

ALL MICRO MAGAZINE

(for users of the Einstein and other golden oldies micros)

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(opinions herein are not necessarily those of the publisher)

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SHOW DATES FOR YOUR DIARY
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ALL MICRO SHOW will be on Saturday 12 November this year.  
plus

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SPRING ALL MICRO SHOW

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on Saturday 16 April.

As usual, the venue is the Bingley Hall, County Showground, Stafford, (2 miles out on the A518 Uttoxeter road & AA signs from junction 14 on the M6,) with plenty of free on-site parking, a shuttle bus from Stafford railway station, and overnight parking on-site if you're coming from Thurso or Truro. It's well worth making the effort to attend (we hope to be there again). Use the discount voucher on the yellow flyer to save a pound. {Sharward Services on 0473-272002}

COUNTRY-WIDE COMPUTER FAIRS:- Your membership card is valid for discount. Slough, 09 Apr; Brighton, 17 Apr; Portsmouth, 08 May. Phone 0225-868100 to confirm, & for more dates.

NORTHERN COMPUTER MARKETS:- Have you tried them? Are they allowing discount on your membership card? Let us know.

ALL FORMATS COMPUTER FAIRS:- Should be two vouchers with this issue. Brown is still good, green lists venues thru July. 081-856-8478 to confirm, and for more information.

BRITISH PRINTING SOCIETY. Branch printmeets / open days:-  
14 May. Dorset Branch (Community Ctre, Kinson, Bournemouth)  
04 Jun. Lincolnshire Branch (Village Hall, Reepham, Lincoln)  
18 Jun. Maidenhead Br. (Village Hall, Amersham Common, Bucks)  
03 Sep. Solent Branch (All Saints School/Ch. Halls, Winchester)  
24 Sep. York Branch (The Folk Hall, New Earswick, York)  
01 Oct. Devon/Cornwall Br. (Yelverton, Devon) (Jack: 0752-707667)  
08 Oct. Crawley Br. (St Paul's Meth. Ch. Hall, Northgate, Crawley)  
\*\*\*\*\*

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## LES FOSKETT REMEMBERS

I'm pleased to see that I'm not the only O.A.P. member, as in #67 Ted Cawkwell says he remembers the days before TV. Actually he isn't giving too much away, because he doesn't say whether he means pre-war or post-war.

I first became interested in electronics(?) in the days of the crystal set, when I used to help my father wind coils. There was no such thing as a loudspeaker -- we used a headphone inside a pudding basin!

Skipping a few years, in 1936 (I think it was) I was privileged to see a demonstration by Baird of large screen (for that time) TV at the Crystal Palace. Then in 1938 we used to watch TV on Marconi sets in a dealer's window.

But to get back to computers, I have a good selection of manuals and software for my TC01, 256, Sinclair, Commodore, Memotech & Apple collection of machines. For the Einstein my software includes TASWORD (one of the best wordprocessors available), also the G4VPD COLLECTION (HAM RADIO), and GRAFDRAW by Surrey Software. This latter is a first class program, ideal for anyone who requires video titles or graphics. It also prints to a graphics printer.

I also have a HEWLETT PACKARD 125 with WORDSTAR, & BASIC.CPM plus various utilities. I have the Wordstar manuals, but none for the computer itself. Can anyone help?

I also have an ST5C COMPUTER RTTY DECODER, which so far as I can tell works fine from a R107 SECOND WW2 RECEIVER and Albert, but it prints a load of rubbish. I think this is due to the software I'm using. Anyone know of a good program?

Queries can be sent in to the magazine, but this often involves quite a delay before the answer can be sent in and printed. Can the magazine HELPLINE list of members willing to give advice to other members by post or phone be revived? The more common (or difficult) problems -- with the answer -- could be put in the magazine to help everyone.

Here are some queries for a start: HOW DOES ONE FIT DOUBLE 5" DISK DRIVES (WITH THEIR OWN POWER SUPPLY) TO THE ALBERT. (I WORKED OUT HOW TO FIT THEM TO THE EXTERNAL SOCKET BUT ALBERT SEEMS TO GET CONFUSED AND SWITCH ON BOTH DRIVE 0 & EXTERNAL DRIVES AT TIMES). WHAT IS THE SPARE ROM SOCKET FOR IN THE ALBERT?. (The service manual doesn't mention it).

\*\*\*EDITOR's comments:-

- 1.Are your external drives' DRIVE SELECT JUMPERS set to the next logical drive numbers after your internal ones? SPIN DISK/READ/WRITE signals go to ALL drives, but jumper settings filter out READ/WRITE signals addressed to other drives.
- 2.Try Mauritron Technical for obsolete manuals (0844-351694)
- 3.Can anyone help with the RTTY decoder/ROM socket queries?
- 4.Reviving the HELPLINE in the magazine seems an excellent idea. Please let us know if you're willing to help.

## WE HOPE YOU WON'T BE TOO CONFUSED

by the amazing assortment of recycled paper and envelopes that we're now forced to print the magazine, correspondence, & incidental items on -- and mail them out to you in.

If you've been a member from the very start, you'll remember that in 1985 your membership cost you £15 a year. In today's money you would expect to pay at least £30, but in fact THE SUBS ARE LESS NOW THAN A DECADE AGO -- just £10 a year (and only £9 if you pay for 2 or 3 years at a time).

With the price of obsolete computers plummeting like a stone, we think it's very important to keep the subs at this level so they are within reach of the unemployed, unwaged & still-at-school novices who are increasingly becoming proud Einstein owners. However, we can ONLY achieve this result by exercising the utmost ingenuity in finding ways of cutting costs to the bone. As we are all volunteers, the only places we can make economies are on paper and printing costs.

We were only able to continue the magazine -- after Graham had given it up as completely hopeless -- by adopting a "utility" format, and by negotiating a deal through the father of a young Einstein user, which got us access to his firm's printing machine during his meal break on the night shift, when it would otherwise have been standing idle.

There were obvious drawbacks to this arrangement, as the night shift only came round every third week, it took six weeks to get a complete issue printed, and it just wasn't practical to print more than a 16-pager this way.

Matters came to a head when a machine breakdown brought things to a grinding halt halfway through printing the Xmas issue. We hurriedly negotiated access to a printing machine at another establishment, but we were now competing with cash customers for productive machine time, so the cost shot up dramatically.

We thought it prudent to keep this backup facility available for the future by using it to print an extra four pages for the Jan/Feb issue. This was just as well, since no sooner had this been mailed out than we lost our original printing machine when our night shift helper changed jobs.

We now had access to a replacement machine -- but at a cost that meant we couldn't afford to use it. The subs would only have supported an 8-page magazine at these prices, and THAT would have killed subscription renewals stone dead!

To the rescue came our sister Steam Printing Society, who negotiated a much better combined-rate deal, and brought the total cost down to a level we can almost afford by donating a vast hoard of broken reams of paper, accumulated from long-closed printing works -- some is 70 years old!! -- which they had no real use for. The snag is that it is all shapes, sizes, colours, weights and consistencies -- & every sheet has to be hand-cut to size & hand-fed thru the press!!



# A BEGINNER'S GUIDE TO THE EINSTEIN, Part 2. (A.C.McROBBIE)

## TURNKEY (or "AUTO-BOOT") PROGRAMS

The Disk Operating System (or DOS) can be modified so that a program can be loaded automatically. One utility program which does this is a BASIC program called BOOTMOD.XBS (or AUTODOS.XBS). With the write protect hole closed, RUN either program and type in the name of the program you wish to auto-load. The next time you press CTRL-BREAK with that disk in the drive, the program (providing it is on the disk) will load automatically.

If you wished Xtal BASIC to load every time you started up the machine, together with a program - FKEYDEF.XBS - that defined the function keys, you would type XBAS FKEYDEF at the prompt, when asked by the utility for the name of the program(s) to auto-load.

## FORMATTING DISKS

When you buy a new disk, you must FORMAT it before it can be used. Formatting writes the data magnetically to the disk that the Disk Operating System (or DOS) needs to read, so that your programs can be stored (and later found) on the disk. Formatting also creates directory tracks on the disk, ready to hold the names and "addresses" of your stored files. To FORMAT a disk, you'll need the utility program called BACKUP.COM (from your DOS system disk) on a disk in the drive you're using.

Close down any program you may already be using, or if you are running a game that has no EXIT or QUIT option you'll have to press the RESET button. (you should NEVER DO THIS WHILE THE DISK ACCESS LIGHT IS ON, or you risk corrupting your program or data on disk). This will reset the memory bank and load the operating system from the disk in Drive O/A. Otherwise CTRL-BREAK will do the same. Either way you should see the DOS prompt 0: appear onscreen. Type BACKUP and press ENTER, then F to select the Format option, and follow the on-screen instructions.

These on-screen instructions are simple and easy to follow (and allow for users with only one disk drive) so you should have no problems, but be warned:-

**FORMATTING (OR BACKING-UP ONTO) A DISK WILL DESTROY ALL EXISTING DATA (OR PROGRAMS) ON THAT DISK !!!**

Before formatting or backing-up a disk you should therefore use DIR to check exactly what is on the TARGET DISK that you are formatting (or backing-up onto), and ensure that the write-protect hole is CLOSED on the TARGET DISK and OPEN on the SOURCE DISK. Making sure that you take this elementary precaution EVERY TIME will protect you from wiping out your valuable programs or data by accidentally formatting (or backing-up onto) the wrong disk!

## BACKING UP DISKS

The BACKUP utility also has a B option to back-up a disk. This writes everything from one disk to another (including operating system and directory tracks). Any data (or programs) on your TARGET DISK will be over-written (and thus destroyed) so take great care, as noted above.

The program will ask which is the source drive (to be copied FROM), and which is the destination drive. If you only have one drive you will key in 0 for both - making sure you key the figure zero, not the letter o! If you have twin drives you can copy from/to either drive. On a single-drive system watch the screen carefully for instructions to change disks, which will happen several times.

A useful tip is to keep the SOURCE disk to the left side of your keyboard, and the TARGET disk to the right (when they're not in the disk drive), so you don't get confused as to which is which.

## COPYING PROGRAMS

If you want a second copy of a file on the same disk (under another name) or if you want to copy files to another disk (without destroying all the files on the target disk) you COULD load the file into memory and then save it to the disk and filename you want it as, but you'll normally only use this method when you've got more experience and want to alter machine code inside programs (or repair the operating system tracks on disks).

If you have a twin-disk system & 80-column display you'll find a disk file utility called NEWSWEEP on most pd library disks (it may be shortened to NS or NSWP) & you'll never use anything else to copy or display files again. Its display is hard to read in 40 columns, and it's less useful on a single-disk system, in which case you'll use COPY from the master system utility disk.

With the disk with COPY.COM on it mounted in the drive, type COPY and press ENTER. When loaded, the cursor moves down one line and displays no more than an asterisk next to the flashing cursor. This is REALLY helpful !!!

At this point key in the FILENAME and EXTENSION of the file you want to copy, plus the drive number (& new file name if different) that you wish to copy to. If you don't get it correct, the file won't be copied! The line should look like this:- \* FILENAME.EXT TO 0: then press ENTER.

Or you can press the spacebar and type \*.\* TO 0: then press ENTER. Filenames will be displayed in turn, and you'll be asked if you want that file copied. If you type N then it moves to the next filename. Typing Y will load that file, ready to copy (then ask you to swap the disk to save it elsewhere if you have a single-drive system). When you've finished, press the ENTER key to return to the DOS prompt.



```

WFFFFFFFXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
WXXXXX0XX0-1-2-3-0XX0-1-2-3-0XX0 limna welsh tree T
W !XX! !XX! !XX! nthes onion onion T
W ^ 1XX1^ ^ ^ 1XX1 ^ ^ ^ 1XX0-1-2-3-4-5-6-7-8-9-OT
W !XX! !XX! !XXXXXXXXXXXXXXXXXXXXXXXXXXXX
W 2XX2 2XX2 2XXXXXXXXXXXXXXXXXXXXXXXXXXXX
W c !XX! !XX! !XX0-1-2-3-0XX0-1-2-3-4-T
W o 3XX3 c 3XX3 3XX! !XX! T
W m !XX! a !XX! !XX1 ^ ^ ^ 1XX1 straw GGG
W f 4XX4 r 4XX4 4XX! !XX! berry G GGG
W r !XX! r !XX! !XX2 2XX2 G
W e 5XX5 o 5XX5 5XX! !XX! G
W y !XX! t !XX! !XX3 s 3XX3 G
W 6XX6 6XX6 p 6XX! w !XX! G
W !XX! !XX! e !XX4 i 4XX0-1-2-3-G
W 7XX7o o 7XX7 a 7XX! s !XXXXXXXXXXG
W !XX!n n !XX! s !XX5 s 5XXXXXXXXXXG
W 8XX8i i 8XX8 8XX! !XX0-1-2-3G
W !XX!o o !XX! l !XX6 c 6XX! buckG
W 9XX9n n 9XX9 e 9XX! h !XX1 wheatG
W !XX! o o !XX! t !XX7 a 7XX! G
W 0XX0 n n0XX0 t 0XX! r !XX2 a G
W !XX! i i !XX! u !XX8 d 8XX! t G
W 1XX1 o o !XX1 c 1XX! !XX3 t G
W !XX! n n !XX! e !XX9 b 9XX! r G
W l 2XX2 2XX2 2XX! e !XX4 a G
W i !XX! !XX! r !XX0 a 0XX! c G W=WALL
W m 3XX3 3XX3 u 3XX! t !XX5 t G G=GARAGE
W n !XX! !XX! n !XX1 r 1XX! a G F=FENCE
W a 4XX4 4XX4 n 4XX! o !XX6 nG T=TRELLIS
W n !XX! !XX! e !XX2 o 2XX! tG X=PATH
W t 5XX5 5XX5 r 5XX! t !XX7 sG
W h !XX! !XX! !XX3 3XX! G
W e 6XX6 6XX6 b 6XX! r !XX8 G
W s !XX! !XX! e !XX4 u 4XX! G
W 7XX7 7XX7 a 7XX! b !XX9G
W !XX! !XX! n !XX5 y 5XX!GGG
W 8XX8 8XX8 s 8XX! !XXF GGG
W b !XX! !XX! !XX6 c 6XXF GGG
W u 9XX9 9XX9 9XX! h !XXF GGG
W s !XX! !XX! !XX7 a 7XXF GGG
W h 0XX0-1-2-3-0XX0 0XX! r !XF
W !XXXXXXXXXXXXX! !XX8 d 8XF ROTATIONS ADD
W 1XXXXXXXXXXXXX1 1XX! !F
WW !XXXXXXXXXXXXX! !XX9 9F POTATO MANURE
W b 2XXXXXXXXXXXX2-1-2-3-2XX!-1-2-3-F
W u !XXXXXXXXXXXXXXXXXXXXXXXXXXXXX BRASSICAS LIME
W s 3XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
W h !XXXXXXXXXXXXXXXXXXXXXXXXXXXXX LEGUMES SEAWEED
W 4XXXXXXXXX0-1-2-3-4-0XX0-1-2-3F
W h !XXXXXX! !XX! F ROOTS/ GYPSUM
W o 5XXXXXX1 brocc 1XX1 F OTHERS /LIME
WW l !XXXXXX! o!i !XXX! t F
W l 6XXXXXX2 2XXXX2 r F
W y !XXXXXX! !XXXXX! e F
WW 7XXXXXXXX0-1-0XXXX3 e F
W !XXXXXXXXXXXXXXXXXXXX! F
W t 8XXXXXXXXXXXXXXXXXXXX4 F
WW r !XXXXXXXXXXXXXXXXXXXX! F
WW e 0-1-2-3-4-5-6-0 F
WW e bush tree F
WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW

```

## ALL MICRO MAGAZINE

CALL A SPADE A SPADE -- (Tony Perkin finds Tasword  
a very useful tool for organic gardening)

Most people use a word processor for letters, but I also use  
TASWORD for layouts, plans and shopping lists.

## GARDEN PLANS AND LAYOUTS:-

Being an organic gardener, I needed a plan of my side garden  
to help me organise my vegetable rotations, and found that  
if I used a scale of one digit per 6 square inches I could  
easily organise this as a Tasword file, with W representing  
walls, F for fences, G for garage, T for trellis and X for  
concrete paths.

Having saved this Tasword text file to disk, it can then be  
used as a template, with copies being edited to add the  
detail of proposed vegetable plantings/sowings as required.  
I find it easier to use lower case so the detail stands out.  
Once saved to disk, a permanent record of the layout in the  
garden for any period of that year can be printed out and  
referred to as often as required for future use.

The illustration shows the planned layout for mid '94.

## SHOPPING LISTS:-

These are set out under headings like bottles and jars,  
cans, fridge/freezer, household etc. using a simple layout.  
For example:-

|          | Quantity | Price | Store     |
|----------|----------|-------|-----------|
| CANS     |          |       |           |
| beans HP | 4        | 0.25  | Kwik Save |
| tomatoes | 3        | 0.16  | Kwik Save |

Once you have the idea there are quite a number of extra uses  
for your word processor !

To digress somewhat, I live near B&H Computers, so the next  
time I am over that way I will ask if they still intend to  
bring out another issue of EINSTEIN USER magazine.

Actually, anyone visiting B&H for the first time is likely  
to be in for quite a surprise, as their Einstein empire  
operates from a petrol station, an old type with a pump  
attendant. What a pity they don't specialise in Jowett cars,  
to really make the time-warp complete!

In fact their computers are mostly modern business machines,  
but there's quite a mail order back-up for the Einstein too.



## ALL MICRO MAGAZINE

Ian PALFREY has another go at dBASE II

I'm glad that the magazine has an enthusiastic new editor & that the user group has been revived. It's nice to know that other people are still actively using the Einstein as well as me! I wish you good luck, and hope that the membership can be brought back up to a viable level again.

I purchased my Einstein back in September 1985 and have been using it ever since. I have written programs in BASIC for my own use; they may not be "correct" but they do what I want them to. After reading that you bought the last copy of Dbase II from B&H (and are talking to Borland about making it available through the user group), I would like to tell you about my experience with this program.

I purchased my copy about four years ago, but couldn't get on with it. Since then I have become self employed, so I decided to try again, and I've managed to write a database for my clients & invoice records. The latest command file I have written prints my invoices for me, but I can't get it to save the information back to the data file. Can you help?

I did find some very good books on Dbase II in my local library but since I last used them someone has pinched them, so I was wandering if I could ask through the magazine if anybody has any books on Dbase II -- or maybe you could start a help page for people to write in with their problems or advice? I enclose a copy of the .CMD file for you to see.

## \*\*\*EDITOR'S COMMENTS:-

1. If you work for yourself (even part time) make sure you check with your accountant that any computer-based accounts will be acceptable to the Inland Revenue.
2. If we can revive the magazine HELPFILE team of members willing to help others, hopefully they will pass on the most useful problems (& answers!) to be printed in the magazine.
3. Most libraries have a printed/microfiche/computer index of books, & you can use it to find which other branches hold the books you need. A small fee will get them for you. Most also have a central unit which will do a "subject search".
4. dBASE III/III+ manuals/books often deal specifically with dBASE II as well, noting any differences.

dBASE, like BASIC, can operate in two modes. You can just use it raw, or you can write programs in it for non-computer-literate people to use at arm's length.

If you're only using it yourself, keep it simple or use it raw. You often don't need much more than USE, INDEX, FIND, EDIT, BROWSE, ?, and SET PRINT ON/OFF.

The main reason your program won't save back to the data file is - YOU HAVEN'T TOLD IT TO! Study 2-83 to 2-87 in the dBASE II Manual carefully, paying particular attention to the use of APPEND BLANK and REPLACE, 2-84 (bottom) on.

## ALL MICRO MAGAZINE

GRAPHICALLY SKETCHING (Dave Arts continues his series)

Chapter 3 - The Graphic Arm. (Part 4)

## CONVERTING THE READINGS TO DEGREES

We will consider ADC(1) (the elbow input from VR2) first. All we do in this case is read the input, subtract the LOWEST value (in my case 54, but remember to substitute your own value here) and divide by 2.65 (my value).

For example if we had a reading of 142 we would have:

$$(142-54)/2.65 = 33.2 \text{ degrees}$$

if the reading is one we already know: 188 (50 degrees)

$$(188-54)/2.65 = 50.5 \text{ degrees (within 1\%)}$$

and for a reading of 200:

$$(200-54)/2.65 = 55.1 \text{ degrees}$$

If C% is the variable:

$$\text{ANGLE CO} = (C\%-54)/2.65$$

ADC(0) is slightly different as the arm traverses through the vertical (20 degrees) which is also the screen vertical (VERTICAL TURNING POINT).

If the value is greater than 20 degrees (78) i.e. 100

$$(100-78)/2.55 = 8.6 \text{ degrees (absolute)}$$

$$8.6 \text{ (absolute)} + 20 \text{ ref} = 28.6 \text{ degrees}$$

If the reading is one we already know i.e. 156 (50 degrees)

$$(156-78)/2.55 = 30.58 \text{ degrees (absolute)}$$

$$30.58 \text{ (absolute)} + 20 \text{ ref} = 50.58 \text{ degrees}$$

If the reading is one which is less than the vertical ref

$$(54-78)/2.55 = -24/2.55 = -9.41 \text{ absolute}$$

$$-9.41 \text{ (absolute)} + 20 \text{ ref} = 10.59 \text{ degrees}$$

If the reading is one which is less but one we know i.e. 26 (0 degrees)

$$(26-78)/2.55 = -52/2.55 = -20.3 \text{ absolute}$$

$$-20.3 \text{ (absolute)} + 20 \text{ ref} = -0.3 \text{ degrees (almost 0 degrees!!)}$$

So the ABSOLUTE value is the one which we need, to calculate the position. So for ADC(0) we read the input and subtract the TURNING POINT and NOT the lowest reading.

If A% is the variable then

$$\text{ANGLE AO} = (A\%-78)/2.55$$

NOTE ADC(1) does not pass through the HORIZONTAL TURNING POINT (SCREEN HORIZONTAL).



## ALL MICRO MAGAZINE

By combining "GEOM1" and "AVGE" and the above read routine we come up with "GEOM2" which will work. However, because we are working in BASIC, this will be painfully slow -- try it!

```

5 REM "GEOM2"
10 BCOL7:GCOL1,7:TCOL1,7:CLS
20 DRAW 0,0 TO 0,191 TO 255,191 TO255,0 TO0,0
30 GOSUB 170
40 GOSUB 240
50 LET CO=(C%-54)/2.65
60 LET AO=(A%-78)/2.55
70 LET Z=2*(305*305)-2*(305*305)*COS (RAD(CO))
80 C=SQR(Z)
90 LET BO=(180-CO)/2
100 XX=C*SIN(RAD(BO-AO))
110 YY=C*COS(RAD(BO-AO))
120 LET X=XX-50
130 LET Y=241-YY
140 PLOT X,Y:PLOTX,Y-1
150 IF ADC(1)=0 THEN GOSUB 310
155 IF ADC(0)=0 THEN END
160 GOTO 30
170 LET E=0
180 FOR N=1 TO 50
190 LET F=ADC(1)
200 LET E=E+F
210 NEXT F
220 LET C%=E/50
230 RETURN
240 LET H=0
250 FOR N=1 TO 50
260 LET I=ADC(0)
270 LET H=H+I
280 NEXT N
290 LET A%=H/50
300 RETURN
310 IF ADC(1)<>0 THEN RETURN
320 GOTO310

```

Again, in order to save our creation to high memory, we need to modify line 155 to allow a call to &8000 where our "SCREENP.OBJ" must reside:

```

155 IF ADC(0)=0 THEN CALL &8000:END
Don't forget to load SCREENP.OBJ to &8000!!

```

Obviously we need a faster read routine:-

MACHINE CODE TO THE RESCUE !!!

## ALL MICRO MAGAZINE

## THE MACHINE CODE AVERAGING ROUTINE

In the program GEOM2, two subroutines at lines 170 and 240 sample the ADC channels 50 times, and take a mean or average value. This is necessary because the ADC channels return only a nominal value. This "nominal" value has an accuracy of only about 2 percent, good enough for most things but unfortunately NOT good enough for the Graphics Arm. These subroutines effectively increase the accuracy (but at the expense of speed).

When we take an average value we count up the individual inputs (The SUM), and divide by the NUMBER of inputs. e.g. in the following the average of these 8 inputs will be:

$$18, 19, 19, 20, 18, 19, 19, 20 = 152/8 = 19$$

This is all very well for decimal, but how do we do it for the registers of the Z80 -- which obviously only work in Binary?

If we load the B register successively with the above numbers, and add them in the Accumulator, we will eventually have 152 in the Accumulator, which will look like this:

|    |    |    |    |    |    |    |    |       |
|----|----|----|----|----|----|----|----|-------|
| D7 | D6 | D5 | D4 | D3 | D2 | D1 | D0 |       |
| 1  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | = 152 |

Now if we divide by 8 we have to Rotate Right 3 times. This is because 2 to the power of 3 equals 8, (i.e.  $2^3$ ).

Therefore we will have:

|    |    |    |    |    |    |    |    |      |
|----|----|----|----|----|----|----|----|------|
| D7 | D6 | D5 | D4 | D3 | D2 | D1 | D0 |      |
| 0  | 0  | 0  | 1  | 0  | 0  | 1  | 1  | = 19 |

Now comes the cunning bit. If we use a DOUBLE REGISTER and sample 256 times, adding each time to the DOUBLE REGISTER, we will not need to rotate to the right 8 times, (2 to the power 8 = 256) because in the upper register, the high-order byte will contain the Average value. This is the principle of the machine code routine.

The port will be sampled and its value placed in memory (&8080) then transferred to register pair DE. This is then ADDED to HL Register Pair. This is repeated 256 times until in the end HL contains the sum of the 256 samples. Register H will contain the average value.



This is transferred to the Accumulator, and loaded finally back into memory location &8080, which is PEEKED in the main program. Location &8059 is POKED with value 4 at first, in order to sample ADC(0), then it is poked with the value 5 to subsequently read ADC(1). The Assembler listing follows:

```

      Ld A,0
      Ld (&8080),A
      Ld (&8081),A
      Ld HL,0
      Ld DE,0
      Ld B,0
AGAIN: Ld A,4
      PUSH DE
      PUSH HL
      NOP
      PUSH BC
      OUT &38,A
      IN A,(&38)
      POP BC
      NOP
      POP HL
      POP DE
      Ld (&8080),A
      Ld DE,(&8080)
      ADD HL,DE
      DJNZ AGAIN:
      Ld A,H
      Ld (&8080),A
      RET

```

Using GEOM2 as a base remove lines 170-300. Modify lines 30, 40 and 155. Add lines 350-380. This program which I've called GEOM3 is the main BASIC program. Modify line 5 to read GEOM3 and save to disk.

The machine code routine starting at &8048 should be entered after first loading SCREENP.OBJ at &8000. After completion get back into basic and save it all as "UTILITY.OBJ", &8000, &8077 Load from cold by typing CLEAR &8000:LOAD "UTILITY.OBJ":and then LOAD"GEOM3".

Running the program will allow you to trace a map or cartoon onto the screen, this can be saved to HI-MEMORY or to disk by pressing PB1. At any time during use pressing PB2 will allow you to move the arm without plotting.

The contents of High Memory can be dumped back onto the screen by typing CALL &8025 <Enter>, and of course it can be dumped to the printer using the GDUMP routine ( Load separately after switching on).

```

5 REM"GEOM3"
10 BCOL7 :GCOL1, 7:TCOL1, 7:CLS
20 DRAW0,0TO0,191 TO255,191 TO255,0 TO0,0
30 POKE&8059,4:CALL&8048:LETA%=PEEK(&8080)
40 POKE&8059,5:CALL&8048:LETC%=PEEK(&8080)
50 LETCO=(C%-55)/2.65
60 LETAO=(A%-78)/2.55
70 LETZ=2*(305*305)-2*(305*305)*COS(RAD(CO))
80 C=SQR(Z)
90 LETBO=(180-CO)/2
100 XX=C*SIN(RAD(BO-AO))
110 YY=C*COS(RAD(BO-AO))
120 LETX=XX-50
130 LETY=241-YY
140 PLOTX,Y:PLOTX,Y-1
150 IF ADC(1)=0 THEN GOSUB310
155 IF ADC(0)=0 THEN GOSUB350:END.
160 GOTO30
310 IFADC(1)<>0THEN RETURN
320 GOTO310
350 CALL&8000
360 CLS:INPUT"FILENAME PLEASE? ";I$
370 SAVE I$,&B000,&C7FF
380 RETURN

```

## UTILITY.OBJ

```

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
8048 3E 00 32 80 80 32 81 80
8050 21 00 00 11 00 00 06 00
8058 3E 05 D5 E5 00 C5 D3 38
8060 DB 38 C1 00 E1 D1 32 80
8068 80 ED 5B 80 80 19 10 E8
8070 7C 32 80 80 C9 FF FF FF
>

```

[TO BE CONTINUED]

```

*****
* but if you follow the instructions with care & attention *
* step by step, you should find that the fog clears for *
* you as you substitute your own readings for the sample *
* ones that Dave took from his prototype GRAFARM. *
*****

```

```

*****
* EDITOR'S NOTE *
*****
* Feedback from members *
* indicates that many *
* of you would like to *
* try your hand at this *
* and similar projects, *
* but are frightened *
* off by the high level *
* of technical expertise *
* apparently required. *
*
* We think that in fact *
* this project can be *
* successfully carried *
* out by anyone who can *
* cope with simple car *
* or house DIY tasks. *
*
* The calculations may *

```



## LES STANLEY ASKS -- ARE THEY GROWING UP TOO FAST?

I have been buying Einstein computers for several years, and I have six at the last count. I intended to make presents of them to nieces and nephews (13 so far - it looks like they will be doubling up!). Now I think I may have jumped the gun. Computers seem to be growing up much faster than the kids. If I'm not careful I could end up with a big stack of unwanted gifts - or have I done so already?

Methinks Uncle Les will have to spread the word that a million colours and fantastic sound (with a mega price tag!) does not by itself a good computer make. If that doesn't do the trick I will have to go back to giving gift tokens!

My Einstein purchases have been very fortunate. The very first Albert was bought from Dixons for £120. Then I needed a second disk drive and a colour monitor. I finished up buying a computer with two drives and a colour monitor from the Einstein Computer Show at the Birmingham Motorcycle Museum. That system cost me £200. At the time I thought it good value for money, because to buy the monitor and drive separately I was looking at over £230.

One-thing led to another, & before I knew it I wanted a 80 column card. No luck with the shops or computer shows, so in the end I put an ad in Micro Mart - "Wanted (with or without computer) an 80-column card for an Einstein". A chap in Exeter replied, and I finished up buying a double disk Albert with 80 column card, green screen monitor (and single disk Albert for spares) for £120.

Down at the local boot market one Sunday I found a single drive Einstein in good working order for £20, and I snapped it up along with a fair amount of software & books.

My last Einstein purchase was a colour monitor, an 80 column card, a computer with a minor fault, and a large box of software - all for £70. "Just look what a couple of years can do to prices!"

Along with all my purchases I have picked up a good selection of software and written literature. At the moment I am trying to catalogue and put in order my 100+ discs.

I started off with the ZX81, followed by a Spectrum, Spectrum+ and Spectrum+2. Then I decided I must have a disk drive machine and so plumped for the Einstein, and I must add - have never looked back. That still didn't stop me buying a Spectrum+3 the first time I went to Stafford Show!

Some twenty odd years ago I had a road accident and I haven't been able to work since. I keep busy looking after myself, housework, & 101 other everyday things. I enjoy using the computer for entertainment, education and therapy. If I can be of any help please say, but I'm no expert. Most of what I know about computing I taught myself from reading books and mags, & the rest I picked up by trial and error!

## MANY THANKS

to those of you who responded to our plea for help in making us visible in MICRO MART and PC MART. This is one foolproof way of contacting lone Einsteiners and bringing them within the fold, and your much-appreciated effort is of tremendous benefit to the user group.

You did express the fear that your efforts might be wasted by unco-ordinated duplication of adverts, but in fact such duplication would be an extremely valuable effect if we could achieve it. It is hard to pick out one single ad from the many thousands in each issue -- even if you know it's there and are trying to find it! -- and duplicated ads much increase the chance of their being spotted and followed up.

A diligent few readers might actually notice such duplication, but again this is a positive asset from the group's point of view, as duplicated ads are known to be very effective in overcoming inertia and persuading readers to respond straight away, rather than putting it off.

Those of you who volunteered to help in this way also mentioned other free-ad papers that you'll put ads in for the group as well. This is extremely useful in making us visible to lone Einstein owners who'd otherwise never know how to make contact with us - or even know that we exist.

In fact, making the existence of the group visible to Einstein owners in your own community (and your own special interest group) is something that every single member can equally well organise quite simply (and usually at little or no cost) whether it's a free ad or a 5-line letter in the local paper, parish magazine or club newsletter -- or a postcard ad in your regular shop or post office. Lots of stores have notice boards for customer ads, & most are free.

Public libraries are another good place for making the user group visible to lone Einsteiners. Almost all have a display board or a card index system for local groups, and the more intelligent ones either include national groups catering for local people with no local club, or keep a separate register of these which they are happy to update.

If your librarian is an unhelpful "jobsworth" who won't co-operate, it's often worth sending a couple of friends in separately, to demand the information you were turned away with (especially if they are not averse to making a fuss about reference librarians who aren't up to a simple job of looking up & providing reference information!)

XMAS COMPETITION RESULT  
~~~~~

At long last, a result! Sorry about the delay, Andy FAY, but your name came out of the hat, so you win first prize.. Everyone else we got an entry from gets a consolation prize, so expect to hear from us with this issue of the magazine.

SIMPLE MENUS

(Ted Cawkwell)

When you have made the effort to put a series of small routines together into one large program it seems a pity not to cap it all with a decent Menu. 'Decent' in this case means a routine which is:-

1. Well laid out and therefore easy to read.
2. Flexible, so that more may be added.
3. Brief but to the point.
4. Idiot-proof.

Taking point 1, a good layout takes perseverance but there are some shortcuts which help. Take the matter of centralising headings; on the 40 column screen to do this you need to put the middle letter of the heading on column 20 and a little mental arithmetic can suffice, but if you are not up to this why not let Albert do it? This is a way:-

```
10 A$="Heading":PRINT@ 20-LEN(A$)/2,3;A$
```

This will print "Heading" nicely centred on line 3 because $20-7/2 = 16.5$ which is rounded up to 17 for the start of the PRINT, the number after the comma being the line number. The next heading might be:-

```
20 A$="by Joe":PRINT@ 20-LEN(A$)/2,5;A$
```

A\$ can be used repeatedly as it is redefined each time, but must not be more than 40 characters. Headings would contain such information as title, version no. (if it is being developed), name of programmer and any relevant serial numbers. This out of the way, the next step is a numbered list of the options. Here TAB can be used with advantage as it has another property beside setting the print position. For example PRINT TAB(20) - the brackets are essential - will print what follows starting at column 20, but PRINT TAB(20,46) prints dots from wherever the PRINT starts to column 20 and then whatever follows. 46 is the ASCII code for the full-stop - any ASCII code can be used, the - code, 45, is also useful.

So, PRINT "1";TAB(20,46);"Unerase" would print out as:-

```
1.....Unerase
```

But it is squashed up to the left of the screen, so:-

```
PRINT@ 7,9;"1";TAB(20,46);"Unerase" would do:-
```

```
1.....Unerase
```

on line 9. The next program line would be:- PRINT@ 7,11;"2" etc. the line nos. being increased by 2 on each occasion. This way the numbers and options are lined up nicely down the screen. When all the options are entered leave a few lines to allow for later additions and put in a line like:-

```
A$="Select the Number required":PRINT@ 20-LEN(A$)/2,18;A$
```

At this point there are a number of ways to proceed, but the slickest is where merely touching the number whips you off to the desired sub-prog! After the above line do (line numbers for demonstration only):-

```
100 S$=INCH$ (halts the prog for an input)
110 S=VAL(S$) (S becomes the number input)
120 IF S<1 OR S>9 (or whatever your high option is)THEN
GOTO 100 (return for a valid entry)
130 ON S GOTO n1, n2, n3.....(relevant line nos.)
140 GOTO 10 (beginning of Menu routine, prog should
never reach here but fails safe if it does!)
```

The only problem with this routine is that you cannot use more than 9 options. Think about it - if you started to enter 10 the prog would zoom off to sub-prog 1 at the first press! You can get round this by using letters and doing a little conversion of the ASCII nos. to end up with 1,2,3.....n.

A is 65 so S would = ASC(S\$)-64 in line 110.

By the way, if you add further options later do not forget to alter the IF in line 120 to suit.

Your menu routine should now be just about ready to use, but a few little refinements remain. The first line of the routine should be CLS for obvious reasons and what about colour? TCOL and BCOL should be defined before the CLS, because the CLS sets the background colour. What about highlighting? If you want a particular word to really stand out you can put it in inverse by the use of CHR\$(23) in a PRINT statement, e.g.

```
PRINT CHR$(23);"MENU";CHR$(23)
```

The first CHR\$(23) switches ON inverse and the second switches it OFF again.

If you use the above methods to do your Menu programme there will be no more counting spaces on the screen and filling strings with blanks to get the spacing right and hopefully you will end up with a decent product!

BYTES AND PIECES

HELPLINE: This used to be a feature of the magazine in the old days, and was much appreciated. We'd like to revive it, so please let us know (or remind us if you've already done so) what you can offer help with, at what level of expertise, and whether by post, or phone, or both.

OTHER USER GROUPS: We need to let other user groups have info on Einstein support. Can you let us have details of groups you know of -- with contact addresses if possible.

DISPLAYING TEXT IN 40 COLUMNS is a problem. Does anyone have a BASIC or .COM utility that does this without hassle? Is there one in the pd library that does what it claims to?

ALPHA LOCK: We're getting some weird magazine items due to members forgetting to toggle this off before keying in text, & not realising that the SHIFT key is there to be used.

RTTY ETC.: Lots of you are radio operators too, but it gets zilch coverage in the magazine. We'd like to run an A TO Z OF AMATEUR RADIO FOR EINSTEIN USERS (in serial form). Can you make the airwaves hum and organise this between you?

P.S. Is Les Foksett trying to use a Baudot decoder to decode ASCII, or something of the sort?

80-COLUMN CARDS: Ron Stephenson tells us that B&H have these in stock again, if you're interested.

CALLING XBAS PROGRAMMERS: Come out from under that bushell! John Briggs thinks you must all be extinct, as not one of you has contacted him yet (on 0280-815029) to chat about converting his GWBASIC progs back to XBAS for us.

PRINTER RIBBONS: Aladdink (08907-50965) advertise PCW film ribbon refills, and re-inking for fabric ribbons, may do them for other printers too. Try FOX (0803-853144) & PCW-World (021-585-7424) too. TOTAL COMPUTING (0202-717001) sell RE-INK, but we found it nasty, messy stuff. Most ribbons are dried out, not used up, and WD-40 revives them as well as being a superb pin lubricant. Don't overdo it though. John Briggs uses fax paper in place of thermal ribbons.

VIDEO TITLING: Stan Gibbs says GRAFDRAW is OK, but has trouble with composite video being at a low level, producing poor results. We think this has been dealt with in the mag & a fix described, but we can't trace it. Your help requested!

SENIOR COMPUTER: Note correction to name. Dick Knight DOESN'T have a boot disk, needs one, plus any documentation.

256 DRIVE BELTS: Like Sharward, Bob Beckwith found B&H supply the wrong sort, and they keep flying off. Sharward threw them away, but Bob worked out a fix that looks very promising. Can we have a diagram/sketch please Bob, (& more info?) so we can get stranded 256 owners "back on the road".

CALLING HARDWARE HACKERS: Mag items on upgrading and/or repairing Einstein kit are another badly neglected area we'd like to improve. Any hackers out there who can read & write?

LSI OCTOPUS: We have a User Guide if you're in trouble.

EINSTEIN SOFTWARE LIBRARY

With one or two minor exceptions (which Jim is helping us to sort out) we've cured the problems we had with the pd master disks, and we're in the process of duplicating them on 5.25" disks to ensure that this valuable collection of software is safe and secure for the future.

Here's more of the pd titles available. They are priced at £7.50 per disk (including disk & p+p), but paid-up user group members are entitled to a discount rate of £4 for one disk, or £3.50 each for 2 or more (including disk & p+p).

Members providing formatted disks & return postage pay £2 per disk copying charge. Disks will accommodate 1 pd volume per side. Each part of pd volumes with suffixes (larger than one disk side) is treated as a separate volume. We supply on 3" disk. (40-track 188Kb Dos 1.31 5.25" disk is possible but send a disk with files on to check disk drive compatibility).

40/80 column software was written for 80 columns, but can be used with care on a 40 column display.

If you have any dud pd programs that you've got up and running, please send us a copy with details.

disk :-	title, brief contents:-	display columns:-
pd101	Disk Utils, NSWP, LISTT, DU, CRCK, LDX101, etc.	40/80
pd102	dBASE II utility; Convert .TXT file to .COM file..	80
pd103	WORDPRO Pascal Wordprocessor; 8080/Z80 translation.	80
pd104	Demo Leisure Ledger; .ARC file extraction utility.	80
pd105	dBASE II Mail List program.....	80
pd106	dBASE III Scout Cub program.....	80
pd107	dBASE III Home Inventory program.....	80
pd108	dBASE II Genealogy program.....	80
pd109	dBASE II Reference Material program.....	80
pd110	dBASE II Article Retrieval program.....	80
pd111	dBASE II Church Management program.....	80
pd112	dBASE II Checkbook program.....	80
pd113	dBASE II Reference Books program.....	80
pd114a	dBASE II Microgourmet Recipe program.....	80
114b	continues	80
pd115	Misc. programs - Big Print, Notepad, Calendar..	40/80
pd116a	dBASE II Property & Accounting Manager Part 1....	80
116b	continues	
pd117a	dBASE II Property & Accounting Manager Part 2....	80
117b	continues	
pd118a	MBASIC DATABASE - Information Management System...	80
pd118b	continues	
pd119	MBASIC ACCOUNTS - Invoicing, NHI, Payslips.....	40/80
pd120	MBASIC programs; CBASIC to MBASIC conversion....	80
pd121	MBASIC Financial, Maths and Utility programs.....	80
pd122	dBASE II Utilities; Code and Decode .COM files....	80

[TO BE CONTINUED]

If you want a complete listing of these, and all pd disks, order pd334, which is also a Dos Manual for the Einstein.

ALL MICRO MAGAZINE

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BACKPAGE INFO  
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ALL MICRO MAGAZINE is published bi-monthly at £3 (postfree), but one copy of each issue is supplied without charge to paid-up members of the U.K. EINSTEIN USER GROUP (UKEUG).

All contributions, subscriptions and enquiries should be sent to Ivy Cottage, Church Road, New Romney, Kent.TN28 8TY. (Telephone or personal enquiries cannot be dealt with)

Membership of the user group is available at £10 per year, with discounted rates of £18 for 2 years or £27 for 3 years. An information pack will be sent on receipt of large S.A.E. [Members residing outside the UK pay slightly more to cover extra postage costs].

The magazine and user group are run in their spare time by unpaid enthusiasts on a VERY tight budget. If you require a reply PLEASE INCLUDE A S.A.E. -- OR WE MAY NOT BE ABLE TO AFFORD TO PAY THE POSTAGE BEFORE MAILING YOUR REPLY!

MAGAZINE BACK NUMBERS are available TO MEMBERS at a reduced price of £1 each for single copies (or £5 for 6) (incl.p+p)

The following are currently available:-

EINSTEIN MONTHLY volume 1: 5,6,7,8,9,10,11,12

EINSTEIN MONTHLY volume 2: 1,2,3,4,5,6,7,8,9,10,11,12

EINSTEIN MONTHLY volume 3: 1,2

ALTERNATIVE MICRO NEWS volume 1: 1,2,3,4,5

ALL MICRO NEWS volume 1: 1,2,3,4,5,6,7,8,9,10,11,12

ALL MICRO NEWS volume 2: 1

ALL MICRO MAGAZINE: #65,#66,#67,#68

EINSTEIN USER MAGAZINE: B&H Computers of Halifax claim to be the publishers of this magazine, but the last issue came out more than 2 years ago, and they don't reply to our offers to publish it for them or to merge their title with ours. They may still be selling "THE FULL SET OF 19 ISSUES" for £10.

They DO provide Einstein hardware and software support, AND a "computer hospital" for sick Einsteins, so ALL Einstein owners should have their catalog and be on their "Einstein Flyer" mailing list. Contact them on 0422-330408/352905

OTHER COMMERCIAL SUPPORT: Sharward Services of Ipswich, 0473-272002, organise the All Micro Show (16April & 12Nov94) They may still provide Einstein hardware & software support, but we've been waiting half a year for them to decide!

A large EINSTEIN SOFTWARE LIBRARY has been built up. Details (and ordering information) are announced in the magazine.

Please make all BANK DRAFTS, CHEQUES, POSTAL ORDERS, etc., payable to EINSTEIN USER GROUP.