

ALL MICRO NEWS

(incorporating Einstein Monthly and Alternative Micro News)

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LIFE IN THE SLOW LANE -- (Chris Pickles)

Does the Tatung Einstein have a place in the modern world?

Even when it was new, the Einstein existed on the boundaries of computing. Now it is so removed from the centre it's almost in another universe. The graphics screen was always a disaster, and the 3" drives and the difficulty of adding a hard disk were a drawback. On top of all this, the Einstein versions of games software nearly always seemed more difficult to play and less satisfying than similar presentations on the almost equivalent Amstrad 6128 or Spectrum. But, despite all this, I owe the Einstein a great debt of thanks for providing not only many hours of programming, writing and game-playing enjoyment, but for providing me also with a toe-hold into the field of mainstream computing. I now earn my living teaching others how to use top commercial packages on mainstream stand-alone and networked PCs, and all my computer skills are self-taught. The skills and insights I gained while coming to terms with Albert stood me in good stead for overcoming the obstacles inherent on switching to other and more highly developed systems. Now, when people moan about the lack of IBM compatibles in education, I can't help but feel a little exasperated.

The computer world is divided up into two sorts of people:- computer users and the computer used. Computer users can switch from one system to another, from one package to another and - usually with little outside assistance - rapidly begin finding their way about. The poor computer used however tend to remain lost, cowering, timid and afraid, even within the systems and packages they are supposed to know something about. ----->

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There's no such thing as a universal system, and each system has a variety of packages available for each application. Even if every student in the country was taught on IBM PCs, the moment they entered the 'real' world they'd encounter DOS, Windows, CP/M (on PCWs), OS/2, Apples, Unix, etc., before they'd even begun to distinguish between different brands of word processor, spreadsheet, database, and so on.

Nor is there a single 'commercial' interface, and - the way things are going - there probably never will be, so the lazy and/or less gifted are never going to get away with not making the effort to think and understand. Commerce and big business would prefer that people were as docile and programmable as possible - simple economic units that didn't require much retraining, or no-retraining at all - but given the nature of things, they'll never get their wish. In such a situation the computer used are in a difficult position. Anyone not capable of switching from system to system, package to package, regularly throughout their working life, will soon find themselves consigned to the scrap heap. In all things, but especially in computing, there is no such thing as a job for life. Instead of teaching children set systems we need to teach flexibility, adaptability, understanding and confidence; in which case it doesn't really matter too much what system, machine or packages the individual cuts their teeth on.

Although I now work with modern high-powered PCs and similar packages, I learned the basics of programming on a Casio hand-held, followed by an Atari 130XE. That's where the Einstein came in. I'd fallen in love with it at first sight, and when the need of a disk-based machine became apparent, it was cheaper to buy Albert from Dixons at £100.00 than to upgrade the Atari. In the end I ended up with three Einsteins, 80 column card, colour monitor, external 3.5" drive - the works - plus a dot-matrix printer and Tasword. The shackles were off.

Having, if not mastered the Einstein, at least come to glimpse the immense possibilities of fully automated computing, when the opportunity arose to move into computing as part of my paid working environment the acquisition of PCW and Locoscript skills, rapidly followed by DOS, WordPerfect, dBASE III+, Lotus 123, etc., proved a great adventure full of interesting, often difficult, but ultimately solvable problems. With no computer training whatsoever I found myself drawn into passing on these self-realised skills to others, and in doing so, discovering yet more skills that could, in their turn, be passed on too. And getting paid for doing it as well!

Despite all this, apart from an Amstrad PPC512 I've remained totally IBM-incompatible on the home front. Albert still looms large over my computer desks -- but I'm writing this on an Amstrad NC100 Notepad, and I use an Atari Portfolio for most of my flat file database functions. Technically I suppose I could combine everything on one standard 486 machine with a 'boring' Windows environment and life would be a lot easier. But would it be as much fun? Like the car mechanic who earns his living servicing people's 'family cars' but has a collection of old bangers in his own backyard, I prefer the thrills, spills and skills of real computing to the conveniences of 'polite motoring'.

Windows is a real drag, requiring vast amounts of processing power, RAM and storage space to do things for people that they could do for themselves if they showed a little more initiative. It's a nightmare solution that causes many more problems than it solves.

But let's get back to Albert. Here is/was a well built, reliable machine, offering easy access right down to the basics of the operating system. An enthusiasts' machine that was never going to mean much to those in search of the uncomplicated and well supported. It attempted to be all things to all men and ended up appealing to no one but the terminally insane computer addict, more interested in how things work than actually working at anything.

I know there are people who use or have used the Einstein for business purposes, and at least one company used SUPASOFT's Easidraw package to design printed circuit boards for their smoke alarms, but generally it was the lone programmer/enthusiast who stuck with the machine, so far as I can see. Bob Draper (who wrote Easidraw) used Pascal, but I made do with Assembly Language, XBasic and MBasic. As well as these there were BBC Basic, Logo and the System 5 XBasic semi-compiler to dabble with, plus other more esoteric languages and dialects, or you could - should you be so moved - tap the numbers straight in as machine code.

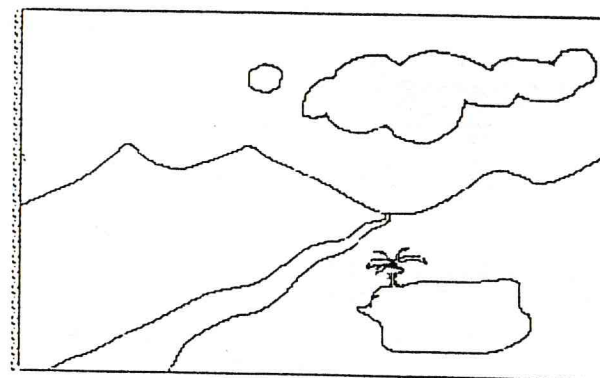
On top of this, the early magazines and source books gave all manner of insights into the inner workings of the system chips, and a machine that - on the face of it - was somewhat limited in its abilities became a gold mine of possibilities. A veritable treasure house of computing. At very little cost it was possible to build up a 16 colour machine capable of supporting four disk drives and displaying text in 32, 40, 64 (Tasword) and 80 column mode; and that - with patience - offered CP/M and Spectrum compatibility, and could be hooked up to just about anything.

The Einstein must have been the enthusiast machine par excellence. No wonder Rolls Royce ended up buying them en-masse to train their technicians on! The limited software was always the big drag though. Tasword proved dependable but uninspired, and one or two games proved enjoyable and highly playable, but other packages and games seemed designed solely for the masochistic or those having committed themselves to an expensive system and software with inadequate prior computing experience - an easy mistake to make. Nowadays the quality of most PC shareware -- and public domain software too -- leaves the majority of even commercial Einstein software standing, but I suppose that we all have our favourite packages, nevertheless.

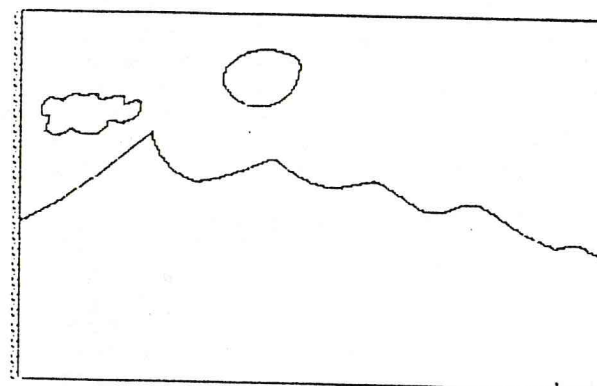
Certainly there is little to fault SUPASOFT's Easidraw on -- and I still use SUPASOFT's I Ching -- but Tasword has lost out in favour of Galaxy Pro on the PPC, and Protext on the NC100, (although WordPerfect v5.1 is easily the best word-processor when it comes to the real thing) and -- apart from an occasional nostalgic look back -- the only Einstein packages I use at all regularly are the games. Of these Reversi, Brighton Belle, Theatre Europe and Bootman give me sufficient frustration-free challenge and pleasure to be worthwhile - although Theatre Europe is easily perfected - but things like Time Bandit and Elite seem almost unplayable, lacking joystick compatibility. When I think of some of the splendid games on the less endowed Spectrum I can only wonder what might have been possible on a more fully supported Einstein.

My one remaining major goal with the Einstein is to discover how to address individual pixels on the 64 x 48 Multicolour screen. This is very badly documented, and although I can call up the screen and cycle through the 15 available colours, I haven't yet succeeded in utilising it for anything worthwhile. Whilst it is a low resolution screen, I'm sure it could be used effectively for some games programming, combining sprites with the luxury of background colours that don't run into each other.

EDITOR'S NOTE:- Chris tells us that as well as the Casio hand-held, the Atari and the three Einsteins, he also used to have three Spectrums, a ZX81, a QL and various other bits and pieces. Now he's down to his last Einstein, an Amstrad PPC, the NC100 Notepad, and a Portfolio! He enjoys computing, and endeavours to share that enjoyment with others by transmitting some of that enjoyment to them. Chris is no longer selling his SUPASOFT range of software, but he's agreed to let us distribute it instead. More soon on this. Many Thanks, Chris, it's much appreciated.



SUNN.OBJ



CREATION.OBJ

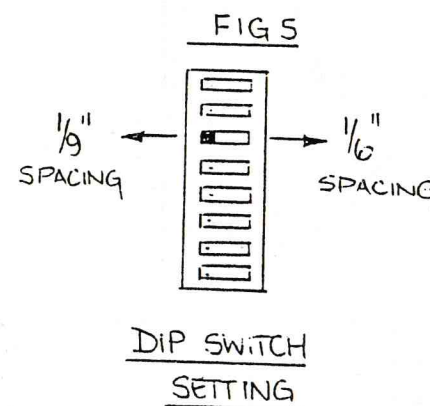


FIG 1

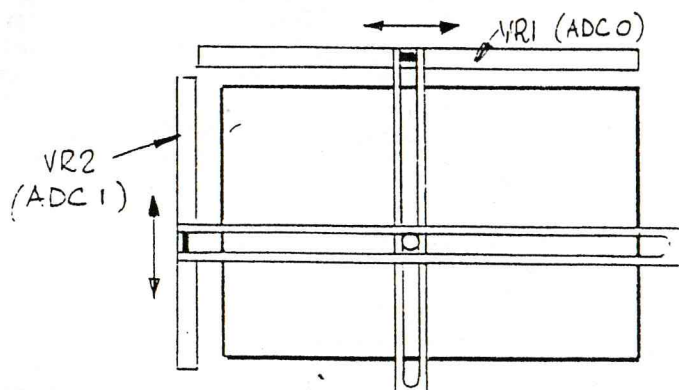
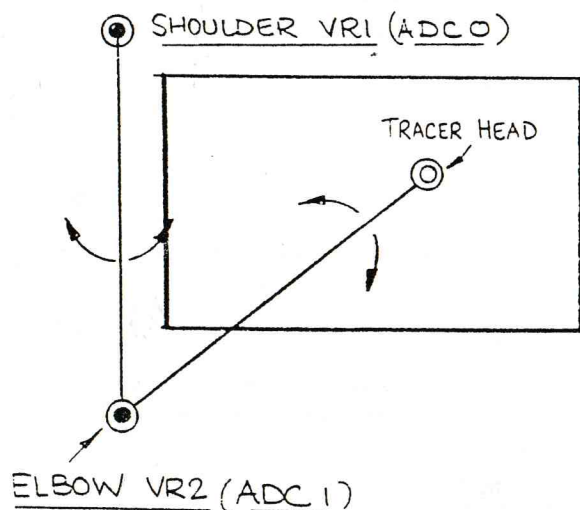


FIG 2



~~~~~ GRAPHICALLY SKETCHING (Dave Arts continues his series) ~~~~~

EDITOR'S NOTE: FIG.5 was referred to in AMN 2/1, p.16, but wasn't shown, so we've put it on page 5, together with CREATION.OBJ (from AMN 1/12, p.9). We've included SUNN.OBJ too, which looks very pretty but isn't referred to at all!

Chapter 3 - The Graphic Arm. (Part 1)

## INTRODUCTION:-

In order to transfer a picture or map to the VDU of a computer system, some form of "Digitiser" is required which transfers the Graphic image into Digital Data that the computer can understand.

This can take the form of a graphics tablet, in which the tracing element can either be a mouse type of device with "crosshairs" or a pencil type of pointer. In the former, the crosshairs are at the centre of an induction loop which picks up a signal transmitted to a matrix of conductors inside the tablet. The latter, however, is usually some form of electrostatic device.

These devices are usually expensive, and are certainly complex. I decided to construct such a digitiser, but discarded the Graphics Tablet option for the reasons just stated. This left the option of employing a simple arm type of digitiser connected to the ADC port. I had two choices. I could use one utilising linear motion potentiometers, which would give me direct readings of the X,Y plot position co-ordinates. This would make the software simple enough, but would make the instrument unnecessarily cumbersome (see FIGURE 1).

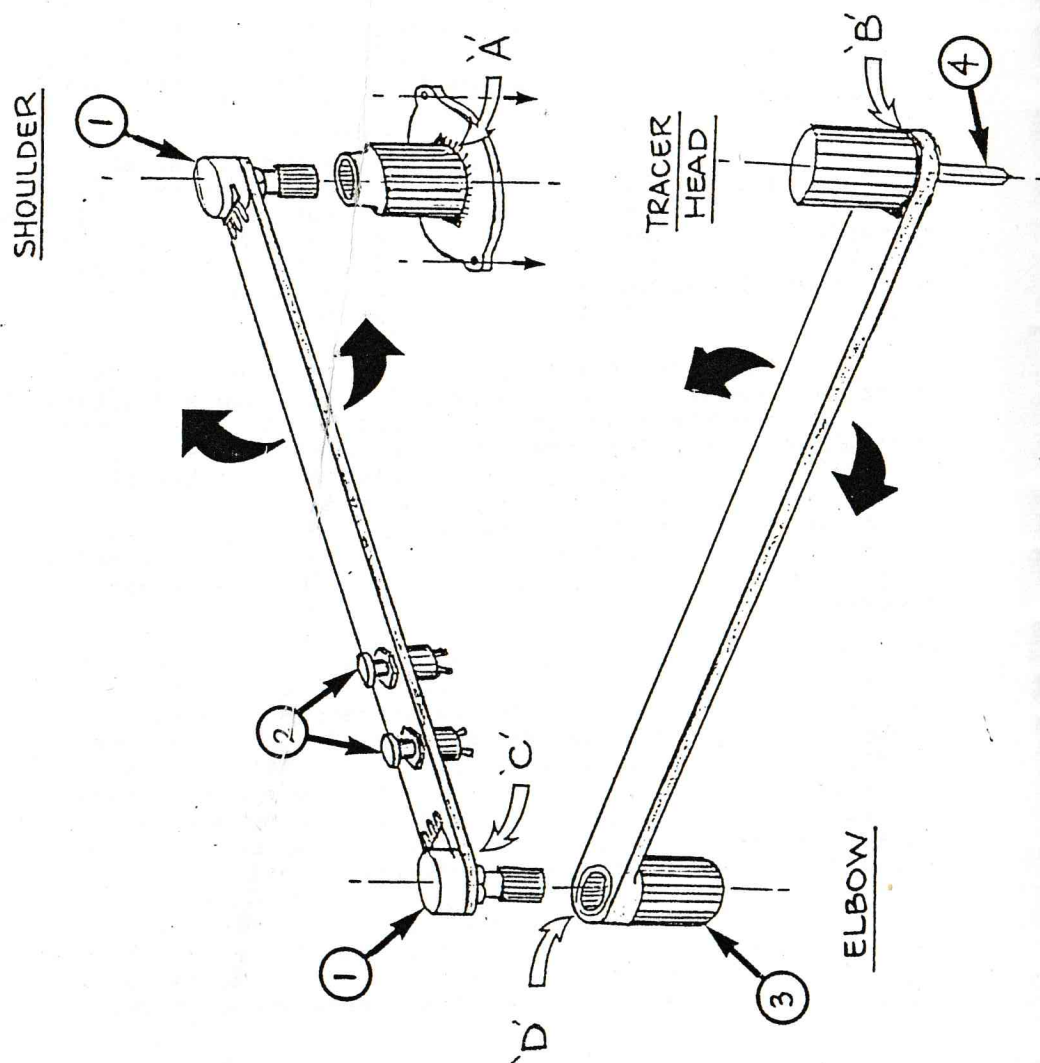
Or I could use one in the form of a true GRAPHIC ARM, with two rotary joints - "shoulder" and "elbow" - utilising rotary motion potentiometers. This would be simple enough to construct, and would be easy to operate (see FIGURE 2), but would make the software a little more tricky, since the X,Y plot positions would not be a direct reading off each potentiometer, but would have to be uniquely calculated from the individual readings of BOTH potentiometers, as they were interdependent.

I decided to go for this latter option, as although it would involve some complicated Co-ordinate Geometry -- and initially I had my doubts as to whether my "Maths" would be up to it!! -- it would afford the "neatest" solution.



FIG 3

GRAPHIC ARM:- ARRANGEMENT



## CONSTRUCTION:-

FIGURE 3 shows the Graphic Arm that I made from a toy "Sketch-a-Graph". The two 12-inch (305mm) arms should be retained, as should the central pivot. In order to make the arm as adjustable as possible, the two potentiometer shafts can be rotated with respect to the instrument knob housings (ref.3) before insertion. This gives us the option of fine adjustment at the setting-up stage described later. There are 4 construction procedures that I've identified in FIG 3:

A: The Main Shoulder Pivot is made from the existing pivot by cutting down the raised section until we just have the baseplate, and then attaching an instrument knob to the baseplate using "Araldite" as shown.

B: The Tracer Head is attached to the arm stamped with the letter "C" at the end without the moulded boss. It consists of a second Instrument Knob, Araldited to this end (the hole may need to be enlarged slightly), and a plastic potentiometer shaft (which has been suitably pointed) inserted into the housing once it is secured.

C: The Upper Elbow Joint is made by removing the moulded plastic boss from the arm stamped with the letter "A". This arm can now be fitted with a rotary potentiometer at each end - orientated as (ref.1) - and with two push-to-make switches (ref.2). I fitted a pushbutton with a blue top - PB2 - nearer the elbow end, and one with a red top - PB1 - nearer the shoulder end of the upper arm.

D: The Lower Elbow Joint. A third instrument knob should be fixed to the lower arm at the opposite end to the Tracer Head, as shown (ref.3). Again, the hole at this end may need enlarging slightly.

When the Araldite is set, the Instrument may be temporarily assembled, so that wiring can be commenced.

EDITOR'S NOTE: Dave hasn't included a shopping list, source notes, part numbers or specification for the electrical bits he's used in this project, but later in his article he indicates that he's used a 13.8v dc power supply, output through a 4.7K ohms resistor, then through the potentiometers wired in parallel, giving a total resistance across the supply of  $2.5K + 4.7K = 7.2K$  ohms. Does this help?

Dave's also assuming that he's using about 75 degrees of a potentiometer with an effective track of 240 degrees.



## HOW FAST ARE YOU? -- by Ted Cawkwell

As a lifetime user of the 'two-finger' method of typing (strictly four because I use my thumbs for the space bar!) I have recently been trying out the Mbasic typing tutor on PD 014 to see whether I could get my speed up a little, or even a lot. After a couple of weeks I thought that maybe some progress was being made, but the Mbasic program lacks a speed tester. I decided that it shouldn't be too difficult to program one in Xbasic - and so it proved - except that I had no idea how typing speed is calculated!

As a radio amateur I did know that a word in Morse code is defined as the word PARIS plus a space, but I decided to check with the local library and discovered that '5 keystrokes' seems to be the thing plus a deduction for typos. I thought I would forget about the typos so here is the routine:-

```

10 REM TYPING SPEED CHECK - for All Micro News
11 REM by Ted Cawkwell, Member No. EUG 0984
12 REM 1993 Xbas 4.2 DOS 1.31
20 CLS
30 B$="" :SP=0
35 PRINT@11,0;"TYPING SPEED CHECK":PRINT
40 PRINT "Start typing at the Beep - stop at the next
Beep."
50 Y$=INCH$
60 PRINT@0,10;
70 TI$="000000"
80 BEEP 5
90 A$=INCH$ :PRINT A$;
100 B$=B$+A$
110 IF MID$(TI$,3,2)="01" THEN GOTO 130
115 IF LEN(B$)>250 THEN GOSUB 160
120 GOTO 90
130 BEEP 5
140 SP=SP+INT(LEN(B$)/5)
150 PRINT@ 2,18;"Your speed was ";SP;" words per minute."
155 END
160 B$=""
170 SP=SP+50
180 RETURN

```

As the programme stands it seems to work fine. If you just hold one key down until the second beep, it comes up with 218 wpm. Using 'this strange keyboard', my wife - who was a trained touch typist (many years ago) - managed 48 wpm in her one attempt. She tells me a real good typist can knock out up to 100! My own attempts have recorded 27 to 33 wpm in 2-finger mode, and a good bit less so far in touch type mode.

There is nothing in the typing tutor to say that you should put a cover over the keyboard to prevent looking at it, but I understand that this is the correct way, so I am making one out of cardboard. It only needs to be about 4 inches above the keys, just so that there is room for the fingers.

The main problem I am having at the moment is hitting Alpha Lock instead of the shift key, and using my little fingers for the shift. The extra keys on the right compared with a typewriter do not help! One odd thing I have noticed is that my tendency to type 'uo' instead of 'ou' in words like 'could' with 2 fingers does not happen using the tutor, but I do have trouble with adjacent letters, like Y for T etc. The result is that I get more spelling mistakes at present.

No doubt practice will make perfect, and I shall persevere. There is only one doubt at the back of my mind; my other micro is a Psion Series 3 (Yes! I AM thinking of having a sticker made up for the car!) and there is no way I am going to be able to touch-type on that!

\*\*\*\*\*  
Dear Sir,

Please send me details of the Einstein User Group. Some time ago I acquired a TC01 twin drive Einstein - which I have set up, using a black & white portable TV as a monitor! I know this is a very primitive set-up, but it is adequate for my purposes.

With it came a lot of software - unfortunately without instructions - which I have been struggling to master. As a guitar teacher I spend a great deal of time writing instructional texts, and I have found Tasword to be a very simple and - with some modification - versatile WP package. I would greatly appreciate any guidance on the availability of music software for Einstein - particularly software capable of "writing" music notation - also advice on what Einstein DTP and graphics software is available. I could also use some help with "Cracker" and "Easidata", neither of which makes much sense to me without manuals.

I hope you can help, because despite fashionable pressure I am reluctant to abandon the Einstein and "upgrade" to an IBM PC, and frankly, I can't afford to!

Nick Pinder, Hull.

## EDITOR'S NOTE:

~~~~~ We know very little about anything in the Editorial Office, (and we know less than anyone else about anything Einstein!) but we're sure that there are some real experts out there among our readers (i.e. someone who knows more than we do!) who can provide the answers for Nick.

PLEASE don't leave it to someone else to write in and tell us -- that way no-one ever gets round to doing so!

DAVID WILLIAMS has provided us with some more XBAS listings to share with you. Here's INSTANT GRAPH, which plots a graph for you as you enter each of 12 positive or negative values. It will automatically scale for the maximum input value you select. Originally a 33-liner, David has added an opening instruction screen and also a Quit option at our request.

```

10 REM*****
20 REM*      INSTANT GRAPH      *
30 REM*      Written for Einstein *
40 REM*      by David Williams  *
50 REM*****
60 BCOL11:TCOL1,0:CLS40:GCOL1,0:DIMC(12)
70 A$=MUL$(" ",32):B$=MUL$(" ",19)
80 PRINT@13,0;"INSTANT GRAPH"
90 DRAW78,183TO156,183
100 PRINT@2,5;"This program will plot a graph as you"
110 PRINT@2,6;"enter each one of twelve positive or"
120 PRINT@2,7;"negative values. The graph will scale"
130 PRINT@2,8;"automatically at the value you select"
140 PRINT@2,9;"when it opens."
150 PRINT@3,18;"Press ENTER key to continue or ESC"
160 PRINT@3,19;"key to quit:";
170 B=INCH:IFB=27THEN440
180 IFB=13THENCLS:TCOL1,15:ELSEGOTO150
190 FORB=1TO20
200 PRINT@4,B;A$
210 NEXT:TCOL1,0:GCOL1,15
220 X=24:Y=183:X1=215:Y1=24
230 DRAWX,YTOX1,YTOX1,Y1TOX,Y1TOX,Y
240 DRAW30,103TO210,103,2
250 PRINT@4,22;"Max input value:";
260 INPUT"";D:IFD=<0THENPRINT@20,22;B$:GOTO250
270 PRINT@36,1;D
280 PRINT@36,20;-D,@36,10;0
290 GOSUB430
300 A=A+1:PRINT@4,22;"Input";A;
310 INPUT"=";C
320 IFC>DORC<-DTHENA=A-1:GOTO290
330 C(A)=C*75/D:GOSUB430
340 X1=22+15*(A-Z):Y1=103+C(A-Z)
350 X2=22+15*A:Y2=103+C(A):Z=1
360 DRAWX1,Y1TOX2,Y2
370 GCOL2:ELLIPSEX2,Y2,2
380 IFA=12THEN390:ELSE300
390 PRINT@4,22;"Again (Y/N):";
400 A$=INCH$
410 IFA$="N"ORA$="n"THEN440
420 IFA$="Y"ORA$="y"THENRUN:ELSE390
430 PRINT@4,22;A$:GCOL1,15:RETURN
440 BCOL4:RST:END

```

EDITORIAL STUFF:

You DID make a note in your diary about the ALL MICRO SHOW at Stafford on Saturday 13 November, didn't you? It's in the Bingley Hall, which is part of the Stafford County Showground, located on the A518, (the main Uttoxeter road) and signposted from J14 of the M6. 10am to 4pm, entry is £2 adult, £1 child, and if you want to avoid the queue, get a free show catalogue and get into the free prize draw, just buy an advance ticket from Sharward Services at:-

Upland Centre, 2 Upland Rd, Ipswich, Suffolk. IP4 5BT or contact them on 0473-272002 (phone) or 0473-272008 (fax)

In this issue's opening article, former Einstein software publisher Chris Pickles notes the often poor quality of even "commercial" Einstein software compared with the shareware - and public domain software - that's available for the PC.

From our experience of the PC and the Einstein we'd say that it's a valid comment, which probably resulted from the Amstrad PCW pulling the rug out from under the Einstein only months after Albert came on the market. Thus there's never really been a big enough user base to attract the professional hardware and software hackers, and it's largely been left to amateur entrepreneurs to fill the gap. Often these people have been self-taught, existing in splendid BASIC insularity from the rest of the computing world, having no real idea what good software ought to look like or be capable of, and relying solely on the standards of the program listings printed in EINSTEIN MONTHLY / AMN. At this stage of the game we can be reasonably certain that if we want professional quality Einstein software, then as Einstein users we are going to have to produce it ourselves, and in practical terms that means home-growing professional-quality programmers out of the new generation of Einstein owners, who nowadays typically start as complete computer novices with no previous programming experience, a single-drive 40-column Albert outputting to a domestic TV, often with no manuals at all, virtually no software, and sometimes not even a system disk.

In these circumstances we badly need readers with a simple working knowledge of the various software packages for Albert and the 256 to share their knowledge with those less fortunate by providing us with one (or a series of) short, simple step-by-step article(s), explaining to novice users without experience or manuals how to load and use the various software packages. No need to be an expert - if you know enough about any particular software package to be able to use it yourself, you're just the tutor we need.

SOFTWARE:- Just as this issue was about to go to press we heard from Jim Ellacott that after long and sterling service to Einstein users he's decided to concentrate on his IBM PC shareware, and he's passed his Einstein master disks to us so that we can operate the Einstein software library. Since we've just stocked up with 3-inch disks to overcome the supply - and cost - problems many of you are having, we are in the process of negotiating distribution rights from several former "commercial" Einstein software houses, and we'd like to see the library content updated to 1994 IBM PC shareware standards of presentation and ease of use, this change should considerably simplify matters.

There's just one minor problem. Jim has used an antique switchable 40-80 track disk drive to create his master disks. This creates disks which Jim acknowledges give problems -- and none of our disk drives will read them!

We are trying to sort this one out with Jim, but meanwhile we'll give you a special offer. Send us ONE of your 3-inch Einstein PD disks - preferably with a note of who you are - and we'll send you TWO of ours!

We also still need any other software you've got to spare, both to equip new Einstein users without any, and also to track down software houses that we aren't yet negotiating a distribution licence with, in order to keep the software available. So that you don't lose your valuable stock of 3-inch disks, we'll send you TWO disks of PD for each ONE of the software disks you send in. In either case we'll give you three new blank disks instead of two PD disks, if you say you'd prefer this.

BACK NUMBERS:- We will be doing a grand sort-out once we've got the magazine back on schedule, but if you need any before then, the list on recent back number covers is probably accurate, and the price the same.

CONTRIBUTING TO THE MAGAZINE:

We very much welcome EVERYTHING on the subject of personal computing, but especially "golden oldies" computing, very especially if it is about the Einstein - either version! You don't need to be an expert - the average user is absolutely ideal when it comes to helping new novice users without experience or manuals to get the hang of using the machine and the programs.

We need programs, listings, text, etc., on 3" disk, plus a hard copy print-out (if you've got a printer). The magazine is put together on IBM-compatibles, so if you do have any way of putting text onto IBM-format 3.5" or 5.25" MsDos disk (preferably in ASCII or Wordstar or Tasword format file), this saves us a lot of work. Alternatively we can probably read Einstein-format 3.5" or 5.25" disks with

EINREAD, but this program can't cope with fragmented files, so the files do need to be copied onto an empty disk one at a time using COPY or PIP, not with BACKUP or DISKCOPY.

If you only have a 3-inch disk drive, then we'd much appreciate a hard-copy print-out of any text file or listing. This needs to be UNJUSTIFIED, i.e. ragged-right margin, to a maximum line length of 60 columns, preferably on whiter-than-white paper with a brand-new ribbon, to give the crispest, densest print possible, (so we can reproduce from it directly from your print-out if all else fails). When you've done, just put the brand new ribbon back in its box and carry on using the old one!

If you only have a 3-inch drive and a text editor or wordprocessor but no printer, send it on 3-inch disk anyway, and we'll have a go at doing something with it. In fact, if that's all you have, send it as a BASIC program full of PRINT lines of text, or if you don't even have the means to do that, then get out the quill pen and the parchment!

The point is that if we write all the content ourselves you'll very quickly get bored with it, but if each and every one of you takes half an hour over the weekend to write something for us, there'll be a tremendous range of content, coverage, interest and expertise, and we'll have to double or triple the number of pages to cope, for at least the next year. That seems to us to be a pretty good return on half an hour of your time!

And unlike the previous management, we'll send your disks back to you promptly, instead of hoarding them and losing them!

PSSST! WANT SOME FREE MEMBERSHIP?

Well, you can get a discount if you buy in bulk, you get a free issue for every article of yours we print, now what else can we think up to give you free membership? Well, we sent everyone a membership form with the last issue, and invited you to renew or extend your membership. Few of you did, and it's a shame to waste those forms, so

Here's a new way to get free membership. Introduce a new member, and you get your membership extended by one magazine issue for each 6-issue-period of membership that the new member initially subscribes to. They must either subscribe on a form showing your details on it, or there must be some other identification of you as the introducer. If you need another form, let us know and we'll pop one in with the next mag - or sooner if you send a SAE.

And, of course, we'll still transfer membership with the machine if an Einstein changes owner.

BASIC LISTINGS: Well, other languages too. No-one's going to write any new Einstein software if YOU don't, and no-one's going to train the new novice users with no manuals, no software and no system disks to write professional-quality Einstein software in the future unless YOU do.

So we want listings - and lots of them. Ones that run would be quite nice. Even better if they do what they are supposed to! Add a note - separately - of what they are supposed to do, please. And so Chris Pickles doesn't have to criticise anyone quite justifiably in future, we'd like them PROPERLY documented, whether they are in BASIC or not.

This has always been asked for in preparing listings for the magazine, but over many years the quite extraordinary assumption has grown up, (possibly because most BASIC programs are interpreted and not compiled,) that "properly documented" means putting pretty title screens and instructions for use into the program listings, which no-one is ever going to see, because every line of them is headed REM and not PRINT !

This is NOT what "Properly Documented" means. Title screens, credits, instructions for use and instructions on how to quit the program should ALWAYS be included, and they should ALWAYS be PRINTed TO THE SCREEN!

"Properly Documented" means EXACTLY the same in BASIC as in any compiled language. It means using REMS to lay a trail which any none-too-bright apprentice programmer can follow, to readily understand just how the program is constructed (and what the bits of it are doing and how they do it) so that it can be maintained and updated by someone who's never seen it before. What appears in the magazine is a SOURCE FILE. The whole point of having them is NOT so clever types can show off their superiority! It is to share knowledge & expertise, and to help novices to learn good programming practice from those with more experience. Hence I'd prefer copious over-documentation, rather than the present "Let them look it up in the BASIC Manual" situation. The new generation of Einstein users haven't got manuals!

Properly done, listings should be awash with REMS, almost NONE of which will need to be keyed in by the reader. They will have done their job and be superfluous!

With magazine listings, please remember that BASIC IS A COMPILED LANGUAGE. It is compiled by hand, by the reader, at the keyboard, from the SOURCE FILE in the magazine, into the OBJECT FILE that he'll SAVE and RUN.

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