexing is then provided by the 75 baud 'return' channel. Once again Nightingale fulfills the requirement effectively.

Versatility in any product can easily be lost in the complexity of actually using it, a trap which Nightingale avoids. Two simple pushbutton micro-switches can be used to select the baud rates manually\* and two further switches facilitate the operations of self-testing and going 'on-line'. When in operation two coloured LEDs indicate the current status of the modem as transmitting, receiving or idle and 'carrier detect'.

Connecting Nightingale to your computer and telephone is another area into which we've put a lot of thought. The new modular BT plug (type 600) is used to connect Nightingale into the phone system and a matching socket on the rear of the modem provides the replacement socket for the telephone itself. Since this type of plug and socket are used as standard for all new telephone installations Nightingale is to a large extent portable. Further more, when Nightingale is connected but not on-line the telephone may be used normally.

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## Chainsaw Mania

A. Southgate



The evil Adolf Hitler Fan Club have planted trees in your back garden! As if this wasn't enough they've dug up some strange prehistoric boulders, and left rockets flying around!

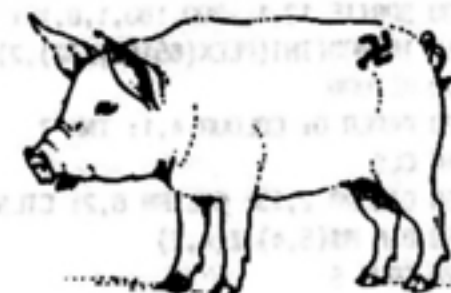
So, being a rational human being, you decide to chainsaw them all down. There's 20 trees to saw down, and you'll need to refuel at the oil drum in the bottom right corner. Use joystick and push fire to chainsaw trees or refuel. Watch your time limit!

Programmers amongst you may like to note line 230, which checks if any two sprites are in contact.

```

10 REM A.SOUTHGATE 1985
20 VS 4: GOTO 1430
30 LET L=3
40 LET SC=0: LET LEV=1
50 FOR F=1 TO 5: LET M$(F)="YYYY": NEXT F
60 LET P=60
70 LET T=0
80 LET A=24: LET B=150
90 GOSUB 1110
100 FOR F=0 TO 2: SOUND F,2500,1000,RND*40-20,-10,100,1: PAUSE 200: NEXT F
110 LET SP=LEV: IF SP>8 THEN LET SP=8
120 LET M=20: LET N=SP
130 GOSUB 870
140 LET C=0: LET D=0: LET E=0
150 LET I=ASC(INKEY$)
160 IF I=8 OR I=25 THEN LET C=SGN((I=8)-(I=25))
170 LET A=A+C*2: IF A<16 OR A>240 THEN LET A=A-C*2
180 IF I=11 OR I=10 THEN GOTO 310
190 IF E>0 THEN LET B=B+D: LET E=E-1
200 IF I=26 THEN GOTO 370
210 LET M=M-1
220 SPRITE 1,1-(C=-1),A,B,0,0,15
230 IF MOD(INT(PEEK(65108)/32),2)=1 THEN GOTO 560
240 IF M=0 THEN GOTO 260
250 IF E=0 THEN GOTO 150 ELSE GOTO 190
260 FOR F=2 TO 5: ADJSPPR 4,F,N: NEXT F
270 IF N>20 THEN LET N=SP ELSE LET N=256-SP
280 SOUND 0,8000,700,0,-20,35,1
290 LET M=40: GOTO 250
300 REM MOVE UP OR DOWN
310 IF A<26 OR A>225 THEN GOTO 330
320 LET G=INT(A/40+.35): LET H=INT(B/40+.75)+(I=10): IF H=0 OR H=5 THEN GOTO 190 ELSE IF M$(G,H)="Y" THEN GOTO 190
330 LET E=40: LET D=(I=10)-(I=11)
340 IF D=1 AND B=150 OR D=-1 AND B=30 THEN LET D=0: LET E=0: GOTO 190
350 LET C=0
360 GOTO 190
370 IF P=0 THEN GOTO 510
380 SOUND 3,2,15
390 LET G=(A/40-.15): LET H=INT(B/40+.25)
400 IF ABS(INT(G+.5)-G)>.05 THEN SOUND 3,0,0: GOTO 210
410 LET G=INT(G+.5): LET H=INT(H+.5)
420 IF M$(G,H)<>"Y" THEN SOUND 3,0,0: GOTO 210
430 LET M$(G,H)="C"
440 LET X=5*G-1: LET Y=22-5*H
450 SOUND 3,16,1024,0,-256,40,1: SOUND 2,5000,1024,0,-256,40,1
460 CSR X,Y: PRINT "  ": CSR X,Y+1: PRINT "  ": CSR X+1,Y+2: PRINT "  "
470 LET P=P-5
480 LET T=T+1: IF T=20 THEN GOTO 780
490 LET SC=SC+200: GOSUB 870
500 SOUND 3,0,0: GOTO 210
510 IF A<240 OR B<30 THEN SOUND 3,0,0: GOTO 210
520 SPRITE 11,4,124,8,0,0,3
530 LET P=60
540 SOUND 1,1000,1000,-50,0,20,1: SOUND 1,0,0,0,0,1,1
550 GOTO 190
560 SOUND 0,6000,1000,100,-50,20,1
570 ADJSPPR 5,1,127
580 FOR G=1 TO 50: FOR F=2 TO 5
590 ADJSPPR 4,F,RND*255: ADJSPPR 5,F,RND*255: ADJSPPR 1,F,RND*14+2
600 NEXT F: NEXT G
610 PAUSE 2000
620 LET L=L-1: CLS
630 CSR 5,10: PRINT "CHAINSAMS REMAINING ";L
640 IF L<1 THEN GOTO 680
650 IF INKEY$="" THEN GOTO 650
660 GOTO 80
670 INK 9
680 CSR 12,14: PRINT "GAME OVER": CSR 10,5: PRINT "SCORE ";SC
690 INK 5

```



```

700 CSR 5,20: PRINT "PRESS ANY KEY TO REPLAY"
710 SOUND 0,1000,1000,0,-10,30,1: SOUND 0,1200,1000,0,-10,30,1: SOUND 0,1400,1000,0,-10,30,1: SOUND 0,1600,1000,0,-10,100,1
720 SPRITE 1,1,64,70,0,0,15: SPRITE 2,2,192,70,0,0,15
730 MVSPR 1,1,RND*8: MVSPR 1,2,RND*8
740 IF INKEY$="" THEN GOTO 730
750 GOTO 30
760 SOUND 0,2000,1000,-10,-10,100,1: SOUND 1,3000,1000,-15,-10,100,1: SOUND 2,4000,1000,-20,-10,100,1
770 FOR F=1 TO 5: ADJSR 4,F,RND*255: ADJSR 5,F,RND*255: NEXT
780 ADJSR 4,12,240
790 LET LEV=LEV+1: LET SC=SC+1000*LEV
800 FOR F=2 TO 15: COLOUR 4,F: PAUSE 100: NEXT : COLOUR 4,1
810 CLS
820 IF MOD(LEV,3)<>0 THEN GOTO 50
830 LET L=L+1: SOUND 2,0,1000,-100,-2,500,1
840 INK 15: PAPER 8: FOR F=0 TO 23: CSR 10,F: PRINT "EXTRA CHAINSAW": NEXT
850 PAPER 1: ATTR 3,1: PAUSE 1500: CLS : ATTR 3,0: PAUSE 1500: CLS
860 GOTO 50
870 LET SC$=STR$(SC)
880 INK 10
890 CSR 31-LEN(SC$),23: PRINT RIGHT$(SC$,LEN(SC$)-1):
900 SPRITE 11,4,P+64,8,0,0,11+3*(P<9)+8*(P>33)
910 RETURN
920 SAVE "CHAINSAW MANIA": REM SAVE BY 'GOTO 920'
930 RUN
940 PAPER 1: COLOUR 4,4: INK 0: CLS
950 SOUND 3,3,15: SOUND 2,1000,0,-2,0,300,1: SOUND 2,400,0,4,0,1000,1
960 FOR F=0 TO 255 STEP 4
970 LINE 128,100,F,171+20*SIN(F/256*PI)
980 NEXT
990 INK 15
1000 CSR 9,12: PRINT "CHAINSAW MANIA"
1010 CSR 5,15: PRINT "PRESS ANY KEY TO BEGIN"
1020 FOR F=1 TO 12: SPRITE F,1+MOD(F,2),24+200*MOD(F,2),F*8,1-2*MOD(F,2),0,F+2
1030 NEXT
1040 PAUSE 1000
1050 COLOUR 4,RND*16
1060 IF INKEY$="" THEN GOTO 1040
1070 COLOUR 4,1: CLS
1080 FOR F=1 TO 12: SPRITE F,1,0,240,0,0,0: NEXT
1090 SBUF 1: SBUF 5: SOUND 3,0,0
1100 GOTO 30
1110 LET S1$=CHR$(129)+CHR$(130)+CHR$(131)+CHR$(132)
1120 LET S2$=CHR$(133)+CHR$(134)+CHR$(135)+CHR$(136)
1130 LET S3$=CHR$(137)+CHR$(138)
1140 LET S4$=CHR$(139)+CHR$(140)
1150 FOR F=1 TO 13: SPRITE F,1,F*17,1000,0,0,0: NEXT
1160 PAPER 1: CLS : INK 13
1170 FOR F=1 TO 21
1180 FOR G=1 TO 7: CSR RND*30+1,F: PRINT "[": NEXT G
1190 NEXT F
1200 FOR Y=2 TO 17 STEP 5
1210 FOR X=4 TO 27 STEP 5
1220 IF M$(INT(X/5)+1,4-INT(Y/5))<>"Y" THEN GOTO 1250
1230 CSR X,Y: INK 2: PRINT S1$: CSR X,Y+1: PRINT S2$: INK 6: CSR X+1,Y+2: PRINT S3$: CSR X+1,Y+3: PRINT S4$
1240 IF MOD(INT(PEEK(65108)/32),2)=1 THEN GOTO 1110
1250 NEXT X: NEXT Y
1260 INK 10
1270 FOR F=0 TO 3
1280 LINE 8-F,15-F,247+F,15-F: LINE 248+F,16-F,248+F,183+F: LINE 247+F,184+F,8-F,184+F: LINE 7-F,183+F,7-F,16-F
1290 NEXT
1300 CSR 1,23: PRINT "PETROL": CSR 18,23: PRINT "SCORE 000000":
1310 INK 5: LINE 70,4,130,4
1320 CSR 30,21: INK 3: PRINT "]"
1330 FOR F=1 TO 4
1340 LET X=INT(RND*4)*40+68: LET Y=INT(RND*3)*40+71: LET Z(F,1)=X: LET Z(F,2)=Y
1350 IF F=1 THEN GOTO 1370
1360 FOR G=1 TO F-1: IF Z(G,1)=X AND Z(G,2)=Y THEN GOTO 1340 ELSE NEXT
1370 SPRITE F+1,3,X,Y,0,0,7
1380 NEXT F
1390 IF LEV>2 THEN FOR F=6 TO 10: SPRITE F,5,254,(F-6)*40+38,LEV*F,0,11: NEXT
1400 SPRITE 12,1,-200,180,1,0,15: SPRITE 13,3,240,180,0,0,7
1410 IF MOD(INT(PEEK(65108)/32),2)=1 THEN GOTO 1110
1420 RETURN
1430 PAPER 0: COLOUR 4,1: INK 7
1440 CLS
1450 CTLSR 2,13: CTLSR 6,2: CTLSR 5,13: CTLSR 0,1: CTLSR 3,13: CTLSR 1,1
1460 DIM M$(5,4),Z(4,2)
1470 SBUF 5
1480 GENPAT 1,129,0,28,62,103,19,121,253,127
1490 GENPAT 1,130,0,1,227,247,254,118,54,147
1500 GENPAT 1,131,7,207,239,255,47,166,242,255
1510 GENPAT 1,132,0,128,156,254,126,126,4,254
1520 GENPAT 1,133,51,121,255,249,123,63,7,3
1530 GENPAT 1,134,153,12,253,223,156,56,251,63
1540 GENPAT 1,135,255,113,252,238,238,231,255,254
1550 GENPAT 1,136,156,207,239,254,116,240,120,48
1560 GENPAT 1,137,26,26,10,10,15,13,45,61
1570 GENPAT 1,138,216,216,209,191,188,208,176,80
1580 GENPAT 1,139,29,14,10,26,26,26,55,255
1590 GENPAT 1,140,80,176,240,184,184,184,188,255
1600 GENPAT 4,1,0,0,0,0,0,0,17,59
1610 GENPAT 5,1,110,222,63,55,35,54,60,24
1620 GENPAT 6,1,6,15,27,51,102,204,152,48
1630 GENPAT 7,1,96,192,128,128,0,0,0,0
1640 GENPAT 4,2,96,240,216,204,102,51,25,12
1650 GENPAT 5,2,6,3,1,1,0,0,0,0
1660 GENPAT 5,2,0,0,0,0,0,0,136,220
1670 GENPAT 7,2,118,123,252,238,196,108,60,24
1680 GENPAT 4,3,0,0,0,0,0,1,3,6
1690 GENPAT 5,3,13,31,31,55,59,123,123,127
1700 GENPAT 6,3,0,0,0,0,0,128,192,64
1710 GENPAT 7,3,96,248,228,154,254,243,239,255
1720 GENPAT 4,4,0,0,0,0,0,0,0: GENPAT 5,4,0,0,0,0,0,0,0: GENPAT 6,4,0,0,0,0,0,0,0
1730 GENPAT 7,4,0,56,28,14,7,14,28,56
1740 GENPAT 4,5,0,0,0,0,0,61,67,153: GENPAT 5,5,67,61,0,0,0,0,0
1750 GENPAT 6,5,0,0,0,32,48,56,254,255: GENPAT 7,5,254,56,48,32,0,0,0,0
1760 GENPAT 0,93,126,36,126,36,36,126,36,126
1770 GENPAT 0,91,17,153,202,110,108,60,56,56
1780 GOTO 940

```







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500K SILICON DISC ..... £145.00  
1MB SILICON DISC ..... £441.00

FDX 2ND DRIVE 500K ..... £141.00  
FDX 2ND DRIVE 1MB ..... £163.00

DUST COVER ..... £3.50  
CENTRONICS 2 metre CABLE ..... £9.95  
DMX PRINTER RIBBON ..... £8.75

FLOPPY DISCS (BOX 10) TOP QUALITY GUARANTEED ..... £18.75

DMX 80 PRINTER & CABLE ..... £239.00  
RITEMAN DOT MATRIX PRINTER ..... £215.00

PAGE NIGHTINGALE MODEM ..... £119.00 + £5 postage & packing.

250K SDX DISC DRIVE ..... £199.00 + £5 postage & packing

DISC CASES HOLDS 10 FLOPPIES ..... £2.50  
ANTISTATIC SCREEN WIPES ..... (10)..... £1.39  
FLOPPICLENE DISC KIT ..... £16.50  
CRIB CARD ..... £2.16

UPGRADE PACKAGE 1 ..... £198.00  
UPGRADE PACKAGE 2 ..... £223.39

The above require factory fitting so add an extra £25 to cover cost of this service.

DON'T FORGET IF YOU HAVE A DISC DRIVE YOU SHOULD OWN A HIGH QUALITY HEAD CLEANER see FLOPPICLENE  
.... over half the problems handled by us are due to dirty disc heads.

JARO SPEED SPLITTER WITH SOFTWARE ..... £20.70



THE ABOVE PRICES ONLY APPLY TO U.K SALES & BFPO SALES  
BFPO SHOULD ADD AN EXTRA £30.00 TO COVER ADMINISTRATION BY MEMOTECH



HALTON GRAPHICS PRESENTS

# THE DESIGNER

*The Ultimate in Graphic Creation for the Memotech*

THE DESIGNER is a must for every owner of a Memotech computer.

It will give you the ability to produce stunning graphics on your M.T.X. The designer has a full U.D.G. GRAPHIC GENERATOR and SCREEN DESIGNER to enable you to create high quality Loading screens, Backdrop Plane, Sprites, Multi-colour U.D.G.'s and Character set. It also allows you to place your graphic creations directly onto your Designed Screen.

Both GRAPHICS and SCREEN can be saved to tape for use in your program's without the time and memory consuming Genpat statements.

The U.D.G. GENERATOR allows unfinished graphics to be reloaded for editing at a later date. THE DESIGNER is the FIRST graphic utility available for the Memotech that allows unique on screen ANIMATION of your patiently designed SPRITES with varying DELAY TIME for more realistic ANIMATION sequences.

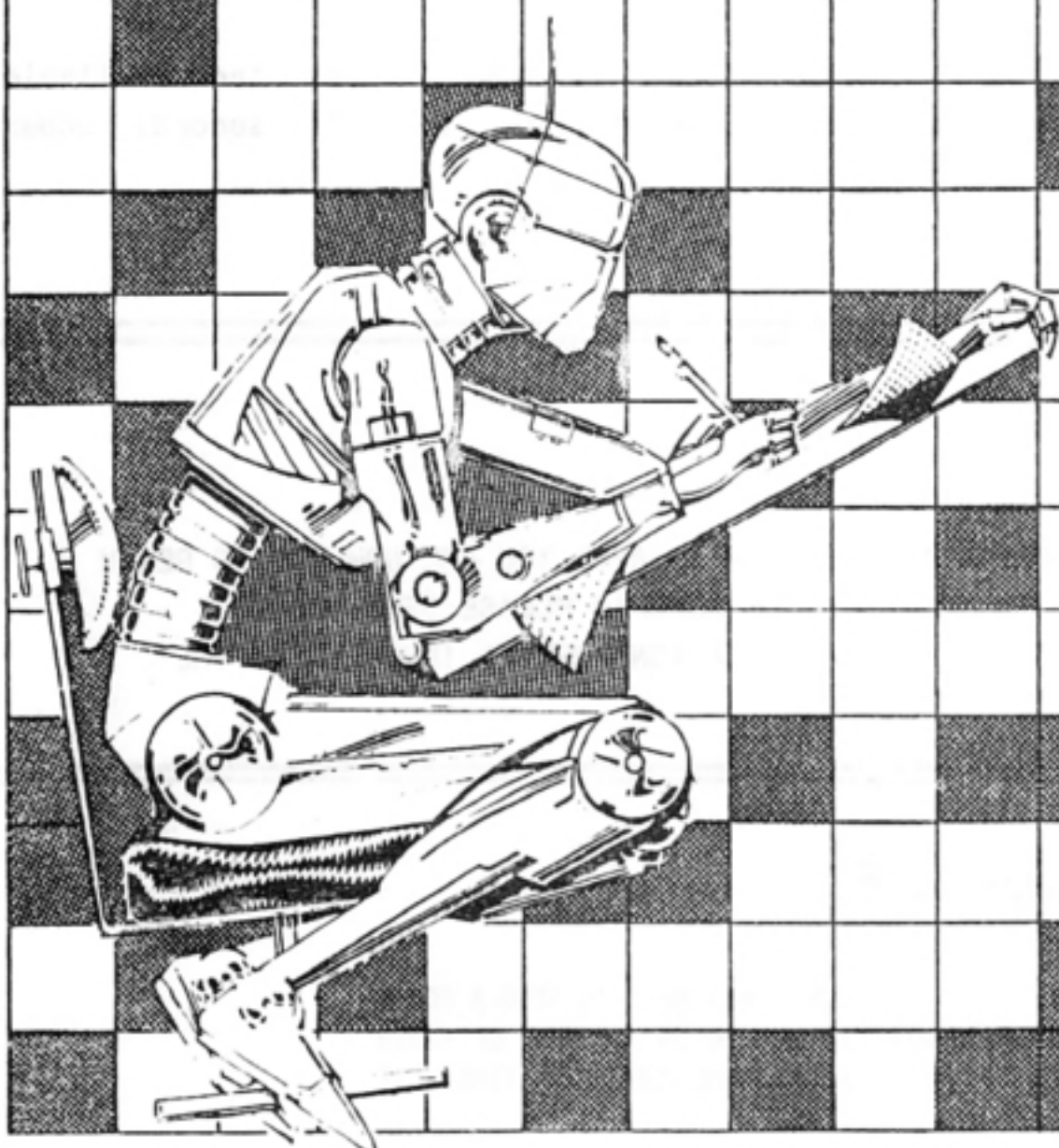
The U.D.G. GENERATOR allows you to design 127 8 x 8 SPRITE PATTERNS in mode 0 or 32 16 x 16 SPRITE PATTERNS in mode 1. You will also be able to redesign your character set and all U.D.G.'s including Multicolour. Other facilities also included in this unique U.D.G. GENERATOR are SPRITE, U.D.G., CHR\$, MULTI-COLOUR, GET, STORE, INVERSE, REFLECT, ROTATE, ANIMATE also the U.D.G. Bit patterns are displayed along with SAVE/LOAD GRAPHICS facility and a complete on screen MENU.

THE SCREEN DESIGNER allows you to create practically anything on a full 256 x 192 graphics screen, facilities like PAPER, INK, DRAW, ERASE, FILL, MOVE, LINE, CIRCLE, PLOT PIXEL, RUBBERBAND, STIPPLE, CROSS HATCH CURSOR, PIXEL CURSOR, DRAW RADIALLY, WIPE, GRAPHIC POSITIONING etc., are included and easy to use.

THE SCREEN DESIGNER also allows your graphics or graphic screen to be loaded or saved or dumped into a printer.

THE DESIGNER gives you the best of both worlds!, the combined use of the U.D.G. GENERATOR and THE SCREEN DESIGNER for highly detailed and precise U.D.G.'s, SPRITES or SCREEN graphics.

THE DESIGNER is a true graphics package for the Memotech and is competitively priced at only £8.95 (Comes with full instructions.)



Please send me THE DESIGNER.

I enclose a cheque / postal order for £8.95.

NAME: .....

ADDRESS: .....

.....

.....

TEL: .....

SEND TO: HALTON GRAPHICS  
22 The Uplands, Runcorn  
Cheshire WA7 2UA

Tel: 0928 717783



## GREAT NEWS

We have just negotiated a deal that gives Syntaxsoft exclusive rights to the book Microcosm. For those of you who are not familiar with the book, it is a book very similar in concept to "Masquerade"... you know, the one where a golden hare was buried and nearly everyone in the land went round digging up parts of Britain trying to find it.

Well, MICROCOSM is a puzzle book which is computer orientated. It is beautifully illustrated throughout and contains many clues to the whereabouts of a certain room. Once you have all the clues, you must type in the program given at the back of the book and if your assumptions are right the computer will give you the telephone number of the room. You will then win £1000.00 plus a free transatlantic flight on Concorde.

Because we think this idea is so brilliant, and is something to get your teeth into during the dark nights we, at Syntax, are going to add £1000.00 of hardware if the winner is a Memotech owner !!

The book will retail at £6.95p but as a special concession to Genpat members we are reserving 500 at £5.45p including postage and packing.

I am really sold on this book, the pictures are brilliant and the clues are not obvious, and like "Masquerade", this will not be solved quickly, and I am sure that it will give hours and hours of satisfaction to all the family.

If it appears that I am doing a "selling job" ... I am ! When this company approached me I said that MTX owners would be interested in it and that we deserved the opportunity of having exclusive distribution, so please support us in this before we go national with it. There is a good prize to be won and it just might lead to other things .....

???

SUPA-CODER which is the revised version of the ill-fated MCODER is now instock and available for return of post service. To give an example: a FOR NEXT LOOP of 5000 took 15 seconds under Basic .... the same loop when compiled took .9 secs !!!!

## SUBSCRIPTIONS

IF YOUR MEMBERSHIP NUMBER IS BETWEEN 0 - 992 INCLUSIVE (ALL LETTERS A-I) YOU ARE NOW DUE TO RENEW YOUR SUBSCRIPTION. TO MAKE SURE OF RECEIVING YOUR NEXT COPY OF MEMOPAD PLEASE SEND YOUR SUBSCRIPTION TO REACH US NO LATER THEN 30TH NOVEMBER. AN APPLICATION FORM IS INCLUDED ON THE ORDER SHEET.



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DISC DRIVE RAFFLE ..... WIN A 250K DISC DRIVE FOR £1.00. THIS TIME YOU DON'T NEED TO SEND A POUND ( THEY ARE ALMOST EXTINCT). SIMPLY WRITE YOUR NAME, ADDRESS, MEMBERSHIP NUMBER ON A PIECE OF PAPER AND INCLUDE THE £1.00 IN A CHEQUE ETC . WILL BE DRAWN 20TH NOVEMBER SO YOU HAVE PLENTY OF TIME. IF YOU HAVE A DRIVE YOU CAN CHOOSE GOODS TO THE VALUE.



# TEVIC-DATA DENMARK

## NEW PRODUCT

FOR THE  
**Memotech  
MTX SERIES**

### MEMOTALK

Speech synthesiser. You may use it when programming, e.g. place speech comments on errors.

A demotape is included.

**£33.95**

Prices  
include  
VAT

AVAILABLE DIRECT FROM GENPAT POSTAGE PAID.  
REQUIRES EXTERNAL AMPLIFIER OR HI-FI. PLUGS INTO THE LEFT HAND SIDE OF THE COMPUTER. COMPLETE WITH DEMONSTRATION TAPE AND INSTRUCTIONS.



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