help

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Albert's Screen

Double sided Drive?

hardware

graphics

experiment

puzzles

WE HAVE
DONE IT !

Yes, it has taken a while, with a succession of titles, publishers and editors at the helm over the years since it was first issued as the UK Einstein User Group Newsletter, but we have finally achieved issue number 100 of your very own Einstein Magazine & All Micro News, and here you are, reading it.

There is a wealth of information in those back numbers, but how many do you still have, accessible and available to refer to?

If you never kept them, or they have become mislaid or tattered over the years, the good news is that while the very early A4 sized issues are long out of print and the demand doesn't justify reprinting them as complete issues, Bob is happy to reprint specific articles in the current mag if this would meet a demand and they haven't already been reprinted in one of the two Einstein Compendium issues.

From Einstein Monthly Vol. 1 No. 4 onwards every issue is still in print, though a few issues do evidence the major problems that we had when we had to fall back on recycled photocopiers to print with.
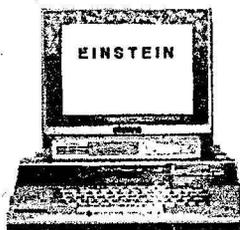
Order your back numbers from New Romney. For an odd copy send a first class stamp in payment for each copy you've ordered. For big orders send a cheque payable to Einstein User Group at four copies for a pound. **Don't forget** to say who you are and which copies you need!

++

Bob needs more input. Don't forget the added incentive - the issue your contribution appears in is credited to your membership account !

++

This issue is made and printed by members of the British Printing Society's Cinque Ports branch

Front page: 'Techie' the Triceratops by Jo Deeley

Contents

Editorial

At the core of the EUG (Einstein User Group) it's all about interaction between members, interest in the activities of others, and exchange of each ideas, especially when working with Einey and towards developing improvements for it. But for many it's just knowing that the group is there to fall back on from time to time, a place where one can obtain information, answers, spare parts, something repaired or merely enjoying a browse through a few EM articles, I hope there will soon be an upturn, with new additions to the membership as more people echo Dave Arts recent sentiments `completely disillusioned with PCs and the Net'. He has recently blown the dust off Albert and been busy, so he doesn't need to rely on so called "professional" software.

I for one feel sure there must be a bunch of potential BASIC LOGO C Pascal FORTH (what you like!) programmers / sincerer, I want them to enjoy what many of us did in the early eighties during the heyday of the micro. And just to dispel any idea I merely want to put the clock back and wallow in some sort of computing nostalgia, that's not what it's about at all, it is a type of involvement with the computer that can no longer be obtained any other way. To answer another possible flaw in my pro TC01 (The Tatung Einstein Computer) argument - retro computing - in general, on a PC using an emulator doesn't really hack it. Not that there is one for TC01 yet, but don't be put of if you are about to write one, it would still be great to have on a portable when travelling, but I digress... There are those with the right penchant, whom the TC01 would suit, but don't know it yet - so keep letting people know we are here! Therefore we do need some of the magazines content to cater for the newcomer (the reprint of the Ps & Qs article for example).

A cause for celebration, the 100th issue and 15 year mile stone has been achieved - and in the actual new millennium year at that. Littered through

out these pages are a few sketches, lighthearted reminders of the benefits, progress and milestones; or not - as the case may be - the microcomputer has wrought this last couple of decades.

Looking back, it's marvellous really, how so many who have written items in the past were able to clarify what was no doubt a complex exercise that they had embarked upon: managing to explain their discoveries in the simplest of terms. I suppose that is the essence of good item. Most of these folk would only claim to be amateurs in technical authoring, their motivation and reward has been the satisfaction of being part of the reciprocal help found within the Einstein user group and joining in with the discoveries.

As I write this the person foremost to mind is Ted Cawkwell, we all feel his loss greatly, and some may well have had great difficulty in coming to terms with his death especially those who had been close to him in correspondence and by phone over the years. Ted set no limit in exploring the inner workings of the Einstein and its software, and made many improvements, he was comfortable with dropping into MOS and working in machine code as many of his articles bear out. These are a few of the things that he accomplished: graphics, mouse interfacing, colour printing, drivers for Cannon BJ printers, writing Golf and other games.

Anyone with even an inkling of the technicalities can't fail being impressed by the huge effort in the conversion of the TC01 to 3.5" disc drives – a non commercial venture to-boot. Ted's direct involvement in setting up and testing many interfaces and drives, also coordinating a forum of some of the more technically minded Einsteiners who were involved in this task, and publishing their findings. Not withstanding... during these exploits he took over editing the magazine and brought to it a high standard of content: presenting interesting articles, information, diagrams, programs and humour - much of this contributing himself. Also improved was the clear orderly layout now with an accurate contents page and numbering! Ted's loyalty to the TC01 was unwavering amidst the progress of PCs and hand-helds which he also made great use of, mostly as tools combined with TC01. We Einsteiners have a wealth of material from Teds EM archives, to explore for years to come.

Beyond what any advertising or hype of its day might have ever achieved, - please forgive me for this worn phrase - `Ted was a true Ambassador for the Einstein' computer. I can't put it any other way. I am not finding writing this at all easy because Ted would not wish any display of sentiment or exaggeration – a natural tendency in contemplating one's loss. Ted's approach was professional but keeping it fun, he just wanted things to improve, also continuing as they were, demonstrating this resolve and purpose by working upon the TC01 continuously throughout his deteriorating health. Evidence of this was in what I think was probably the last piece he wrote for the magazine, that being `The Silicon Disk'. His desire to investigate this device he had spoken to me about, earlier in the year. I had mentioned it again in a phone call just before my summer holidays, as a result of this prompting the article was there in the post upon my return. That was two weeks before Ted's death. It was published in the previous mag., EM99. So you will understand it was a very special article.

All this so far doesn't explain a couple of shining qualities/abilities that Ted possessed, which I shall attempt to elucidate. The first I shall call, the ability to spot `the emperors new cloths'. During the twenty or so years development of the micro computer we have been constantly told of the great new things each additional feature will achieve for us, and due to the complexity we are often uncertain of what is fact or hype, whilst the less astute and informed are taken in completely and believe `the emperor is' - indeed - `wearing new cloths'. After spending lots of money for these `new generation machines/software' many people will have nothing said to the detriment of... But of course there is that one voice calling from the crowd!

The Ps & Qs article, which was geared for the beginner, is I feel just one example of Ted's ability to cut to the core of the matter and state what no one else dare admit to - in this case actually having difficulty typing the code in correctly, due to that persistent fossil the Sholes keyboard layout. This article was also one of his earliest submissions, the apparent simplicity of the matter is belying of the depths Ted delved the subject, and he even presents a solution in another article: programming the TC01 function keys. And all this was done, as were many other pieces, with wit and humour. I

present it once again in these pages. It's also interesting to note that Microsoft only got around to including the Dvorak layout in Windows 98, and that is devoid of the tilde and UK pound. *(Dvorak layout presents the most used keys on the middle row and keeps, 0 and O, I and l, 1 and l, apart).*

The second ability was Ted's way with and love of children - perhaps it was not so unconnected with the former. I relate the following story told me by Beth, his wife... `A neighbour came round and left their daughter, a toddler, with us a while. On a subsequent visit the little girl hesitated uncertainly, in the kitchen, with an enquiring look... where's Ted? "Oh! Where he always is, in his computer den, that's all right you can go on up and see him"'. I think that's how I best like to think of Ted; turning from his computer desk giving attention to a child.

Ted would have been the first to agree that he couldn't have achieved a fraction of what he did without the support of Beth - as for many of us men we are grateful for the long suffering of our wives towards our computer interest, which absorbs copious amounts of time, robbing them... Ted had found in Beth a very special... though she would say `I don't understand computers... many times I could have taken an axe to that computer screen' - the fact is she didn't. Beth's exemplary care for Ted during his illness enabled him to be at home - he defied the medic's predictions for his life expectancy tenfold. We, all in the EUG who have benefited from Teds input don't know the debt we owe to Beth. Ted and Beth met in the RAF and were married forty-eight years.

One of the ideas for this issue was to re-print some of best articles and programs of the past, however nothing towards that end seemed to gel for me over the Christmas period - probably because of being under the weather with a persisting virus that's taken 'until February to shake off, but also because masters of the originals are lacking, Ted couldn't keep back-copy on his hundred and twenty mega byte hard drive! And anyway this has been done before, on the tenth anniversary - that material assumed excluded. I must admit that using old stuff does seem a bit of a cheat, the sort of thing one gets at the end of a series, squeezing another one out, by combining the highlights to create another episode with the star character

waking up at the very end - revealing it was all just a dream. That said a compendium is good to refer to, so if you have suggestions for content we could make it for EM 101, entitled ` 101 Einstein Programs and Tips', or something...?

Anyway a couple of our stalwarts have been busy over Christmas, coming to the rescue, and presented some superb fresh material, so here we are keeping bang up to date. And that's the way Ted wanted EM to continue, this being the edition that he had so looked forward to - but had admitted to me he would not be able to see. I think everyone will agree in dedicating this EM 100 to the memory of Ted Cawkwell.

—@@@—

BANG !
UP TO DATE

Desk top publishing

&

The Print Shop
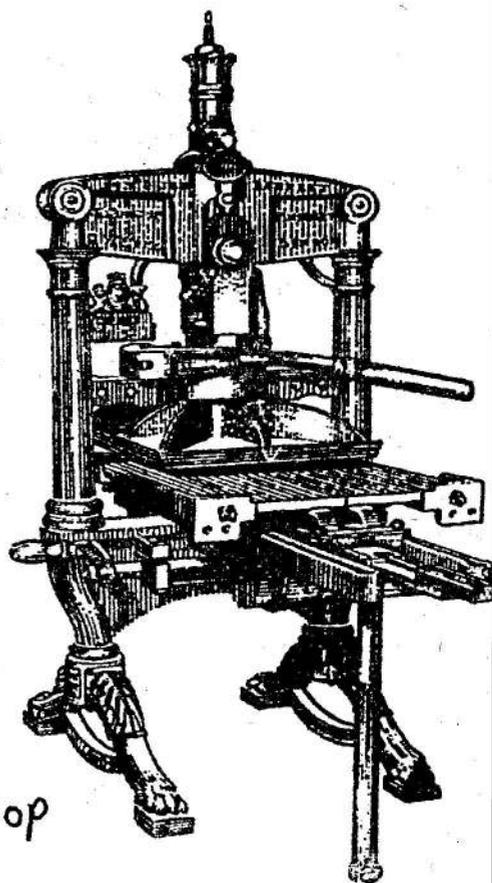
Graphics Digitiser For The TC01 - *continued from EM99* _

The Listings

By John Marriott

<u>mouse obj</u>

```
9000H:  3E CF D3 31 3E 00 D3 31
9008H:  3E CF D3 33 3E FF D3 33
9010H:  DD 21 00 00 FD 21 00 00
9018H:  3E 00 32 04 A2 21 1B A1
9020H:  DB 32 E6 C0 47 0E 04 0D
9028H:  23 7E 90 20 FA 7D 32 00
9030H:  A2 7C 32 01 A2 21 09 A1
9038H:  DB 32 E6 30 47 0E 04 0D
9040H:  23 7E 90 20 FA CD 4D 91
9048H:  00 00 00 00 00 3A 00 A2
9050H:  6F 3A 01 A2 67 0B 32 E6
9058H:  C0 47 7E 90 28 4A 2B 7E
9060H:  D6 FF 20 IF 0E 10 23 0D
9068H:  20 FC FD 22 FE A0 3A FE
9070H:  A0 06 00 90 28 32 00 00
9078H:  00 00 FD 2B DB 32 CB 4F
9080H:  C8 18 25 7E 90 28 E3 23
9088H:  23 7E D6 FF 20 06 0E 10
9090H:  28 0D 20 FC FD 22 FE A0
9098H:  3A FE A0 06 BF 90 28 08
90A0H:  00 00 00 00 FD 23 18 D4
90A8H:  CD 5A 91 00 00 00 00 00
90B0H:  3A 02 A2 6F 3A 03 A2 67
90B8H:  DB 32 E6 30 47 7E 90 28
```

```
90C0H:  IF  2B  7E  D6  FF  20  2A  0E
90C8H:  10  23  0D  20  FC  DD  22  FE
90D0H:  A0  3A  FE  A0  06  00  90  CA
90D8H:  45  90  00  00  00  00  DD  2B
90E0H:  DB  32  CB  47  CA  17  91  C3
90E8H:  3D  91  3E  01  CF  C4  C3  67
90F0H:  91  7E  90  28  DB  23  23  7E
90F8H:  D6  FF  20  06  0E  10  2B  0D
9100H:  20  FC  DD  22  FE  A0  3A  FE
9108H:  A0  06  FF  90  CA  45  90  00
9110H:  00  00  00  0D  23  18  C9  3A
9118H:  04  A2  D6  00  20  08  3E  01
9120H:  32  04  A2  C3  EA  90  DD  E5
9126H:  FD  E5  FD  2A  05  A2  DD  2A
9130H:  07  A2  3E  00  CF  C4  FD  E1
9138H:  DD  E1  C3  EA  90  3A  04  A2
9140H:  D6  00  CA  EA  90  3E  00  32
9148H:  04  A2  C3  EC  90  7D  32  02
9150H:  A2  7C  32  03  A2  FD  22  05
9158H:  A2  C9  7D  32  00  A2  7C  32
9160H:  01  A2  DD  22  07  A2  C9  DB
9168H:  32  CB  4F  C8  C3  45  90  FF
```
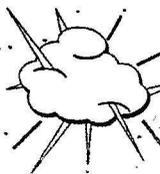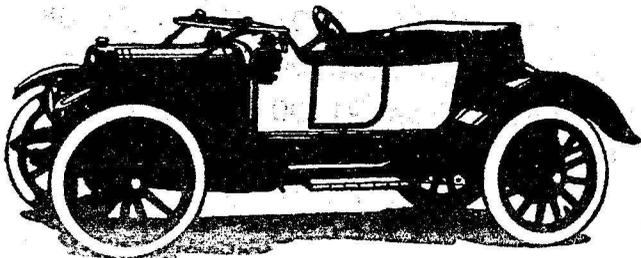
screen obj

```
T8000 8047
8000  21  00  B0  22  00  D0  3E  00
8008  D3  09  3E  00  E6  3F  D3  09
8010  06  18  C5  06  00  DB  08  2A
8018  00  D0  77  23  22  00  D0  10
8020  F4  C1  10  EE  C9  11  00  B0
8028  21  00  00  06  18  C5  06  00
8030  E5  D5  7D  D3  09  7C  F6  40
8038  D3  09  D1  1A  D3  08  E1  23
8040  13  10  ED  C1  10  E7  C9  00
```

dath obj

```
A100H:   FF  30  20  00  10  30  20  00
A108H:   10  30  20  00  10  30  20  00
A110H:   10  30  FF  C0  80  00  40  C0
A118H:   80  00  40  C0  80  00  40  C0
A120H:   80  00  40  C0  00  00  00  00
```


Madly
Digitizing

```
  5 REM MOUSEP
 10 CLEAR&8000: LOAD "SCREENP OBJ"
 20 CLEAR&9000: LOAD "MOUSE OBJ"
 30 CLEAR&A100: LOAD "DATH .OBJ"
 50 LOAD "RATP"

  1 REM RATP
  5 CLS
 10 GCOL1,7
 20 BCOL7
 30 TCOL1,7
 50 CALL&9000
 60 CALL&8000
 70 CLS:INPUT "FILENAME PLEASE? ";I$
 80 SAVE I$,&B000,&C7FF
 90 END
```

—@@@—

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ALBERT'S SCREEN

By Dave Arts

Over the years articles on the Video Display Processor and the manner in which a Graphic Image is displayed on the screen using machine code have been few and far between. Notable exceptions have been,

```
1. GRAHAM BETTANY   VDP for beginners -
                        EM vol 1,2 & 1,3

2. PETE HUBBARD     VDP - EM vol 2,9; 2,11;
                        2,12; 3,1; & 3,2
```

In the former Graham abandoned the article just when it was getting interesting! However to be fair I think he laid the foundation for others to follow, and that's what its all about.

Pete Hubbard's articles were right out of the top drawer, and were aimed at the experienced machine code user. His routines were slick, and those in the user group who haven't got the above issues would do well to send for a copy whilst they are still in print.

In this series of articles I do not intend to go over the ground relating to the VDP covered by Pete, but I do intend to illustrate how we can create a Graphic image on the screen using machine code- firstly one graphic square and then expanding this to a 2x2 graphic.

The article demonstrates how we can create a pattern and it's attributes (colour foreground/background) also to move this image around the screen.

The machine code has been written so that the user who has no knowledge of machine code can still benefit from the programme, and I will demonstrate what needs to be done for the creation of larger graphic images. The Data for the image PATTERN, ATTRIBUTES, and SCREEN POSITION are contained in 3 Data tables, which can be easily modified.

Because it was Christmas when I developed this programme, The Graphic Image I've chosen is my representation of a Christmas tree see FIG 1.The data is contained in 8 Bytes and the Hex values are:

08,08,1C,3E,3E,7F,08,08

The Introduction Manual page 151 onwards will show how these are derived.

Now we have the data we will load this to address &5000, Drop into MOS from XTAL Basic by typing MOS <enter>, Then type M5000, type the first byte 08 after the prompt 5000 and <enter>, do the same for all the prompts up to and including &5007 using all the above data bytes then type a full stop and <enter> again. The code is now loaded into the above addresses. This is our first DATA TABLE.

Now what about the attributes? The colour for a Christmas tree is green and it would look rather good against a light yellow background. Below are the colours and their associated number in decimal and hex.

DEC	HEX	COLOUR	DEC	HEX	COLOUR
0	00	TRANSPARENT	8	08	MEDIUM RED
1	01	BLACK	9	09	LIGHT RED
2	02	MEDIUM GREEN	10	0A	DARK YELLOW
3	03	LIGHT GREEN	11	0B	LIGHT YELLOW
4	04	DARK BLUE	12	0C	DARK GREEN
5	05	LIGHT BLUE	13	0D	MAGENTA
6	06	DARK RED	14	0E	GREY
7	07	CYAN	15	0F	WHITE

With Dark Green the code is 12 or 0C or simply C and with Light Yellow the code is 11 or 0B or simply B

The attribute information is stored as a combination of these numbers in the form Foreground/Background and so the COLOUR BYTE will be CB. Note that if we required a Yellow Christmas Tree on a Green Background the colour byte would be correspondingly BC.

Whilst still in MOS we will now type M5008 <enter> and at each prompt up to and including 500F we will enter the colour byte ending as before with a full stop and <enter>.

By typing T5000 500F <enter>, the 2 tables will be displayed which should look like below.

```
5000    08 08 1C 3E 3E 7F 08 08

5008    CB CB CB CB CB CB CB CB
```

Now we have these tables in memory we will now describe how we generate these onto the screen.

THE VIDEO DISPLAY PROCESSOR AND VIDEO RAM.

Hidden in the depths of Albert is a very sophisticated Texas Instruments chip called the Video display processor, or VDP for short. Electrically attached to it is a block of memory called Video Ram or more simply VRAM.

In order for Albert's Z80 main processor to address the screen it has to do so via the VDP. The VDP has been located at port &09 and the VRAM at port &08.These ports are not hardware ports like the User Port & Printer Port but are internal "Communications lines" from the Z80 main processor.

Essentially the VRAMs correlation to the screen is in 2 parts the "pattern plane" and the "attribute plane" - see FIG 2 & FIG 3. But don't take my word for it! Enter the basic programme below.

Save this as "DEMO" if required.

After entering the programme run it and it will execute lines 5 to 40 this results in our tree being printed at our chosen position but without attributes. To complete the screen type "RUN 110" Enter and the attributes will appear. Finally delete line 40 and RUN for the complete action.

For those who were intrigued by my mention earlier of a yellow tree on a green background, merely drop into MOS change the data in addresses &5008 to &500F to BC, return to basic (warm start - Y <enter>) and run again.

&0000
&0001
&0002
&0003
&0004
&0005
&0006
&0007

Row 0
Col 0

&00F0
&00F1
&00F2
&00F3
&00F4
&00F5
&00F6
&00F7

&08
&08
&1C
&3E
&3E
&3F
&08
&08

Row 0
Col 30

Fig. 1

&00F8
&00F9
&00FA
&00FB
&00FC
&00FD
&00FE
&00FF

Row 0
Col 31

&17F8
&17F9
&17FA
&17FB
&17FC
&17FD
&17FE
&17FF

Row 23
Col 31

Ed: These are single character extracts from the screen map "pattern plane" shown below, on next page - revealing pixel detail and the address of each row. The values on the right hand edge of Fig 1 are its actual contents these generate the columns, each being one bit from a row byte set to either ON or OFF. MS (most significant) Bit, to the left LS (least significant) Bit, to the right

Fig. 2

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Column headers (top): 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

Row labels (right side): 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

Row labels (left side): &00 &01 &02 &03 &04 &05 &06 &07 &08 &09 &0A &0B &0C &0D &0E &0F &10 &11 &12 &13 &14 &15 &16 &17

&2000
&2001
&2002
&2003
&2004
&2005
&2006
&2007

Row 0
Col 0

&20F0
&20F1
&20F2
&20F3
&20F4
&20F5
&20F6
&20F7

Row 0
Col 30

&20F8
&20F9
&20FA
&20FB
&20FC
&20FD
&20FE
&20FF

Row 0
Col 31

&37F8
&37F9
&37FA
&37FB
&37FC
&37FD
&37FE
&37FF

Row 23
Col 31

Ed: These are single graphic
character extracts from the
screen map "attribute plane"
shown below, on next page –
revealing pixel detail and
the address of each row.

Fig. 3

EINSTEIN MAGAZINE Nº. 100 ~ 17

This will PEEK the data you've just loaded into &5000-&500F and VPOKE (Video Poke) this Data into the Screen addresses. Lines 10 to 30 Vpoke the pattern information to the pattern plane and lines 110 to 130 do the same for the attributes. Note the Screen Addresses I've chosen are &00F0 to &00F7 and the corresponding attribute addresses are &20F0 to &20F7.This places the graphic at screen co-ordinates x,y– 30,0.

```
  5 TCOL1,15:CLS
 10 FOR N=0 TO 7
 15 LET X= PEEK(&5000+N)
 20 VPOKE(&00F0+N),X
 30 NEXT N
 40 END
110 FOR N=0 TO 7
115 LET X= PEEK(&5008+N)
120 VPOKE(&20F0+N),X
130 NEXT N
140 END
```

For those who want to experiment further, clear the screen and type RUN 110. For those that have entered CB, as Data for the attributes there will simply be a yellow square and for those who have entered BC there will be a green square. This is because in the absence of pattern data the BACKGROUND COLOUR only is displayed.

THE MACHINE CODE ROUTINE

Now for the Machine Code part, as mentioned earlier we talk to the VDP via port &09 and the VRAM via port &08, so consider the following Assembler listing with corresponding Machine code. I've located this at &8000.This SUBROUTINE sets the screen address, and as such is called SETADDR.

```
&8000 SETADDR
```

Ld HL,&5000	21 00 50	load Data Pointer with start address of Data table
Ld A,&F0	3E F0	load Accumulator with Screen LS BYTE
OUT(&09),A	D3 09	output to VDP
Ld A,&00	3E 00	load Accumulator with Screen MS BYTE
40	F6 40	set bit 6 to "1"
OUT(&09),A	D3 09	Output to VDP
CALL PRINTOUT	CD 30 80	call print sub routine at &8030
RET	C9	return

The above machine code sub routine sets the screen start address as &00F0 at addresses &8004(LS BYTE) and &8008 (MS BYTE) It also sets bit 6 of the MS BYTE to a 1 to indicate that the next information coming its way is a write to VRAM at that address. It finally calls the printout subroutine at &8030 see below.

```
&8030 PRINTOUT
```

Ld B,&08	06 08	register B acts as a counter to count the 8 bytes of Data comprising 1 screen position.
LOOP: Ld A,(HL)	7E	load the data at the address pointed to by register pair HL into the Acc.
OUT(&08),A	D3 08	Output this data to the Video Ram at address instructed by the VDP.
INC HL	23	Increment the Data pointer so as to point at the address of the next Data byte.
DJNZ(LOOP)	10 FA	decrement the counter if zero return if not jump to LOOP and repeat.
RET	C9	Return

The printout subroutine successively loads the contents of the address pointed to by the Data Pointer, Register pair HL, (The Data) into the accumulator (Register A) and outputs this to VRAM via port &08,It does this 8 times (controlled by the B reg).

The Screen address in the VDP set by the subroutine at &8000 is auto-incremented by the VDP. The first pass would place the pattern at address &00F0 through &00F7 we must now have a CONTROL ROUTINE, which changes the Screen Addresses from the Pattern Plane to the Attribute Plane.

THE CONTROL ROUTINE

This routine will set up the initial Pattern Plane address and load it into the SETADDR subroutine at locations &8004 and &8008 It also loads the locations &8001 and &8002 with the Data address thus allowing the Data pointer (Register pair HL) to point at the correct data.

It also instructs register pair DE to point at an area in memory where the changes of address will be located. In this case I've located the pattern plane screen address and attribute screen address at &5040.

Firstly load the following locations with the following Data:

```
&5040  00   DATA PATTERN   LS BYTE
 5041  50   DATA PATTERN   MS BYTE
                           (ie ADDRESS &5000)
 5042  F0   SCREEN PATTERN PLANE LS BYTE
 5043  00   SCREEN PATTERN PLANE MS BYTE
                           (ie ADDRESS &00F0)
 5044  08   DATA ATTRIBUTE LS BYTE
 5045  50   DATA ATTRIBUTE MS BYTE
                           (ie ADDRESS &5008)
 5046  F0   SCREEN ATTRIBUTE PLANE LS BYTE
 5047  20   SCREEN ATTRIBUTE PLANE MS BYTE
                           (ie ADDRESS &20F0)
```

The Control Routine follows, this should be loaded at 8100

```
&8100   CONTROLR

        Ld B,02          06 02      Load counter for 2 passes
                                    (1 for pattern, 1 for
attributes)
        Ld DE,&5040      11 40 50   load DE data pointer at start
of
                                    address change data table
LOOP:   Ld A,(DE)        1A         load Accumulator with
                                    contents of data pointer.
        Ld(&8001),A      32 01 80   load SETADDR with data
        INC DE           13         increment data pointer to
point
                                    at next data

        Ld A,(DE)        1A
        Ld(&8002),A      32 02 80
        INC DE           13
        Ld A,(DE)        1A
        Ld(&8004),A      32 04 80
        INC DE           13
        Ld A,(DE)        1A
        Ld(&8008),A      32 08 80
        INC DE           13
        PUSH BC          C5         push counter onto stack
        CALL SETADDR     CD 00 80   call SETADDR subroutine
        POP  BC          C1         retrieve counter from stack
        DJNZ (LOOP)      10 E5      decrement counter return if
                                    zero if not jump to loop.

        RET              C9
```

Load all of the above code at their respective addresses you should now
have the following tables in MOS:

```
5000    DATA TABLE FOR PATTERN
5008    DATA TABLE FOR ATTRIBUTES
5040    DATA TABLE FOR SCREEN ADDRESSES
8000    SETADDR SUB-ROUTINE TO VDP
8030    PRINTOUT SUB-ROUTINE TO VRAM
8100    CONTROL ROUTINE
```

With everything in place, return to basic, (warm start - Y <enter>) and enter the following Basic Programme, I've called "EXEC".

```
10 TCOL1,15: CLS
20 CALL &8100
30 END
```

Save this to disk. Now RUN this basic extension programme, and from machine code the graphic will be instantly displayed.

So to conclude what have we achieved?

1) We can define a pattern or shape and store this as Data in

&5000-&5007

2) We can assign attributes to the pattern from Data held in

&5008-&500F

3) We can position the pattern on the screen from Data held in

&5040-&5047

Things to do:

Enter this Data at &5000 and RUN the programme:

```
5000   08 08 1C 3E 2A 7F 08 08
```

Give the tree trunk a different colour by changing the following Data at &5008 to:

```
5008   CB CB CB CB CB CB 6B 6B
```

and RUN the programme.

Move the graphic image by changing the screen addresses:

5040   00 50 60 08 08 50 60 28

and RUN the programme.

Finally define your own pattern and attribute data and place this near the centre of the screen.

The next article shows us how we can create a larger graphic 2x2 (16 pixels by 16 pixels) and using essentially the same software with expanded Data tables create a more visible image

©Dave Arts - Jan 2001

—@@@—

Not more drives!

By John Marriott © January 2001

At last a clear space on my work bench - at least Christmas and the New Year tends to give me a breathing space from people hammering on my door bearing some obscure bit of electrical/electronic equipment with the "...it isn't much, but Fred Smirch (local workshop chappie) says it'll cost me £25.00p. Just to look at it...".

Strange how people think they're worth £10.00p. per hour (but settle for about £4.00p.) from their employer - yet expect a skilled artisan (me?) to repair their stuff for nothing, give an unconditional guarantee - and redeliver it when convenient to them, again - at no cost!

Well, that's my New Year Resolution shattered - again. But on to that old thorny 'drive problem' with the TC01. Mainly due to knocking over a box containing about 250 neatly sorted 3" disks - I've 3 TCO1's for local Club use, configured 2 x 3" 40T/SS, 1 x 3" 40T/SS & 1 x 3.5" 80T/DS, 1 x 3" 40T/SS 1 x 3.5" 80T/DS & 1 x 5.25" 80T/DS - so booting up with an 'standard' 1.31 DOS in the last 2 machines lands up with wrongly configured drives, no correct DIR on those disks, and general "...what the hell!" so...

...I got to thinking about that '3.5" 80T/DS boot drive' chestnut - and from MOS with a 'standard' 1.31 DOS disk did the >R10001200<e>, then >T10001010<e> and looked' at the value in 1006, which happened to be OC. The 'high byte' is the 'number of tracks' information, the low byte' the 'number of sides' - which means that all 4 drives would be configured as 40 track, with drives 0 &1 being single sided and drives 2 & 3 being double sided - logical' for when the TC01 first saw light of day.

Naturally, due to the strange logic that I'm blessed with - I tried out the same test with a System 5 2.05 DOS and 1006 contained EE which means (on that disk) the drive configuration is drive 0 is 40T/SS and the rest 80T/DS. Checking an 80T/DS 2.05 DOS disk in Drive 1 gave the same - so with that blinding flash of inspiration and a leap into the dark, I thought '...why not change that value to FP (all drives 80T/DS!) and save it back to the disk, replace Drive 0 with a 3.5" DS one - and boot up?..."

Do you remember my recent bit on Murphy's Law - it struck, with a whack? First and foremost I assumed the 3.5" drive I was going to use was a 'full worker' - forgetting that this had been a recent boot sale buy (amongst a box load of computer junk), so of course it didn't. Slight side tracking as I repaired a broken primary winding wire to its power pack transformer, continuity test check okay, starts putting (ramming!) it back together and breaks the other end! Repair that - and away we go...

...only to be 'told' that there's no 'sector/track'. Change the drive to one I know is okay, but same result - so thinks ... and another leap into the dark, as it dawns on me that could the 3" drive have 'missing PCB tracks' like the drives which Amstrad/Spectrum+3 use? True enough, there is no 'Side Select' circuit on the TCO1's 3" drive, so could it be "...well, it's only got one side so it doesn't matter if that line' is 'true or false' on start up and is 'brought to task' after booting up and drive configuration made?

Set up my 2" 'scope, the ni-cads want charging - nothing changes. Anyway, it appears that the 'Side Select' line is taken under control right from the start, so much for my senile brain cells - but I'm still left thinking - '...wasn't the head on the single sided 5.25" 40T drives on top, the opposite to the 3" drive, or has my marbles slipped. If so, could the 'wrong'

side of the 3.5" disk be looked at' on boot up when in Drive 0 position, despite the 'side select' signal being there?

Right, boot up with 1.31 DOS, type MOS<e>R10002000<e> then T10001010<e>TF971F9A8<e> (RAM screen dump as table 1) &1006 's &0C shows the drive configurations, 0: - 1: as 40T/DS and 2: - 3: as 40T/DS with the content values of RAM Addresses &F973/83/93/A3 concurring (hence the booting up rather than ‘no disk' straight into MOS). Table 2's &1006 's &EE configures the drives to be 0: as 40T/SS and 1: - 2: - 3: as 80T/DS. Table 3 is 2.05 DOS re-boot *showing the same configuration as Table 2* except the drive information is now at RAM Addresses &F9CA/DA/EA/FA. Table 4 is a 2.05 DOS 3.5" 80T/DS drive ‘read' in 1: position, just curiosity on my part to see if DOS 2.05 ‘formatting' got up to any tricks – but part of ‘Backup' is to copy the system tracks from the disk in 0: - but I was getting a bit fed up with my ‘assumptions' being more than wide of the mark!

...now, part of my test was to show ALL drives as 80T/DS (this covers ALL suitable 3", 3.5" & 5.25" drives!), but what I didn't then realise was the drive configuration information held in upper memory - so if I change &1006 from &EE to &FF and write it back, disassemble the 'drive program' so that &FF lands up in RAM Addresses &F9CA/DA/EA/FA on that ‘write' then re-boot with a 80T/DS drive at Drive 0 - will it work...

...or is there another look up table' somewhere else?

As there is a loud pounding on the door, the local Cats Protection Treasurer of 25 years decided to shuffle off this Mortal Toil the beginning of Christmas Week, I've still not sent out my 'Thank you' cards to those who carefully selected and gave me copious amounts of red plonk, yet again I'm trying to dispose of 'rubbish acquired' from recent Boot Sales - is there someone out there who'd like to continue where I left off?
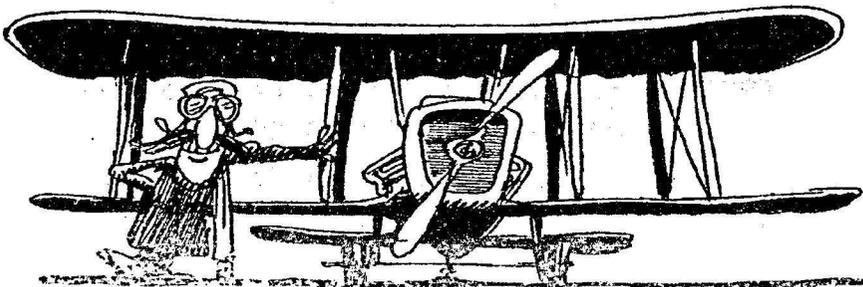
Drive 0:   DOS Version 1.3   Disc 3" 40T/SS

```
>T 10001010
1000 00 E1 00 FB 00 FA 0C FF .a.{.z..
1008 FF FF FF FF FF FF FF FF ........
1010 FF .
>T F971F9A8
F971 00 FD A9 F9 80 FD C0 FD .})y.}a}
F979 00 00 00 00 00 00 00 00 ........
F981 00 FD A9 F9 90 FD 90 F7 .})y.}.w
F989 00 00 00 00 00 00 00 00 ........
F991 00 FD B8 F9 A0 FD C2 F7 .}8y }Bw
F999 00 00 00 00 00 00 00 00 ........
F9A1 00 FD B8 F9 B0 FD F4 F7 .}8y0}tw
>
```

<div style="text-align:right;">TABLE 1</div>

Drive 0:   DOS Version 1.31   Disc 3" 40T/SS

```
>T 10001010
1000 00 E1 00 FB 00 FA EE FF .a.{.zn.
1008 FF FF FF FF FF FF FF FF ........
1010 FF .
>T F971F9A8
F971 00 FD A9 F9 80 FD C0 FD .})y.}a}
F979 00 00 00 00 00 00 00 00 ........
F981 00 FD D6 F9 90 FD 90 F7 .}Vy.}.w
F989 00 00 00 00 00 00 00 00 ........
F991 00 FD D6 F9 A0 FD C2 F7 .}Vy }Bw
F999 00 00 00 00 00 00 00 00 ........
F9A1 00 FD D6 F9 B0 FD F4 F7 .}Vy0}tw
>
```

<div style="text-align:right;">TABLE 2</div>

Drive 0:   DOS Version 2.05   Disc 3" 40T/SS

```
>T 10001010
1000 00 E1 00 FB 00 F8 EE 01 .a.{.xn.
1008 FF FF FF FF FF FF FF FF ........
1010 FF .
>T F9C8F9FF
F9C8 00 FD EE FA 80 FD C0 FD .}nz.}@}
F9D0 00 00 00 00 00 00 00 00 ........
F9D8 00 FD EE FA 90 FD CC FD .}nz.}L}
F9E0 00 00 00 00 00 00 00 00 ........
F9E8 00 FD EE FA A0 FD D8 FD .}nz }X}
F9F0 00 00 00 00 00 00 00 00 ........
F9F8 00 FD EE FA B0 FD E4 FD .}nz0}d}
>
```

TABLE 3

Drive 1:   DOS Version 2.05   Disc 3.5" 80T/DS

```
>R 1000120000001
>T 10001010
1000 00 E1 00 FB 00 F8 EE 01 .a.{.xn.
1008 FF FF FF FF FF FF FF FF ........
1010 FF .
>
```

TABLE 4

Ed: This is just part 1 of the new series about
TC01 `drives', generated by John
Marriott's recent
investigations.

—@@@—
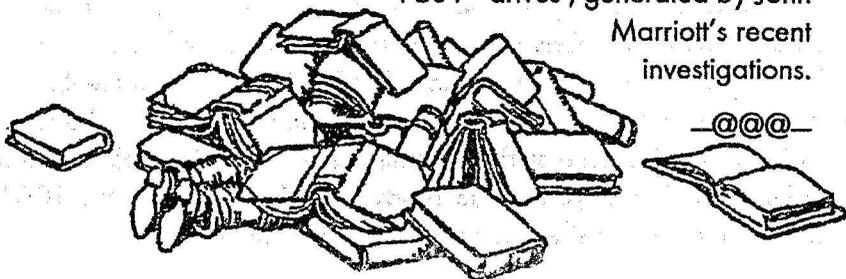
<u>FIRST STEPS</u> 🏃

P'S AND Q'S AND USING @

BY TED CAWKWELL

"Mind your P's and Q'S" is a well-known proverb which the computer programmer does well to remember in the shape of "mind your O's and S's." The confusion of 'O' and zero is probably the most common typing error of all, and often the most difficult to spot when debugging. I have often thought that the best place for the zero would be between the 5 and 6 but unfortunately we are stuck with it just above the letter 'O'. The Einstein makes things even more difficult by using the diamond 0 in preference to the slash 0 of other micros. The slash 0 is definitely more eye-catching when scanning a listing. When typing therefore, constant vigilance is required. The wrong O can appear during line numbering (more reason to use AUTO) and in the word TO in particular, with baffling results when the programme is RUN.

The problem with 'S' is it's confusion with $, notably in reserved words like CHR$,MID$,RIGHT$ etc., as well as in the names of variables (e.g. NAME$) and arise from the natural tendency to think in terms of WORDS rather than SYMBOLS. If you try to think NAMEdollar or RIGHTdollar instead of the more obvious NAMES or RIGHTS this problem will be more easily overcome. Even so CHR$ is always a difficult one to enter 100% !

One typing error, which plagued me for weeks, was entering 8 or 9 when I wanted (or)! Perhaps this is just an individual quirk but it was the one that started me on the road to using the Function keys. (See EM Vol 2/6). As an aside it occurs to me that I did not mention in the original article that having programmed the Fkeys it then makes sense to utilise Albert's neat plastic bar above the keys to install a slip of card to label them! So obvious that I didn't even think of it! This gadget is not mentioned in the manual but its use must be fairly obvious. Lift the corners of the clear plastic strip (it may be quite stiff) and it hinges up. The piece of thin card goes underneath. There were some ready-printed blanks with the TC01 when new but they are easily made up if you can't find them.

USING @

Also not mentioned in the manual are some uses of the character @. This symbol follows PRINT and is used to position a string on the screen and is very useful in arranging the format of a display. Of particular interest is the ability to PRINT retrospectively to the display and its use after PRINT in a programme line. As an example

    PRINT@2,10;"QQQQ"

Will print to the screen QQQQ and the first Q will be positioned in Column 2 on Line 10. The , and ; are essential as are the quotes around the message to be printed. Also remember COLUMN and LINE in alphabetical order -if you reverse them strange things will occur in your display! A further thing to remember for accurate placement is that both column and line start at zero - not 1.

In the above example PRINT@2,10; set the print position at column2, line10 and any subsequent PRINT'S will be placed AFTER this position unless a further PRINT@ is used. later in a programme. However, it will still be possible to add a heading to the display by using e.g.

    PRINT@15,4;"HEADING"

But bear in mind that the print position has now been changed and any further PRINT statements will immediately follow HEADING! The other thing about @ is that once a PRINT has occurred in a line, @ can be used alone to position any following strings. Except when another Command intervenes. Try this: -

    10A$=MUL$("*",40)

    20PRINT@0,4;A$;@18,6;"FILE";@0,8;A$;@3,12;"NAME";
    @3,14;"ADDRESS";@3,18;"TELNO.";@23,6; "A";@3,20;

Be VERY careful about , and ; . If the last @ doesn't make sense try leaving it out and note what happens to "Ready" on the screen when you RUN it! ©   —@@@—

Simple Database!

By John Marriott

One of the annoying things I find about databases is 'setting up the fields', for I can guarantee however much room I allow for each field it'll either be too much - or not enough. That is until I discovered that the best database, which suited my needs, was a Word processor with a 'find' or 'search' facility, which Word Pro on the Einstein has!

Okay, not blindingly fast, more key presses than usual - but give it a try. Each 'data file entry' has its own paragraph, say, the STD Code and phone number followed by the name/address/information. Updating any entry is a simple word-processing action to the file, and save-off!

One benefit (depending on the database program you're running) is you're not saving off lots of 'dimensioned blanks', just actual information. Whilst Tasword on the TC01 hasn't a search/find capability, if it's anything like the 128K versions on the Spectrum and Amstrad which have, these are just as bad for saving off 'dimensioned blanks' but still have that flexibility for my `database' needs which true database programs haven't.

©John Marriott - January 2001

—@@@—

STRANGER THAN FICTION

theclebyslark@gapement.com - conclusion?

There is only one wheel on this wagon and it isn't going very far at all. Not much further than the offices of the Tonight program at the BBC that is – and there it remained five days before any one opened the package.

I had just turned on the car radio having left work rather late, my brain being still stuck in nerd mode, upon hearing Jeremy Paxton had been sent the notorious missing Enigma Machine, I naturally concluded I was tuned in to the news quiz, and some one had cooked up a gag about university challenge. But fact is stranger than fiction and the Enigma Machine that had been stolen from Bletchley Park, base of wartime decrypting, had indeed been recovered

After months of hearing about an accidental purchase – innocent of the knowledge this might possibly be stolen goods! Ransom demands, speculation about who was to be the go-between, anonymous donors and the police apparently turning a blind eye. Now the Enigma Machine was found. One might have thought that the matter had ended. However a couple of those vital wheels were missing - that's right - they are set to a start combination rotating at each letter continuously scrambling the text further. Without these the thing was useless and the blighter was still after the money! The wheels could be more easily secreted. But the police came up trumps, made an arrest, and recovered the goods: suspects awaiting trial and wheels back in their slots.

To briefly explain, the wheels were both the complication of the device and also in part its downfall. So confident were the Germans in its encryption capabilities they wired up the contacts set within the wheels in alphabetical order, a vital clue for the decipherers. Its other Achilles heel was that the machine was incapable of encoding a letter to itself, so one knew for example an E couldn't be an E but must be any one of the other twenty-five letters. Still sounds confoundedly difficult if you ask me!

The special, one of three, Enigma Machines is now in safe hands - I assume the owners. He/she must think twice before loaning it to a museum to be put on display again. That of course is what is needed, as I have said before, an established museum to preserve this heritage of British wartime ingenuity – preferably on the site where it all happened, and the memories still linger.

–@@@–

Rich Text Format – Some Answers

Here is some general info about RTF which Dick Keynes has dug up - there's a note about Microsoft copy write though, but I'm sure they want as many people as possible to know all about their stuff so won't mind us advertising for them in these pages.

Rich Text Format

The rich-text format (RTF) standard is a method of encoding formatted text and graphics for easy transfer between different applications and different operations. Generally, it is used by all Microsoft Word applications Word for Windows, Word for the Macintosh, and Word for MS-DOS in order to move word-processing documents between different platforms without having to rely on special translation software or conversion utilities. Because the RTF standard provides a format for text and graphics interchange that can be used with different output devices and operating systems, Windows Help also supports this standard. That means you can use any text editor that generates RTF output, including your own custom RTF editor, to create the source files that are built into Help files.

Software that takes a formatted file and turns it into an RTF file is referred to in this appendix as an RTF writer. Software that translates an RTF file into a formatted file is referred to as an RTF reader. An RTF writer separates the application's control information from the actual text and writes a new file containing the text and RTF groups associated with that text. An RTF reader does the converse of this operation. Microsoft©

Hmm... as I suspected RTF is a preferred embedded control, so exporting and importing text between products is possible, I guess everyone has adopted it, Lotus and GST to name just two, in the hope people will move over to their applications without disturbing their prior work too much. I guess each product has slightly different versions of RTF, for example: with GSTs DTP it's possible to create a soft CR (carriage return) by pressing Ctrl. + Enter - so what's the use of that? Well it starts a new line without beginning a new paragraph, this is useful when one wants to prevent indenting or line spacing and maintain cohesive text but with differing line lengths as in a program listing. The trouble with this is it doesn't work when importing from Microsoft. So use the former, you say, but that can't contain the tables generated by Microsoft and besides the full latest version of Word was supplied free with the PC. Anyway there must be a way it's just I haven't found it - or you haven't shown me how... yet.

—@@@—

Ed: Now we have a couple of useful astronomical offerings from Dave Arts. The second, GALISAT might just require a telescope to be fully appreciated – it is possible to see several of Jupiter's moons with a small telescope like my own 60 millimetre refractor. Both these programs make good tools for the sky watcher. The first program, MOON2000 however, should be a delight to all. The evening I hastily booted up to run it, entering the date, and a nice third moon image appeared. I went out side and sure enough there it was exactly the same. A few nights later, in January, we had an eclipse – this feature isn't included as yet. Hint Dave. Now there's an Idea for future program development!
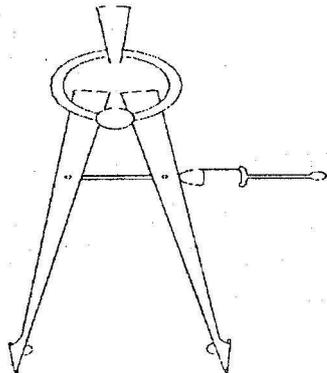
MOON2000 — XTAL BASIC Program

by Dave Arts

```
10 REM:MOON CALCULATION by Dave Arts
20 CLS:INPUT"INPUT YEAR,MONTH,DAY ";YY,MM,DD
30 Z=INT(YY/19)
40 R=YY-(Z*19)
50 MM=MM-2
60 IF MM=0 THEN MM=2
70 IF MM=-1 THEN MM=1
80 R=R*6-1+MM+DD
90 T=INT(R/30)
100 AGE=R-(T*30)
110 IF AGE=>28 OR AGE<=1 THEN
PRINT "THE MOON IS NEW"
120 IF AGE=2 OR AGE=3 THEN GOSUB310
130 IF AGE=4 OR AGE=5 OR AGE=6 THEN GOSUB340
140 IF AGE=7 OR AGE=8 THEN GOSUB250
150 IF AGE=9 OR AGE=10 OR AGE=11 THEN GOSUB370
160 IF AGE=12 OR AGE=13 THEN GOSUB400
170 IF AGE=14 OR AGE=15 THEN GOSUB430
180 IF AGE=16 OR AGE=17 THEN GOSUB460
190 IF AGE=18 OR AGE=19 OR AGE=20 THEN GOSUB490
200 IF AGE=21 OR AGE=22 THEN GOSUB280
210 IF AGE=23 OR AGE= 24 OR AGE=25 THEN GOSUB520
220 IF AGE=26 OR AGE=27 THEN GOSUB550
230 PRINT@15,21;"AGE "; AGE ;" DAYS OLD"
```

```
240 INPUT"PRESS ENTER KEY TO CONTINUE";A$:IFA$=""
THEN CLS:GOTO20
245 END
250 REM:FIRST QUARTER
260 ELLIPSE100,100,50,,,RAD(270),-
RAD(90):FILL110,100
270 RETURN
280 REM:LAST QUARTER
290 ELLIPSE100,100,50,,,RAD(90),-RAD(270):
FILL90,100
300 RETURN
310 REM:2/3 DAY MOON
320 ELLIPSE100,100,50,,,RAD(270),RAD(90):
ELLIPSE90,100,50,,,RAD(272),RAD(82):FILL145,100
330 RETURN
340 REM:4-6 DAY MOON
350 ELLIPSE100,100,50,,,RAD(270),RAD(90):
ELLIPSE43,100,75,,,RAD(319),RAD(41):FILL135,100
360 RETURN
370 REM:9-11 DAY MOON
380 ELLIPSE100,100,50,,,RAD(270),RAD(90):
ELLIPSE134,100,60,,,RAD(125),RAD(236):FILL100,100
390 RETURN
400 REM:12/13 DAY MOON
410 ELLIPSE100,100,50,,,RAD(270),RAD(90):
ELLIPSE113,100,52,,,RAD(105),RAD(256):FILL100,100
420 RETURN
```

```
430 REM:FULL MOON
440 ELLIPSE100,100,50:FILL100,100
450 RETURN
460 REM:16/17 DAY MOON
470
ELLIPSE100,100,50,,,RAD(90),RAD(270):ELLIPSE87,100,5
2,,,RAD(284),RAD(75):FILL100,100
480 RETURN
490 REM:18-20 DAY MOON
500
ELLIPSE100,100,50,,,RAD(90),RAD(270):ELLIPSE66,100,6
0,,,RAD(304),RAD(55):FILL100,100
510 RETURN
520 REM:23-25 DAY MOON
530
ELLIPSE100,100,50,,,RAD(90),RAD(270):ELLIPSE157,100,
75,,,RAD(139),RAD(221):FILL60,100
540 RETURN
550 REM:26/27 DAY MOON
560 ELLIPSE100,100,50,,,RAD(90),RAD(270):
ELLIPSE110,100,50,,,RAD(98),RAD(268):FILL55,100
570 RETURN
580 GOSUB310
590 CLS:GOSUB340
600 CLS:GOSUB250
610 CLS:GOSUB370
620 CLS:GOSUB400
```

```
630 CLS:GOSUB430
640 CLS:GOSUB460
650 CLS:GOSUB490
660 CLS:GOSUB280
670 CLS:GOSUB520
680 CLS:GOSUB550
690 END
```
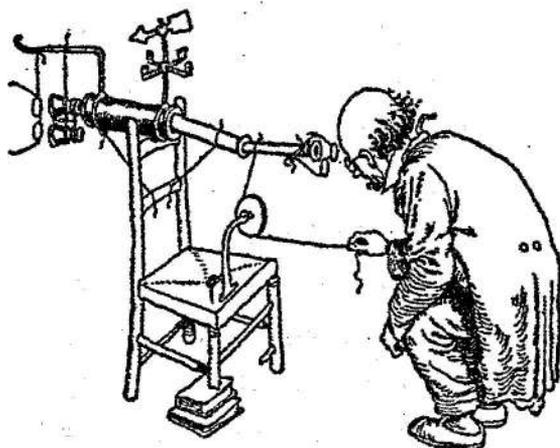

GALISAT   – XTAL BASIC Program

by Dave Arts

```
10 REM GALISAT by Dave Arts
25 PRINT"WHICH IS TOWARD LEFT:"
30 INPUT"EAST OR WEST? ";A$
35 IF LEFT$(A$,1)="W"THEN GOTO50
40 IF LEFT$(A$,1)="E"THEN GOTO60
45 GOTO30
50 L=1:L$="WEST":R$="EAST"
55 GOTO65
60 L=-1:L$="EAST":R$="WEST"
65 GOSUB800
70 N=J-2415020+F
75 P=PI/180
80 PRINT@0,0 ;L$
85 PRINT@36,0 ;R$
```

```
90 PRINT@6,0 ;"YEAR";Y;
95 PRINT@18,0 ;"MONTH";M;
100 PRINT@28,0 ;"DAY";D;
105 V=0
110 GOSUB295
115 DL=INT((N-INT(N))*20+0.5)/20
120 IF DL=0.5 THEN GOSUB 335
125 MT=(358.476+0.9856003*N)*P
130 MJ=(225.328+0.0830853*N)*P
135 JJ=221.647+0.9025179*N
140 VT=1.92*SIN(MT)+0.02*SIN(2*MT)
145 VJ=5.55*SIN(MJ)+0.17*SIN(2*MJ)
150 K=(JJ+VT-VJ)*P
155 DT=SQR(28.07-10.406*COS(K))
160 Z=SIN(K)/DT
165 I=ATN(Z/SQR(1-Z*Z))
170 I=I/P
175 F=(N-DT/173)
180 F1=I-VJ
185 U1=84.5506+203.405863*F+F1
190 U2=41.5015+101.2916323*F+F1
195 U3=109.9770+50.2345169*F+F1
200 U4=176.3586+21.4879802*F+F1
205 X1=5.906*SIN(U1*P+PI)
210 X=X1:GOSUB315
215 X2=9.397*SIN(U2*P+PI)
```

```
220 X=X2:GOSUB315
225 X3=14.989*SIN(U3*P+PI)
230 X=X3:GOSUB315
235 X4=26.364*SIN(U4*P+PI)
240 X=X4:GOSUB315
245 V=V+1:N=N+0.05
250 IFV>=155 THEN GOTO265
255 IFD>=32 THEN GOTO275
260 GOTO115
265 INPUT"CONTINUE(Y OR N)?";A$
270 IF A$<>"N" THEN CLS:GOTO80
275 INPUT"ANOTHER MONTH? ";A$
280 IF A$<>"N" THEN CLS:GOTO25
290 END
295 REM JUPITER DISPLAY
300 DRAW124,0 TO124,175
305 DRAW130,0 TO130,175
310 RETURN
315 REM SATELLITE DISPLAY
320 X=127+L*INT(X*3.5+0.5)
325 PLOTX,V
330 RETURN
335 REM CHANGE OF DATE
340 PRINT@31,0 ;D
345 DRAW5,V TO 25,V
350 DRAW230,VTO255,V
```

```
355 D=D+1
360 RETURN
800 REM CALENDAR
810 INPUT"Y,M,D? ";Y,M,D
811 D=INT(D)
815 G=1:IFY<=1585 THENG=0
820 D1=INT(D):F=D-D1-0.5
825 J=-INT(7*(INT((M+9)/12)+Y)/4)
830 IF G=0 THEN GOTO850
835 S=SGN(M-9):A=ABS(M-9)
840 J1=INT(Y+S*INT(A/7))
845 J1=-INT((INT(J1/100)+1)*3/4)
850 J=J+INT(275*M/9)+D1+G*J1
855 J=J+1721027+2*G+367*Y
860 IF F>=0 THEN GOTO870
865 F=F+1:J=J-1
870 CLS:RETURN
```

—@@@—
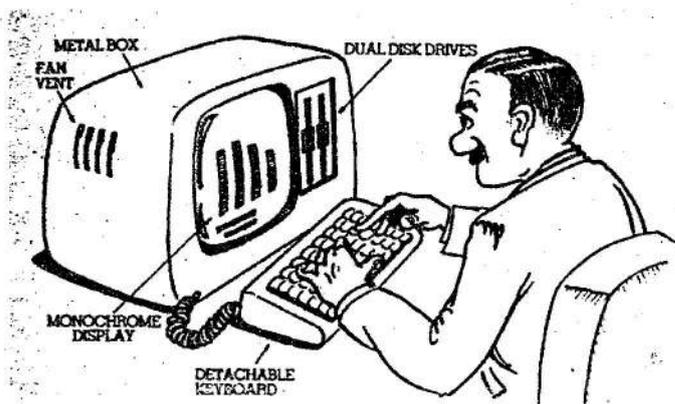
A letter from Dick Keynes

Dear Ed.

Thank you for picking up the reins after the sad loss of Ted and congratulations on producing an interesting and well laid out magazine. I can commiserate with you on your troubles with the scanner and O.C.R program, I have just installed a scanner myself thinking I could use it to edit my photographs. Not only was their trouble with the installation but I still have difficulty in using the basic copy program, I thought it would be straightforward exercise to produce prints but it seems to take ages and then I do not always get a match between the screen colour and that of the print. As for O.C.R I get a good reproduction in places interspersed with "gobble-de-gook", fortunately I do not have a real need for this facility.

I liked the piece about Murphy's Flaw, I suppose we have all met it in one shape or another. Which brings me on to the reason I am writing this letter, I seem to have been credited with supplying the information on modifying the DOS to allow booting up from the silicon disk. I was never one of Ted's techies but only an interested bystander and I supplied him with the disk parameters and definitions from Albert Revealed when he was looking for a way to modify DOS to make a 3.5 drive the standard for the Einstein. I never knew of the routine for modifying the drive allocation and wished it had been known before; I might then not have needed all those crossed wires and not have blown up my Matsumi drive. Anyway I hope you can credit either Ted or the supplier of the information.

At the same time as Ted was progressing the time bomb on drive life (or was it 3" disk availability) he expressed an interest in the silicon disk, the outcome being that I removed the ROM and memory from my machine and sent it to him with a demonstration disk with a Cracker program on it. I think that Ted was very involved with the disk drives at the time and did not investigate its potential and it must have been when my involvement waned (due to health) that he started delving into the usefulness of the sildisk. If you have used the Cracker or dBASE you will have realized that

the poor Einy has to write back to the disk drive all the time as there is not enough room in memory for the program let alone the work area. To illustrate the difference in speed I suggested he should try SS Spell with and without the sildisk and my program that ended up printing a graph after computing angle and max. distance for a projectiles travel.

There was some talk about seeing whether the design could be copied for general use at the time but I understand that though the ROM could be copied the memory was not understood, this still left copyright to be broached and I guess it was never progressed. Nowadays of course we have Excel and Access to use but I can't help thinking that the later does not compare to dBASE.

Well I hope you can continue the good work and request you delete the offers to extra copies of the disk which you enclose, sorry I can't find them as I had to drag out all my old correspondence to find out the little I know. If Tony thinks it is time I paid for more issues please let me know I can't wait to find out more about that Enigma machine.

Best wishes   Dick Keynes

Ed: Dick corrects us that none of the silicon disk article content in EM99 was his work, but as his name was mentioned, one can only assume his due influence. Seeking out all that information helped it along - he has earned his EM credits.

Wanted to show-off his 'laptop' but picked up the wrong case this morning!

Einstein TC01 bits & pieces

Due to a number (most!) of my local Club Members now firmly entrenched PC's, I've got 3 TCO1's (with manuals) for disposal with at least twin drives and 80 column cards - about 60/80 5.25" 80T/DS disks with lots of program (plus junk) on, lots of 3" disks (similar), plus various drives & etc. Also the SPECULATOR with manual and saved Spectrum programs, plus the TC01 hardware manual, The SOURCE and a photocopy of ALBERT REVEALED. For some reason my replacement 256 seems to have disappeared off the face of the earth so its monitor is up for disposal, possibly a TC01 colour monitor - but these are "delivery expensive" compared to their probable &/or agreed price. Best thing is to give me a phone (in the evening!) and see what you want/what I've got, and haggle prices/delivery...

...please, Programmers preferred to `Collectors come Hoarders'? I'm on 01392-469206 (Exeter).
John Marriott 121 Hill Barton Road Exeter EX1-3PP

The paperless office

Computer Quotations - *supplied by Ken Ross*

"Everybody gets so much information all day long that they lose their common sense." –Gertrude Stein

"Everything that can be invented has been invented." Charles H. Duell, commissioner, U.S. Office of Patents, 1899

"640K ought to be enough for anybody." –Bill Gates, 1981

"There is no reason anyone would want a computer in their home." –Ken Olson, president and founder of Digital Equipment Corp, 1977

"Computers make it easier to do a lot of things, but most of the things they make it easier to do don't need to be done." - Andy Rooney

"Imagine if every Thursday your shoes exploded if you tied them the usual way. This happens to us all the time with computers, and nobody even thinks of complaining." –Anonymous

"The most overlooked advantage to owning a computer is that if they foul up there's no law against whacking them around a little." –Anonymous

"The attention span of a computer is only as long as its electrical cord." –Anonymous

"Man is the best computer we can put aboard a spacecraft... and the only one that can be mass produced with unskilled labour." - Werner von Braun
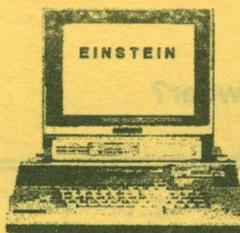
"I think there is a world market for maybe five computers." –Thomas Watson, chairman of IBM, 1943

Data data everywhere, and not a thought to think. –Anonymous

"If a new computer or a software upgrade costs more than it's worth to you, don't buy it. After all, you don't have to upgrade. Software will run forever and computer hardware will work as long as it's kept in good repair." –Bill Gates

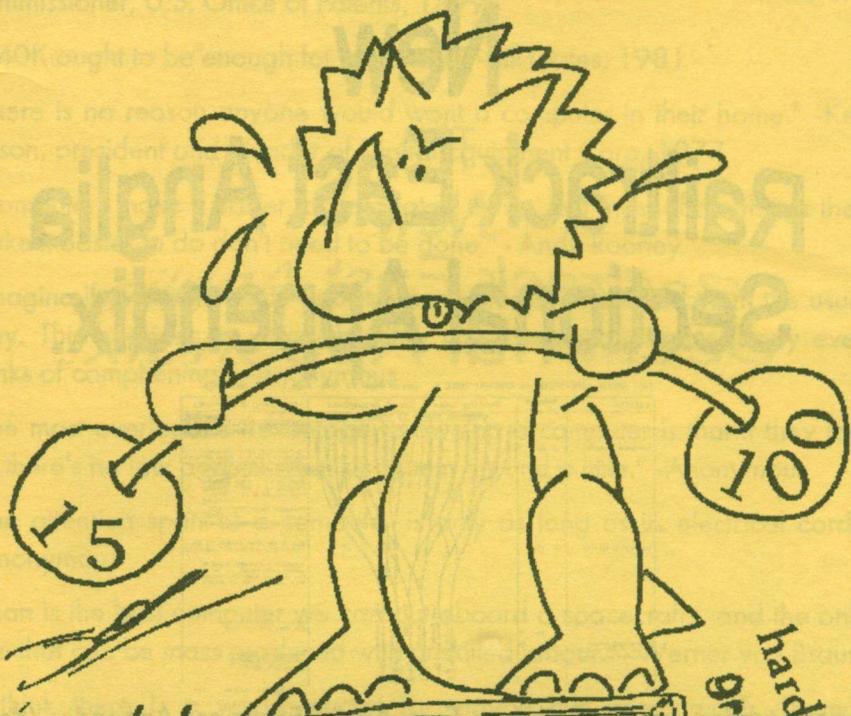"Computers in the future may weigh no more than 1.5 tons." –Popular Mechanics, 1949   —@@@—
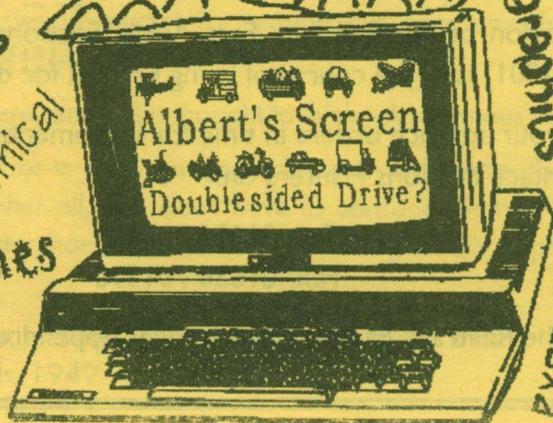
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& ALL MICRO NEWS   Number 100

Albert's Screen

Double sided Drive?

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