

Einstein Magazine

& ALL MICRO NEWS

Number 109

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Edwinstowe	10 28	2 8			
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Manchester Station,
London, N.W., July, 1907.

SAM FAY, General Manager.

M.D. 208

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Letter from Duncan Elvin

(reprinted from EM No.79)

Enclosed is my article about how I used a serial terminal as an 80-column output device when I couldn't get an 80-column card and a monitor at a sensible price. (ED: Published in EM No.81) I am also working on my next article, about the hard disks I've installed on my Einstein.

I now have a CD-ROM drive connected to one of my machines at home, & thus have access to the contents of the CP/M library software compendium CD-ROM more easily. Double speed drives are very cheap now. The CD-ROM drive is actually connected to a Research Machines RML 380Z. This is an ancient Z80-based CP/M machine, which acts as a server, sending sectors from the CD down the serial line to an Amstrad PPC640 portable (with 2*720Kb drives), which runs the Microsoft CD extensions. It's slow, but it works.

Sorry it's taken so long to get the article to you, but with two small babies and a very demanding job I don't have much spare time to write it all up.

From: Clem Cole, 46 Roseland Road Wainarwydd Swansea SAS 4ST 14/3/2003

Thank you very much for sending the Einstein Magazine. The correspondence does make interesting reading. In case you don't have that floppy drive yet, or want a spare, here is a good worker. Also a set of HP 800 series driver disks. One of my grandsons has one of this series, and I replaced his ink cartridges the other day. The colour one is out of yellow, and the black is out or nearly out, but you may be able to get an idea of the state of the rest of the printer. (The cartridges might need the help of a bit of WD40 to clear the dried out ink jets.) Please accept as a bit of recompense for continuing EM. Best wishes, Clem

Letter from Maurice Hawes, Sharp User Club, 6 Belle Vue, The Esplanade, Weymouth
Dorset DT4 8DR Tel. (01305) 783518

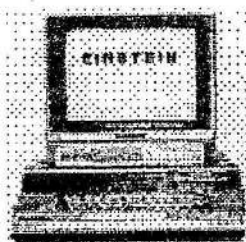
Dear Tony,

We recently made a very surprising discovery which may interest some of your members. We were having serious reliability problems with 720KB 3.5" disk drives on the Sharp MZ-80K, even though they had previously worked perfectly on the MZ-80B, MZ-80A and MZ-700. The problem was that 3.5" 720K disks would format and copy and re-boot OK on some occasions, but on others they failed completely, at some stage or other. But when we changed to brand new pre-formatted 1.44MB PC disks sold under the name 'PC-LINE' by the local branch of Dixons, all the problems disappeared !

The MZ-80K disk system differs from all the later Sharp MZ- systems in that it uses 'single density' recording. It therefore appears that when working in single-density format with 3.5" 720K drives, 1.44MB high-density disks give better results than 720KB double-density disks, which is quite the opposite of what you would expect. There is no doubt of this result in this particular case - John Edwards and I recently spent 2 whole days testing all kinds of 3.5" 720K disks on my MZ-80K, and none of them were anywhere near as reliable as the 1.44MB 'PC-LINE' disks from Dixons.

We have not yet got round to the obvious next step of testing other brands of 1.44MB disk - but clearly we must do so before making any final conclusions and recommendations.

Maurice.



Einstein Magazine

and ALL MICRO NEWS Number 109

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the Holy Grail ... OOPS! (correction to article published in EM 107-4 thru 107-7)

John Marriott sends his grovelling apologies, says honestly it's not his fault, Bill Gates' dratted bug-ridden user-unfriendly sabotage-programmed Windows software KO'd him yet again in preparing his "Holy Grail" article. To be precise, MicroSoft Word version 7 has a sneaky habit of deleting things with "short cut" keys which come in on the blind side and catch you unawares.

Ed: Yes, and don't I know it, to my cost. Many a time the rotten thing's wiped out hours of carefully keyed-in and sweated-over text of mine. You got off lightly, John!

...and whilst I mentioned in my EM 107 "Holy Grail" article about changing the mini-link on the 3" drive from DSO to DS3, a small but very important bit of "...and US1 to M1. ..." got lost - which lands you up with a dreaded screen message of "...no drive/sector..." and you thinking "...what's that daft bugger Marriott fouled up now...". Whilst I would like to blame my "tools", it is the ignorance of the "workman" to blame - sorry. I must try to stay alert, using "Word".

Further learning ~ I decided to remove the 5¼" D2: 80T/DS drive from my TCO1 (situated where the speaker should be...) as I was getting some track reading errors on some of my "dated" disks as well as the drive getting a bit hot (well, the disks were coming out warm!) and I decided to replace a rather tatty 3½" drive in D1: with a spare 3" drive, making that D2 and bringing into play a BBC Compact 3.5" double drive tagged on to the TCO1's external drive port as DO: & D1: - trying to juggle everything in a minimal space (surface area), testing as I went, to find every damn "fault" message in the book came up at different junctures! And yes, that heat was coming from a 5V Regulator IC/heat sink located on the TCO1 PCB - Scream!!!

Out of the corner of my eye I could see that what is normally DO: on the TCO1's 3" drive (but configured as D:2) was showing a green "disk running" light. With a bit of a panic and fast encroaching insanity I feverishly tried "this, that, and the other - and back again", opened a bottle of wine at 21.50 hours and later retired to bed...

...got up, took my Better Half back with me (rather bemused look on her face, I must cut down her alcohol intake - or is it wiser to keep her bemused, just in case she comes to realise that I'm not the same bloke she married all those years ago?) ...and let sleep and my subconscious take over...

...something was wrong with the ribbon cable, something to do with the IDC PCB end which fitted the removed 5¼" drive, but what?

Simple remedy - slice that connector off - problem cured! Now, some of you may or may not know that there are two types of the IDC PCB edge connectors made - one type you can easily see the connectors which contact the PCB tracks, but the others are more hidden, as the front of the plastic makes more of a slot (anti-wobble design for the Spectrum computer PCB's) and this "fault" lay in one of those. Closer inspection brought me to the conclusion that this connector was a "re-user" and in its earlier "rescue" had partly come apart, allowing some of the contact "springs" not to be located correctly: i.e. they could short circuit to the opposite "springs" BUT only when not located on to a PCB!

What had I done? No wonder I had each and every fault that Murphy's Flaw could come up with. Moral, do one step at a time, write that down, test -THEN the next step - when will I ever learn.

Once again, sorry for that missing "US1 on to M1" in the EM 109 "Holy Grail" article.

EINSTEIN MAGAZINE No.109-5

From: Chris Coxall, 56 Cambria House, Lamer Road, Erith, Kent DAB 3RQ

Dear Tony,

31 March 2003

Please find enclosed a print out of the present front page of the "Tatung Einstein Web Site". You will see with reference to the Einstein Magazine that I have been somewhat satirical about those who are not yet on the internet. The publishers of EM, for instance! Please understand for those that do connect to the internet they quickly find they have taken a simple step which leaves those that have not trailing far behind. The ease and speed of sending information by e-mail is one that quickly becomes taken for granted and there is frustration and intolerance for having to return to sending letters and floppy disks by snail-mail. Visitors to the web site are all on the internet, of course. In promoting the Einstein Magazine I have to explain why letters and article submissions can't be wizzed off to an E-mail address. Getting on the internet is not expensive these days. A 486 PC with an ISA card modem can be put together for a pittance. If EM 108 had arrived a week earlier I'd have had one to send you. Sadly, I'd just given it away.

From EM 108 I see that John Marriott has already provided a working 486 PC with Win95 for the publishing side of EM and I assume that this will also be used for secretarial duties. For connecting to the internet and for Einy-PC communications a second PC is strongly advised. For a computer connected to the internet virus protection software is absolutely essential

Like John Marriott I have boot sales and computer fairs in my area. Also, as I am known as a regular bargain hunter, I get offers from drinking acquaintances at my regular watering hole. Latest offer was a 486 PC, 12" monitor and an external modem £25. At the latest computer fair there was a Zenith P233 PC with no monitor or modem for £40. P166 PCs at £30 a time. The newest computers have the advantage of running Win98, which supports a CD-ROM writer and rewriter. Currently these cost around £50. This might seem expensive, but consider the 640 Mb. of data that can be stored for around 50P a time on a CD-ROM. With a rewrite disk in the CD drive files can be saved and deleted just as though you were dealing with a gigantic floppy.

From the print out of the web page you know my opinion that the EM editor needs to be on the internet, and the Einstein Magazine needs an E-mail address. If you are going down that road let me know if I can help out with hardware. A concern you might have for a publicised E-mail address is that you would be open to a lot of unsolicited and non Einy e-mail content. You would be, but if you wish I can set up an E-mail address for the Magazine, and redirect only the Einy related mail to your unadvertised e-mail address. This way your own e-mail address could be circulated to only those you consider essential users.

As you are not yet on the internet, let me try to create a picture of the "Tatung Einstein Site". I.e. what it is, how it came about, also what it has become. I had no original intention of creating an Einstein Web Site, but was content just to provide web page content for the site which Ken Ross had set up. When, for personal reasons, Ken Ross took his site off line, I panicked and made the effort to create a replacement. Let me say here that I do not believe in an Einy Web Site. I believe in lots of Einy web sites! - so I am very happy to see Ken Ross's site back on line. As with anything computer related, first time endeavours can often be very frustrating. It's like asking a stranger the way. The directions sound complicated until you reach your destination, but return visits are simple. Creating basic presentable web pages is not all that difficult. Finding a web space provider and setting up the site is simple and its free. It's a bit like writing your first BASIC program, if you can remember that far back.

Until now I have concentrated on developing Einy-PC transfer software, seeing this as the way to connect Einy to the modern World via the internet and via the PC. Putting my own imperfect

programming up on site has paid off, because it came to the attention of Ste Ruddy. He is a programmer who has used Einey professionally.

To give some idea, here are some quotes from email correspondence:-

Ste Ruddy to Chris Coxall

The integrated editor/ assembler we used wasn't actually XSM, it was just written with XSM. We were Software Creations, but I think quite a few of the Manchester game developers around in the late 80's used the Einey as a development machine. The Einey was ideal with it's 64k RAM, built in disk drive, 256k RAM disk and direct access to an easily used parallel port.

Chris Coxall to Ste Ruddy

Ste you have in a short time contributed a lot of valuable content to this site. I can also use some more but I hope it is not taking your time away from other things you are doing.

Ste Ruddy to Chris Coxall

No probs. I enjoyed it and I still can't get over how fast the Einey boots up compared to my PC. Indeed, thanks for providing the only info I could find on actually using the Einey on all of the web! The only other sites I found just had pictures of it together with a list of specs and were basically completely pointless.

The major contribution which Ste has made to the Einstein Site and for Einey users everywhere is the Einstein-PC transfer software "EinTrans". The Windows version is very easy to use but there is also a MS-DOS prompt command line version. Both can be put in a zip archive and squeezed onto a floppy. I can send you a copy on disk, or you might just as easily find internet access at a library or on a friend's PC and download it from the web site yourself.

The site also has links to other sites where other software can be downloaded. PC applications such as Z80 assemblers and disassemblers, plus CP/M software that will run in the TC01.

At present I am building a page for another software utility created by Ste. This is a once-off utility for who have acquired an Einstein without a boot disk and are on the internet. A small amount of Hex is typed into the Einstein in MOS mode, creating a program in memory which allows Ste Ruddy's EinSys.exe to be run on a PC connected to it, which writes a system disk (Xtal Dos 2.05) to a blank floppy in the Einstein's drive 0. I had created a program myself which did this too, but it was more complex and needed a lot more Hex to be typed in. I asked Ste if he knew any scratch pad memory locations I could poke to streamline the operation. He answered by E-mailing his own complete professional software program to do the job. It does show though, that amateurs creating and sharing their own programs with others, however badly written, can prove a theory which the more able can take up and improve on.

The transfer software requires an Einey-PC null modem serial cable. I have put the wiring configuration for view and download onto the site. I really want to find a cable manufacturer who will make these up to order and accept orders from a print out order form on the site.

There is a lot I've still got to do, to go up onto the site. The current "to do" list:-

Technical information for reading the 8251A USART register. The info for this is not in the MOS/DOS manual, although info for writing to the register is.

John Marriott some time ago sent me photo copy information of MOS machine code calls and of Xtal DOS routines. This is important technical information that describes the make up and workings of Einey. I want to get it listed and up on site. There is a lot of it, so it will have to be done a bit at time. I regard this as an essential service. It will not be a stimulating pastime to

do. Not like reporting the result of some tinkering and dabbling that ends up with some interesting software. A workmanlike ethic will be needed here and strict discipline.

Some wants for the site:-

I could do with some disks or disk images of different operating systems for downloading from the site. Especially Duncan Elvin's CP/M PLUS for Einey. A double sided Einey formatted disk would also be help full. Transfer with EinTrans has not been tested with double sided disks.

I'd like the PC application EINREAD that is mentioned in the back numbers of EM. This program was said to be able read Einey disks on the PC. I thought I had 22DISK set up to do this and put details up on site. But big files became corrupted, and I had to eat humble pie.

An adaption for building Dave Arts' additional user port circuits for view and download off the site would be good. This type of information attracts "techies" from other Z80 computers. Good for sharing information. Might get some converts to Einey.

A graphic file displaying Einey's mother board would be nice to have for view and download. With a photographic transparency I could scan this in.

I am also interested in hearing of anything that can be used to help others understand the workings of the Einstein, its present makeup and of new hardware attachments. Changes to present hardware and firmware to overcome worn out circuitry is important. Source code files of the ROM or alternative ROMs are useful for others to understand how Einey works. I could put the prepared web pages of others up on site or create a new site for them. Just as easily, those that can create web pages could create their own web sites and I could put links to them.

For promoting EM on site I could do with some introduction comment for each issue from the EM Editor. Listing out each issue's article content, with added comment, sent as a plain text letter would be OK.

There is another Einey web site to keep in contact with. The tating_einstein site created by Ken Ross. Ken's web site is more geared to general "Einstein User Group" support than my "Tating Einstein Site". Ken isn't an Einey owner himself, but is a Commodore PET enthusiast & Mac owner. He has really put himself out to support Einey users and the Einstein Magazine with a web site facility. Up on his site he has a way to direct e-mails to EM. I believe the e-mails have to be text only as the content is printed out and sent by post. Graphic illustrations could be too big and clumsy to be sent this way, but ask Ken. In EM106-6 he tells how those not on the internet can fax their own pages, to go up on his site as graphic bit maps. Ready made text and HTML pages can be sent to him as e-mail attachments. He was always ready to accept those I e-mailed to him. Ken's site is more flexible and interactive, whereas I want the "Tating Einstein Site" to be a more of a resource centre.

Now that there is excellent simple Einey-PC transfer software, a chapter of my endeavours has drawn to a close. So it is time to think about the next major project.

I want to start looking into electronic circuits that can be attached to the Einey user port. The PC doesn't have the ability to do this. One up for Einey! This means that for robotics Einey is much better than the PC. If some amateur tinkering and dabbling shows that Einey's Z80 can handle some useful robotic device, the device itself could end up hosting its own specialised

Z80 processing. Using the latest Pentium or AMD processors would be far too expensive and over rated. Einey makes an ideal test bed and development machine for robotics.

Now I'm sure you are not going to like this. Up on the internet (Its Wonderful! You ought to see it in colour) from a Speccy site and from a site devoted to the Z80 CPU are wiring schematics for fitting IDE hard drives. One in hardware terms looks very simple to build. The price for its simplicity is that it only uses 8 bit width so it will only access half the drives capacity. For a 240meg. drive you get 120Mb. For 500meg. drive you get 250Mb. The hard part, of course, will be the R&D to find the software to access it. I think I might have a go at this. The IDE interface has 16 registers, which will require 16 of Einey's I/O ports.

There might be an alternative. Some time ago at a boot sale I bought an external Amacom CD-ROM with a parallel to IDE interface. I had to download the drivers from the internet (Here we go again, its all on the net. Wonderful!). The drivers were for a CD-ROM, a hard drive and the LS 120meg. floppy. I found I could use two IDE drives with this, HD & CD-ROM or two HDs although both would not fit into the external case together. I am just wondering whether some clever "techie" can disassemble the PC drivers and translate it into a Z80 driver for Einey.

There is now a Spectrum+3e. This is a +3 with a change of Rom. It will access the full 16 bit width of an IDE drive with a specialised add on (self build and complex I'm afraid). The add on also holds additional RAM. What they seem to be doing is loading the ram from a floppy to act as an alternative ROM. On seeing this I began to thinking that this machine might be able to emulate the Einey. This is turning my thoughts to that of rebuilding the Einey. Creating a generic Z80 CP/M computer designed to be used as development machine for robotics but also capable to emulate other old Z80 computers. This might seem over ambitious but it might be necessary. Building new attachments for old computers is a bit like adding fresh dressing to a stale piece of meat which, in terms of wear and tear, is well past its use by date.

So though still in the realms of speculation the next chapter of development for the web site appears to have some sense direction for its content.

To recap on some past events that might have passed you by.

Einstein emulation on the PC with the MESS software. MESS is improving all the time. There are regular updates that can be downloaded. Now it uses a Windows GUI interface but it is still far from desirable. First lets be fair to the developers. Their objective "The aim of MESS is to document old computer systems by allowing them to be emulated. Since the source is free, people can discover about the hardware by reading the source; which often includes comments". Thanks to Kevin Thacker who has created Einstein emulation for MESS our Einey TC01 has been documented and recorded for history for as long as the MESS software survives. Mess has filled its objective but for the user it is not so good. Programs run in it a lot slower than in Einey. The PC keyboard is used in way that emulates Einey's which means for some characters you have to work out which keys to press because they are not labelled as such. The big disadvantage of any Einey emulator on the PC for me will be that I can't access the user port because the PC doesn't have one. MESS has fulfilled its obligation regarding Einey. If we want something better then it is up to us to find someone clever who can use the recourses of MESS to create our own stand-alone Einey Emulator. Kevin Thacker has done this for his own favoured computer the Amstrad CPC with the Arnold emulator. Arnold to me is the ideal model of an 8 bit computer emulator. Programs can be written with this and later transferred to the CPC. It has a feature that at any time you can call up a HEX dump of the memory or a dis assembly. An ideal developers tool on the PC for those who still use the

original Amstrad. My major use for MESS at the moment is to view Einey disk images sent to me by e-mail and to get some idea of those other computers emulated. Some of these I've never heard of before.

I am a great fan of BBCBASIC. It runs on quite a few platforms. The latest variant is "BBCBASIC for Windows". This is great. I can write simple BASIC programs and run them in Windows, no dropping down into DOS. Familiar file manipulation programs I used with Einey's BBCBASIC work just as well on the PC with BBCBASIC for Windows. Before I lost it in a crash, I had written and used a program to open an Einey disk image file and read its directory. The basic programming was very little different from that that I would have used on Einey. BBCBASIC can be more complex though, it has its own built in assembler and on the Windows version there are API commands to call up to use Windows dialog boxes. This aspect of BBCBASIC for Windows is not easy to get your head around. It will take some learning and time. For us old timers though it is a breach in the wall. With a start of using a familiar program structure we can tinker and dabble and investigate the Windows operating system, write our own programs and not be so reliant on Bill Gates and his Windose hand me down programs.

When I went to R T Russell's site to download BBCBASIC for Windows I noted that for download there was BBCBASIC for PC DOS, a generic CP/M version and one for the Amstrad CPC. I e-mailed Mr. Russell asking whether he would make the Einstein version available for download. He said he would gladly make it available if I could send it to him, as his Einstein was up in the loft, and he wasn't sure if it was still working. Also he didn't have a null modem cable. So there is another ex Einey user who could come back in from the cold.

EM, where to next? You will soon have Win95 running. Like JM I prefer A5 format. Out of the corner of my eye I can see a pile of A4 size Micro Marts and its glossy cousins. They look untidy and take up lots of space. From the other corner of my other eye I see A5 back numbers of EM held together in cardboard boxes, but sitting pretty in a book case. When reading instructional content from an A5 booklet and implementing (typing in program listings and such) it is less likely to flop about and fall on the floor. The A5 mags can be stored upright, and with appropriate spacers can be kept in a logical order for finding and replacing particular issues.

How should contributions be sent? With Ted Cawkwell I used to send DTP prepared, printed A5 camera-ready artwork, leaving a space for him to paste up page details. It had to be done that way because the illustrative content made the DTP files too big to fit on a floppy. So even though we were using the same desk top publisher, Ted ended up with article contributions where he didn't have much final editorial control except to ask me to start over again. In some cases we were making a joint effort where I was providing illustrations for his text. Ted had to describe the illustrations he wanted and how he wanted them placed on the A5 artwork to be sent. Somehow he managed to put the artwork into his printer and print his text around the illustrations. Now I have a CD-ROM writer, so the above effort will not be necessary, but we would need to have the same DTP software. If you have an e-mail address sometime in the future, the CD-ROM will not be necessary, as file attachments can be e-mailed.

Bob Deeley didn't want hard copy artwork sent. He asked for plain text scripts with pictorial content sent separately. He also told me he had a lot of difficulty trying to assimilate hard copy pages from different word processors, and desk top publisher files that were sent in.

I see in EM that John Marriott mentions GST Publisher3. I think this is called Pressworks. Ted used this and loaned me the floppy software to load into the 486 I had at the time. The disks were copy protected so no back up for me to keep. And at changing to a new computer the

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installed software was lost. I use Serif PagePlus 5 DTP at the moment. This was free software that came on a magazine cover CD-ROM. (Still Free for Download) After 30 days I had to phone up, register and get the serial number for continuing use. PagePlus5 was still free but they gave a hard sell for me to buy PagePlus6 before they let me have the serial number. I had installed earlier PagePlus3 this is still on my computer and I still have the cover CD it came on. It's free and there is no need to telephone for a serial number or key. You are requested to go online to register, but there is no need to do so. A long time ago John Marriott sent me Serif PagePlus (must have been the first version). It fitted onto a floppy. Could only save one page to a file at a time. I did create EM page artwork with this.

My thinking here is that whatever DTP software you choose it might be best to have a freeware one that can be distributed to the major article contributors of EM. These contributors could create page layouts, send in the files which can be later loaded in for editorial alteration and adjustment where necessary. Having page making skills over time being co-ordinated to a distinct layout and style (for an accepted standard for the overall presentation of EM) could enable one contributor to act as a Deputy Editor if needed, or for others to be sub Editors if the workload came too much for one.

Other EM content contributions would still have to be processed from what ever way they are sent in i.e. typed letters and such, but for some of the most committed contributors having a knowledge of how the magazine is laid out and put together would be a way for them to comfortably adjust to higher responsibilities if there was a need, and if they wanted to.

For some time now I've been looking for a way to create a web page that can be guaranteed to print out to a A5 hard copy or A5 pages set to defined page breaks. There doesn't seem to be one, so no simple way to put a web page to magazine page. It has to be reworked. Magazine pages can be scanned in (or with Serif PagePlus3 saved as a picture at development) to a graphic bit map. These can be incorporated into a web page. They are large files, take up a lot of bytes from web space and load in slower for view. It is better, where possible, to rework Desk Top Publisher files to a HTML format. ASCII text then stays as text and not as a bit map representation using up more bytes.

This means there isn't a simple way for me to prepare Einey article content and make two copies - one for the magazine, the other for the web. There is and will be content up on site that has not been covered by the magazine. If others think some of this content should be in the magazine they are free to translate it to hard copy format. Please do not expect me to be obligated to do this.

Re the nature of EM content. It is some time ago now that the IBM computer and MS Windows became affordable and were being taken up by people such as myself. As reported in EM a lot of old 8 bit computer magazines that drifted towards PC content lost their readership and ceased to be. With propriety PC magazines on the news agents shelves how did they expect to compete? The mainstream mags came with free cover software, first on floppy disks, then on CD-ROM. The software was good and of a large variety. With so much ready made software to explore, for most, there was not much interest or time left for writing their own programs.

The IBM/MS Windows is a revolutionary tool for all kinds of interests and trades. There is professional written PC software for gardeners, through to video editing. The popularity of the PC is not for its inner workings and its micro processors, but for what it can do for you. The many reasons why people have PCs is as diverse as the software available for it. The software used for the PC is not made by a programmer but by a team of programmers, market

researchers and all those others involved in R&D. For individuals without higher tuition, writing programs for Windows was not a simple task, so for those whose interest was still in micro processing, its manipulation and control continued on with their 8 bit computers.

The present continuing EM readership is probably largely of those who still have a fascination for basic micro processing, want to understand its inner workings and explore its potential. Do they still see the IBM/MS computer as a competitor? I do not think so. They probably have one and see it as a modern day convenience utility the same as the washing machine or telephone. To them it is a versatile tool with software attachments which can not only simplify tasks they want to do but make them possible. A software choice could be for a desk top publisher so they can make up magazine pages for an 8 bit computer fanzine.

The majority of the EM readership probably started out with the old 8 bit computers and now also have a PC for its convenience value. From the Tatum Einstein Site I think I'm seeing those coming from the other way, i.e. those who have started out with the PC and are now showing an interest in the old computers. Up on the Web (Here he goes again, Its Wonderful!) there seems to be a site for every 8 bit computer that ever was. Most have good technical information and software to download. There are also some mind blowing speculative projects to enhance these computers well past their designer's original intentions (adding flash memory cards, USB connectivity). Except for a few, most of these sites make no reference to hard copy publications. If it is the belief of these 8 bit enthusiasts that by having a web site there is no need for a hard copy magazine, I think they have made a mistake.

The monitor is not a comfortable medium to read from, but the written word has to be there to provide information. This I think this is best served by a punchy points in brief style. Mouse clicks on imbedded links in the text enables readers to jump to the specific area of information they are looking for. Not like a book where you have to flip to the index at the back. The written word on the web and off CD-ROM is best put by the Encarta and Britannica reference style.

This kind of writing does not show any kind of personality for the writer though. Without anecdotal comments and the opinions of the writer being expressed there are questions left unanswered. Why is the writer still interested in these old computers? Why is this information being made available to others? How does he think these old computers can still fit in with the modern World. Does the writer see some importance for these computers in the future that I should know about?

From all the articles that have been in EM, from even those that have tried to limit themselves to just the technical, we get an idea from incidental phrases and sentences of how those questions above can be answered. From this our own imagination is stimulated and our own vision for the purpose for going in on with Einy is reinforced. Speculative surmising and pipe dreaming articles about Einy's future also make good reading from an armchair and from a paper page, but a lot less so when perched on a stool in front of a monitor screen.

Acceptable EM content? PC content should be accepted if it is Einy related. File transfer software should of course be mentioned also anything that deals with PC-Einy communications and interaction. PC software that is used for Einy purposes i.e. Z80 assemblers and disassemblers. Also that which is useful for communicating about Einy i.e. discussing what type of PC equipment the EM Editor needs for publishing EM, and on what budget. We have to except the fact the PC has now established itself into a lot of peoples lives and homes, just like the telephone, so it will be mentioned and brought up in any subject of

conversation. It has become a necessary convenience. I dread the day when I find it necessary to have one of those dreadful mobile phones. I believe that day will come.

The established IBM/MS PC is a marvellous tool for the home user. It is getting better all the time. It has though, through its evolution, become specialised for information technology. It has become nothing more than a very good information processor. Its sophistication and complexity has made it bypass an important field for micro processing power, that of robotics. Einey's processor is of the right type, size and cost. The PC can't compete with Einey in this field. With this in mind I don't think we need to fear that PC content in EM will compete for our souls.

The World Wide Web is a mountain of information. It has become the mountain where those with ideas go to pronounce them to the World. It holds a lot of information for other 8 bit computers. Web content though, unless it is for sound and film, is really a "go there for a take away" facility, whereas reading a magazine is like sitting down for a good meal. But, like it or not, for keeping up to date, for reporting and commenting on what is happening in the World, hard copy publishing now has to be as Mohammed and go to the mountain. EM content must bring information off the web to those not connected in a way such that there are no missing pieces available only by accessing site addresses which they cannot visit. If you see fit I could contribute some regular feature items titled something like "Surfing for Einey".

Re threatened non Einey content for the lack of Einey content sent in. EM 108, Romney Marsh Steam Railway, Recipe of the day from the WI, Our spiritual welfare taken care of with a column by your local Parson. Frankly, I must say that I would rather like these additions to be in EM. I never forget that automatic bread making tip you put in EM as a space-filler, of using ordinary plain flour instead of the strong bread flour. Cost 12p instead of 70p or more. That makes it cheaper to make bread than to buy it. Does the WI have instructions for fruit bottling as well as recipes for their famous jam? I used a Burco boiler, but I had to stay there looking at the thermometer, tweaking the heating controls so the heat built up slowly, for nearly two hours. This so the bottles wouldn't explode. During that time a thought passed through my head of making an electronic/electrical gadget that I could attach to Einey so everything could be monitored and controlled without me having to be there. Never did do anything about it. Some day, someone will, and the gadget will be in the shops next to the automatic bread makers.

The Romney Marsh Steam Railway. I have been on that. In one of those little enclosed carriages. I also remember going to Ilfracombe in North Devon in the 50's by steam train. The section of line between Barnstaple and Ilfracombe is no longer. I'm told it has now been turned into a footpath and cycle-way. Why is it when these short lengths of track are abandoned from the rail network the lines are torn up? Can't something like a battery powered milk float be used to run along these lines as tram cars? They could be there going along these routes to a maximum speed of 15 mile an hour, requesting hikers and the slower cyclists to move to one side for them to pass. Except for level crossings, railways usually go over or under existing roadways, so no adding to traffic congestion. The North Devon track linked two towns, from the map, about 10 to 12 miles apart. No need to travel at channel link speeds. With the modern technology unmanned cars could be used to move freight in more isolated areas. There would need to be sensors on the track and some form of controlling micro processing on the self propelled carriages. Someone with an Einey and a model railway set could test out the theory.

The Parson could forewarn those who are tempted to find out of what is exactly meant by "porn on the Web". "The evil will be upon you like a swarm of angry bees," he could write. "As you swat one vision of evil from your sight you will be stung by another. There will be no sanctuary

by going to the "Tatung Einstein Site" for the swarm will follow and the evil will reappear. Your only salvation is to disconnect, power down and reboot."

Seriously, concentrating purely on Einey's technical ability gets us trapped in the box with the circuitry. Micro computing is not a side line abstraction. It has potential to be applied to real problems; new applications for all sorts of things in modern day life. EM readers could be holding back from making article contributions because they do not see themselves competent in hardware and software skills, when what could be of more value is their imagination and vision for what the technology can be used for. So lets have some non-Einey content. Many a truth is spoken in jest, and ideas given could be turned into serious projects.

I think I could ramble on for ever saying what I think EM should be, when all I would be doing is describing what it is and what it has already become. A web site is a resource but it is not a magazine, so fear it not.

I do not believe the modern technology has replaced Einey or EM but I do think the pace of modern day communications has left the way EM content is assembled and put together far behind. The geographic isolation and lack of regular contact between Editor and article contributors is a problem. Fast responsive e-mailing can reduce this. E-mail reply can be sent and received in minutes. An interview-type article, i.e. question and answer, between two contributors could be put together in days. A useful way for an Editor to summon up needed magazine content before a deadline. CD-ROM writers means large DDT files can be put on disk and posted. It would be your printer and ink that would be putting them to paper though.

For an agonising time from EM 107 to 108 I thought the "Tatung Einstein Site" would be all on its own, and I would be having to put a EM "R.I.P" up on the web site. I'm now glad you have taken on the Editorship. I hope you will be swamped and over worked with article contributions but have a devoted team of supporters who take on some of the responsibility.

So with "Long Live EM and God save the Editor"

Until EM 109 I say goodbye,

Chris Coxall

Editorial Response:-

Although we're not yet internetted at Einstein Empire World HQ, I have occasional access via the public library computers, and have checked out the Einy websites. These have engendered much interest from people we would never enrol in EUG in the normal way, and often these are the "new blood" who have done so much to keep Einy alive since I took on the responsibility of enabling others to "do their Einy thing". I am very much in agreement with the view expressed by Chris, that EUG/EM needs not only an active but also an interactive presence in the e-world, and the 486 PC running Windows 95 which John Marriott made available was intended to achieve this. However, the boot fair seller removed essential bits from it before John took delivery, and the best laid plans of mice and men went somewhat pear-shaped. The offer which Chris made to use the contacts he has in order to obtain good fairly-recent but now-redundant PC kit cheaply or for free for EUG/EM has been taken up with alacrity, and hopefully the administration and magazine production technology will shortly be fully updated and operating in e-land as well as in the realm of Postman Pat.

The EinTrans software to which Chris refers seems to be serial-transfer software which requires Einy and PC to be linked with a null modem cable. Are these readily available?

Do Maplins sell the bits in their catalogue range? Is serial transfer software for the Einey end included? The EinSys system-disk-creation software for anyone who's bought (or been given) an Einey without even a system disk looks interesting. However, BEWARE COPYRIGHT! Any Einey owner has an implied right to take whatever steps are necessary to protect their investment by backing up, repairing or reinstating the system disk, without which the machine is not capable of performing its intended design function, but this ONLY applies to the operating system which was supplied with the machine, to any upgrades supplied to users as an authorised upgrade to it, and to software which the owner can show they have a legal right to have in their possession for use on that machine. System 5 (XtalDos version 2) was NOT a free upgrade, and if the people at each end of Einsys are not legal owners of a licence to use this version of the operating system, a criminal offence may be committed in reproducing it under the 1988 Copyright, Designs and Patents Act. There is no problem in reproducing XtalDos version 1 in original or debugged form, or as modified by Ted Cawkwell to allow it to be used with 3½" or 5¼" double-sided disks/drives. I imagine that this is pretty much what Tatung did to produce Dos80, so that should be OK too. All versions of CP/M are OK to reproduce (or reverse engineer) for the purpose of private study and similar not-for-profit use. XtalDos was a user-friendly clone of CP/M 2.2 based on Xtal's experience of porting CP/M to Sharp (and other Z80 machines) under licence, and like a lot of other CP/M-clone operating systems, it wouldn't surprise me at all to find that there's more CP/M code than Xtal code in it.

I think John Marriott has Ted Cawkwell's modified XtalDos 1 which allows worn-out and unavailable Tatung 3" drives to be replaced with good modern double-sided PC ones. Ted was also in the process of debugging and fine-tuning Duncan Elvin's non-bankswitching Atlas self-build computer's CP/M PLUS (CP/M Version 3) that Duncan ported to Einey. What happened to this, and who has a copy? It included utilities to read/write files to/from PC disks - including ones with subdirectories on them - and Amstrad disks too. Duncan also used it to hook up a hard disk & a dumb terminal to run 80-column displays without an 80-column card.

For other operating systems, I'd normally point you to the software library, the master disk set of which was borrowed from me several years ago by Steve Potts to copy onto 3½" disks for use at Stafford shows with the promise that it would all be returned to me within weeks, but the master set has never been returned to me. What's happened to it all, Steve? Enquiries to you from Chris don't get answered. If you've simply lost interest, can you unearth the master set so someone else can sort through it and extract anything useful, as the basis of a new Einey software library on CD-ROM, that can be accessed in the traditional way or on-line?

EINREAD was developed as a fairly basic utility for his own use in 1989 by V E Davies, then tidied up a bit and made available to others through the group. Like 22DISK, in my experience it tends to get confused if you feed it a disk with fragmented files, multiple files, files over one extent in size, or 2-sided disks. If CPD R/W works OK, you may be better off sticking to that.

Duncan Elvin has done it once, but wouldn't want to try it again. The general consensus of opinion in EUG and Sharp User Club is that to put hard disk drives on Einey or Sharp isn't worth the effort. CD-ROM would be a possible alternative - see p.2 of this issue for what Duncan Elvin has already achieved - but you would need to install a CD-ROM writer/re-writer for it to be a viable alternative to a hard disk. You'd also need to drag CP/M out of the steam era by junking user numbers and adding an MsDos-type subdirectory system in order to access the content without going certifiably insane. Maurice Hawes of the Sharp User Group says this would just be a software mod and no real problem to do, but who is going to do it?

Once the new EUG/EM computer system you're putting together for use here is up and running, we'll be better able to explore how best to get EM online as well as on paper.

As you say, the real usefulness of Z80 machines like Einey is their ability to interface with and control other subsidiary systems. But when you've set your production line up it won't be an Einstein you're building - it will be a Coxall! I've solved the mobile phone problem though. Asda had a clearance line before Xmas of an obscure and very basic French make at a price that finished up only costing about a fiver after registering the "Get You Started" ten quid credit voucher, plus the seven quid bonus when you registered. It's a T-mobile phone, but it's so ancient that it's absolutely convinced it's a One-2-One phone. I have to use it for a couple of minutes every 180 days to keep it alive, but otherwise I only use it for breakdowns, other emergencies, or if I need to make an urgent call when no landline's available. The rest of the time it's switched off, ex-directory, and I don't tell anyone its number. Simple, innit?

Sorry, you can't have a sermon from the Vicar in every EM from now on. He's due to retire next month, and the church can't afford to pay a replacement, as all its money is being spent on propping up old buildings that only a handful of people ever use, for a few hours a year!

PC 3½" 1.44M DRIVES

John Marriott

Sometimes disasters force you to find solutions - and buying a duff Amiga 1200 with about 200 720K type disks was not the disaster, for it was the disks that I was after, for use/supply on the TC01, but the simple fact that the 1200 Amiga has a strange disk format which not only puzzles the Shareware program ANADISK on my PC to the point of telling me that they were blank/unformatted - but also the FormaVerify on my TC01 - telling me I had a read error on Sector 15Hex, which is Track 22 in Human terms, which just doesn't exist in System 5's disk parameter block!

Whilst I've no longer any information on the Amiga, let alone the 1200 - I'm pretty sure that the 1200 had 3 forms of disk format with one being 11 sectors per track, so double sided 80 track gave an 880K disk with some "outsider" formats squeezing another 2 tracks, bringing it to over 900K. Assumption suggested that either these disks were past re-formatting/recovery (some were "noisy" - instantly scrapped with the aid of some tin snips!) or that the 720K drives on my TC01 and the 720K disk media were incompatible. Yes - some of you may remember the rather misleading "media" descriptions given to the 5¼" disks - the "quad density" meaning 360K per side, and as for "double density", how many of us managed to format these to 1.2M only to find out some months later just about 100% loss of saved programs.

So, part way through the demise of the 720K disk as the 1.44M muscled its way in, what's the betting that the same media material was going into both disk types as well as "early" 1.44M drives being off-loaded as 720K drives - a bloody grey area. At this moment in Time there's a lot of 1.44M disks with 2.88M media - although the 2.88M 3.5" drive now won't really see the light of day, as the "read/write/re-write" CD deck drops in price (CD's as well) to become "original specification" to the "Box Shifters". The point I'm trying to make at this juncture is "disks are disks, are disks - but!". So, I decided to try reformatting some of these disks on my PC with PC-Shell as 720K with a Verify - and suddenly there wasn't as many drop-outs - suggesting that a 1.44M drive might do the job if it could be linked to the TC01 ?

Scurry round looking for spare 1.44M drives and ribbon cables, plus a spare PC power unit for those bare drives - and of course, the learning curve on the "twisted ribbon" fandango. Cutting

a long story short, somebody in the Computer Industry must have come to the conclusion, back along, that the 5.25" drive was now old hat, would only be used in the D:1 position, so why go to the costs of having "jumpers" and their associated bits and pieces (yes, pennies do count when in the thousands!) and decided that the DO: pin on the drive's PCB needn't go anywhere - so only D1: type drives went into production (although for some strange reason D2-3: still seemed wired on the drive's PCB - with no program facility from the PC!).

Somewhere else, another Costing Clerk picked this up - thought it a grand idea, and had it invoked on the current (and for the then foreseeable future) 1.44M 3.5" drive - only to find that the bloody thing wouldn't work in the DO: position! Needless to say, any saving was well lost with the vastly extra costs in "twisting" that cable. And to really cheer you up, people like that design "flight" programs, look after nuclear power plants, work in hospitals maintaining life support equipment - some even reach the dizzy heights of Prime Minister! - but I digress?

So, why wouldn't a "jumper-less" 3½" 1.44M drive work with a "twisted cable" on the TC01 as DO: yet the same set up would in a PC? And the answer was so obvious (oh yes?) of taking out the "180 degree twist" of wires "10 to 16" and just 180 degree twist wires "10 to 12"... and things just worked out fine! That's right, your TC01 is sending out a signal to what it thinks is DO: - with the drive not caring a hoot so long as it gets a signal on its D1: pin.

Of course, only time will tell with those ex-Amiga reformatted disks - will they be compatible and accept new "writes" when back in my 720K drives, a case of "suck it and see". I've tried "calling up" drives 2: and 3: to see how the PC drives in 0: and 1: would react (could pins 14 & 6 of those drive's PCB go somewhere?) but things seemed OK - although a simple cure would be to just cut those wires on the ribbon cable if things played up - and yes, they could be routed to pin 12 as a way of "selecting" drives 2: or 3:

Usual Legal Disclaimers on this - I'd suggest that you disconnect your internal drives and "work" the PC drives on the external disk port and with a spare PC power supply. The chances of picking up a late 286 or early 386 for less than £10.00p. locally will supply you most of the parts, with no parcel post costs to be paid for - cheap!

One last bit - I've had a very poor format success rate with 1.44M (so called) disks on the TC01 using PC drives, trying to format to the System 5 80T/DS 800K level. I have the sneaky feeling that this is to do with the time/design limitation of the 1770 chip signals - which seems to preclude formatting to a PC standard. ...although would somebody like to prove me wrong?

Notes to ribbon cable wiring diagram:- (also reproduced on the back cover of EM 108)

- A: (fig 1) standard PC "twisted" cable with lines 10/16 twisted to be 16/10. Not suitable in this form for use with the TC01 (fig.1)
- B: (fig 2) PC "twisted" cable modified so that just 10/12 are twisted to be 12/10. Suitable for use with non-jumpered PC 1.44M 3.5" drives with the TC01, as D0
- C: (fig 2) Normal "through" section of the PC "twisted" cable. Will accept the PC 1.44M 3.5" drive for TC01 use, as D1.

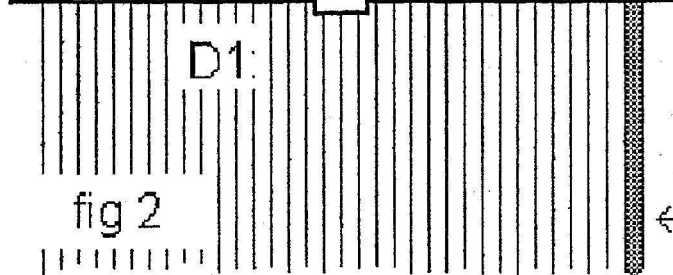
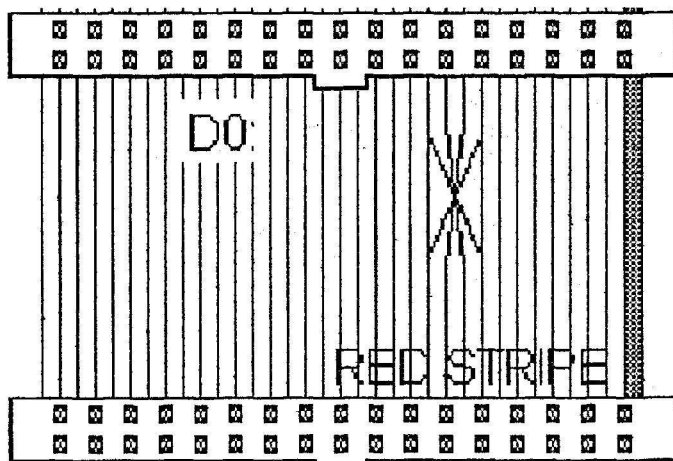
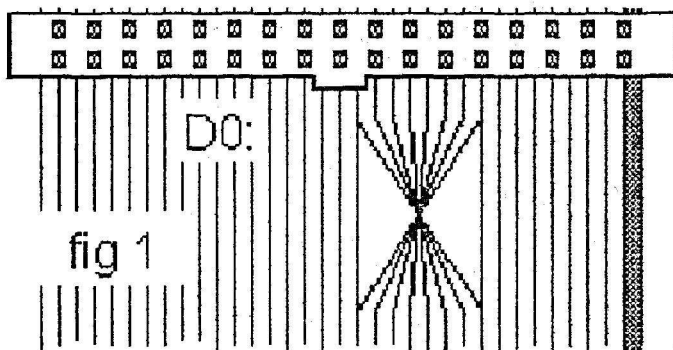
Dear Tony,

I regret to have to tell you that my husband, Dick Keynes, died last year after losing his battle against lung cancer.

I would like to thank you for all the pleasure he had from keeping in touch with the Einstein User Group over the years, and wish you all well in the future.

Pat Keynes, Bexhill-on-Sea

EM 109-17



From Ken Ross, 26 Redenham Hse, Tangley Grove, Roehampton, London SW15 4DW:
(As I've been mentioned in Chris Coxall's letter, I'll put my 2p worth with my comments !)

From: Ken Ross To: Chris Coxall"

I've worked my way through your 9½ pages of letter. 2nd PC for internet due to virus fears? Get a Mac if such fears are the main point for doing internet stuff. Macs live happily on the web even at very low specs. I've a power book 14mb memory 1 68030 processor 1 B&W screen that I can use on internet quite happily with very little difference between it & my desktop beastie! Or just don't use ANY Bill Gates e-mail programs, along with a bit of common sense - MS email progs are the main method of nasties spreading / infecting. My website was off-line due to the fact that the webspace people changed their root name , and I didn't find out about this change as medical events took charge of things and I didn't find out till afterwards. There's a lot of 'me-too' information list web sites that have all copied each other. They really annoy me. Why bother! Why not just put a link to the original page that's been pinched !

Cable manufacturer? Judging from my Commodore experiences it'd be easier to buy a winning lottery ticket then to find /hire anyone willing to make them up to order!

The e-mail link just forwards them onto me through one of my e-mail addresses. You can attach graphics to e-mails, but it depends on how friendly your beastie is! (and phone costs) The fax number (07092-022719) is handy, as items can be hand-drawn (etc.) on A4 paper and shoved through any fax machine. It turns up in my e-mail box as an attachment, ready to be dealt with by graphics progs, etc. (This number also handles voice messages as well, would you believe ? - Einney sound samples, maybe ?) This gives non-interneted people a chance to have some input on the site if they wish to.

Spam (i.e. junk e-mails) is a sad fact of life if your email addy is anywhere on a public page - no matter what any advertiser says - and if your website is on the same ISP as your email account they derive it from the URL . (so if you're a "public figure" (ho ho!) like me it's inevitable) all you can do is filter it - apart from going round and dropping bombs on the servers they use . on a tech aside about the internet - the requirements for getting online is very low indeed. The key part of the software is a TCP or PPP 'interface prog' as it were. There's even a project around for getting an unexpanded C64 onto the internet which is in final stages .

Comment from Tony:-

On reading through some "How to For Dummies" books borrowed from Bexhill public library about getting on the Internet and finding useful information on it, I found that (A) the net and the web are not one and the same thing, and a vast network existed in text mode before any "Glueys" - graphic user interfaces - were employed to make it all look sexy and adorable. Apparently a lot of the content has not been maintained or updated for yonks - a bit like the brand new Einsteins with built-in modems and DVD drives that you can't buy in the High Street nowadays - but some cash-strapped countries that can't afford to update their infrastructure are still actively using it; and (B) that you can access the all-singing all-dancing graphical sites in text mode if you have a program to do so, and the data transfer then runs at the speed of light. Although it lacks ports to control other kit, the PC was a world-beater because other manufacturers were able to clone it, and because it was software-driven and infinitely adaptable. The more I think about it, the more I like Chris' intention to have a go at updating Einney into a 21st-century machine, with interfaces to take full advantage of its built-in control function abilities. However, much off-the-shelf industrial/domestic equipment is already driven by embedded Z80 systems, so to really

succeed without a lot of effort re-inventing the wheel you need use the WorlWideWonderWeb to check out exactly what other (mainly US?) Z80 / CP/M devotees have already achieved in bringing Z80 home computer hardware, software and operating systems into the 21st century and how, and then develop a 21st-century version of Einey which is equally useful for PC-type functions, not put a vast amount of effort into building a machine that can do little more than control your lawn-mower or switch the lights on randomly in your house when you are out.

CABLES TO ORDER:- (query raised by Chris Coxall and commented on by Ken Ross) After some hunting around I found the ad we used to run on the back cover of EM for cables to order by former EUG member Stuart Marshall. He moved on from the Einstein, but said he was still able and willing to make up cables and connectors to order for Einey owners, and also to blow ROM chips on an exchange basis. We don't seem to have run his ad since EM No.78, which is quite some time ago, but if he is still at 25 CARLCROFT, STONYDELPH, TAMWORTH, B77 4DL (01827-897920) - or elsewhere in the area and listed in the phone book or directory enquiries - it's worth checking with him by phone or by post - with a SAE if you want a reply - to see if he is still willing and able to help. Alternatively, **DO WE HAVE ANY OTHER MEMBERS WHO ARE WILLING TO MAKE UP CABLES AND CONNECTORS TO ORDER?** Thinks... Have you put out an enquiry about this on your WonderWeb, Steve?

SHARP USER GROUP PEOPLE PLEASE NOTE - HAVE YOU CRACKED THIS ONE?

Stocktaking - part 1?

John Marriott

One of the problems I've found with retirement is the simple fact that there are not enough hours in the day, and the need to "prune" what is left over from 50 years of "habit", things that are linked to all those years of "gainful" employment which must be firmly cast into the "trash can", for whilst I have many happy memories amongst the whimsical, bad, even sad ones - pruning is a must...

...I was going to say an unfortunate must, but on looking closer - why hang on to tools, components, manuals, calculators... yes, even "draftsmen's tools" which cost an "arm and a leg" but have sat up in the loft, unused for nearly 10 years as those types of tools have firmly moved onto the computer - replaced by Autocad, Turbocad, Draftlite and the rest. Even "Rowland A3" plotter printers appear to have disappeared in favour of the Hewlett Packard emulations.

When I "really" came into the Electronic Servicing Industry the humble transistor was struggling to make a Commercial impact - the germanium type prone to any transient spike a-going, whilst the "all transistor" portable radios although needing less battery replacements than say the Ever Ready portable valve radio (we were still charging lead-acid accumulators for houses which had no electricity, houses like that in Exeter up until about 1960 (*rude interruption by Editor: My parents bought a house in Surrey in 1956 for us to live in, which only had gas lighting in the part of the house the owners had lived in, with nothing but candles or oil lamps for lighting in the rest of the house*) - so when they talked about "steam radio", no laughing matter!), 2 of the large 9V battery types took quite a chunk out of one's pay packet - and as for a car radio, if you could hear it above the mechanical reed oscillator which converted the car's 6VDC battery (hey, 12V cars were a luxury - AND a starter?) to AC so as to get the "bottle" valve's anode voltage levels, and if you were daft enough to switch the engine off and leave the radio on - get the starting handle out and hope to God that you'd set the "advance/retard" lever correctly, or find out how quickly that handle could kick back - OUCH (*ED: Don't! It still hurts!*)

Bit by bit the glass bottle valve disappeared, grimly hanging on with the TV e.h.t. circuit until the "BU" silicon series of power transistor finally ousted them. It seems unreal that I was sent on a week's course (a working week was 6 days!) to learn how to solder - winding a couple of

inches (so it seemed) of wire around a "post" from a resistor or capacitor, a 100W electric iron (our service vans also carried gas powered soldering irons - no such thing as a "standard" electrical socket, most houses could only boast one 15A 3 "round pin" socket, probably a couple of 5A 2 "round pin" sockets - and don't count on there being an "earth", with the chassis alive" - yes, with the heat you'd find inside a "set" you could guarantee that the solder would often be close to its "putty" point with only the "mechanical" wrapping being the "serviceable" connection...

...and how many printed circuits "died" when that 100W iron was "firmly applied to the joint" by the "Old Timers" who just couldn't get the idea that the latest Multicore Solder had a lower melting point, and the transistor some "intolerance" to this excess heat "flowing through its junction". Strange, I've still got one of those 100W irons, except mine's a 220VAC model (most of Exeter back then was 210VAC), so work out its true wattage then, and the jump when the National Grid and new Power Stations "converted" us to 240VAC! ($P=I.V$ & $V=I.R$)

A lot of the "Old Timers" never made it onto transistors. let alone colour TV - and when the integrated circuits came in, well - that cleared the lot. It's funny how we automatically change a light bulb if we "click" the switch a couple of times and it doesn't light - who bothers about "what's happened" inside, but they would with transistors and IC's. I suppose, that with valves you'd get one which would have "worn" below a certain working specification for the particular set/chassis it was in, yet be okay in another - even some "signal" transistors would mimic that with their "Hfe/Mu" spread, and one of the first things you were "taught" was never to throw a component away unless you could "prove positive" that it was bugged!

Of course, "power transistors" control high Currents at relatively low Voltages, which means a lot of internal heat can be generated - so if your TV "Line Timebase Oscillator" isn't operating correctly, that "BU" switching transistor has a very short (milliseconds!) life as compared to the "mistreatment" a "bottle valve" will take - I've seen one where the internal temperature was so high that part of its glass envelope started collapsing inwards under its vacuum - and still worked when the offending/faulty "grid resistor" was replaced!

But, the old days of "practical job learning" were going fast. So fast that I crammed a 3 year City & Guilds "Radio, TV & Electronics" course into 2 years, followed by a 6 month Residential Course in Bristol - when Redifusion used to train their "Trainees" over 4 years, all in order to "stand still"...

...yet I was still only rated as a "Bench Improver" by my Employer! Funny, but the "wave solder" technique the UK TV Manufacturers were using led to a lot (understatement!) of "dry joint" problems - which is where that week's "solder training" came in handy - you "knew" a poor joint by its "colour" rather than sweating over a PCB, "hitting" every joint in the hope that you might get all, or any bad joint. If any of you have carried one of the old PYE/Dynatron 26" tambour doored colour TVs up and down 3 full flights of stairs in a block of flats (even with your "apprentice) half a dozen times - well, a few muttered words about "modern wave soldering techniques" as your knuckles were banged and skinned never seemed to be sufficient. ..

...and as for those old Ford 5cwt vans - the effing back doors would never stay open as you were struggling to get that set in - and of course, with its rigid "cart spring" suspension (**ED:** Yes , *TWO springs, mounted crosswise, one over each axle - and heaven help you if you ever loaded the van heavily enough for them to actually do anything - you would have no control at all of the steering at the first bend you came to!*.) that would vibrate that "can't find" dry joint to a "it'll now work for a couple of days in the Workshop and fail again 2 days after being returned!". And yes, another point - the way the Arctic Draughts blew up through the pedals, it was no wonder I seemed to have an endless crop of chilblains the moment Autumn

came - and don't mention car heaters, you'd be lucky if your van had a working windscreen wiper (remember how the Ford ones went slower and slower the harder you accelerated?), or a passenger seat - yes, an extra - so my "apprentice", when he had to come out with me, sat on a beer crate covered by a bit of potato sacking...! *(ED butting in again: Leather gaiters round the pedals when new never lasted very long, and with no water pump even the saloon car version of the van had no heater. You had to wear flying boots, thick gloves, scarf, hat and heavy overcoat while driving in winter, with the windscreen cranked open in cold weather to see through it if you hadn't bought (or built) a battery-flattening add-on electric demister. As John says, the windscreen wiper never worked when you needed it, because it was vacuum-operated by a small pipe leading off the inlet manifold. Going up a hill in the rain you had to take your foot off the accelerator pedal for it to work at all. Oh, those Good Old Days!!! Mind you, John's van sounds like it was in better nick than mine. I didn't just have gaps round the pedals. The ply floor under the driver's seat had fallen through into the road the first time I had to make an emergency stop - that really was an emergency! - and a couple of long iron gate hinges bolted to the vertical steel panel behind the seat and resting on the sheet metal panel round the pedals supported the floor and seat, with great gaping gaps all round it. The driver's door couldn't be opened, or it would fall out into the road, the passenger's door handle couldn't be locked from outside so had been removed and I used a railway carriage door key instead, the battery was knackered and the radiator grille had sagged so the startiung handle couldn't be inserted. The starting procedure was to push it up the road, jump in, & bump start it. That really was a pantomime. London bus drivers were collapsing in tears, watching it.)*

Anyway, back to John's apprentice ...under Fear of Death as he desperately peered out backwards through those "sun glass" sized rear windows for the "Boys in Blue" as we thundered (rattle and banged!) along, a good 7 mph above the legal Commercial Vehicle limit of 30 mph - of course, the Vehicle Logbook for a "C" Class vehicle never up to date.

Yes, sitting on the floor next to me now ~ an old AVO8 multimeter (NATO Stock!), for 20K OHM's per volt was the test standard and you quickly found out that "tracing" faults with it in a transistorised circuit made it part of the circuit! Yes, I've digital multimeters with their 10 Meg.OHM "effect" input, but it's the way you can "read" the swing of the needle which can be more important than the "absolutes" of a digital display ~ even better as you can watch "from the corner of your eye" rather than hearing that dreaded "SNICK!" as you've glanced your eyes away and one of the effing probes has followed you and created a short circuit...

...go on, walk straight ahead and then look backwards over your shoulder - and your body veers off to the side you're looking over- hence (Road Safety lecture!), always look over your shoulder which is furthest from the kerb!

Now- stop laughing, it's my age and advancing senility. And getting back - what do you think I should do with that old AVO8 in its prime condition case, junk it with the other stuff, drop it off at my Sons' old school (where it'll get the same fate?) or hang on to it in case that old "test standard" comes back in...

...for when the "West" laid hands on one of the Soviet Foxbat aircraft and started sniggering over the fact that its radio equipment still had miniature glass valves, only to be quickly informed "by their own Scientists..." that transistor based equipment was trashed by the "magnetic wave front" of an exploding "A" Bomb (and "H")...

...and what type of electronic component is inside a digital multimeter? Although I was involved in the "correct maintenance" of a local Royal Observer Station (but "declined" to take part in any of the "weekend" and "24 hour lock-in" exercises - classified information, sorry) - the consensus, should the "Button" get pressed, on what action to take was invariably followed by "... on my bike home to have a steak, pint of beer, and leg over... and not necessarily in that order..."

One thing I will say - whenever I was in the "secure" building I always had one of the "Services" torches clipped to my belt - despite many being "housed" around the building, and was none to gently "advised" about that. So, one day I slipped a piece of cardboard between the contacts of a "Mains failure change-over/drop-out relay" which would (theoretically?) bring on the diesel generator - something which "they" would be simulating in the coming 24 hour "lock-in" weekend... ...it was surprising how many torches were religiously carried from then on!

That piece of cardboard? Yes, it was found - complete with my name and date, but strangely enough - no action taken! Perhaps in a later article I'll expand on some of the futile and wasteful practices which abound "in the Defence of the Realm", but to round this piece off, this particular building complex was not on my "normal patch" but "cared for" by another "operator" with no training in electrics, electronics, advanced control systems or air conditioning plant (I won't count diesel generators, which was listed as a "Specialist's Contractor's Job"). His apprentice training had been plumbing/pipework fitting with just a 2 week residential course on "Boiler-house management" containing just the rudimentary inklings on some electrical/control theory.

Now, isn't that somebody you need in the pitch dark filled with hard metal edges, flanges, stuff to walk into, the Mains electrical supply no more due to an "air bomb burst" and a change-over/drop-out relay which hasn't changed over due to not being maintained...

...and the only bit of good welding he ever did was when he welded a screwdriver across 2 phase terminals in a 3-phase 440VAC isolation chamber. What's that strange smell. Mummy?

Okay, cover this if you want to work out that earlier "Wattage" problem. The 100W iron would have a "notional" resistance of 484 OHM (no, it won't read anything like that with a multimeter - check a light bulb and puzzle), so with 210VAC that wattage output will drop to 91W, with 240VAC rise to 119W which at first (again?) seems puzzling until you arrive at a derived formula of $p = V^2 / R$. No wonder that iron is so good at unsoldering things!

Well, I've drifted away slightly - not even got on to computers, that one back in 1958 which had about as much power as a Spectrum 16K computer, but needed a soulless white painted brightly lit air conditioned basement room about 20 feet by 20 feet (optical illusion with its height!) - it "told" me that it was going mad as it suffered from claustrophobia, and that the "breakdowns" it was having weren't due to component failure but the onset of a nervous collapse...

...well, that's what I told the "Interview Board", but somehow they must have questioned the logic of what I'd told them, seeing as how I never got offered the job?

USEFUL TIP: There is no key for $\frac{1}{2}$ or $\frac{1}{4}$ on the standard PC keyboard, but a lot of little-used symbols can be accessed by holding down the ALT key while you key in the code for the symbol on the numeric keypad. $\frac{1}{2}$ is 171 and $\frac{1}{4}$ is 172. Try it out. Can Einney do this too?

[overleaf:]

The first sod of the new Lancashire, Derbyshire & East Coast Railway was cut at Chesterfield on 7 June 1892, but due to lack of money and difficulties with the terrain it never reached either Lancashire or the East Coast, but was limited to the 40 miles between Chesterfield and Lincoln. Passenger trains started running on Tuesday 15 December 1896, but most of the railway's revenue came from hauling coal from the East Midlands coalfield to connecting railways. This traffic built up to 2,668,414 tons in 1906, most of it being hauled onwards by the Great Northern Railway to London for use there, or being handed on to the South Eastern & Chatham Railway or the London Brighton & South Coast Railway for customers in Kent or Sussex. In January 1907 the LD&ECR was merged into the Great Central Railway, which had started life as the Manchester, Sheffield & Lincolnshire Railway (commonly referred to by its regular passengers as "the Mucky, Slow and Lazy") before it built a completely new main line down the spine of England to give itself direct access to London. This new main line became part of a grand scheme to link up with the South Eastern & Chatham Railway and construct a Channel Tunnel, giving direct express trains between Manchester, Paris and further afield, but construction of the Channel Tunnel was stopped by order of the War Office after it had progressed a mile under the sea, on the grounds that it would facilitate a French invasion!

The last LD&ECR steam locomotive was withdrawn and broken up for scrap in August 1948, the last LD&ECR passenger carriage having been withdrawn from service in July 1947, only a few months before the London & North Eastern Railway - into which the Great Central had been merged in 1923 - itself became the Eastern Region of British Railways. However, the cash-starved LNER was always on the look-out for useful economies, and many of these 6-wheeled carriages were then converted to other non-passenger use in breakdown trains, etc.

Amazingly, one of these 5-compartment all-3rd-class 6-wheel carriages survived intact to 1975, when it was purchased for preservation, and was fully restored at the Midland Railway Centre at Butterley.

LETTER:- I have been given your contact details by Ken Ross and thought it would be a good idea to write to you regarding my project.

My aim is to showcase a small mobile exhibition in primary schools throughout London and the Southeast based on the history of technology. Its main theme will be on computer technology and will highlight its origins and rapid development over the past few decades. Primarily it will be based on home computing from the late 70's to the present day and will include several working models from that period.

The exhibition will highlight the many innovations in home computing that came about from the first major computer to impact on the home market, the Sinclair ZX80/81. From this we can both appreciate the numerous proprietary systems that followed; Apples, Commodores, Amstrads, Acorns and of course the less well known but equally important machines such as the Einstein, the Oric, The Memotech MTX and so on.

I have contacted you because I need an Einey expert for advice on the Einstein machine that I intend to include in the exhibition, and because I am looking for like-minded others to work with me on this worthwhile project.

If you have any Einstein users/members/supporters who are interested in this co-operative project, I'd welcome their interest and an opportunity to make contact with them.

Please feel free to contact me on 01892-683338 or write to NIGEL STAPPLE, 4 BONDFIELD CLOSE, SOUTHBOROUGH, TUNBRIDGE WELLS, KENT, TN4 0BF

L. D. & E. C. RY.

CONTRACT No. 1.

RULES FOR WORKMEN.

- 1.—No Workmen to start work except at the commencement of each Quarter.
- 2.—Time will be booked by the hour, and only the time actually worked will be paid for.
- 3.—Sub will only be paid to new starters in the week on which they commence work. Tickets for Sub from the Time-keepers will be paid by the Cashier on Wednesdays and Saturdays at the Office.
- 4.—All alleged mistakes in time or money must be rectified before leaving pay table.
- 5.—Any Workman who, in the opinion of the Ganger, is under the influence of drink, must at once leave the Works. No Beer or Spirits will be allowed to be brought upon the Work.
- 6.—Each Workman will have deducted from his pay as subscription to Sick and Accident Fund

3d. per week.

- 7.—Each Workman will receive, in case of sickness, or accident contracted under ordinary conditions, Medical Attendance and Medicine free of Charge, for a period not exceeding 26 weeks, provided he resides within 2 miles of these Works; and when unable to work from either of the above causes will receive, on production of doctor's certificate,

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- 8.—In cases of accident happening off the Works, or where a man is in any way under the influence of drink upon the Works, or caused by irregular or disorderly conduct, or in sickness caused by excess of any kind, or if the man has not been on the time book for 21 days, or in case the man gets drunk whilst under the Doctor's care, no payments will be made.
- 9.—Any Workman employed by a sub-Contractor must clearly understand that he must look to such sub-Contractor for his pay, and that we are not responsible for any loss he may sustain through such employment.

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