

(No.74) EINSTEIN MAGAZINE & ALL MICRO NEWS (MAR-APR 1995)

published bi-monthly for users of Einstein & other computers
by Steam Computer Society. Chief Editor and Publisher:-
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(opinions herein are not necessarily those of the publisher)

OPEN LETTER TO DAVE ARTS

Dear Dave, Some time ago you received a letter from me
(about your practical project articles) which
you found offensive, and you decided to cease them. Les
Foskett tells me that your account of this event and mine
are almost identical, & I suspect that what offended you may
have been not so much what I said, as the way that I said it

I do very much care about supporting all those Einstein
users who subscribe loyally to our mutual-support user group
-- as you did with such enthusiasm when I took over -- and I
would very much regret your withdrawal even if you weren't a
member with rare and valuable skill and knowledge of the
Einstein's inner workings, who we can ill afford to lose.

When I wrote the letter which offended you I was under
great pressure, and seriously concerned that because Graham
had chosen to publish your project in the magazine (as he
had little or nothing else to put in it?) and not as the
supplement that you had clearly intended, I had the no-win
choice of devoting most of several successive issues of the
magazine to a topic of no interest at all to most readers --
the final nail in the coffin to waverers at renewal time! --
or of driving those who did want the information crazy
waiting for the final instalment, so they just gave up on it

It also became clear that we had foundered on a problem
that is the bugbear of technical experts -- C programmers
too! -- that what seems to them like words of one syllable
(at the most basic level possible), nevertheless scares the
sh** out of willing but half-frightened novices (totally
lacking in confidence), by seeming to them to be a "trade
test" written in techno-gobbledegook, that starts by
presuming levels of knowledge, experience and skill that
they don't even dare aspire to, & thereby excludes them.

I am genuinely sorry if my drawing your attention to
this problem was what you found offensive, but sadly it is a
universal truth, and one that almost all technical experts
experience the greatest difficulty in adequately overcoming.

As Chief Editor, I always try to ensure that articles
of a technical nature are presented so that the content is
clear and unambiguous even to the newest novice user, but I
am no electronics constructor, and I simply do not have the
technical knowledge or skill to properly final-proof-read
your text (as I endeavour to do with everything I publish).

I very much regret that you were offended by my trying
to bring this problem to your notice, and obtain your views
on how best to deal with it. NO OFFENCE WAS INTENDED. Tony.

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THE VIEW FROM THE IVORY TOWER IVY COTTAGE

Our present publishing policy is to concentrate far more on the actual content of the magazine than on its appearance, though the international team who produce it (Andy in Scotland, Ted in "what-used-to-be-Lincolnshire", and me just over the fence from the armed French Gendarmes guarding the British end of "Le Chunnel") are painfully aware that the magazine's appearance still leaves much to be desired.

We'd hoped to renew worn parts on one or both copiers to deal with this problem, but our total failure to generate any interest in members in volunteering to be our All Micro Show stand manager (or assistant) has necessitated our putting the money aside instead, to pay for petrol for me to hold the fort once more. Being unemployed is good in the sense that it provides more time -- running a user group takes immense amounts of this -- but every penny has to be stretched until it begs for mercy!

Some time ago we followed the example of The British Printing Society's A5 magazine THE SMALL PRINTER by doing away with cover pages and combining cover with text, and this issue we're following their example further by including Sales and Wants in a separate insert sheet. This allows us to include "stop press" items up to the very last minute, and recognises that they are essentially ephemeral in nature, whereas we try to make the magazine a reference book for the future. Or it would be if we had a full and comprehensive index, not just the traditional abbreviation.

There seems to be total confusion in the minds of those advertising Einstein kit for sale, as to whether it is made of dross or gold in setting an asking price. One member tells us they've just bought an Einstein & monitor in good order for £2. Then an "Einstein is wonderful, so we don't want ours any more" member expects NINETY TIMES AS MUCH!

The Amstrad PCW9512 is being regularly advertised in our local papers at £50, complete & working, (or £30 for the 8526). This equals a much younger 80-column TC-01 with massive support, silicon disk, printer, monitor, XtalDos 3, XBAS 6, & software far better than Wordstar or Tasword.

Standard CP/M (and early MsDos) business machines now sell for £15-20 with monitors, hard disks, and armfuls of manuals/software. There is absolutely no way at all that a TC-01 can possibly be worth more than a hard-disk machine!

Anyone who asks more than £15 for a single-drive (or £20 for a double-drive) Einey, is right out of touch with the second-hand computer market -- or praying that you are!

What to do if you are SELLING? Simple -- Don't ask for a lump sum. Instead, LIST & PRICE ALL YOUR FOR SALE ITEMS INDIVIDUALLY -- but DO be realistic about the prices.

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Editorial Comment - A. McRobbie.

I am pleased to say that we are now starting to receive comments on the articles published in "our" issues of the mag -- it proves that you are at least reading them!

There have been a few raised eyebrows about beginners delving into MOS (the Machine Operating System), with dire warnings about losing everything if you don't do things properly. All I can say is, don't be frightened to try out MOS. I have included the various paragraphs in the Beginners Section to illustrate that you are not limited to BASIC or XtalDOS. In particular, if you lose the system tracks on a valuable disk (which has happened to me from time to time), confidence in working with MOS can restore your disk with all your data intact. I am no programming expert. I simply took an example from an old Einstein User magazine, and tried it out for myself.

However you should ALWAYS MAKE A BACKUP COPY of the disk, and alter this, not the original. Then if things do go wrong, you do not have a catastrophe on your hands.

In case you wondered, I admit that I am the anonymouse person who included the BASIC text reader in the last issue.

INSIDE THE MAY/JUNE ISSUE

Sprite basics for beginners.

Try your hand at JRT Pascal from the Public Domain.

We have received quite a bundle of your letters, too late for inclusion in this mag, but hopefully the next issue will not have my name amongst the contributors -- so you won't start thinking that we only publish our own material!

Thanks for taking the time to write. Whenever you write in - AND PLEASE DO - always PUT A COPY ON DISK as well as on paper. WE CAN NOW READ ANY EINSTEIN FORMAT DISK. Please note your name (membership no?) on the label (so we know who to return it to!) & if it's 1/2 sided; 40, switchable 40 or 80T

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KUMA SUPERSTORE - A STRAIGHTFORWARD DATABASE. (A.McRobbie)

A database is simply an electronic filing cabinet. You can use it to store lists of similar things in a format which is useful to you. eg. Telephone numbers, CD collection or Video tapes. The main aim of a database is to be able to find information quickly and easily.

Whereas a card system of names and addresses would be most likely to be stored alphabetically by surname order, there is no requirement for this to be the case when stored electronically. Finding information based on other search criteria is just as easy. eg. Listing all the people with the same surname, or living in the same town, as well as names, addresses and telephone numbers.

Like the spreadsheet (covered in the last issue), your database will benefit from a little thought before you start

Decide what kind of information you want to hold, and how you want it displayed when you retrieve it. Will you want to print out the information, or will it be simply for viewing?

A collection of similar items, with yes or no answers to questions asked in an input screen, is feasible. eg. With a model collection.

If you are unsure what information to record, it will help if you first gather the information that you'll want to hold in the database.

I wish to record details of model vehicles in my database, so the information I might choose to hold may be entered in the following form for EACH model that I own.

SUGGESTED INFORMATION

RECORD DETAILS

=====	=====
Record Number	1
Trade Mark.	Corgi Toys
Make.	Chevrolet
Model.	Impala Fire
I.D.No.	482
Colour.	Red & White
Cost.	27.5p
Value	5.00
Boxed (Y/N)	Y
Model Condition.	Good
Box Condition.	Good
Country of Origin.	UK
Location.	-
Special Features.	Plated Radiator
Standard Features.	Windows Rubber Tyres

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The data recorded for a single model, as above, is known as a RECORD. The various categories of information within the record are known as FIELDS. The total number of fields -- in this case -- would be 15. A collection of such records is referred to as a DATABASE.

The simplest way of displaying each record would be in "filing card" format, as above, but this is not mandatory. You can change the layout to suit yourself. It is precisely this reason why some database programs may consist of a main (database maintenance) program, and also a second utility program (to design the form or page layout you wish to use). Don't be afraid to experiment at this stage.

The main program Adds, Modifies, or Deletes the data (i.e. structured information) in your database file.

I have used Kuma Superstore from Kuma Computers Ltd, but this program does have some limitations. eg. One record is shown on the screen at a time, and you are limited to 40 columns. I make no apology for using this limited but relatively straightforward program, as results can be obtained quickly and easily without the frustration of apparently getting nowhere, or of getting bogged down with fancy extras. You can build up your confidence, and then work with more sophisticated software at a later stage.

From DOS, type DESFM and press ENTER. Once the DESign FORM program loads, press ENTER again, which lists the help screen. This help screen can be referred to at any time by pressing the ESC key. Press ENTER a third time, & -- horror of horrors! -- yet another almost blank screen awaits you. The cursor keys will move the cursor a maximum of 40 columns (or characters) across, and 20 rows down. Text like 'Trade Mark' is added by positioning the flashing cursor where required, and typing. Each input field is set, by again positioning the cursor where required, and marking with the 1/4 LEFT ARROW key. Move the cursor (cursor keys), and fix the end of the first field with the 3/4 RIGHT ARROW key. The two arrows will then automatically be joined by dashes. Remember to make allowances for the longest entry in each field.

Continue in this manner until the layout is to your liking. This can be considered the fun (/frustrating?) part of creating your layout. Unfortunately available memory is the main problem in using this database, but it is the simplest type. This is called a Fixed System. You decide how big or small you want each field. No account is made of how many blank spaces are left in each record. It is rather wasteful of record space eg. If you have a surname Ponsonby-Smallpiece to fit in, & (later on) Foo, this leaves 16 blank spaces. To increase the number of records, consider using abbreviations where possible, but you must be consistent.

As all records are held in memory at one time, one useful feature is the ability to check the number of records which each design of form or layout can hold. Do this by pressing CTRL C. Once you are happy with the result, save to disk by CTRL W. You are then asked for a name up to eight characters long. Type a suitable name in and press ENTER. Once saved, CTRL X will exit you from the form design program.

At this stage you have a layout, but the proof of the pudding....

From DOS type EDIT and press ENTER to load the editor. Press ENTER again, and (like the DESFM program) a help screen is displayed. Press ENTER a third time, and you will be prompted for the name of the file you wish to load. Type in the name of your layout, and press ENTER. It will be loaded and then displayed, together with the first record number, and how many records (using this particular form) the computer will hold.

Using a form laid out like the one shown above means that each record will have spaces for your data, each with a FIELD HEADING, so you are not likely to leave anything out.

As you add in your information, you overtype the dashes which indicate your field length. If any field is not completely filled you might want to remove the dashes by pressing the space bar. The finished record then looks neat.

Mistakes are corrected by moving the cursor to the appropriate position and overtyping.

A new record is displayed by CTRL A.

Adding records is a bit of a chore, but it is well worthwhile taking a little care.

One golden rule to remember:-

GARBAGE IN = GARBAGE OUT

It never ceases to amaze me how some individuals are so careless in adding database information -- and are the first to complain when they cannot find what they are looking for!

When you have a few records in memory, you may want to try some of the database functions.

CTRL S will sort the records by a particular KEY field. This is (by default) the first one. In my example all the records with Trade Mark 'CORGI TOYS' would be listed first.

CTRL C changes this key to sort on another field. A page will appear (just like a blank record) and you move the cursor to the new key field and press ENTER. Pressing CTRL S will sort all the records on this new field. If I had chosen the second field, then all the A, then B then C.. Chevrolet models would be listed together.

The program can also locate a particular item in a key field. If MODEL is the key field and we wish to find IMPALA, CTRL F will prompt you for a string or group of characters to look for.

In my database, typing in as few letters as IMP will display three occurrences:- Chevrolet Impala, Chrysler Imperial and Hillman Imp.

In a similar fashion I could display all the models which had an aerial as a special feature, by making that particular field the key one.

Should you require a printout of your database, the program will perform this function too. Used as a database for names and addresses, there is a useful label printing option. You can choose the fields to print, and one or a number of records, together with how many copies required of each record.

This program gives you a good appreciation of what a simple "card-file" database can do for you, and further proof that the Einstein is not just an obsolete toy.

DATA SWITCHING by Ted Cawkwell

Few people owning more than one computer probably have the added luxury of a printer for each micro, so using the printer becomes a matter of finding the right lead, and connecting up every time a different micro is used. This involves switching everything off*** and then the awkward job of getting behind the various pieces of equipment to attach the plugs.

***Ch.Ed:- don't ever connect up equipment without switching it off first -- or you risk causing fatal damage !!! ***

The simple answer is to fit a Data Switch. These are becoming increasingly available at rallies and computer fairs, though a year or so ago they were harder to get. They come in a large range of types, i.e. 1 channel IN and 2 to 6 OUT, to 3 IN and 2 OUT. They are reversible, so you could have, e.g., 2 IN and 3 OUT, or 6 IN and 1 OUT. They come with all DB25 sockets, all Centronics 36 sockets, or a mixture of both (or with telephone, radio or video sockets), and a switch on the front panel (to choose the circuit required).

I have 3 micros (Einstein, Psion Series 3 and a 286 PC,) and one printer, so could obviously benefit from a data switch. After some thought I purchased one with DB25 (standard 25 pin computer) sockets (rather than the type with Centronics sockets). This was decided on the basis of available plugs, and the prices of the same. DB 25 are cheapest (and easier to get), and I already had a DB25 to Centronics (PC to printer) cable, to use as the data switch to printer lead.

I needed DB25 to DB25 cable from the PC to Data switch, and these are quite cheap at rallies. I also needed a 34 pin Einstein to DB25 cable. The Psion Series 3 has a special 6-pin miniature connector to Centronics cable.

Another consideration was that I wanted to use screened cables to minimise interference with my amateur radios (short-wave, VHF and UHF), which sit on an adjacent bench.

This meant that some soldering was required, but (if you are not a radio ham like me) IDC pressure connectors will be easier. Actually I had to use a short piece of flat cable with IDC connectors to mate the Centronics plug (of the Series 3) to a DB25 plug (to fit the data switch). This was fun, because the connections are not all 'in line' and some have to be cross connected. Fiddly, but not too difficult. The 34 pin TC-01 connector had similar problems.

I have also made up cables for serial transfer between the PC and Albert, and between Psion Series 3 and Albert. (The PC to Psion cable is a standard Psion optional extra.)

The pin connections are as follows:-

DB25	TC01 34 pin	Centronics
1	1	1 STROBE
2	3	2 D1
3	5	3 D2
4	7	4 D3
5	9	5 D4
6	11	6 D5
7	13	7 D6
8	15	8 D7
9	17	9 D8
10	19	10 ACK
11		11 BUSY
12	23	12 PE
13		13 SELECT
14		14 AUTOFEED
15	28	32 ERROR
16		31 INIT
17		36 SELECT IN
18-25	2-24 even	16,33 GROUND
	31,33	19-30 GROUND

(Other pins no connection)

The problem pins are seen to be 15,16 and 17, which have to be re-routed. Using flat cable, the particular wire has to be cut free with a sharp knife, and pushed onto the correct terminal (using a small screwdriver or blunt knife-blade).

Using screened cable involves listing the colours of wires in the DB25, and connecting them at the other plug -- being careful to ensure that a good solder joint bonds the screening wire to the body of the plug.

To use the data switch for serial transfer from the Einstein, a 5- pin DIN domino plug is wired to a DB25 :-

5 pin DIN		DB25
1	0volt	7
2	CTS	5
3	TxD	2
4	RTS	4
5	RxD	3

Check that the cable is working correctly, and mark the top side of the domino plug (because it fits either of two ways). A 25 to 9 pin cable is available for PC serial use. My Data Switch -trade name- cost £12 and is made in China.

Ch.Ed.:- Did you mean to tell us the brand-name of your data switch here, Ted? Or don't you read Chinese???

KEYBOARD SKILLS - A.McRobbie

So you have a keyboard with keys which either don't work, or that stick when struck. What can you do about it? The quickest answer is to change the keyboard. B&H were selling keyboards for £5.00 at a recent show.

FITTING INSTRUCTIONS - to be read through first (to allow easy identification of the various parts involved).

Place Einstein on a level surface.

- 1) At rear of machine there are two screws visible. The cover is held in place by these two screws, plus lugs at the front of the machine, next to the disk drive(s). Remove the screws and store them in a safe place.
- 2) Lift cover from machine by raising it clear at the back of the machine, then ease the cover rearwards to disengage the front lugs.
- 3) On the underside of the machine (at the very front) are three screws. Remove these and store in a safe place.
- 4) Wires from the power l.e.d. and loudspeaker are fitted to the motherboard by a plug and socket. Gently remove these, to give you more room to work. The keyboard plug can also be removed at this point.
- 5) The aperture for the keyboard has six open ended slots and is held in place by six screws. Four of these may be hidden by the disk drive(s), in which case the drives may have to be removed too.
- 6) Each disk drive is held in place by four small screws, two per side. Slacken these off, then push the drive towards the rear, and lift it up to clear the power

supply. (The drive mounting brackets have 'L' shaped slots at the front.) Take care with the screws nearest the loudspeaker (to avoid inadvertently damaging it). You may find it easier to disconnect the cables from the drives, thus giving yourself more room to work.

- 7) Once the drives are out of the way, the six screws securing the keyboard assembly to the base of the Einstein can be slackened but NOT removed, (as slots, not holes, are used in the keyboard assembly).
- 8) Lifting the keyboard cover from the front will allow you (in a tilting movement) to remove this cover (plus the loudspeaker) without having to remove any more screws. At this stage note where all the slots are, as assembly is a reversal of this procedure. ie. Under the disk drive and power light at the LHS, and the same positions on the RHS.
- 9) Four screws now hold the keyboard to the cover. Slacken all four but only two need to be removed (at the same end). The keyboard should now slide out.
- 10) Re-assembly is a reversal of the dismantling process. The complete operation can easily be done in two hours.
- 11) Fit the new keyboard and cover, ensuring that the socket for the keyboard is routed towards the motherboard, (otherwise you will have a fiddle when trying to attach it to the motherboard). The open ended lugs should slide under the slackened screws.
- 12) Tighten the six screws.
- 13) Replace the drives, ensuring that the washers are not trapped behind the mounting brackets.
- 14) Refit the sockets to the motherboard:- the keyboard, the power light and the loudspeaker. All fit only the one way. No forcing is required.
- 15) Standing at the front of the machine, fit the top cover. You can see where the lugs are intended to go more easily this way. Once these are in position, the rear, with a little help, will push into place. Refit the two screws at the rear.
- 16) Deep intake of breath, then switch on.

REMOVAL OF INDIVIDUAL FAULTY KEYS.

This is a much trickier operation, and is really only feasible if the offending key is near the edge. The problem is getting at the keys in the middle (without damaging any of the others) when you have to lever a key away from the PCB. Follow steps 1 to 9 above.

Removal of the key-caps (the bits with the letters on them) should be done next. Gentle prising with a screwdriver is enough to free them. Treat them roughly and you could break the yellow plastic lugs which secure them. Replacing the key is then the only option.

When cleaning the keyboard, removal is one way of ensuring a first class job, and Albert does clean up like new. I have managed to remove a few keys from a dud keyboard supplied with an Einstein I bought locally. I thought that I might as well have a go, as nothing ventured... I took my old keyboard, and removed a key from the circuit board -- breaking it in the process. From this I could work out what was wrong, and I have since repaired a different machine.

What you have to do is remove the solder from the underside of the board. The best method would be with the use of a de-soldering tool (or something similar), which can suck the solder from the contacts as you melt it with a soldering iron. I tried to remove the grey clips holding the contact assembly together so that I wouldn't need to use the iron, but they are so thin that they just broke off when I tried to prise them apart. Once the switch contacts are as solder-free as you can get them, it is a simple case of carefully prising the offending key assembly away from the PCB. You may need to straighten the contacts first (by bending them with a small screwdriver).

If the key is faulty, you may be lucky enough to fix it by simply bending the spring clip once you prise apart the, grey clips/lugs holding the assembly together -- a much easier thing to do once the key is away from the PCB.

The keys on the keyboard are a master of engineering, but a production nightmare. The contacts (which are soldered to the PCB) are sandwiched together with a film of metal, and an insulator (with a hole cut in it) between them.

These are held together by plastic rivets at the bottom and the spring clip at the top. One of the contacts has a pip on one side, which helps to make contact when the key is pressed. The spring clip then pushes a leg on the black mounting, which in turn pushes the thin metal film against the pip on the other contact. The insulator prevents the two contacts making with each other, except when the keys are pressed. You can now use a meter to check if there is continuity between the two PCB contacts when the key is pressed. Spare keys are available from B&H, should you be unable to repair one. A complete keyboard is dearer, but a more-cost effective way of buying keys.

Fitting a key to the PCB can be tricky if the contacts do not line up with the holes exactly, or if there is still a trace of solder where the contacts should be. Careful manoeuvring of the key (without using of force) is required. Once in position, a small blob of solder on each contact will ensure that the solder does not flow onto neighbouring territory, thus shorting out your key or the one next to it.

Re-assemble the keyboard as mentioned earlier, and Albert should be ready to serve you once more.

A recent remark by Tony that after 10 years some MOS chip EPROMs may start developing wobbly memory, reminded me that when I got my first TC-01 I also acquired an issue of What Micro? which covered the birth of the Einstein. This was the Aug. 84 issue, and when I dug it out I also found the May 85 issue -- which compared Albert with the Amstrad CP464(!) as a business machine. The mags are 3/16" thick and have 150 pages, with no freebies, and cost 70p.

Aug. 84 was interesting; the top processor was the 68000 dashing away at 8 MHz, the Psion Organiser was on sale for £99.90, the Canon PW1080A dot matrix printer was £366, the IBM XT with colour monitor and hard disk (10M) was a bargain at £4066, and there were no Tatung ads at all. Manufacturer support had obviously started as it meant to go on!

The review of the Einstein was titled "A Work of Pure Genius", and was as near a "rave" review as any I remember.

Brownie points were given for being all British (unique!), the first home micro with built-in drives (a joy to use), the keyboard (good), colossal speaker with volume control (well worth the few pence it costs), the separately loaded BASIC (alien!, but a decided advantage), XBAS (impressive), build quality, and CP/M capability. Summed up:- "Its serious potential is enormous. The price is high at £499, but it is value for money".

The only niggles are that some of the BASIC commands don't work like similar commands in other BASICs, the problem of adjacent colours on the text screen, and some doubts that a 40 column screen is able to cope with the later CP/M programs. There was also the comment, "Nice micro - shame about the name", which I find hard to understand now.

Digital Research's CP/M was being pushed for all it was worth at this time, and the Z80 was the 'in' processor, being the heart of most of the micros in the magazine's famous list. I only found one reference to the 3.5" drive, an ad giving the price as £39.90 for 10 microdisks. 5" disks were £32.90 for 10 DD's, and VAT went on top of all these prices!

At the end of the magazine were printed BASIC programs for the Spectrum, BBC, Oric and Dragon (always one of my favourite bits, but sadly no more). I hate to think of the hours I spent typing in those listings (guaranteed bugless), and then the further hours debugging -- and sometimes the routines never did work -- but it was good for one's BASIC knowledge, if nothing else!

Nowadays I am truly surprised if I type in a listing that DOESN'T work first time, even if there were typing or printing errors in the original.

The May 85 issue was still pushing CP/M, but IBM's PC/MSDOS was beginning to show. The AT had the top processor in the list, (the 80286), but the price was still over £4k with mono monitor and 20M hard disk. There were two micros with the 80186. An article was pushing windows, mice and icons, and bemoaning the fact that the public regarded them as gimmicks! There were two mentions of 3.5" drives; the new RM Nimbus, which had two, and an advert for the diskettes.

The article comparing the Einstein and CPC464 preferred the TC01's Hitachi drives to the Amstrad's, being unable to make Backup copies on the latter. It liked the Einstein software, but not the 40 column screen (but an 80 col colour adapter was due out in a year!!) Summed up, there was not much to chose between them in use, but the Einstein was probably more reliable, and certainly more sturdy and better value.

Again Tatung declined to place an advert, but in the two page Amstrad one it mentioned that the price of the Maxell 3" disks was £4.95 each. There were no listings to type in for any machine.

In retrospect, all the comments seem pretty fair, and Albert's reliability is well known. Mine has survived hammerings by grandchildren and friends that had to be seen to be believed -- and had me wincing from time to time. I am of the school that believes machines should be treated gently (well, apart from a swift kick in the slats when they play up!). I suppose the truth is that the Einstein was too cheap for a business machine, and too expensive for a home micro -- and the manufacturer support was inadequate for both. I bought my second machine from a small businessman who couldn't come to terms with it, in spite of having the 80 col. card, mono hi-res monitor, printer and some excellent software. He was very glad to sell the lot to me for less than I recently paid for a 286 PC.

The funny thing is, I got the PC to interface with my Psion Series 3, and to have a look at how the other half live, but I can't say that I am very impressed with it on the whole. MSDOS is a jungle of its own, and QBASIC has its manual on the hard disk - not as easy to refer to as a book, when you are trying to assemble a program. I find myself switching Einie on more often than the PC -- which just sits there looking impressive, but not doing anything much. Presumably it has potential, and of course, it is upgradeable.

*** Ch.Ed: Yes, so is Einey, to a 286. But what's the point?

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Review (by A.McRobbie) of PD 335:-

Astronomy Plotting and Tracking Programs (40 Columns, 144K).

This is a disk with programs using XTAL BASIC and also BBCBASIC (the much hyped-at-the-time BASIC used by the Acorn BBC computer). Compatibility is nothing like 100%, of course, but when you consider that the CPU in Albert is the Z80 (compared with the 6502 on the Beeb), they have done a good job. You don't get the flexibility of the Crystal BASIC screen editor (which I found annoying at first), & the copy facility on the BBC machine isn't available on the Einstein. The graphics area is the main non-compatible bit, of course.

Most of the programs are of 2K size, but there are 50 programs logged on the disk according to -PD335.CAT. Two programs are missing from my copy, namely ASTROMAP.XBS and ASTROMAP.BBC. To fully utilise all the others you would be advised to build one of the user port projects as described in Einstein Monthly.

8/2.BBC

This program shows how to output data to the user port. It uses the PUT command in BBCBASIC. When run, it prints a column of F00Fs down the LHS of the screen.

ALGORHM.BBC

A tracking algorithm program which refers you to page 74 of a BBC interfacing publication. When run it doesn't appear to do anything. It uses the command ? in BBCBASIC.

ATOD.BBC

The title suggests this is an analogue to digital program, but simply prints a reference to Maplins catalogue-Page 376.

BIN2.BBC, BIN2OUT.BBC, BINOUT.BBC, HEX/BIN.BBC & RON.BBC
A comparison can be made between hexadecimal and decimal numbers between 0 and 225 using these programs. Reference is made to BBC Interfacing - page 14. Output is also sent to the user port.

CLUSTER.XBS - 4K.

The menu gives you 7 options to enable you to plot the position of a number of stars (pixels) on the screen. This can be your own data, or computer generated. The computer then plots the position of the stars, and what their new position would be after a period of time, which is taken as the equivalent of a year. The movement over a number of years can be quite surprising.

COMPAR.BBC

Output of integers to a DAC or ADC is carried out by this program, but with no external bits connected to the computer, nothing is seen to happen.

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D.COM

An 80 column display of the programs on disk, with the total number of files plus free space listed.

ECLIPSE.XBS - 8K.

If you want to beat the Germans to the sun loungers when booking an overnight stay at some exotic location, where and when an eclipse is due, then this is the program for you. This program will print the dates of Lunar or Solar eclipses backwards or forwards in time from a date chosen by the user

EDITOR.XBS

This is a Sprite Editor program which first appeared in one of the Einstein User magazines. If I remember correctly, this one didn't work so I copied my working copy on to this PD disk.

EFR.XBS

This calculates the Effective Focal Ratio? from input supplied by the user.

FILTERS.BBC

More calculations to obtain matching networks. You supply the input and output impedances plus the Q value for the filter, and the computer lists the results.

GRAF.BBC & GRAFFER.BBC

BBC interfacing page 128 (I wish I had the book) to draw a graph from the A.D.C. Without a connection you simply get a no such variable at line 80. Again the program is missing something.

HAMHELP.BAS - 6K.

A menu driven program to help radio hams. OHMS law will calculate VOLTS, AMPERES or OHMS from two known values supplied by the user, while Parallel Resistances will calculate the equivalent resistance of up to 100 resistances in parallel. Two other options deal with Aerial design.

HAMLOG.BAS - 4K.

Not user friendly, with syntax errors to sort out before you can do very much, but a handy program to log the contacts made with the help of your radio. You can display all your records, or search for a particular entry. The display is in 80 columns. Again, the amended copy has been forwarded for inclusion in the PD library.

HARMIC.BBC, PLOTTER.BBC & SINE.BBC

Input the amplitude and range of the harmonic, and the computer draws the sine or cosine wave associated with it. eg Values of 0.5 and 5 respectively work OK on 40 cols. PLOTTER draws the axis then scrubs it by printing the numeric data before plotting the graph. SINE was obviously a first attempt.

HIHARM.BBC

Sine or Cosine information is sent to the user port.

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INTERMOD.BBC & INTERMOD.XBS

This program refers to Intermodulation Products, which is not a familiar subject to me.

LITES.BBC

The numbers 192, 3 and 24 are listed on the screen with their binary equivalents. The binary numbers are output to the user ports.

LOGFILE.DOC

This is 12K in size, but I cannot get the computer to read it.

OUTFILE.COM

A program which asks for a file, but hangs after you 'strike any key when ready'.

*** (Ch.Ed:- Comms prog? Were you connected to anything?) ***

PIO.BBC

Send data to the PIO, write or read a byte to or from the PIO with this program.

PLOT.BBC

This gives a 'no such variable error' when run. I think part of the program is missing.

PORTS.BBC

PIO address information is displayed on screen, when run.

PRECESS.XBS

Another area I am not familiar with but if you type in the date and time, including degrees plus 'RA' details, the computer will list the 'EPOCH 1950 CO-ORDINATES'.

Q.XBS

This is simply the program listed in the BASIC Reference Manual for trying out the sound generator.

SIDEREAL.XBS & TIME.BBC

A Sidereal Clock to suit any time from 1987 to the year 2000. The input is not as listed HH:MM:SS but HHMMSS. If you add the colons (as in one of the demo programs supplied with Albert, many moons ago) you get an error. The program then shows you GMT, GST (Sidereal) and local sidereal time which you can alter to suit your location. TIME.BBC is not as good a version of this program.

STARDATA.BBC

Another astronomy program, but this is a bit of a dud, as it looks for data held in another drive. No relevant information is stored on this disk.

SUCCALAGO.BBC

This successive approximation algorithm refers to page 174 of the BBC interfacing book. Presumably it reads the port values and displays them on screen. When run, it prints a list of 255s down the LHS of the screen.

TEMP.BBC

A temperature conversion program, Celsius or Fahrenheit.

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TEXT.XBS

This program should read a text file and display it on screen (rather like the DISP command in DOS), but you can do so while in BASIC. The problem is that it read a small two line file OK, but hung after reading the first .CAT file on this disk.

TLITE.BBC & TLITE2.BBC

More stuff for the ports at the back of the Einstein, with no display on the screen.

TRACKING.BBC

If you are into tuned circuits then this program is for you.

USERPORT.XBS

Another program to output data to the outside world.

USQ.COM

This is a program to unsqueeze a file and write it to disk. When run, an asterisk is displayed, so simply type in a squeezed filename and file extension, then press enter. If the file is not squeezed, the program tells you.

VOLTMET.BBC

BBC interfacing again -- this time calibrating a voltmeter.

X/Y.BBC

This draws an X and Y axis.

SUMMARY

I thought that there would be more astronomy related programs listed, and not so many User Port ones. A number of programs are similar so could be incorporated or deleted from this disk.

Cheap and cheerful C Programming: Part 2. (By Sid Dunn).

* * * Small-C V1.2 * * *

By Ron Cain and James Van Zandt

2 August 1984

GREET.C

```
#include iolib.h
#include
#include printf1.h
#include
===== main()
```

There were 0 errors in compilation.

1:zmac greet=greet /*same input and output filenames*/
SSD RELOCATING (AND EVENTUALLY MACRO) Z80 ASSEMBLER VER1.07

0 ERRORS

1:zlink greet=greet,iolib,printf1/*object files listed:*/


```
*****
LINKAGE EDITOR VERSION 1.4      0 UNDEFINED SYMBOL(S).
1:greet /*issue command */
Greetings O King
I bring you tidings of great joy
```

In order to explore the resources available in Small C it is necessary to have so much on a 3" disk that not much room is left for the source code. It has to be admitted that the increased capacity of an external drive is really needed for peace of mind and for development work, which led to this article being done with such an attachment.

Most useful applications of computers require the ability to supply data to the machine. In C this is usually done with the function 'scanf' which is most fastidious about what type of data is supplied. The present small package provides more basic tools, and challenges the enthusiast to make the best use of them.

If it is necessary to feed a program with a floating-point number, then two functions are used: gets (which gets a string from the keyboard) and atof (which converts the string into a floating-point number. Program FT shows how:-

```
#include iolib.h
#include printf2.h /*bring in superior screen printing*/
#include float.h /*bring in floating-point routines*/
double atof(),x; /*ASCII > float converter function*/
char buf[80]; /*an array of characters*/
main()
{
  puts("\nEnter a value of x: \n");
  gets(buf); /*get string from array*/
  x = atof(buf); /*convert to floating point*/
  printf("\nx%f",x*x); /*form x-squared*/
}
```

If you are already familiar with BASIC, you will expect to be able to demand and control repetitive action on data. The usual means is the FOR - NEXT loop. Small C doesn't have this, but instead features WHILE. There is a simple one-to-one correspondence between these two methods, so that translation is easy.

The example I've chosen is a personal favourite. As a schoolboy I was quite shocked to discover that the series $1 + 1/2 + 1/3 \dots$ was divergent. Clearly the notion of adding up thousands of tiny fragments to make a substantial number was too much for me. The computer, however, just revels in this sort of thing. I asked it how many terms it would need to build a number the size of 10.

```
*****
#include iolib.h
#include printf2.h
#include float.h
main()
{
  int n; double s,m,t; /* double is floating point number */
  n = 2; s = 1.0; t = 1.0;
  while (t < 10.01) { /*loop holds up while condition true*/
    s = s + 1.0; /* increment denominator of fraction */
    m = 1/s; /* form fraction */
    printf("%20.15f %d\n",t,n-1); /*tabulate sum and */
                                /*number of terms */
    n++; /* increment loop index */
    t = t + m; /* form total */
  }
}
```

The process took the best part of an hour, and packed in at 10.009939299692 after piling up 12490 decimal fractions -- the last one being a trifling 0.0000806.

Knowledge of a language is incomplete without a grasp of its arrangements for handling files. The next short program features the three essential steps in writing a file to disk

1. An integer, fp, is declared, which is the 'pointer' (an address) to the file. This is done rather obliquely by the use of *fp - which means 'the contents of that address'.

2. That number, fp, is then identified with the usual filename expected on the disk and a choice made between writing ("w") and reading ("r").

3. At the end of the process of writing, the file is closed.

```
#include iolib.h
#include printf1.h
main()
{
  int n;
  int a[95]; /* array holds the values of printable characters */
  int *fp; /* pointer to a file number */
  n = 0; /* array-filling loop */
  while( n <= 94 ){
    a[n] = n + 32; /* step over non-printing characters */
    n++;
  }
  printf("\n array is now filled");
  fp = fopen("sam.c","w"); /*open file, give name, select write*/
  n = 0; /* output loop */
}
```


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```
*****
while(n <= 94 ){
putc(a[n], fp ); /* deliver characters, one at a time */
n++;
}
fclose(fp); /* close file */
}
```

Sure enough, if you look on the disk there is a file called sam.c which, under disp, reveals:

```
!"#$%&'()*+,-
/0123456789:;<=>?@ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_
abcdefghijklmnopqrstuvwxyz{~}
```

which is of course the Ein character set under 80 columns.

On p15 of issue 68 of our mag other disks in the PD library are listed which carry C material - 002,3,5 and 6. These describe a very similar, though less complete, set of tools. I've tried them and not been successful in producing an executable object code file. Perhaps other enthusiasts might report more encouraging experience?

CONFUSED BY "C" ? -- SO WERE WE!

Well, your Chief Editor was, anyway, until he came across a copy of THE BIG RED BOOK OF C in a local charity shop, and bought it for 15p, being amazed by the way that it explains a difficult subject in a way that even he could understand!

Author: Kevin SULLIVAN; pub.1983 (reprinted 1985/87/88) Sigma Press, Wilmslow, Cheshire, SK9 5DY; distrib. John Wiley, Chichester, Sussex; this edn ISBN 0905104 684; may still be in print (tho maybe new ISBN). Well worth ordering thru your local library (if they don't have a copy locally), or buying

BASIC Programs to tap in.

A quick and accurate check of chosen lottery numbers against the winning selection from TV is possible with this program.

```
10 REM*****
20 REM THE LOTTERY COMPARATOR *
30 REM Written for the Einstein *
40 REM by David Williams, Nov'94. *
50 REM*****
60 BCOL7:TCOL1,0:CLS:A$=MUL$(" ",40)
70 PRINT@9,1;"THE LOTTERY COMPARATOR"
80 GCOL1:DRAW 54,175 TO 186,175
90 PRINT@7,4;"Input the winning numbers:"
100 Y=6:GOSUB 250
110 PRINT@7,9;"Input your chosen numbers:"
120 Y=11:C=1:D=0:GOSUB 250
```

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```
*****
130 FOR A=1 TO 6:FOR B=1 TO 6
140 IF W(A)<>N(B) THEN 170:ELSE D=D+1
150 PRINT@7,14;"Your";D;"winning numbers are:"
160 PRINT@5+4*B,16;W(A):BEEP
170 NEXT B,A
180 IF D=0 THEN PRINT@16,14;"BAD LUCK."
190 PRINT@7,20;"Have you other numbers Y/N:";
200 A=INCH:IF A=89 OR A=121 THEN 230
210 IF A<>78 AND A<>110 THEN 190
220 BCOL4:RST:END
230 FOR Z=20 TO 11 STEP-1:PRINT@2,Z;A$:NEXT:GOTO 110
240 REM***** SUBROUTINE *****
250 FOR A=1 TO 6
260 TCOL1,0:PRINT@5+4*A,Y;A$
270 TCOL1,15:PRINT@5+4*A,Y::INPUT"";W$
280 L=LEN(W$):IF L>2 THEN 260
290 V=VAL(W$):IF V<1 OR V>49 THEN 260
300 IF L=1 THEN W$="0"+W$:PRINT@5+4*A,Y;W$:TCOL1,0
310 FOR Z=1 TO L:B=ASC(MID$(W$,Z,1))
320 IF B<48 OR B>57 THEN Z=L:GOTO 260
330 NEXT Z
340 IF C=1 THEN N(A)=V:ELSE W(A)=V
350 NEXTA
360 TCOL1,0:RETURN
370 REM***** END *****
```

NOTE WELL!! The editors take no responsibility for users becoming millionaires (with all the hassle that will involve!) as a result of using these programs, but would be grateful for a few thousand pounds in recognition of their help in publishing it. TBBT (The Big Bad Tony) will not let us publish our addresses. He says he desperately needs his 10% commission (for passing the money on to us), so that he can buy a new copier to print this magazine on!

Decide which lottery numbers to choose with this program:-

```
10 REM*****
20 REM THE LOTTERY GENERATOR *
30 REM Written for the Einstein *
40 REM by David Williams, Nov'94 *
50 REM*****
60~BCOL3:TCOL1,0:CLS:A=112:B=192:C=103:D=47
70 PRINT@10,2;"THE LOTTERY GENERATOR"
80 GCOL1,0:DRAW 61,167 TO 186,167
90 PRINT@13,5;"Albert's choice"
100 DRAW D,A TO B,A TO B,C TO D,C TO D,A
110 A$=MUL$(" ",24)
120 TCOL1,15:PRINT@8,10;A$
130 FOR A=1 TO 6
140 FOR B=1 TO 500:NEXT:BEEP
150 R(A)=RND(49)+1
```



```
*****
160 FOR B=1 TO A
170 IF B=A THEN 190
180 IF R(A)=R(B) THEN 150
190 NEXT B
200 PRINT@4+4*A,10;R(A);
210 NEXT A:TCOL1,0
220 PRINT@9,18;"Repeat or End (R/E) ?";
230 A=INCH:IF A=82 OR A=114 THEN 260
240 IF A<>69 AND A<>101 THEN 220
250 BCOL4:RST:END
260 PRINT@9,18;A$
270 GOTO 120
```

Answers Please!

John Briggs has come up with a good tip, if you are having problems finding a supplier for thermal printer paper. He suggests using thermal fax paper instead. John is a prolific writer of BASIC programs, but he hasn't owned an Einstein for some years, so we are in the process of converting his work from GW BASIC (as used on his PC) back to Xtal BASIC.

A. Wilkie is having problems with DR LOGO. All he can get it to do is add up. He wonders if this version of LOGO can understand turtle graphics. The answer is ..it should. When you type LOGO and press Enter, the program should load and eventually display a question mark beside a flashing cursor. User friendly eh? Leave a space between a command (in lower case) and your values. eg fd 10. Other commands include bk, rt, lt, and cs (to clear screen). To edit a procedure use ed "procedure name. Control C leaves the editor. Books available..Apart from the DR LOGO Introduction booklet and Using DR LOGO on the EINSTEIN, Einstein User V1 No.1 has an article on LOGO.

*** (Ch.Ed:- except that this relates to LOGO on the PC, and has little to do with its Einstein implementation, as was admitted in a later issue of Einstein User Mag) ***

MEMBER IN TROUBLE -- DOESN'T KNOW

THAT AMN WAS WOUND UP 2 YEARS AGO!

I have mainly used Tasword on my TC-01 to write essays and short stories since my Sinclair QL Microdrives died on me.

But my TC-01 has now been idle for more than 2 years, as I can't find anyone to repair the monitor at a price that I can afford, and who is also willing to give a guarantee.

I am a pensioner, and after paying my Council Tax I have no spare cash for luxuries like newspapers and magazines, so I am unable to renew my subscription to AMN.

I love my Einstein, and hope that I might yet find a monitor at a car boot sale, and so be able to use it again.

L J Rodericks (UKEUG 760)

Ch.Ed:-

I don't know how many other members are under the same delusion -- that they are subscribers to AMN magazine -- but the fact is that Graham abandoned AMN as a total dead loss, beyond all hope, nearly 2 years ago. All unexpired subs were then transferred to the Steam Computer Society, who actively promote the rebuilding of UK Einstein User Group on the basis of co-operative mutual self-help, to provide practical support, advice, encouragement, and exchange of information.

It's sad that you still haven't grasped this point -- we've tried to make it perfectly plain to all members -- as we could very easily have helped you to get your Einstein up and running again, simply and easily, at little or no cost.

We still would like to help you, but the group cannot possibly survive if we help people who have opted out of our mutual support network in just the same way as we help those who opt to be in it, and give as much to it as they get.

Of course, we realise that some members are hard pressed to find the money for subscription renewals, and that others contribute by their efforts far more of value to the user group than we ask for as a subscription payment.

So we are always willing to take payment in kind as well as in cash, and to credit members with the sweat of their brow on the group's behalf.

As has been repeatedly pointed out in the mag, if you had sought our help earlier, you could have had your TC-01 running again more than a year ago, and used your writing skills to contribute a short item for each issue of the magazine, been credited an issue for each one we published, and now be a year in credit on your subs. You still could, as we will willingly accept your renewal in kind instead of in cash, since each member we lose weakens us perceptibly.

We can still help you to get your keyboard humming again as you key in your essays & short stories. But we can only support you if you choose to be within our mutual support group, not if you are outside, fending for yourself!

CONTRIBUTING TO THE MAGAZINE

Please do! Contributions are always welcome -- from each and every member -- on all aspects of your ownership and use of your Einstein -- or any other "golden oldies" computers.

Contributions may be in any form, but PLEASE SEND US A COPY ON DISK WHENEVER YOU WRITE IN! We can now read ANY Einstein disk format (please say which on the label), or CPC /PCW8256/Sharp MZ-80B disk. Or we'll try & read Dragon, (or anything!). ASCII files please, if on foreign disks! Yes, you do get it back! Send a hard-copy printout too, if you have a printer. If not, just send it on disk -- We'll print it out.

No word-processor to write it with? NO PROBLEM! Just write/save it as a BASIC listing. You all have XBAS!

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SHOWS AND OPEN DAYS

ALL FORMATS COMPUTER FAIR: phone 081-856-8478 for dates and places of shows that your discount vouchers are valid for.

BRITISH PRINTING SOCIETY branch OPEN DAYS:- 13 May at Kinson community centre, Bournemouth, Dorset; 17 June (FREE!) at Reepham (3 miles east of Lincoln). Both 10am-4pm.

SALES AND WANTS

SEE OVER for Ian Palfrey's ad. (N.B. Some items are sold)

BROTHER HR-5 User Manual (English language version). UKEUG badly needs to beg, borrow (even buy!) a copy, to support users who don't read German. Offers to Tony at Ivy Cottage.

EINSTEIN HARD DISK information/contacts wanted, to locate owner with hard disk hardware/software/documentation, & make this option available again. If you have all or part of this kit (or know who has) please tell us. Do you have any disks that boot up Xtaldos with a strange ACC BIOS message? Any strange utility programs that might relate to hard disks? ACC are helpful, but no longer have any hard/software/docs. Contact UKEUG (Tony) at Ivy Cottage.

CP/M for the WORDPLEX 80. CP/M was an option on these heavy-duty dedicated wordprocessors. We need a copy. Can you help? Contact UKEUG (Tony) at Ivy Cottage.

TWIN DRIVE TC-01 FOR SALE, with colour monitor, 80-col card, external 3.5" drive, mouse and joystick. Asking about £100, some original software. PYMAN, 4 Lancaster Rd, Wimbledon, London SW19 5DD, phone 0181-944-8278.

Jonathan HAMILTON, 5 Garson Close, West End, Esher, Surrey, bought a SINGLE DRIVE TC-01 for £15 at a boot fair 6 months ago, and now wants £35 o.n.o. plus postage for it.

USER GROUPS FOR OTHER MACHINES. We have some info, but need much more. Ask us if you need them. Tell us about them too.

UKEUG SOFTWARE LIBRARY DISK PRICES -- MEMBERS ONLY:-

We can now copy to 3", 3.5" or 5.25" disk. For 5.25" disks, STATE CLEARLY WHETHER YOU WISH TO READ THEM ON 40-TRACK OR 80-TRACK DRIVES. 3" disks will hold TWO volumes, 3.5" or 5.25" disks will only hold ONE volume. Count each part of a multi-part volume as one volume. Copy charge (if you provide disks/packaging/return postage) is £1 per volume. If we provide disks, add £1.50 (3"), 50p (3.5"/5.25") per disk.

EINSTEIN to PC TRANSFER is also available. Onto 5.25" (holds 360Kb) or 3.5" (holds 720Kb) MsDos disk. Same prices.

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BUMPER BONANZA OFFER TO MEMBERS

Are you wise? Are you wonderful? Are you a whizz-kid expert on the Einstein? You jolly well will be if you read your way through all the user group magazine back numbers, so why not make a start RIGHT NOW! Nearly 50 are still in print, and they'd normally cost you around £40. We've been running a special half-price offer to new members -- £20 for the full set of those still in print -- and this has been such a success that we think it only fair to let you all benefit.

SOFTWARE

Equally popular with new members is our software offer. The Surrey Software WP40/WP80 wordprocessor with manual for £10 (incl. disk & p+p), or the AEGOS games disk for £5 (incl.). Lots of others on the way too, but there's only 36 hours in our day and 9 days in our week. If you need specific SSS/Bell/Supasoft titles just ask, it's probably lurking there in the pipeline, begging for our attention!

*** N.B. These are special user group MEMBER ONLY prices ***

One copy of this magazine is mailed FREE OF CHARGE to each paid-up member 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 now down to £10 per year, OR ONLY £9 A YEAR IF YOU PAY 2 OR 3 YEARS AHEAD!
Members residing outside the UK pay slightly more to cover extra postage costs.

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

An information pack -- including details of our EINSTEIN SOFTWARE LIBRARY -- will be sent on receipt of large S.A.E.

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!

BACK NUMBERS are available TO MEMBERS at £1 each for single copies (or £5 for 6) incl.p+p. BUT SEE OFFER, ABOVE!!!

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

EINSTEIN MAGAZINE & AMN: 65,66,67,68,69,70,71,72,73

FOR SALE

Twin Drive Einstein TCO1 Computer,
Colour Monitor with manuals & system disk. £175.00 *

80 Column Card £30.00
Silicon Disk £35.00
Einstein Computer £30.00 *
Prism Modem & Syntel software £50.00
Keyboard £5.00
Internal Disk Drive £10.00
Power Supply £10.00
Motherboard (not working) £3.00

* Purchaser to collect or pay postage.

Software

Cracker	£12.00	PD Software	£1.50 with disk
dBase II	£25.00	004	
WdPro	£5.00	114	
WP80 & WP40	£5.00	128	
System 80	£5.00	102/172	
Power Draw	£5.00	209	
Invoice Program (copy)	£2.00	208/212	
KUMA Database/Spreadsheet	£3.00	217	
WP40	£3.00	229	
Helping Hand	£5.00	222/268	
Grafdraw	£5.00	233	
MouseArt & Mouse	£20.00	271/276	
Neils Utilities	£3.00		

GAMES

Monopoly	£3.00		
Supersix Games	£3.00	Blank Disks	£1.00 or 5 for £3.50
SS twin Pack	£3.00		
Time Trap	£3.00	Einstein User Magazine	
Soho (Emsoft)	£3.00	vols. 1 - 5	£15.00
Flight Simulator	£3.00		
Zexl	£3.00	Einstein User Group Magazine	
Turbo Chess	£3.00	Vols. 1 - date	£20.00
EM the disk	£3.00		
Einstein Compendium (with Book)	£5.00		

All comes with instruction manuals where possible.

Will accept reasonable offers..

Tel. 01276 476342 ask for Ian