

S I D E L I G H T

The journal for Torch users

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EDITORIAL

Once again, a major theme of the editorial must be a request for more material for publication. At present, there is a considerable short-fall of material for publication in issue 4. I should like to ask the people who have offered to write articles if they would submit them during the next two to three weeks since it takes some time to get Sidelight to bed once all the material is available. I realise that not everyone has the time to spare to write a full length article but if every member just makes one contribution in a year, this major problem will be largely solved. Even if you are not able to make a positive contribution ie. guiding others, how about a negative contribution ie. asking questions and making suggestions for others to write about. I know you've been thinking about writing to us so why not set aside a few minutes just to collect your ideas and sketch out what you want to say. Once that's done, the rest is plain sailing. You need not worry too much about spelling or grammar. We are quite happy to use editorial licence to improve these areas. The main point is to get the technicalities correct.

I believe that one very useful aspect which we can cover is to help and encourage people to write their own programmes. There is a plethora of books and magazines which cover the subject in general terms and so Sidelight's function must surely be to include help on Torch specific problems. If you feel able to help others in this respect, please contact me with your ideas.

The response to my plea for help in the previous issue has been considerably less than modest. Surely, you can spare a small amount of time just four times a year? But it may be that I'm misjudging you. Is it simply that you've just not got around to dropping me a line yet? If you feel that perhaps you are not up to the technicalities, don't worry. I am quite happy to have non-technical help. In fact, it could well be a very good way of learning more about your system.

We do have a deliberate policy of not encouraging direct communication to authors. The reasons are two-fold. Firstly, if people bypass the journal we will lose valuable material and lose touch with members' feelings and problems. Secondly, not everyone would be pleased to receive telephone queries at odd hours of the day or night. On occasion, when I have been convinced that there was a genuine need, I have contacted a member with whom another member needed direct contact in order that he might get in touch with the requesting member if he so wished. This is not a frequent occurrence but I will continue to use this method so long as it is not abused.

I have received many queries regarding the whereabouts of the Graduate. At one point, I was going to suggest that it might have been more appropriate had Torch continued to use the names of mythical beasts! I understand, however, from a member in Australia that his dealer has had a Graduate for several months but that there was an overheating problem. Hopefully, this has been solved and there are Graduates "now appearing at your local dealer." Torch say that production is several hundred a month and back orders should be cleared by April. I'm not familiar with the PC but I have heard that the Graduate is slower. Whether or not this is correct, the Graduate is a very cost effective route to PC compatibility. I hope to be able to evaluate a Graduate myself in order to review it.

Now for some good news. The new version of the programmers guide which Torch have been promising for some time will shortly be completed. I am told that it should be available before the end of April. I understand that it has been

greatly expanded to include all the Beeb's operating system calls. It has also been restructured into a more logical arrangement which should make it much easier to find what you require. Well, it should - but because there will be no index, perhaps it will be just as awkward! I hope to receive a preview copy before issue 4 of Sidelight goes to press and should be able to report on it more fully in the next issue. The bad news is that the price for all the manuals has been increased to a staggering £13.50 each from £7.50. I have asked Torch to justify this massive increase. Their reply (excuse?) is that the new programmers guide is very much more expensive to produce and to keep their price structure simple they have increased all their prices.

If the new Programmers Guide is as comprehensive as I have been led to believe, £13.50 is not unreasonable but it seems very steep for a ZDP User Guide which is much slimmer.

NO MORE MANUALS

Up to now, we have supplied members with Torch manuals post free. Unfortunately, there are several manuals available and we don't supply any of them in large numbers - consequently, it is not possible to keep a stock. We order from Torch as we require them and Torch make a P&P charge of £7.50. We spend about £1 on P&P and this means that we spend about £8.50 on each manual we supply. The discount which Torch gives us simply doesn't cover this sort of outlay. Sadly, therefore, we can no longer supply manuals to members. In theory, you should be able to obtain manuals from any Torch dealer but they are in the same position as us. They would, therefore, be most unlikely to just order a manual from Torch. If they are sending an order for something else, you should be able to persuade them to include a manual because the charge levied by Torch is on a per order basis not a per item basis. We are, of course, honouring outstanding orders but are no longer accepting new orders for Torch manuals. We do try to help members but I am sure you will appreciate that we can't afford this sort of subsidy.

TORCH OWNERSHIP

Most readers will know by now that the Acorn takeover of Torch will not take place. After Acorn shares fell to £0.28p on the USM, they were suspended until the company was restructured. This included the appointment of new stockbrokers and selling 49% of their shares to Olivetti for about £0.08p each. It is not clear how this will affect Torch who are now being funded by the triumvirate which of course still owns Torch. One may assume that the relationship between Torch and Acorn will revert to being similar to the one before the takeover talks.

Due to poor market conditions, many computer users must wonder how long the original manufacturers of their computers will stay in business. Torch users have to worry about Acorn and Torch. In theory, if the Beeb is no longer manufactured, Torch could be in serious trouble. In practice, one hopes that Torch, being in the more steady business market rather than the home market, should be fairly stable. They certainly seem to have full order books. One would also hope that Torch have heeded the warning on Acorn's stability and have drawn up contingency plans to obtain a base processor from some other source should the need arise. In the unlikely event of Torch ceasing manufacture, we will extend our support to members as far as possible.

NEW SOFTWARE CATALOGUE

I understand that Torch will shortly be publishing a new software catalogue. More details in the next issue.

NEW FORMAT

At the time of writing, we have yet to decide how we are going to produce this edition. It may well be that we shall move away from the previous technique of a matrix printer. If we do change, this edition may be slimmer than the previous ones - but DON'T PANIC! There will still be the same number of words. It is merely that by using more efficient technology we get more on a page. On the other hand, there may be no changes other than, hopefully, a higher standard of presentation as we keep experimenting.

GRADUATE NEWS

There have been a variety of improvements to the Graduate. The operating system is now version 3.10 and the differences are as follows:

- * Improved compatibility. More IBM PC Software packages will now run including Multimate. (A full list of compatible IBM PC software will be issued shortly but you may like to know that Torch have tested and proven popular packages like Wordstar, dBASE, Lotus 1-2-3, Framework, Open Access, Supercalc and many more. A driver package is now available from Torch Customer Support in exchange for a disc to allow Lotus 1-2-3 graphics to operate correctly.

- * Faster screen display. Many people who saw the original Graduate complained about the slowness and jerkiness of its display. This has now been speeded up and synchronised with the 8088, giving a much better display.

- * Better printer handling. Some slow printers were losing characters but with the latest version of the operating system, this has been fixed. Selecting serial/parallel printer is also O.K. now.

All Graduate users will receive updates to their operating system. If you don't have any insurmountable problems, it's probably best to wait for this rather than requesting an update. This is because Torch say they are making further improvements. They say they will distribute the new version when they are satisfied that other difficulties have been resolved.

*DUP BUG FIX

GDFS supports a subset of the DFS commands. *DUP is supported but doesn't work correctly on version 3.12 and earlier. To fix this bug, proceed as follows:

```
*GDFS<RETURN>
?%1057=%15<RETURN>
```

```
Normal GDFS entry
Bug fix
```


TORCH REPLY

Here are Mark's comments from issue 2. I must once again apologise that I have had to apply the editorial blue pencil to reduce the original thirteen pages. It seems we let Torch off too lightly in issue 2! Perhaps there are a few points in this issue which will cause a little steam in Cambridge. Ed.

Thank you for Issue 2 of Sidelight which I received mid January. I was again very impressed by the content and this edition is, if anything, an improvement on the first. As has now become the tradition I would like to make a few comments about the issue, both to put forward the TORCH point of view and to add some of my own knowledge where relevant:

Page 2

On the subject of 'bulletin board' type services users of UNIMAIL, TORCHMAIL or TORCHMAIL PLUS, as well as calling the 'public' TORCHMAIL service on Cambridge (0223) 840238 are also welcome to dial the Support Department TORCHMAIL computer on Cambridge (0223) 842051 to look at the latest news etc. Please note, however, that our TORCHMAIL machine is meant primarily for urgent software downloading by dealers or users and so may not always be available for calls.

Any messages or files should be sent to drive A. If you wish any messages you leave to be readable by other people use the 'bulletin' option available in UNIMAIL and TORCHMAIL PLUS. Please also note that urgent or important messages for TORCH staff should be sent to the public computer on (0223) 840238 since the discs are always checked daily on this machine and any messages forwarded to the appropriate departments without delay.

Page 5

Thank you for publishing some of my comments. I am pleased to say that issue 2 contains far less to raise my blood pressure! The problem with DNFS I mentioned briefly is the same as the one I described with Watford DFS 1.3 -the Z80 Disc Pack must be switched on with a disc in the drive before the BBC Micro is switched on. This problem has been fixed in MCP 1.00 (available as part of the PLUS-100 pack)

Page 7

The 'much improved ZDP guide' I refer to is in fact the all new User Guide included with the PLUS-100 pack.

Page 9

I also echo Mr Janes' opinions to a certain extent. It sometimes seems that many people I talk or write to think that I was either born with knowledge of Perfect Software or that I have divine powers. The truth is that I had to learn, just like everyone else, when I worked for a TORCH dealer before coming to work for TORCH themselves.

We were sent one of the first sets of Perfect Software to come out of TORCH and I spent many weekends getting to grips with it all. But after more than 18 months I still use Perfect for most of my software needs, despite the fact that I have access (through TORCH) to most of the other popular CP/M packages like WordStar, and I still think it is good software.

The Support Department use Perfect Writer for all wordprocessing and Perfect Filer for our dealer database and mailings.

As an aside, you might be surprised how little would be reduced from the price

of TORCH products if we did not include the software. The only way we can get very low prices on bundled software is to ship it in very large quantities (e.g. with every machine) and then the price of the added software becomes so low there is no point in taking it out of the package.

Page 9

I would also like to see some graphical adventures on the TORCH. The print quoting/job costing may be possible with Perfect Calc or a short BBCBASIC Z80 program. If not, there are a few software houses around who will write bespoke software for the TORCH (I used to work for one as a programmer). TORCH, incidentally, also provide a consultancy service writing systems software. The TORCH has been linked to a typesetter by TORCHSET Systems and I believe they will also accept copy by TORCHMAIL/UNIMAIL. For full details contact TORCHSET Systems at 4 Sillavan Way, Salford M3 6AE. Telephone 061-834 8564.

Page 12

Just to add to the overheating debate, my own Z80 card mounted inside my BBC has run successfully for well over two years now with no sign of overheating. (Although my Z80 Disc Pack sits to the left of the machine, not underneath it).

By the way, we had a recent enquiry in Support for dust covers for TORCH products. We don't make them and I don't know of anyone who does. Depending on demand this might be a nice little spare time money maker for a member with the appropriate skills. Just a thought.

Page 14

Yes, I have got a few comments. Firstly, Mr Sargent is living proof that you can please all of the people some of the time, some of the people all of the time but After a large number of complaints from users who either did not realise that PGO was required or just kept forgetting to do it we termulated Perfect Writer and Calc (using ADDTERM with pre and post program FX call termulators incidentally) so that PGO would be done automatically.

Now we we hear complaints that it is no longer possible to use custom BEGIN.SUB and PGO.SUB files. In fact (as I may have said before) putting *FX226,1 at the start of the SUB file will still allow your *KEY definitions to be used by pressing SHIFT and the appropriate function key. (Note that this works on any BBC Micro but will only work on TORCH Business computers if they are fitted with MCP version 1.00).

Sorry if this inconveniences anyone but overall we have found most users approve of this change. Issue 2 (in this form) has been going out with all machines since March 1984. Far from me going out of the way to issue another set of masters to the factory just to keep people on the hop I suspect Mr Sargent's problem stems from the fact that some versions of CPN ignore the termulation on Perfect Writer meaning that PGO is still needed.

This is one of the few reasons why we recommend that only MCP users upgrade to Issue 2 although there will be a fix to this problem very soon. By the way, although the white booklet says otherwise the left hand keypad (on the TORCH Business computer) and CTRL function keys (on the BBC Micro) work on Calc as well as Writer where relevant.

All versions of CPN and MCP will run a BEGIN file if a key (such as space bar) is held down when break is pressed or the power is switched on. Alternatively f9 or CTRL+BEGIN (on TORCH Business machines) can also be used. It should be obvious by now why B and BREAK won't run a BEGIN file in MCP. MCP 1.00 in the PLUS-100 pack always runs a BEGIN command on switch on unless the Caps Lock key

is held down.

As I may have mentioned in my last letter no other filing system (such as DFS) should ever be enabled when CPN or MCP are running. This can cause some very peculiar corruption problems and is the reason MCP switches to tape mode when running. If programs like Mr Sargent's multiple choice questionnaire are to be run they, and the screens, should be converted to TORCH format using RDACORN etc and screen load and save procedures used.

I have not found a way around the Perfect Speller on hard disc problem apart from either to have a floppy disc in drive A or, if the commands are available on your HELP screen, to DETACH A and then ATTACH A TO (drive containing Speller) [D].

Page 15

Point 5: The problem here is that the documentation assumes you realise that, if your CPN format disc is in drive B you must add B: to the front of the CPN filename otherwise the system stores it on the current default drive (which is usually A) thus ruining the disc.

I also lost my first disc before I realised, but it is worth mentioning here that regular backups of data are essential before running programs like this one if only because if the power fails with both your 'master' discs in the drive at once you could lose or corrupt something vital. A replacement for RDACORN and WRTACORN called RWACORN is supplied as part of PLUS-100 or on the Systems 1.8 Disc and one of the many improvements is a safety check to avoid overwriting what may be the wrong disc without confirmation first.

Point 6: ATPL is the internal ROM board we usually recommend because it sits fairly well away from the Z80 card. The sticky feet on my Z80 have been OK but it is not used in such high temperatures and humidity as Mr Glaser's is.

Question 2: A listing of the way dBASE is installed when supplied by TORCH is enclosed. Alternatively, dBASE could be configured for a popular terminal such as ADM 3A and then termlated using the appropriate part of ADDTERM.

DBASE II INSTALLATION

Run INSTALL. You will be greeted with the message:

DBASE II INSTALLATION PROGRAM VER 3.0

ARE FULL SCREEN OPERATIONS WANTED (Y/N)?

Enter 'Y' in answer to this question. Next you will be given a list of terminals. Choose option 'Z' - USER SUPPLIED TERMINAL COMMANDS.

You will then be warned you will need the control codes listed below and asked to enter 'Y' to continue. You are then asked if you wish to enter control codes in decimal or hexadecimal. Enter 'D' for Decimal.

The following sequence of questions will then be asked:

For delete a character enter 'N' because the sequence is not 'backspace, space, backspace' and then enter 127 as the code to use.

For cursor positioning you will be asked a whole series of questions:

Are the cursor addresses single binary bytes or several ASCII digits ? Enter 'Y' for this question since they are Binary.

Enter the position in the sequence that holds the column number - 2

Enter the position in the sequence that holds the line number - 3

Enter the constant bias for your terminal - 0

Enter the skeleton for ther direct cursor command - 31 [return] 0 [return] 0 [return]

Code to clear screen and home cursor - 12

Command to switch to high intensity or normal video - 0

Command to switch to low intensity or reverse video - 0

Commands to be issued when entering full-screen editing mode (if any) - 0

Commands to be issued when leaving full-screen editing mode (if any) - 0

Command that will switch to standard intensity or normal video - 0

Screen size - 80 columns, 30 lines

character enter 'N' because the sequence is not 'backspace, space, back

Question 4: Off the top of my head I can think of three possible ways to solve this problem - Firstly, the new version of Executive's Aid supplied with PLUS-100 allows you to go into a 'background screen' by pressing CTRL [. This completely clears the current display until Escape is pressed when it restores the screen display and allows you to continue where you left off. Secondly, a terminator could probably be written fairly easily to turn the foreground and background colours the same at the press of a key.

Lastly, as I suggested to Mr Glaser in my last letter to him (which I hope he has received by now) you could leave 30 or so blank lines at the end of your document and program a function key to ESC SPACE BAR and ESC (set mark then go to end of document). When the intruder has left use CTRL X CTRL X (exchange cursor and mark) to return to where you left off. The blank lines will be ignored by the formatter when your document is printed and so will make no difference to the finished product.

Another reader tells me that he has solved his problem by using abuse! Ed

Page 33

The reason PFCONFIG is so called is that it is used to configure PF.COM (Perfect Formatter).

Page 44

EPSON.COM is a machine code screen dump for the FX80 which is part of the TORCH Graphics Utility Pack which also includes screen dumps for a variety of other printers and a simple graphics editor and chart generating program. This is

available from any TORCH dealer.

Page 46

Selective backup of individual files is possible using the 'archive' option of the COPY command available in MCP 1.00 which will only copy those files changed since the last copy.

Page 49

As previously mentioned, filing systems should never be used while CPN or MCP is active. Perfect Software Issue 2 will, in fact, run fine under CPN, the only problems being that the automatic programming of function keys does not work and the .SUB files for creating the working discs do not work correctly with some versions of CCCP. The first of these can be rectified by retaining the PGO and PDONE files and the second by copying the files yourself. A full fix for both these problems will be available soon. Function key programming is explained fully earlier.

Page 51

I hate to pick holes in an excellent introduction to the ROMs in the system but CCCP's task is more like that of BASIC - interpreting commands, either those given by the user, like MODE or BACKGROUND or those from inside programs that call CPN functions and breaking them down into their component parts before sending them to MCP. For example, MODE 7 would be sent as two tube calls to display bytes 22 and 7.

MCP then acts a little like MOS in that it then performs the functions requested of it by CCCP, usually by using parts of MOS (OSWRCH in the example given above) or its own routines for the filing system type calls or parts of NFS for networking. A minor point, but important to bear in mind to avoid confusion later.

Page 52

CPN or MCP should always be the highest priority ROM. Coming on in BASIC with the TORCH system still 'active' will only cause trouble sooner or later.

Page 53

When MCP starts up it first sets up the screen etc, then initialises the internal modem (if it is in a TORCH Business computer with this fitted), initialises the tube and resets the Z80 card and waits for a reply from it down the tube. It is at this point the 'No Z80' message is issued if no valid reply comes back from the card. It then sets up the networking system if a Econet NFS ROM is present and finally goes into the MCP main loop.

This continually polls the network for any incoming traffic and the tube for any bytes to be received and actioned and checks the keyboard if required. As mentioned above, it then takes the appropriate action, delegating commands to MOS or other ROMs, using its own routines, or a combination of the two.

It's worth noting that MODE as such is not a MOS recognised command. It is normally interpreted by BASIC and turned into the appropriate VDU command (VDU 22) in the same way that COLOUR and GCOL etc work. Also, BBCBASIC Z80 * commands are not passed to CCCP but to a command line interpreter in BBCBASIC Z80 itself and then directly to MOS via the tube if not recognised or if the command is preceded by two stars. MOS does not pass any commands to CPN as such (except the usual sideways ROM service calls).

I think that just about covers Issue 2 of Sidelight. I look forward to Issue 3. Now for some news from TORCH:

TORCH unveiled their new Professional range of business micros at the Which Computer Show '85 in Birmingham. The Professional range incorporates a series of refinements including a new modem and new keyboard. Other TORCH products were also on show including TORCHNET and the Graduate.

A TORCH dealer Autocall Computers have released a new package called LINKBBC. This program converts BBCBASIC Z80 programs into .COM files so they can be run directly from the command line. As its name implies, it is not a compiler but links your program to your copy of BBCBASIC Z80.

Once done anyone can run the program, not just BBCBASIC Z80 owners and no one can rip-off a copy of your BBCBASIC interpreter or program. Facilities are also available to collect arguments from the command line as 'real' .COM files can. For more information contact Autocall Computers, 17 Middlesbrough Road, South Bank, Cleveland, TS6 6NW.

Mark Cook (TORCH Technical Support Department)

ADVERTISING IN SIDELIGHT

We will now accept single sheet A5 advertising leaflets for inserting into Sidelight. The cost is £25.00 for us to distribute 250 leaflets supplied by the advertiser. We currently have nearly 200 members. Any leaflets which remain will be circulated to new members when they join. This covers world wide distribution from Australia to Saudi! If you would prefer some other arrangement or have more than a single sheet, please contact me to discuss alternatives.

Grahame Perchick

CLASSIFIED ADS

Subscribers only may place classified ads. Minimum price £4.60 for the first 20 words. Thereafter, £0.12p per word. PLEASE write clearly or better still print your advert. PLEASE remember to quote your membership number to us. Sorry no box numbers.

Mint copy of Perfect Software for the Torch complete with all manuals - unused. Offers to Brough. Phone 01-589 5111 X5010/1

This Space could be YOURS! You could sell your computers, discs, manuals, modems, headaches -all for £4.60 for twenty words.

LETTERS

40 TRACK COPYING

Just out of a frustrated interest, do you know a way of making the TORCH disc drives read AND write in 40 tracks? I have tried a number of ways and cannot get the drives to save in 40 track. I would be glad of some help if you could give me any.

R. J. CURTIS, (COLCHESTER)

COPIER on the Torch system Disc Version 1.8 will allow you to read/write 40 or 80 track discs in either Torch or Acorn format. It will not perform format conversion between Torch and Acorn - use RWACORN for this. Although reading 40 track discs on an 80 track drive is O.K, writing 40 track discs on an 80 track drive is somewhat dubious. You will be able to read the disc on an 80 track drive pretending to be a 40 track drive but this isn't generally very useful. Reading the disk on a 40 track drive is less likely to succeed. If you are lucky, it may work if you use a disc which has not been previously formatted. Ed.

SUPERBRAIN EMULATION

Do you know where I could obtain a programme to emulate a Superbrain as I have a large number of Superbrain programmes?

JAMES NEILL (BANGOR, CO. DOWN)

ADDERM includes an emulator for the ADM3A. This is the terminal that the Superbrain emulates. See SL/LIB Vol 01. We can perform format conversion to and from Superbrain format discs. Ed.

INCOMPATIBILITY

Torches are very scarce here - I know of two others in Adelaide via BEEBNET - the local BBC users group, although there are a lot of BEEBs, particularly networks in the highschools.

I am interested in your comments (Page 2, Sidelight) customising software from other machines to the "CPM compatible" Torch. I do contract work in educational institutions, which often have Z-80 Apples, IBM PC, Sanyos and it would be convenient to my home working on the Beeb and Torch if I could make a Torch version of the various packages from CPM machines such as these for my own private use so I could use the same systems at home and work and thus more readily get stuff done! I realise this may infringe copyright but in all instances the owners of the software have said they would be happy for me to have a copy if only I could get it working on my Torch!

Otherwise, what is the point of a "CPM compatible" machine if one has to spend \$\$\$s (or fs) importing specific Torch software from overseas?

My attempts with a Sanyo "Wordstar" behaved as if the disc were not formatted. Even if the formatting were overcome, are the programmes likely to run on the Torch? Is there a history of fixes for things like Wordstar, DBASEII, Statpack etc. or are Torches not readily compatible CPM machines at all? As far as BEEB ROM compatibility with the Torch is concerned, I have used Wordwise and Termi (less successfully but not the Rom's fault I think) with the Torch - Beeb connected and Modem (300 baud) via the BEEB.

PAM WOODS (SOUTH AUSTRALIA)

With the packages you mention in your letter, you would indeed be infringing copyright. As regards disc formats, the Torch format is NOT CP/M but this is not a problem if the software is purchased for a Torch. In fact there are dozens of different CP/M disc formats and one can't generally move discs around from machine to machine.

As you rightly guess, even if you download the software to your Torch, it frequently won't work because these programmes use functions not provided by CP/M. In fact this applies to most CP/M machines once again, even if you tried to move from say a Sanyo to an Apple. We can tailor CP/M packages to run on the Torch and we can also perform format conversion. Before we can do this, however, we must have a written declaration that the person requesting this work is authorised and that Sidelight will not be infringing copyright.

The problems of disc formats and hardware dependencies are covered elsewhere in this issue in Introduction to the Torch System. The IBM PC uses an 8088 processor which is not compatible with the Z80 in your system. You could successfully transfer data files via a link or using disc format conversion but programmes transferred from the PC to a Torch cannot run. Moving data files does not infringe copyright and can on occasions prove very useful. Ed.

SEVERAL COMMON QUERIES

I have the latest Torch disc pack which as you may know will not function without a disc in drive A. This, I am told by Torch, is because Acorn have 'improved' their latest DFS Rom. My dealer didn't know this and couldn't understand the fault. Neither did he know that the DC socket on the back of the disc pack is now not connected inside to the power supply. Therefore, the Beeb must keep its own power supply. The power supply was removed and the main board attacked by a large soldering iron before my dealer realised his mistake. Needless to say when I read the installation instructions, all is revealed. I am therefore not impressed with my friendly local dealer.

You may not have time to answer any queries but just in case:-

- 1) Does anyone know the Perfect Writer command codes for NLQ italic font on a Taxan Kago printer?
- 2) Where can I get a screen dump to use with Z80 Basic and the Kago 810?
- 3) How do I get hold of a utilities disc to be able to use my disc drives in standard Acorn mode. Without a utilities disc, one is unable to format a disc!
- 4) How good is the Torch graphics software pack (£45).

DR. T.L. OGDEN (DOLGELLAN, GWYNEDD)

I am afraid that the problem with your dealer is all too common. We sent out a letter and leaflet to over two hundred dealers. We received only six (6) responses. Torch say that their experience is similar. After sending out Perfect software update discs and data to all their dealers, most of them knew nothing about it when Customer Support advised users to contact their dealer for an update. It seems extraordinary to me and I would find it hard to believe but for my own first hand experience.

- 1) You must use PFCONFIG and set up either the Italics On/Off Strings or the Bold On/Off strings. See Figuring Out ASCII in issue 2 and Figuring Out PFCONFIG in this issue.
- 2) Your printer claims to be compatible with the Epson FX80. This means that the FX80 dumps on SL/LIB Vol. 01 should work.
- 3) You can format a disc in Torch mode and then use it in Basic mode. There is a problem in that you won't get a DISC FULL error from the Beeb. I am told,

but haven't tried, that writing a file on the disc using RHACORN from the latest version 1.8 of the system disc will solve this problem.

4) I've not tried it - how about a review from someone who has? Ed.

ANOTHER GRAPHICS DUMP, PLEASE

First of all, thank you for the two first successful issues of Sidelight. I wish you good luck. In issue 2 page 44, you ask of an available GRAPHICS DUMP PROGRAMME to work for BBC + TORCH DISC PACK and an EPSON FX80 printer.

Please add to the above request mine of a screen dump routine for use with BBC + TORCH DISC PACK and a SEIKOSHA 6P-250X printer!

JOHN COSTIS (ATHENS, GREECE)

Can anyone help? Ed.

MORE PER DISC

You can get Perfect Calc and Perfect Writer on one disc if you omit the dictionary and the menu programme - this means you can quickly swap between the programmes when preparing documents that need figures and text. The menu programme, as you know, is not really necessary and things are much quicker without it - unfortunately the reference to removing it is somewhat hidden in the manual.

STEPHEN FEBER (ESSEX)

Thanks for the tip. We have an article on the very subject of removing the menu in this issue. Ed.

FIRST GRADUATE QUERY

Any info on the Torch Graduate would be appreciated - eg. can it run plugged into the BBC with a Torch disc pack. (I appreciate that the Torch discs and Z80 won't run when Graduate is on and vice versa.) Useful to have both, though, I teach computing.

JOHN WHITING, (COUNTY ANTRIM)

Yes! You can have a Graduate and Disc Pack/ZEP 100 connected to a Beeb at the same time. This is because unlike other second processors which are connected to the Tube, the Graduate is connected to the 1MHz bus. You cannot, however, run a Graduate while connected to a Network. Ed.

TBASIC?

I am trying to acquire a TBasic disc to run on the Z80 but not having much success through my normal supplier. Perhaps you can help me with this.

JOHN CUNDALL, (WEST YORKS.)

I replied to John that TBASIC was available on a SIG/M library disc. Its full name is Tiny Basic. I know nothing about it and so could comment no further. I then received another letter from John which rang a bell. It seems that BBC BASIC (Z80) was at one time called TBASIC by Torch presumably for TORCH BASIC. I am pleased to say that we sorted it out eventually but if you have a Torch software catalogue, you'll find it on page 5. Ed.

QUERIES AND IDEAS

Thank you very much for the journals received, I am impressed and very fond of this information.

When writing a letter, even a short one, a lot of @ commands must be set up, but I simply load an old letter to the same person, change the date, delete the old text and write the new. Then I 'write' it under a new filename. Easy.

I have recently received the MEP Bar Code Reader, which has a programme to print Bar Codes and some printer drivers. To my surprise their 'Standard Epson' did not work, but the 'Walters WMB0' did.

A screen dump utility for the Torch system is also wanted. In the documentation of BBCTORCHBASIC is mentioned that two versions are available from M-TEC Computer Services (UK), Ollands Road, Reepham, Norfolk NR 10 4EL, price £ 5.00 + VAT, P&P free. They are substantially the same, but one (ZDFAST.BBC) runs about 12% faster than the other (ZDUMP.BBC). However, it occupies 50 bytes more memory.

I asked for them and got the following kind answer: "Please, return your Master BBCBASIC(Z80) Disk and we will supply free of charge copies of screen dump for Epson MX80, it will include instructions on how the programme works.

If you should have a Giro Account, please, let me have the number when convenient.

I have a good question: Will it be possible to COPY a file SAVED under one USER No. to another USER No.? I think not, therefore I do not use the various USER Nos. though it can be a hard job to go through more than a hundred file names. A good organization of USER Nos. can cut this number down.

As suggested by you I send enclosed a BMC Printer Format. It looks like Epson and the printer works well with a Screen Dump Utility by George Hill I have taken from 'Acorn User' December 1983. This was said to work on all Epson 'bit image' printers and the Star 510.

Configuration of BMC Printer Model BX-80 for Perfect Writer

- 1 - Paper width:
- 2 - Paper height:
- 3 - Standard character width: 254 micas
- 4 - Height of a single-spaced line: 423 micas
- 5 - Smallest horizontal movement: 254 micas
- 6 - Smallest vertical movement: 12 micas
- 7 - Proportionally-spaced font? No
- 9 - Generate online-readable output? No
- 10 - Initial paper offset: 0 micas
- 11 - Special printer code: 1
- 12 - Use Control-H for backspace? No
The manual is not clear on this point, it can be understood as if the answer shall be yes, but the printer works well with a No
- 13 - Use Carriage Return (Control-H) for bare

- carriage return? Yes
- 14 - Use Form Feed (Control-L) for form feed?
Yes
 - 15 - Type of synchronization protocol: 1
 - 16 - Translate characters on output? No
 - 18 - Initialization string: Esc @ according to the manual, but it is not necessary as the printer will be initialized on power on. If you use it, it will not be possible to change the national character sets by a code to the printer as the printer will be re-initialized by PW. I have not replied anything to this point and it works well.
 - 19 - Reset string: None
 - 20 - New line string: Control-M + Control-J
 - 21 - Enlarged characters on: Control-N
off: Control-T
Emphasized characters on: Esc E
off: Esc F
Double printed characters on: Esc G
off: Esc H
 - 23 - This printer cannot print italics, but will underline, on: Esc 4
off: Esc 5
The underline code of the printer is:
underline on: Esc - 1
off: Esc - 0
Also available
Condensed characters on: Control-O
(the letter, not zero)
off: Control-R

BENDT NORDENTOFT, (DENMARK)

The M-TEC screen dumps both come with BBC BASIC Z80 issue 2.3. I have spoken to Gerry Perry at M-TEC and he has kindly agreed to allow the inclusion of both the Epson dumps on our library disc - SL/LIB 01. There are some news items and a special offer elsewhere in this issue, on BBC Basic Z80.

Copying between user numbers is interesting. MCP will support this. Type the number in [] brackets after the file name, thus:

COPY FILE.COM [3] to FILE.COM [1].

Unfortunately, this won't work with CPN. SWEEP in the Software Library (UKUG Vol 14) is an excellent copying utility which is supposed to support copying between User Numbers but it doesn't on CPN. I haven't tried it yet on MCP. Remember that you can read a file from User Number 0 whatever your current user number. This works on CPN and MCP. There is an article What Use is User? elsewhere in this issue which goes into more detail. Yet another alternative is LU; the library utility from SIG/M Vol 119. This allows you to gather files into one large file with a sub directory for its contents. Using LU has the additional advantage of avoiding wasted disc space if you have a large number of small files. Using SQUEEZE on text files will save further disc space.

Sorry, we don't have a Giro account but you can make payments directly to our bank - see elsewhere in this issue. Ed.

How to get WYS on Perfect Writer

As pointed out by Bob Janes in the first issue of Sidelight, Perfect Writer is not a WYSIWYG ("what you see is what you get") word processor. It has the advantages of easy formatting, but WYS (what you see) is most definitely not WYG (what you get) when you print your document on paper. Unfortunately, this unpredictability, which any user of PW suffers from, means that the main advantage of word processing is lost - instead of doing all the editing on the screen, and then printing out a perfect finished document, I am sure that most if not all users of PW on the Torch find that the printed document does not look the way it should, and that they then re-edit the file, re-print it, and maybe even re-edit and re-print again - at least, that has been my experience whenever I have tried to produce any document of any complexity.

It would not be so bad if WYS were not WYG if the user at least knew what he or she would get. But the documentation for PW is not very informative, especially as far as the all-important environment commands (like VERBATIM, INDENT etc.) go. So there are two reasons why users end up printing, re-editing, and re-printing documents - because WYS is not WYG, and because the manual makes it hard to predict WYG from WYS. But both these problems can be overcome - with a little work Perfect Writer on the Torch can have the best of both worlds of a WYSIWYG and a formatting word processor - and this article will tell you how.

Let us first turn to the environment commands. The manual tells you what kind of format to expect from each command - eg. that CENTRE (oops, I mean CENTER) produces centred text, LEVEL gives you numbered paragraphs, and so on. But it is not always clear when your carriage return or space bar or tab key is going to be ignored, as I am sure you will have noticed. Here is a summary of what really happens in each of the different environments:

There are basically only two kinds of environments - those we can call "preserving" environments, which preserve the carriage returns (CR's), blank lines, blank spaces, and tabs which you type in, and "nonpreserving" environments, which do not:

"Preserving" environments

All CR's are preserved, ie:

- a single CR moves onto a new line
- two CR's leave a blank line and start a new paragraph, indented by however much your "indent" style parameter is set
- three or more CR's produce a new paragraph after two or more blank lines
- and multiple blank spaces and tabs are all preserved

Preserving environments are VERBATIM, EXAMPLE, CENTER, ADDRESS, CLOSING, FLUSHLEFT, FLUSHRIGHT, VERSE and DISPLAY.

"Nonpreserving" environments

- one CR only produces a single space, unless it is at the start of a line, in which case it is ignored completely
- two CR's leave a blank line and start a new paragraph, indented by however much your "indent" style parameter is set
- three or more CR's have the same effect as two CR's.
- multiple blank spaces and tabs are all reduced to just one blank space, unless they are at the start of the line, in which case they are ignored completely.

Nonpreserving environments are TEXT (which is PW's default environment), QUOTATION, LEVEL, ENUMERATE, ITEMIZE, DESCRIPTION and UNDET. INDENT behaves like the other nonpreserving environments but it also ignores any number of CR's - you cannot start a new paragraph in INDENT!

The other thing we need to predict is what happens when we enter or leave a new environment. If you leave the style parameters for "Above" and "Below" at their default values (423 micas, or one line) you will find that a blank line will be left above and below each environment provided you enter and leave the environment in the following standardised way:

1. Before entering the environment, give one CR
2. Then give the command, eg. @VERBATIM with the opening "fence" and the text following straight after this fence
3. Leave the environment by giving a CR straight after the closing "fence", and carry on in next or default environment straight on in the new line.

There is only one exception to the above: if you are "nesting" LEVEL, ENUMERATE or ITEMIZE environments, and you want a blank line to be left between each paragraph, you must give two CR's immediately after the closing fence of each inner nested environment only, or a blank line will not be left.

If you follow the above guidelines, you will find that you can predict the printed output fairly accurately. Another thing that will help considerably is to set the "fill" column on your screen display (either using PWCUSTOM if you have Issue 2 of PW (PW2), which is recommended, or using CTRL-X F) to the same number of characters as the actual printing you will be doing. For example, if you are actually printing 79 columns (which Sidelight does) then setting the fill to column 79 (instead of the default 65 of PW2) will mean that the text will be wrapped and filled on the screen pretty much the same way as it will be on your printing.

But "pretty much" is not good enough! How can we see exactly what the printed output will look like without printing it? Well you can, even though the manual suggests you can't - the only limitation being that you are not actually physically printing more than 80 columns of text (it is of course physically impossible to display more than 80 columns on our VDU's!). If you read your PW manual closely, tucked away on pp.326-7 is the information on how to see the page breaks in your finished document without printing it - by formatting the output for "console" in the same way as the formatting for your printer. But as the manual says, the result "won't look nice", which is rather an understatement - it looks atrocious! And if you have Issue 2 of PW, formatting the Console definition won't help, because Torch have declared "TORCHdaisy" to be the default console device (rather than "console") without telling anybody! So the first thing to do is to call up PFCONFIG and specify "console" as your default console device, if it is not already.

Now comes the fun. The screen is only 80 characters wide, so you can only print 80 characters, and this includes margins, as the margins will be "printed" on the screen too. The screen is in effect your piece of paper, and this means that your "paper" cannot be more than 80 characters wide.

So calculate how wide this is in micas: if your printer's characters are 212

micas wide, then your maximum "paper" size is $212 \times 80 = 16960$ micas. But what if you have configured your printer for, say, 8.5 inch wide paper (21590 micas)? If you look closely at your configuration you will almost certainly find that a lot of this 8.5 inches is taken up with margins - PW2 for example specifies two default margins of 2540 micas each, which leaves only $(21590 - (2 \times 2540)) = 16510$ micas of actual print. It is very unlikely that you will often want to print more than 80 columns of actual text - all you have to do is to reduce the width of the margins so that margins plus the text total 80 characters or less (at whatever width characters you have). Your physical paper can of course be any width you like - all it means is that you have to feed it further along to the left of your printer a little bit to make up for the reduced "margin" (and with a much narrower "margin" you have the advantage that the printer will start printing very close to where it's head starts, rather than moving some unpredictable distance across the paper before starting).

So, to sum up so far: reconfigure your printer with PFCONFIG so that your paper width (in micas) divided by the width of your printer's characters (eg. 212 micas) is 80 or less, and then change your document style margin (left and right) parameters (with PFCONFIG) to leave the actual text width you want. For example: I started off with 8.5" (21590 micas) wide paper, with 2×2540 mica margins. So I had only 16510 (ie. $21590 - (2 \times 2540)$) micas of actual print, which on a 212 micas-per-character printer gave me $(16510 / 212) 78$ characters of print. So I reconfigured the paper width to be $80 \times 212 = 16934$ micas, and changed the margins to be 212 micas (one character) each wide ($16934 - (2 \times 212) = 16510$, so I have 78 characters of actual print left between one-column margins).

Still with me? (honestly, it's worth it to know that WYS is WYB!!). Next you have to reconfigure "Console", with PFCONFIG. For question 1 on the definition (paper width): multiply the character width on your printer by 80, and then subtract one character width (don't ask me why, but it works!) - for example, I multiplied my 212 mica wide characters $\times 80 = 16960$, minus 212 = 16748. Enter this answer for question 1.

For questions 2, 3, 4, 5, 6, and 7 enter exactly the same figures as you gave for the corresponding questions for your printer definition. For question 9, answer "Yes" - and that is it! Then exit PFCONFIG by selecting option 6, then option 6 again, thus updating PF.DAT with your new information as you depart.

You are now able to view your formatted output on the screen exactly as it will appear on your printer. [Of course, your screen cannot display underlining, bold or italic print, or super/subscripts properly. There is only one other discrepancy: occasionally the output on your screen will indent the first line of the text of a paragraph in the DESCRIPTION environment by one character. That's the only difference between WYS and WYB!] - pagebreaks, indentations, tabs, BLANKSPACES and BLANKPAGES, footnotes, indexing - the lot! How? By formatting it for console output: select option F from the menu to format it, then options C (format for console output), A (pause between pages, assuming it's a multi-page document) and G. And, to stop the page as it scrolls up off the screen, hold down CTRL and SHIFT (another thing the PW manual doesn't tell you!). Worth it, wasn't it??

Tony Glaser (West Indies)

Perfect JUKI Pound Signs

To recap, the JUKI printer, using a standard Triumph Adler format print wheel, prints a pound sign on receipt of the Escape sequence, 'ESC I'. Simon Brown ascertained that the character translation tables cannot be persuaded to handle Escape sequences. However, sequences of unspecified length can be sent by Perfect Writer by means of the typeface commands '@B' for Bold and '@I' for Italic. Now the change to italic print under word processor control is only usable by matrix printers; with a daisywheel printer the print wheel would have to be changed in the middle of a printout. This would only be undertaken by the most ardent enthusiast in pursuit of an artistic word-processing masterpiece. For run-of-the-mill work the Italic mode definition might well be sacrificed to some other noble cause such as the task of enabling printing of the JUKI's elusive pound sign. I have therefore defined PW's 'Italics On' instruction as 'BS ESC I', i.e. backspace followed by pound sign; the need for the backspace will be explained later.

The concept is simple, but the practical details took some forging into shape! PFCONFIG has an amazing capacity for making the JUKI do things that are apparently in complete contradiction to what the JUKI manual says it should. In this case the first problem was that if the print head happened to be moving from left to right when instructed to print a pound sign then all was well, but if moving from right to left then the pound sign appeared to the right of the numerals instead of to the left. The versatile JUKI allows us to specify left-to-right printing by means of the instruction 'ESC \', but would it obey the instruction? No, no, and no again! despite several attempts on my part to be just a bit more devious than the PW/JUKI combination. Eventually, after brainstorming sessions in the smallest room and a short night's sleep it all fell into place. It appears to be necessary, under PFCONFIG printer definition field 11, to specify Special Printer Code=1, i.e. plain non-fractional movement printers, rather than SPC=2, i.e. Diablo type printers as I had used previously. This had been necessary in order to obtain half-spaced sub- and super-scripts, so these are sacrificed. The 'print left-to-right only' instruction is included in the device definition as part of the Initialisation sequence.

When printing right-justified text, the inclusion of a pound sign in a line by this method causes the line to overspill by one character. This is because PW assumes that the Escape sequence sent by the 'Italics On' instruction does not cause a character to be printed, and the pound sign is therefore not counted in the line length. A BS character is therefore included in the 'Italics On' Escape sequence to compensate for this error. However, this means that an extra blank space must be inserted immediately before the position where the pound sign is to be printed. Perfect Formatter will be confused by this and make havoc of it unless the extra space is protected by a 'one-word' command '@W'. For example, in order to print:

the price is £5.23

the Perfect Writer source file should contain:

the price is@W()@I(5.23)

If you don't want to use the pound sign in right-justified text then you may omit the BS from the Italics On sequence when you run PFCONFIG, and you may omit the extra space and the @W in the text.

There is another difficulty which has occurred, namely that of printing a pound

sign on its own, i.e. without numerals following. This might be required at the head of a column of figures. It is difficult because the 'Italics On' instruction will not take effect (i.e. print a pound sign) until a printable character (i.e. not a blank space) is encountered within the brackets. For instance '@I()' will not print a pound sign. One remedy is to underline the heading and to use an additional underline character to trigger the Italics On command, i.e. '@UX(@W()@I())', and you should get: £. You might well ask "is it worth it?". Probably not, but someone would be sure to ask if I didn't include it in the article!

The full device definition (I call it 'JUKI10A4L' for JUKI, 10-pitch wheel, A4 paper, Longways) is now:-

```

1      21000
2      27940
3      254
4      423
5      254
6      423
7      No
8      No
9      0
10
11     1          i.e. non-fractional movement printer
12     Yes
13     Yes
14     Yes
15     1
16     No
17
18     ^[^Z]^[\          i.e. ESC SUB I ESC \
          i.e. initialise and set left-to-right mode
19
20     ^M^J
21     ^[W
22     ^[&
23     ^H^[I          i.e. BS ESC I
          i.e. backspace pound-sign

```

It can be seen that the method entails some sacrifice of printer facilities, but I think these may be acceptable for simple wordprocessing tasks such as producing letters, orders, invoices and so on. Those documents in which pound signs are most often needed are perhaps also those where advanced printer facilities such as half-spaced super- and sub-scripts are least likely to be required. Some loss of printing speed is also entailed, but again, for short documents this is probably acceptable. These disadvantages can be overcome to some extent by creating separate printer definitions for different applications by means of PFCONFIG.

Vernon Webb

CORRECTION

I recently received a phone call from a member who was unable to obtain the correct MODE and colours as set in the submit file for Perfect Filer on page 18 of issue 2. The problem was solved by omitting the first line - *FX3,6. This may vary with your version of CPN/MCP. Ed.

ROM AND DISC UPDATES

UNIX UPDATE - FREE

An update for UNIX release 1.00 users that fixes the system clock's inaccurate timekeeping is now available. Send Torch Customer Support a blank disc if you require this update.

CPN UPDATE - FREE

If you have a version of CPN (not MCP) prior to 0.71, Torch Customer Support will update it to the most recent version. Send them your CPN and CCCP EPROMs.

MCP upgrade - £15

Users with a TORCH CPN ROM can now upgrade to a newer operating system called MCP (version 0.41). This gives networking capabilities (provided you have a network interface fitted to your computer) and, unlike CPN, can also be completely disabled when entering BBC Micro mode. To keep the price down on this upgrade, you must send Torch Customer Support your CCCP EPROM and a blank 16K EPROM (type 27128). Please note that they do not need your CPN EPROM for this upgrade.

The address for Torch Customer Support is:

Torch Computers Ltd Abberley House Great Shelford Cambridge CB2 5LQ U.K.

SYSTEM DISC 1.8 - £13

There is now an updated system disc - version 1.8. As well as all the usual programmes, the additions from Sys 1.5 to Sys 1.7 were COPIER (40 to 80 track disc converter) and FIND (finds files on disc.) Additions from Sys 1.7 to Sys 1.8 are SOFTKEYS (checks the function keys), DATETIME (sets the internal clock), RWACORN (replacement for RDACORN and WRTACORN), GETRS423 (replacement for RS423 and more. We can now supply system disc updates. There is an all in charge of £13 per disc. This includes some photocopied instructions but the instructions for GETRS423 and SNDRS423 are not yet available. Sorry, but we can't supply odd files from this disc and as the disc is fairly full, we can't add to it. You may also order the disc directly from Torch customer support. They charge only £10 but you must send them a disc.

There is also an updated system disc for Torch business computers - TD3.0. This contains much the same additions as version 1.8 but includes the extra packages which come with the business machines.

BBC BASIC (Z80) MANUAL - £25

If you have Version 1.91 of BBC Basic (Z80) M-TEC will supply a copy of the new 2.3 manual for £25.00. To take advantage of this offer, you must return your old 1.91 disc and M-TEC will send you free of charge a 2.3 Version disc. The original M-TEC manual was to a high standard and the new one is even better.

The address for M-TEC is:

M-TEC Computer Services, Ollands Road, Reepam, Norfolk NR10 4EL.

SIDELIGHT LIBRARY

TORCH GOES FORTH

Many thanks are due to Maurie du Feu for the new Sidelight Volume - SL/LIB02. This contains MVP+T Forth. The special significance is that Maurie has extended MVP+++ Forth specifically for Torch computers. I understand that Maurie uses a full Torch computer but he has adapted the library version to function on either a full Torch computer or on an extended Beeb.

For those unfamiliar with Forth, a Forth programme is made up of WORDS. A word is a small segment of code. Because of Forth's structure, the addition of a new word effectively extends the language. Unlike, say, BASIC where the programme and the language are separate entities. Thus when writing a Forth programme, one is in fact extending the language to suit the application. A Forth programme ends up as a single word - the definition of this word causes other words to be executed which in turn calls other words etc. Any word can be executed by the operator interactively as in BASIC.

MVP+T Forth is based on the FORTH 79 standard but there are some differences. The latest version - FORTH 83 is different but the only significant improvement is that FORTH 83 supports multi-tasking. With this exception, however, there is nothing which FORTH 83 can do that FORTH 79 cannot. One could even write a multi tasker for MVP+T without too many problems.

One disadvantage of MVP+++ Forth is that Forth "blocks" and CPN files will not live happily side by side on the same disc. This is another area where Maurie has made improvements which allows Forth Blocks and CPN files to co-exist on the same disc. Other additions include a full screen editor (with abbreviated on screen Help) and a very useful on-line Help facility.

I am not a FORTH 'buff' but looking through the screens (a screen is a page of FORTH words.) I was most favourably impressed. Maurie has obviously put a lot of effort into the disc - much of it specifically to place it in the Sidelight software library.

If your knowledge of Forth is limited, "Starting Forth" by Leo Brodie is essential reading. This is the classical introductory text for potential Forth programmers and I have yet to see anything better. It assumes no foreknowledge of programming and is very easy to follow. It doesn't follow MVP+T to the letter (pun) but this should not cause any major problems. Due to the very strong dollar, it now costs £22.95. We can supply copies post free to U.K. subscribers.

The MVP+T disc includes a complete source listing but to achieve maximum advantage, "All About Forth" by Glen B. Haydon is very useful. It's not a 'how to' guide but contains full details of all MVP+++ Words with a description of how to use them and their implementation. It also highlights differences between MVP+++ and fig Forth / Forth 79. We can supply the second edition for £8.99 inclusive of P&P to U.K. addresses.

We can supply either book to overseas subscribers. There is, however, an additional postage charge for each book of £2.00. This covers airmail delivery to Europe or surface mail to any other country. If you require airmail delivery outside Europe, please include £10 extra for each book. If postage is less than this, we will include a credit note for the difference. I am sorry but airmail postage is extraordinarily expensive - although I do understand that surface mail can be slow: eg. two or three months to Australia. The

cheapest answer would seem to be either: Patience, or try to purchase the books locally. Please remember that cheques must be drawn on a U.K. bank and should be made payable to Sidelight.

If you purchase both books and the disc at the same time, we will supply the disc at a special price of just £8.00. A saving of £4.50.

ADDITIONS TO SLIB VOL 01

There are some additions to SL/LIB01 from Torch. The first one is a programme to concatenate text files. If you have several files which you wish to form into a single file, this is simpler and faster to use than Perfect Writer. It will also allow concatenation of object files or the stripping of the top bit of a text file. This last option effectively converts Wordstar type files to Perfect Writer type files. There is a short documentation file.

There are some procedures which allow you to call other network users from within a Basic programme together with examples of their use.

I also have a file which allows you to save a screen to disc and copy it from disc back to the screen. This is done from within a Basic programme.

Torch emphasise that although they would like to receive bug reports, they do not accept responsibility for fixing them. This software is not official Torch release stuff!

I have also added copies of screen dumps for the FX80 from M-TEC (the BBC BASIC (Z80) people). In addition they have contributed their program to convert 6502 Basic programmes or data to Z80 Basic. Full instructions appear in the programme listings.

ORDERING PUBLIC DOMAIN DISCS

When ordering public domain software, please quote the Volume number eg. SLIB 01, SIG/M 115 or CPMUGUK 8 etc. The first disc in an order costs £12.50 and subsequent discs in the same order are £12.00. We can transfer a few files from another disc when you order a disc - the cost is £2.00 for a maximum of ten files from each extra disc. We can supply any discs from our catalogue disc which also costs £12.50 and contains hundreds of directory listings. Discs which are not ex-stock can take two or three weeks longer to post.

FORMAT CONVERSION

We can convert most CP/M discs to Torch format, including CP/M86. The notable exceptions are: Apple, Commodore and Sirius. Other formats are usually O.K. but please check with us first. The price is £12.50 for the first output disc and £12.00 for each additional disc. Most CP/M discs fit on one Torch disc. Sometimes two or even three CP/M discs will fit on one Torch disc but on the other hand, some high density CP/M discs may require up to three Torch discs. Please contact me with details of your requirements and I shall be more precise. We can also convert from Torch to most CP/M formats. The price structure is the same - £12.50 for the first output disc and £12.00 for each subsequent one.

OVERSEAS MEMBERS - PLEASE NOTE

I am pleased to say that having done my sums we are able to supply software library discs by airmail to any part of the world for the same price as the U.K. This is because we need not charge VAT for exports.

I have been asked by several overseas members if they may make payments by Giro. We do not yet have a Giro account but you may make payment directly to our bank:- Barclays Bank PLC, 260, Preston Road, Harrow, Middx. HA3 0PZ U.K. The sorting code is 20-69-88. Our account number is 30716871 and the account name is G.Perchick Ltd. You *MUST* include your membership number as a reference number. Beware that it can take up to two months for your payment to reach us! You *MUST* also send us a letter so that we can look out for your payment. All in all a cheque drawn on a U.K. bank is much faster and simpler for both of us!

PAYMENT

Please make cheques payable to Sidelight. We will accept official orders from public bodies - universities, schools and local councils etc but there is an additional charge of £5.00 per order.

DIRECTORY LISTINGS

Some directory listing follow this article. Remember that other discs are listed in issue 2 and that we can supply any volume from the catalogue disc - CP/MUGUK Vol 00.

Grahame Perchick

The following volumes are on order and will be fully listed in future issues.

CP/MUGUK Volume 0	Catalogue up to Sig/M Volume 205
* CP/MUGUK Volume 6	Misc utilities
* CP/MUGUK Volume 17	Magazines index 1978 - 1983
* CP/MUGUK Volume 22	Improved Z80 disassembler
* Sig/M Volume 2	Original 350 Point ADVENTURE FORTRAN Source Code implemented for CP/M
* Sig/M Volume 92	68000 Cross-Assembler, RBBS, Little Ada
Sig/M Volume 118	XLISP An Experimental Object Oriented Language by David Betz
* Sig/M Volume 163	CBASIC USERS GROUP VOLUMES 1 & 2
* Sig/M Volume 164	REC-Regular Expression Compiler (Vol 1 of 4)
* Sig/M Volume 165	REC-Regular Expression Compiler (Vol 2 of 4)
* Sig/M Volume 166	REC-Regular Expression Compiler (Vol 3 of 4)
* Sig/M Volume 167	REC-Regular Expression Compiler (Vol 4 of 4)
Sig/M Volume 173	REC-Regular Expression Compiler (Volume 5)
Sig/M Volume 178	BDS C Bulletin Board and C programmes
Sig/M Volume 180	Misc Programmes from Software Tools of Australia - Vols. 40 - 45
Sig/M Volume 181	Misc Programmes from Software Tools of Australia - Vol 45 and other sources
Sig/M Volume 193	Programmes from the Toronto RCP/M System
Sig/M Volume 194	High Resolution Graphics Printing System
Sig/M Volume 203	CP/M 80 to CP/M 86 Translator
Sig/M Volume 204	Forth-83 for CP/M 80-Version 2.0

SL/LIB 01 MISCELLANEOUS UTILITIES

BEGIN.SUB	See SIDELIGHT Issue 1 Pages 23-25
A.TMP	/
TOP.SUB	/
PW.HLP	Rewritten Perfect Writer Help file
BEGIN.COM	Faster version of BEGIN.SUB
DIARY.PC	See Vernon Webb's article "Work Diary For Perfect Calc
EXAMPLE.PC	/ probably in SIDELIGHT Issue 2
PROGGEN.BAS	Converts BBC BASIC files for use by BBC BASIC (Z80)
PROGGEN.DOC	Documentation on PROGGEN.BAS
LIST.COM	Types a file stopping at the end of each screen
LISTIT.BBC	BBC BASIC (Z80) programme with extended facilities to LIST.COM
PF/FX100.DAT	PF Config file for Epson FX100 See file PF.DOC
PF/FX80.DAT	PF Config file for Epson FX80 See file PF.DOC
PF.DOC	Documentation file on PF/FX100.DAT and PF/FX80.DAT
ADDDTERM.COM	Termulator for Torch computers
ADDDTERM.DOC	Documentation for ADDTERM
OTHER.DOC	Documentation for termulator patches
TERM.DOC	/
2T04.TRM	Termulator patches
CO3T.TRM	/
CB80.TRM	/
DS.TRM	/
EXIT.TRM	/
FXIN.TRM	/
FXOUT.TRM	/
H1500.TRM	/
HKEY.TRM	/
MC.TRM	/
NULLTERM.TRM	/
PAGEBIOS.TRM	/
RDRPUN.TRM	/
SUBMIT.TRM	/
TERM.TRM	/
TVI950.TRM	/
KEYBOARD.BBC	BBCBASICZ80 prog customise BBC+Torch keyboard for Perfect Writer
!HELP.HLP	/To run load BBCBASICZ80 type "KEYBOARD" follow instructions
!HELP.COM	/
KEYBOARD.HLP	/
KEYBOARD.SUB	/
KEYBOARD.TBL	/
KEYBOARD.CPY	/Disc in A: type "C KEYBOARD.CPY" to copy this prog suite to B:
CAT.COM	Concatination routine for text and programme files uses a UNIX
CAT.DOC	/ like command line.
6502-Z80.BBC	Converts 6502 data or programmes to Z80 format for BBC BASIC (Z80)
NETPROCS.BBC	Network command procedures for use from within basic programmes
NETCALL.BBC	Examples of using NETPROCS
ZDUMP.BBC	MX80 screen dump routines
ZDFAST.BBC	/
PICSAVLD.BBC	Screen save and load routines

SL/LIB 02 MVP+T (MVP+++ EXTENDED FOR THE TORCH)

UK Volume 10

DESCRIPTION: Utilities.
MBASIC programs.

NUMBER	SIZE	NAME	COMMENTS
		-CATALOG.10-	CONTENTS OF UK VOL. 10
10.1	1K	C2M.DOC	CBASIC to MBASIC file
10.2	4K	C2M-CONV.BAS	conversion program.
10.3	2K	C2M-RAND.BAS	/
10.4	3K	CALENDAR.BAS	BASIC calendar program.
10.5	7K	CALENDAR.STC	STDIC calendar program.
10.6	1K	DEDUMPZ.COM	Update of UK Volume 1
10.7	4K	DEDUMPZ.MAC	program.
10.8	1K	PRTHT.DOC	Update of UK Volume 5
10.9	49K	PRTHT/22.ASM	program.
10.10	4K	PRTHT/22.COM	
10.11	12K	QUEST.BAS	Game program from Byte.
10.12	2K	README.DOC	Doc. for Calendar programs and DEDUMPZ.
10.13	54K	UKM7.ASM	David Back's version
10.14	8K	UKM7.COM	of MODEM7 for UK use.
10.15	10K	UKM7DC.DOC	/
10.16	31K	VFILE.COM	File viewer program.
10.17	6K	VFILE.DOC	/
10.18	1K	VFINSTAL.SUB	/
10.19	4K	VFUSER1.ASM	/
10.20	1K	VFUSER1.HEX	/

Sig/M Volume 53 Updated SAM76

-CATALOG.053 contents of Sig/M volume 53
released January 2, 1982
ABSTRACT.053 SAM76 documentation

index	name	size	crc	description
53.01	ASTRO .FNT	8K	AC 16	Astrological signs for graphics
53.02	BONUS .DOC	1K	BC 4B	Function documentation
53.03	BOOK .DOC	1K	35 77	How to order SAM76 manual
53.04	CPMSETL .COM	1K	9D 9A	Part of SAM76 setup procedure
53.05	DEMO .SAM	3K	A1 F7	Some interesting demo programs
53.06	DIRFIX .SAM	1K	AB F3	Disk directory routines
53.07	EXTF .ASM	19K	5E 47	Various routines, including
53.08	EXTF .DOC	1K	CF C0	..a clock driver.
53.09	FRIEND .DOC	1K	3C 3D	oops!! Applies to something not supplied on disk: a vers of SAM76 that runs at 8000H
53.10	G .SAM	2K	A4 E2	Sets up SAM for load-and-go
53.11	HOOH .SAM	1K	3C 8B	Hex to octal to hex
53.12	IDUMP .COM	1K	D4 15	Interpreted file dump (**)
53.13	ILRAW .COM	13k	B1 B2	Raw copy of SAM76. See READ-ME.DOC and S.DOC
53.14	INFO .SAM	10K	CD BB	Creates following .DOC files
53.15	INFO1 .DOC	1K	DB 37	<<Empty>> ??
53.16	INFO2 .DOC	1K	A0 B3	Misc. DOC

53.17	INFO3	.DOC	2K	73 12	Misc. DOC
53.18	INFO4	.DOC	1K	5C 62	<<Empty>> ??
53.19	INFO5	.DOC	2K	BF 1B	Misc. DOC
53.20	LABEL	.SAM	3K	1D 09	Demo prog.
53.21	LOOP	.SAM	1K	4B 5E	Demo prog.
53.22	MOVE2	.SAM	1K	37 A9	Demo prog.
53.23	MULT	.SAM	1K	DC 6D	Multiplies long decimal f's
53.24	NEWS	.SAM	5K	EE FF	Random news story generator.
53.25	P1UR	.FNT	10K	F0 1A	Used with graphics
53.26	PLOT	.ASM	15K	72 6E	For graphics on Poly/TRS-80
53.27	PLOT	.DOC	1K	87 03	..type board, or plotter.
53.28	PRINT	.SAM	7K	14 36	Print SAM files
53.29	READ-ME	.DOC	3K	6B 04	One user's experiences.
53.30	S	.DOC	2K	89 67	Doc on creating S.COM
53.31	SIZE	.SAM	1K	4A 34	Demo
53.32	SIZLST	.SAM	1K	4A 13	Demo
53.33	SLED	.SAM	4K	9A 65	Demo
53.34	THREED	.SAM	4K	70 56	Demo
53.35	UPD051	.TXT	7K	B6 1E	???
53.36	UPD052	.TXT	7K	36 C6	???
53.37	VERIFY	.SAM	1K	5A 08	Demo
53.38	VOLSAM	.DOC	6K	B2 9B	Volume documentation ("extended abstract")
53.39	X\$UTIL	.SAM	3K	C2 67	Demo

SAM76 was submitted by the author to Sig/M with corrections to CPMUG volume 34. "SAM76 The First Language Manual" is available from:

SAM76 Inc.
Box 257 RR1
Pennington, N. J., 08534

Reference PRICES.DOC file for more information

See Dr. Dobbs Journal f26 (Volume 3, Issue 1) for a look at SAM76, but consider the above book as the "real" reference.
*.SAM files are not printable due to control-Z at their start, so IDUMP was included on this disk "for the curious". It is an hex-ascii interpreted file dump program.

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Sig/M volume 87 "THE FED (TM)" Econometric Model
by Decision Sciences and Software
Irvine, California

Software Tools of Australia
Miscellaneous programs

-CATALOG.087 Contents of SIG/M volume 87
released November 18, 1982

CRC .COM checksum program
SIG/M .LIB submission form

index	name	size	crc	description
-------	------	------	-----	-------------

087.01	THEFED	.TXT	3K	1C	1A	CBASIC version of model
087.02	THEFED	.INT	19K	3D	9D	used by St. Louis Federal
087.03	ECON1	.DAT	5K	76	8B	Reserve District to test
087.04	FORCAST2	.DAT	1K	35	D7	alternate money supply
087.05	PRNTECON	.INT	3K	5C	44	policies.
087.06	PRNTFORC	.INT	2K	58	E0	/
087.07	BDSCAT	.AQL	33K	DC	89	BDSC catalog
087.08	DISPLAY+	.ASM	16K	53	17	types file without wildcards
087.09	DISPLAY+	.COM	3K	C5	39	/
087.10	TYP+	.ASM	13K	9E	74	types file with wildcards
087.11	TYP+	.COM	3K	66	03	/
087.12	HELP	.HLP	7K	5A	0B	miscellaneous help programs
087.13	MESSAGES	.HLP	6K	25	1E	for bulletin boards
087.14	MODEM	.HLP	18K	08	66	/
087.15	QUICK	.HLP	1K	CB	9A	/
087.16	RATFOR	.HLP	19K	DE	DE	/
087.17	SOFTWARE	.HLP	11K	96	C1	/
087.18	THIS-SYS	.HLP	22K	88	11	/
087.19	NEWCOM	.	2K	FD	49	/

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Sig/M Volume 114 PISTOL v2.0 Portably Implemented STACK Oriented Language

by Ernest E. Bergmann

-CATALOG.114 contents of Sig/M volume 114
released April 1, 1983

CRC .COM checksum program

ABSTRACT.114 disk documentation and copywrite notice

index	name	size	crc	description
114.01	PISTOL .COM	16K	F9 C2	PISTOL - "a language in the footsteps
114.02	PISTOL .C	5K	9F A4	of FORTH and STOIC"
114.03	PISTOL .H	5K	E1 07	!
114.04	PISTOL .HLP	7K	83 E6	!
114.05	PISTOL .PAS	42K	C2 A5	!
114.06	ARITH .	2K	9E 11	!
114.07	CORE2 .	16K	22 5B	!
114.08	DEFS .	3K	56 D2	!
114.09	EDITOR .	4K	D6 61	!
114.10	ENVIRON .DOC	2K	C9 61	!
114.11	FUTURE .DEV	5K	89 18	!
114.12	IO .	9K	EA 1E	!
114.13	ITCOND .	11K	B6 3D	!
114.14	LOGIC .	2K	F4 EE	!
114.15	MEMOPS .	4K	88 6A	!
114.16	MISC .	5K	78 18	!
114.17	PBASE2 .	23K	9B 92	!
114.18	PIST2A .C	6K	45 FB	!

114.19	PIST2B .C	4K	26 ED	!
114.20	PIST2C .C	4K	31 FA	!
114.20	PIST2D .C	4K	E7 9A	!
114.21	PIST2E .C	7K	C9 6A	!
114.22	PISTSUB .SUB	1K	40 B2	!
114.23	READ .ME	7K	7C FF	!
114.24	STACK .	3K	03 CB	/
114.25	SYSCONS .	4K	D7 3B	/
114.26	SYSVARS .	8K	22 D6	/
114.27	TUTORIAL.	13K	61 D5	/
114.28	VOCAB .	6K	09 F4	/

SIG/M Volume 123 Miscellaneous LBR and other files

-CATALOG.123 contents of SIG/M Volume 123
released July 5, 1983

CRC	.COM	checksum program
SIG/M	.LIB	disk donation form

index	name	size	crc	description
123.01	6502DASM.LBR	11K	B0 6D	6502 disassembler
123.02	ALIENS11.LBR	28K	F3 B6	Fun and games
123.03	FIND-20 .LBR	11K	E0 20	String finding utility
123.04	INKEY .REL	1K	67 D6	Inkey improvement for BASCOM
123.05	INKEY .Z80	3K	E0 65	/
123.06	MATHLIB .ASM	4K	94 90	16 bit math for 6805
123.07	MATHLIB .SRC	11K	F7 FA	16 bit math for 8048
123.08	MATHLIB .Z80	3K	3D 0E	16 bit math for Z80
123.09	ODMP .LBR	47K	DE 8D	Simulation model
123.10	OPSYN .ASM	2K	1C 82	IEEE mnemonics with XASM05
123.11	SORTUSER.BQS	3K	52 39	Sorts bulletin board users
123.12	XFORMER.BQS	13K	F9 EC	Transformer design
123.13	XMODEM74.LBR	80K	4A 75	Xmodem update

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SIG/M Volume 129 dBASEII ORDER AND INVENTORY PROGRAM
JRT PASCAL USER GROUP VOL 1

-CATALOG.129 contents of SIG/M Volume 129
released September 9, 1983

CRC	.COM	checksum program
SIG/M	.LIB	disk donation form

index	name	size	crc	description
129.01	DB2SIG/M.LBR	180K	0E 47	A complete dBASEII (TM) order and inventory program. Covers orders for and inventory of SIG/M Vols 1 to 136.

When order is entered program advises if in stock or backordered and makes appropriate adjustment to inventory. Prints invoices, shipping labels, disk labels, various reports. Includes FASTBASE (TM) search program which locates any string in any field in all records. Automatic date verification. CompuPro time and date verification. Runs on both CP/M and CP/M 86. Etc.

129.02 JRTPAS-1.LBR 45K F5 B6 A comprehensive set of JRT Pascal routines including those in Dr. Wirth's USER MANUAL AND REPORT.

To extract the above files you will need LU.COM available on SIG/M Vol 119.

TO use LU - type LU

TYPE -O at the prompt to open a file

TYPE the name of the .LBR file

TYPE -L to list the items in the file

TYPE -E *.* to extract all files

(make sure you have room on the disk - or else extract part at a time.)

TYPE -C to close the file

TYPE ^C to exit.

(LU requires 18K and we just did not have enough room to add it to this disk)

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SIG/M Volume 140 Cross Assemblers and Misc. Utilities
Software Tools of Australia Extracts

-CATALOG.140 contents of SIG/M Volume 140
released October 7, 1983

CRC .COM checksum program
SIG/M .LIB disk donation form

index	name	size	crc	description
140.01	68KASM .FQR	42K	84 DD	68000 Cross assembler from Dr. Dobbs
140.02	68KASM .MQC	7K	95 3F	/
140.03	CPU .ASM	4K	7E 09	Faster BDSC for 8085
140.04	SPEEDUP .C	7K	02 47	/
140.05	ERROR .FOR	2K	D1 1A	Fortran-80 command switches & error codes
140.06	EXORCOPY.C	12K	AE A5	MOTOROLA mdos to CP/M data exchange utility
140.07	FILENAME.FQR	2K	50 6A	Fortran filename parser (German comments)
140.08	M6805 .LIB	8K	55 29	Macro Lib. of MOTOROLA MC6805 opcodes
140.09	REMAKE .PLI	5K	5A 67	Compiler manager
140.10	OPCODES .	2K	28 F0	MOTOROLA 6800 cross assembler
140.11	EXBUG3 .SYM	1K	7A 56	/
140.11	SEG1X68 .C	17K	1B E7	/
140.12	SEG1X68 .OVL	6K	8B 83	/
140.13	SEG2X68 .C	10K	5B 68	/
140.14	SEG2X68 .OVL	5K	73 4A	/
140.17	X68 .C2	17K	C4 12	/

140.18	X68	.H	5K	59 84	/
140.19	X68	.OBJ	15K	1C B6	/
140.15	SIMLT	.FQR	8K	6D E9	Solves simultaneous equations in fortran
140.20	XTCPM141	.AQM	26K	A7 0A	Method to extend CP/M 2.2 system
140.21	XTCPM141	.DQC	2K	A9 0E	/
140.22	Z80DISK	.DOC	4K	5E 0B	Z80 Disk diagnostic, Dr. Dobbs April 1981
140.23	Z80DISK	.MAC	23K	BF 13	/
140.24	Z80DISK	.OBJ	3K	03 12	/

SIG-M Library -CATALOG Volume Number-140, 24 Files cataloged.

NOTE: Use USQ.COM on SIG/M Volume 60 (as well as other SIG/M Volumes) to unsqueeze .?Q? files.

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SIG/M	Volume 155	dBASEII (TM) Programs and Information including Atlanta Data Base Users Soc. Vol I
	-CATALOG.155	contents of SIG/M Volume 155 released January 6, 1983
	ABSTRACT.155	explains this disk and how to use it
	SIG/M .LIB	software donation form
	JOIN .ACG	ACGNJ membership application
	CRC .COM	checksum program - type 'CRC' to validate disk

index	name	size	crc	description
155.01	ADBUG .CMD	5K	AD BC	Atlanta Data Base Users Group
155.02	ADBUG/1 .DBF	1K	B1 0E	Letter Mailing and Member Data
155.03	ADD/REC .CMD	6K	2C 19	Records System
155.04	FORM/LTR.CMD	4K	B1 B7	/
155.05	FORM/PRT.CMD	7K	50 5D	/
155.06	LABELPRT.CMD	4K	86 78	/
155.07	LETTER00.CMD	4K	44 E7	/
155.08	LIST/PRT.CMD	5K	1B BF	/
155.09	MAIL/LAB.CMD	3K	B0 BB	/
155.10	XBALANCE.CMD	5K	1D 52	Atlanta Data Base Users
155.11	XCANCEL .CMD	4K	E0 39	Society Banking System
155.12	XDEPCANC.CMD	3K	15 7C	/
155.13	XDEPOSIT.CMD	3K	9A 8B	/
155.14	XINDX .CMD	4K	AA 9E	/
155.15	XMENU .CMD	3K	2B 8E	/
155.16	XMODCKS .CMD	6K	5E 86	/
155.17	XMODDEP .CMD	3K	BD 1B	/
155.18	XNEWENTR.CMD	4K	77 36	/
155.19	XPRNT .SUB	1K	07 CA	/
155.20	XPRNTCK .CMD	8K	B7 69	/
155.21	XSYSTEM .DOC	6K	4E 59	/
155.22	ABUSBANK.DBF	1K	0D 92	/
155.23	CKNUM .NDX	1K	2C 89	/
155.24	OFFBASE .CMD	2K	CF 46	Atlanta Data Base Users
155.25	SAM001 .CMD	4K	27 03	Society Sample Periodical
155.26	SAM001 .DOC	23K	C7 92	Tracking Data Base System
155.27	SAM002 .CMD	4K	12 14	/
155.28	SAM002 .DOC	25K	41 68	/
155.29	SAMAKEY .NDX	2K	F7 F0	/

155.30	SAMFILE	.DBF	2K	C6 2B	/
155.31	SAMMENU	.CMD	3K	94 DD	/
155.32	SAMMENU	.DOC	15K	B7 B6	/
155.33	SAMSCR1	.CMD	3K	32 C1	/
155.34	SAMSCRM	.CMD	1K	C5 3E	/
155.35	UPDATE	.129	3K	67 D8	Updating files and information
155.36	MAIN	.INV	4K	F6 BC	for dBASEII version 2.4 and
155.37	MAIN	.SIG	6K	BC 8A	SIG/M Vol. 129
155.38	MENU	.SIG	2K	E3 CE	/
155.39	SIG/M	.CMD	10K	99 C3	/
155.40	DBOX	.ART	4K	4F 7F	Dual Data Bases and dBASEII
155.41	VALDATE	.TST	3K	3D 15	dBASE date validation program

SIG-M Library -CATALOG Volume Number-155, 41 Files cataloged.

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SIG/M Volume 162 Concurrent Pascal-S Compiler
PL/O Compiler

-CATALOG.162 contents of SIG/M Volume 162
released February 3, 1984

SIG/M .LIB donation form
CRC .COM checksum program

index	name	size	crc	description
162.01	BOUNDED .CCP	1K	6A A2	bounder buffer problem, in ccp
162.02	CCP .001	3K	98 CB	init overlay
162.03	CCP .002	22K	F8 E1	compiler overlay
162.04	CCP .003	15K	79 8A	interpreter
162.05	CCP .COM	8K	2C 90	root .com file
162.06	CCP .DOC	6K	3F 56	read first
162.07	CCP .ERL	2K	C9 3E	
162.08	CCP .PAS	7K	05 5E	root source file
162.09	CCP .SYM	2K	07 5A	
162.10	COMPILE .ERL	23K	59 40	
162.11	COMPILE .PAS	36K	B7 E2	compiler iverlay source
162.12	DINPHIL .CCP	2K	14 45	dining philosophers problem
162.13	GLOBAL .INC	2K	7C 84	global declarations - include file
162.14	INIT .ERL	3K	1A F7	
162.15	INIT .PAS	4K	EC D6	init overlay source
162.16	INTERPRE .ERL	10K	EB 8A	
162.17	INTERPRE .PAS	14K	E9 16	interpreter source
162.18	MAKECCP .SUB	1K	7F 7C	submit file - note synonyms
162.19	PLO .COM	26K	40 B0	Wirth PL/O compiler
162.20	PLO .ERL	13K	E2 A1	
162.21	PLO .PAS	15K	29 CA	
162.22	RECREAD .	1K	70 D1	sample PL/O program
162.23	TEST .CCP	1K	99 A8	variable access test
162.24	TRIO .CCP	1K	7F 1B	3 processes writing to screen

SIG-M Library -CATALOG Volume Number-162, 24 Files cataloged.

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FIGURING OUT PFCONFIG

Figuring Out ASCII in the previous issue of SIDELIGHT explained the way in which computers store characters and how to extract and, if necessary, convert the required codes from your printers handbook. This second part explains how you may apply this knowledge when using PFCONFIG. When I give examples, I have used FX80 codes because I have an FX80 and I know that it is the most popular printer among our members. It should be a simple matter to translate into suitable codes for your own printer.

Before you can use PFCONFIG, there are certain parameters relating to the combination of paper and printer which you must determine. This may be ascertained empirically or from your printers handbook. I can't give much help in deciphering your printers handbook but if all else fails, the following empirical method is, as near as can be, foolproof - so if it fails, you're obviously not a fool!

If you intend using the printer's default mode - ie. the way it re-sets itself when you switch it on, skip this next bit.

If you intend using a non default mode, you must set the printer up before you start it printing. This is doubly useful because it should help you to give PFCONFIG the correct information. In order to set up the printer mode, you must send it a series of instructions. To set a printer mode, you must send at least one non printing code optionally followed by further printing or non printing codes. These codes will normally be sent by the print programme from Perfect Writer. If we want to send these codes manually, we do so by using a VDU code as follows. The CPN command is "VDU". This is followed by a space and then the figure 2 to turn the printer on. The codes required by the printer are sent next but each code to the printer must be preceded by a figure 1. The individual figures must be delineated by a comma. These codes are specified in decimal. Thus to send an "ESC"(Escape) to the printer, look at the chart in the previous issue and you will discover that "ESC" is 27 so the command will be:-

```
0A>VDU 2,1,27,3<RETURN>
```

The 3 at the end turns the printer off - if you omit it, everything you type will be printed. In fact, "VDU 2" has the same effect as ^P when the printer is not enabled and "VDU 3" has the same effect as ^P when the printer is enabled. The 1 before each code instructs the computer not to send the following code to the screen. If you omit any of the 1s, very odd things can happen! One more example should suffice. If we want to set the FX80 to print elite, we must send the following code sequence using the "VDU" command:-

```
VDU 2,1,27,1,77<RETURN>
```

VDU is the command

2 turns the printer on

1 prevents the next code from being sent to the screen

27 is ESC

1 prevents the next code from being sent to the screen

77 is the code to set Elite

In this instance, we have not sent a code to turn the printer off so any further characters we type will be sent to the printer. Send another return, assuming that you have tried this on your FX80 and the printer will line feed. Incidentally, the commas are needed so that the computer knows where one number stops and the next starts. It is essential when

sending a "VDU" command from the Torch mode to include a space after "VDU" and before the first digit! Otherwise CPN does not recognise it.

There is one area which sometimes causes difficulty especially to those who use a printer from both the Beeb and Torch modes. This is caused by the Beeb assuming that the printer will automatically perform a line-feed when it receives a carriage-return. The Torch assumes that the printer will not perform automatic line-feed on carriage return. The Torch must operate this way in order to maintain compatibility with CP/M software. Neither the Beeb nor the Torch can be considered to be right or wrong, it is just that they are different.

Fortunately for most people, there is a simple solution. Your printer should be set to not give an auto line-feed on carriage-return. This will be disabled either by an internal switch as is the case with Epson MX and FX printers or from an initialisation string. The simplest solution if your printer requires an initialisation string is to use a Submit file which contains the appropriate VDU command line. This will allow it to work correctly from CPN whatever the source of the printing commands. This works because although the Beeb assumes the printer performs a line-feed on carriage-return, it still sends both a line-feed and a carriage-return. If you are not lost yet, you might wonder why the printer does not give two line-feeds on each carriage-return (one automatic line-feed from the printer and one from the Beeb.) The answer is *FX6. This allows you to instruct the printer control software in the Beeb to discard a specified character. Thus, *FX6,10 will (by reference to the table in our previous issue) cause line-feed to be ignored and this is how the Beeb sets itself up when it is switched on. The Torch, however, because it assumes that the printer will not give auto line-feed on carriage-return sets up *FX6,0 which will ignore the 'ignore' character. The result is that the printer will now receive carriage-returns. If I have now got you thoroughly confused, I'm sorry but it is confusing. The answer, however, is simple. Once you have set your printer not to perform auto line-feed on carriage-return, you must allow the Beeb to send line-feeds by using *FX6,0 when you start using the Beeb. As long as your printer is set correctly and you remember *FX6,0 when you start using the Beeb mode, all will be well. If you can't disable auto line feed on carriage return, you must send *FX6,10 when entering CPN.

If you are using the printer's default settings, you must now direct output to the printer by typing control-P or VDU 2, either will have the same effect. If you have set up the printer mode, omit the "3" at the end of the VDU command string. If you now type a couple of "RETURNS", your printer will give a gentle burp for each "RETURN" and the paper will feed.

Before proceeding, you must disable the printer from performing any of its own formatting. These are things such as Skip Over Perforation or Margin Settings. Most printers default to no formatting but if yours does not you must send the appropriate VDU command or set the internal switch(es) as appropriate.

If you are using cut sheets of paper, position a new sheet in the printer. This sheet must be in the normal starting position.

The next step is to type a lot of rubbish. It doesn't matter what you type and if you just press "0" (letter O not zero) and hold it down, this will do fine. Ensure that you print sufficient to fill a line on the printer. If your printer can cope with more than eighty characters per line, you will of course end up with more than one line of characters on the VDU screen. It should be obvious when the printer has completed its line because it will give a line feed. Now press "RETURN" and hold it down. Ensure that you go over two lines

of perforation to make certain that you print at least one complete page. Remove the page you have now printed. It should contain a line of "O"s across. These Os should cover very nearly the whole width of the sheet. If not, it is due to the printer adjusting the margins. There should be a column of "OA>" down the left hand side. Where the perforations are, the gap should be no larger than between any other lines. If not, your printer is skipping over perforations. In fact, a larger gap between lines may appear anywhere. If it isn't at the perforations, it simply means the paper is positioned wrongly. If you can't disable the printer's formatting, it is possible to live with it but your system will be less flexible.

If you are not using paper which is the full width that your printer will print on, beware! It doesn't do your printer any good to print past the edge of the page. You might also find that when using a narrower than standard type face, you must send your printer an escape sequence to get it to print the extra characters on each line.

And now comes the moment you have been waiting for. Having read thus far, you should have sufficient background information for us to look at PFCONFIG in person so to speak.

To start PFCONFIG, simply type:
PFCONFIG<RETURN>

You will be rewarded with a general introduction to PFCONFIG on your screen. This is followed by a question which asks if you want to change discs. If you answer "Y" to this question, you are returned to CPN. If you answer "N", PFCONFIG continues by displaying a rather confusing couple of paragraphs which don't really say very much. The most useful item is the last part which informs you that you can escape to a previous menu by using control-G. In fact this doesn't always work when the menu on display includes an option to return to the previous menu. Pressing any key results in a new screenfull. The second paragraph is certainly pertinent. It warns you to change a little at a time. You also receive the top level PFCONFIG menu:

```
Perfect Writer Configuration Program Master Menu
1 - Define input/output port usage
2 - Define printer types
3 - Select Perfect Writer default style parameters
4 - Edit character width tables
5 - Edit character translation tables
6 - Exit configuration program
Enter the number of your selection, followed by a CR -->
```

Item one on the menu MUST NOT be used on the Torch. Item two is the one to select by entering a "2" followed by "RETURN". All information entered from now on must be followed by "RETURN" but I shall not continue to repeat this. The other items may be of interest but are only dealt with in passing in this article. If you are going to define a proportional character set, you should first sort out a suitable character width table by selecting option 4. Similarly, a character translation table should now be set up if required.

The next paragraph on your screen repeats information given already in this article and is followed by the Printer Type Definition Menu:

```
Printer Type Definition Menu
1 - List the currently defined printer types
2 - Define a new printer type
```

- 3 - Update existing printer definition
- 4 - Delete a printer definition
- 5 - Select the default printer type
- 6 - Return to main menu

Enter the number of your selection, followed by a CR -->

If you select "1" from this menu, you will receive a list of the pre-defined printer types. Pressing any key will return you to the Printer Type Definition Menu. If you select item "2", you will be starting from scratch; you must enter all the information at once; you can't go a step at a time. You must be wary if you select item "2" because you can only define 16 printer types maximum; but if you try to add a seventeenth type, PFCONFIG doesn't tell you - it will allow you to enter all the information but simply throws it away! Because you start off with 16 pre-defined printer types, you must delete one of the pre-defined printers first; by selecting option "4" before option "2".

If you take the safer route via option 3, you can change one item at the time. The only snag is that you cannot change the name of the printer from this option; this may only be performed via option "2".

The differences once "2" or "3" are selected are small. Option "2" starts off by asking you for the name of the printer type and then goes through each relevant option on the Printer Definition Menu without displaying the menu. Option "3" starts by asking for the name of the printer to be edited and then displays the Printer Definition Menu:

- 1 - Paper width: 21590 micas
- 2 - Paper height: 27940 micas
- 3 - Standard character width: 254 micas
- 4 - Height of a single-spaced line: 423 micas
- 5 - Smallest horizontal movement: 254 micas
- 6 - Smallest vertical movement: 423 micas
- 7 - Proportionally-spaced font/printwheel? No
- 9 - Generate online-readable output? No
- 10 - Initial paper offset: 0 micas
- 11 - Special printer code: 1
- 12 - Use Control-H for backspace? Yes
- 13 - Use Carriage Return (Control-M) for bare carriage return? Yes
- 14 - Use Form Feed (Control-L) for form feed? Yes
- 15 - Type of synchronization protocol: 1
- 16 - Translate characters on output? No
- 18 - Initialization string: ^[@^M
- 19 - Reset string:
- 20 - New line string: ^Q^J
- 21 - Boldface on string: ^I!(
- 22 - Boldface off string: ^![^A
- 23 - Italics on string: ^[4
- 24 - Italics off string: ^[5

Field number to edit (or Control-G):

In order to avoid repetition I shall describe what happens if option "2" on the Printer Type Definition Menu was selected but I strongly recommend the safer option - "3". The paragraph numbers which follow relate to the Printer Definition Menu option numbers. Now take your ruler, calculator and printout described earlier. The example answers are all based on the Epson FX80 printer but with the knowledge gleaned from the previous article and this one, it should not be difficult to decide on the values required by your own printer.

1 - Paper Width:

Simply measure the overall width of your paper and multiply the answer by 2540. eg. $9.5 \times 2540 = 24130$. This is the normal continuous forms size. It is not clear why PFCONFIG wants this information - it doesn't seem to make good use of it. If you set up the default values such that there isn't enough width on a line for the number of character positions specified, it simply continues on the next line without issuing any warning.

2 - Paper Height:

Simply measure the length of a single sheet of paper and multiply the answer by 2540 to convert it to microns. eg. $11 \times 2540 = 27940$ for standard continuous listing paper or $11.7 \times 2540 = 29718$ for A4 size paper.

3 - Standard Character Width:

If you are not using proportional spacing, count the number of characters in one inch. Divide 2540 by the number of characters per inch. eg. for FX80 Elite at 12 characters per inch, $2540 / 12 = 212$. If there are not an exact number of characters in one inch, use some other unit eg. 1.5" or 2" or anything which fits exactly. For example, condensed pica on the FX80 has 24 characters in 1.4". We now multiply 2540 by the number of inches and divide the answer by the number of characters. So, for condensed Pica on the FX80 we have $2540 \times 1.4 = 3556$ and $3556 / 24 = 148$.

4 - Height of Single Spaced line:

This is obtained simply by measuring the number of lines to one inch and dividing the answer into 2540. Thus, 6 lines per inch = 423. Six lines per inch is the default setting of most printers but many may be set to 8 lines per inch. If you wish to use an odd line spacing only an approximate measurement is required because you can multiply the spacing by the number of lines on a page to give the page length. This will keep PFCONFIG happy.

5 - Smallest Horizontal Movement:

Unless your printer is compatible with one of those listed under 11, the answer to this will be the same as 3. The older version of Perfect Software (which comes without PWCUSTOM) will not work correctly using the MX80 definition, for an FX80 - The new version (which comes with PWCUSTOM) includes an FX80 definition but does not have any FX80 special knowledge.

6 - Smallest Vertical Movement:

Same comments as 5 but the answer will normally be the same as for question 4.

7 - Proportionally - Spaced Font/Printwheel?

Answer Y(es) only if your printer is listed under 11. All others answer N(o).

8 - Number of Character Width Table:

If you answer No to question 7, you will not be asked this question. If you will be using a proportionally spaced font, you should have sorted out the table to use before starting this part so you simply enter the table of your choice.

9 - Generate On-line Readable Output?

If you answer Y(es) to this you will not be able to print correctly justified lines. I can't actually see the need for a Y(es) because the end result of formatting a file then is the same as using the Quick Print option. If you selected to modify a printer definition from the Printer Type Definition Menu, when you choose this item you may find that you will not be returned to the Printer Definition Menu. To get back, simply type ^G.

10 - Initial Paper offset:

On most printers, if you start printing from the normal starting position, ie. if you tear off the paper and then print immediately, printing starts some distance down the paper. On the Epson dot matrix printers, for example, this is about one and a quarter inches. If you produce mainly single pages of printout, it's best to enter '0' here and continue wasting this space. If, however, you produce an average of seven pages or more (assuming an Epson and 11" paper) you will save paper by sacrificing the first sheet. Simply give enough blank space at the start of your document so that you start printing at the top of the page. You then enter here the number of blank lines required to get you to the perforations at the end of the document. If you cheat a little, however, you can save the wasted paper when printing several documents one after the other. Simply enter 0 here. Adjust your printer so that it advances to give the correct top of page printing and you then get one document after the other with no blank pages required. You must then advance the paper manually at the end of the print run to align the perforations to the tear off bar. This is the technique that I normally use for Sidelight.

11 - Special Printer Code:

If your printer is not FULLY compatible with one of the printers that PFCONFIG lists for this question, you must enter 1.

12 - Use Control-H for Backspace?

Most daisies and some matrix printers (eg. the Epsons) will backspace. Check your printer manual for this one.

13 - Use Carriage Return (Control-M) for bare carriage return?

If you have been able to prevent your printer performing an automatic line feed on carriage return, answer Y(es) to this. If not, you should have used *FX6,10 to prevent double line spacing at odd times and must answer N(o) here.

14 - Use Form Feed (Control-L) for form feed?

If you are not sure about the answer to this, start off by answering N(o). When you have everything else sorted out, come back to this question and change the answer to Y(es). If the page boundaries go haywire, the answer should be N(o) or you have not set up the page length correctly on your printer. The advantage of a Y(es) here is that form feed is faster than several line feeds on most printers and also causes less noise and printer wear.

15 - Type of Synchronisation Protocol:

Once again, your printer manual should answer this one but if in doubt, start with 1 and experiment. The parallel centronics port on the Beeb is output only so you have to choose 1. With a serial printer, if you lose odd characters - especially at the start of a line and this is worse after a long line, try using option 2 or 3. This is a bit hit and miss but you should be able to find this information in your printer manual.

16 - Translate Characters on Output?

Unless you have a little experience, start off by answering no to this one. When you have everything working, you can experiment in small steps. If you answer yes, you must select option 5 from the Master Menu to set up the character translation. This will simply allow you to swap round the printed characters so that they match up with the keyboard. This shouldn't normally be necessary for any more than one or two odd symbols. The £ sign is a common one. Note that you can't include control codes - only printing codes.

17 - Translation Table to use:

You will only be asked this if you answer Y(es) to 16. Only tables 0 and 1 are set up to start with. If you want to use your own table starting from scratch, you must set it up before answering this question - you will only be allowed to specify here a table which exists.

18 - Initialisation String:

This is where you must dive into your printer manual and with the previous article, work out what you must send. If you are using your printer's default mode, you can get away with no initialisation string. This is obviously a good way to start but if you want to use your printer's full potential you must grasp the nettle and experiment. For example, to set up an FX80 for Elite, one method is to send ESC M. It's a good idea to reset the printer first which is ESC @. Thus the string will be ^[@^M. Similarly, to set condensed pica you must reset the printer followed by SI. This will be ^[@^O. The possible combinations and permutations with the FX80 alone probably justifies an article by itself (any volunteers please contact me!)

19 - Reset String:

If you intend printing in a different mode from PW to that which you normally use, it's useful to reset the printer to the mode which you normally require. This isn't necessarily a Reset of course. eg. You might normally want the Epson to print Elite but just for this configuration you've set up Pica. In this case the reset string will be ^[@^M.

20 - New Line String:

For most printers, this will be carriage return followed by line feed. This is ^M^J. Some older printers are sensitive to this sequence because carriage returns take a long time, they perform the line feed while the carriage is returning. If on these printers you reverse the order - line feed, carriage return, you will find the first character of the line anything up to half way along. If you are unable to prevent your printer performing a line feed on carriage return, or more rarely, a carriage return on line feed, you will send only carriage return or line feed as appropriate.

21 - Boldface on String:

This and the following three questions allow your creativity to shine! For example, you could decide with the appropriate printer to use the bold or italic string to change ribbon colour. I will say no more here about this technique as there is an article elsewhere in this issue and another will appear in the next issue. On the FX80 ESC 6 (^G) will set double strike mode.

22 - Boldface off String:

This will only be available if a boldface on string is specified at 21. Double strike off for the FX80 is ESC H (^H).

23 - Italics on String:

Same comments here as for 21. On the FX80 italics on is ESC 4 (^I).

24 - Italics Off String:

Only presented if an Italics on string specified at 23.

All that might remain now is to make any required changes to the default style parameters. This is performed by typing ^G to return to the Printer Definition table and then select 6 to return to the main menu. Selecting option 3 now will allow you to view and modify the default style parameters. Once again, change only one item at the time. Changing style parameters is far simpler than setting up the printer commands and should require no further explanation.

SPEED UP WORDSTAR 3.3

Use option + to enter modification made from install menu.

<u>LOCATION</u>	<u>OLD VALUE</u>	<u>NEW VALUE</u>
028E	0A	00
028F	05	00
02AF	03	00
02B0	09	00
02B1	19	10
02B2	40	00
02B3	09	00

PATCHES TO IMPLEMENT TORCH W.P. KEYPAD

<u>LOCATION</u>	<u>OLD VALUE</u>	<u>NEW VALUE</u>
0555	16	97
061D	0F	95
061E	07	00
0621	0F	93
0622	18	00
0655	All zeroes	96 00 02 02
0659	"	9B 00 9D 65
065D	"	94 00 F8 64
0661	"	9C 00 03 64
0665	"	91 00 49 64
0669	"	92 00 A7 2E
066D	"	99 00 98 68
0671	"	9A 00 9E 68
0675	"	90 00 12 68

TORCH KEY

para
file
redo
window
screen
word
line
undo
insert
begin
end
exact space

WORD STAR FUNCTION

^O6 Paragraph tab
^KD Save file done
^L Repeat last find
^OX Margin release
^QE Move to top of screen
^A Left word
^QD End of line right
^U Cancel command
^V Insert
^QR Beginning of file
^QC End of file
^C Screen up

Derek Tripp (Herald Computers)

Continued from Page 38

If there is an area which I have not fully explained please let me know - don't be shy, it's the only way I can rectify matters. The process of setting up the printer is not as complex as may appear from the length of this article because no printer will cause all the problems I have covered and PWCONFIG is probably the most friendly of all the Perfect programmes. So go on, give it a try and you'll get far more out of your printer and PW.

OMITTED FROM THE MANUALS

On the subject of things that should have been in the manual but either were missed out or missed by people reading them, apart from the now infamous B and BREAK to go into BASIC under MCP the following points have caused us a few 'phone calls in support in the past.

Files can be transferred between user numbers by putting the user number in square brackets after the filename, for example COPY A:FRED [1] TO B: [0] will copy FRED on drive A user 1 to drive B user 0. COPY CS.COM [3] TO [0] will copy CS.COM from user 3 to user 0 on the current default drive.

Note that user numbers are only supported by MCP not by CPN. User 0 is treated in a special way both by CPN and MCP. When in a user other than 0, if the file specified to be read in is not found in the current user area, user 0 will be searched. If it is found there, it will be used. Thus it is possible to access user 0 files by all users but for reading only. When using MCP, if user 0 is explicitly specified, files may also be written to. Ed.

Changing the default drive (that is to say, the disc drive the system looks on first if a drive letter is not given in the filename) is just a matter of typing the drive letter followed by a colon and return, so typing B: (return) will make CPN look on drive B for files unless told otherwise. Remember also that adding a drive letter and colon to the start of a filename will access the file on that drive, so if you are running your Perfect Writer on drive A but want to store your document on the disc in drive B just give it a name with B: on the front, like B:DOCUMENT.MSS.

Unlike CPN, the TIME command can only be used to read the time in MCP. A program called SETTIME.COM is supplied on the Systems 1.7 disc to change the clock. To use it enter SETTIME hh:mm:ss (replacing the hh, mm and ss with the current time of course).

If you are running a program that requires keyboard input (e.g. Perfect Writer) from within a .SUB file it is not sufficient just to put the name of the program into the file because, although the program will run, it's keyboard input will still be coming from the .SUB file. To rectify this use the EXEC.COM program supplied on all systems discs. To use it, the last line of your file should be EXEC !XMENU:M to call up the Perfect Writer MENU program. Obviously this should be changed to the name of the program you actually want to run. There are full details in the user guides. By the way, if you are writing Z80 assembler the listing of the EXEC.COM program at the back of the A5 sized Programmer's Guide provides many useful routines.

When used normally the DUP command skips over what it considers to be empty tracks on disc in order to speed up the copy. There is also an option called DUP FULL which will copy across all 80 tracks on both sides of the disc. This makes it ideal for copying 80 track, double sided discs which do not contain CPN information. For example, it will copy Acorn DFS and TORCH UNIX discs.

Mark Cook (Torch Customer Support)

WHAT USE IS USER

Typing and entering HELP on your Torch will give you a list of the command words and their syntax. But how many of them do you actually use? You may well be familiar with PRINT and TYPE, but even then, if you are mostly using your machine as a wordprocessor, or with someother dedicated piece of software, it's unlikely you'll need them. The same goes for COPY, DELETE and a good few more.

But what of USER? The fact it is not duplicated by your software alone suggests it's not much use.

The USER command, which creates up to 32 different directories on one disk, really only comes into it's own on a network system, giving every user a directory to themselves. (On a single machine, you can always give them all a disk each!) But, let's suppose you do use it. Let's suppose you've typed in USER 27 (MCP users can get away with just U 27) and you've got back the prompt 27A>. Now type DIR. Nothing! How on earth are you going to work without any software? This is not such a problem as it might at first seem, for directory 27 has access to two directories: itself and directory 0. With Perfect Writer installed on directory 0, you can quite happily create a text file on directory 27. Do just that, then inspect the directory, and you will find just one file: the text file you've just created. Now send that file to the spelling checker, and, while correcting the spelling, decide to add a word to the dictionary. When you next inspect the directory you will find you've gained a file: a new version of the dictionary. Hence forth, while all other directories will use the dictionary on directory 0, directory 27 will use it's own.

A file may be read from either directory 0 or the current directory (the default being the current directory, where there's a choice), but writes only to the current directory.

MCP users can copy from one directory to another, using a command something like:

```
COPY A:THIS.TXT [0] TO B:THAT.TXT [27]
```

or even: COPY [0] to [27]

I very much regret that this doesn't appear to work with the CPN rom. Some files like Perfect Speller's dictionary, will be rewritten by the software. The only other way I know to transfer files is to use POKEDISC. Copy the file to another file on the same directory (RENAME.ME), then call up Pokedisc. Locate RENAME.ME in the directory, and press <CTRL>B to begin editing. Moving the cursor to the filename, rename it back to the original. Then moving on to the User Number column, renumber this 27. <CTRL>E ends the editing, and while quitting with Q from the menu, you will be asked if you wish to output the changes to disc, to which the answer is Y. Okay, so I can create different dictionaries on different directories. Indeed, I always could create multiple dictionaries and swap between them. This is just another way of doing it that might appeal as a quick way of changing hats while typing. One moment you're a Nuclear Physicist with a special set of spelling requirements, next you're a mum or dad teaching your kids, and not wanting to get your special dictionary mucked-up.

What else? Well, there are the default parameters. Take Perfect Writer once more. Many of the formatting commands have default values. These may be changed using the configuration program, but maybe you don't always want the same ones. I know many people who don't like their wordprocessed letters to be right

justified because it looks as if they used a wordprocessor! They prefer what is known as a ragged right. This is easily fixed with either a style parameter or by changing the default. But if you're likely to want to change between two or more commonly used sets of defaults (letter writing vs. articles, for instance), why not put them on different directories? However, you will be limited in what you can do by the size of the file and the available memory.

Still not convinced? This one's the clincher! And it will work on the CPN rom. If, like me, you think Perfect Filer's a pain in the software, this is the way to improve it's performance.

Ordinarily, Perfect Filer will only allow you one database per disk. It's expensive tastes are fine if you plan to use large databases, but if you have simple, relatively small databases, you still have to donate a whole disk to each. The easiest way round this problem is to put each database on a different directory. That way you can get up to 32 databases on each disk! Of course, it won't make any more room, so you'll have to balance size against number. And if you're worried that you'll forget where you put each database, why not put that information in a database on directory 0?

All rom users need only move to their chosen user directory and, provided Perfect Filer is installed on user 0, the software will create the appropriate files on the new directory just as if it were a brand new disc.

Remembering where everything is could well be a problem, which reminds me, it's a good way to hide things, too. If you have an address list that you want to keep secret from your wife/husband/lover/bestfriend, put it on a separate directory. Each directory may be inspected with a command like DIR [27], but wildcards (*) are not permitted, so you've a thirty-two to one chance in you're favour.

Goff Sargent

MEMBERS DISCOUNTS

Computacount (UK) Ltd. of Birmingham have contacted me. They are offering Sidelight subscribers up to 20% discount on their "wide range of peripherals and specialist software." Amit Jobanputra tells me that they have "a considerable amount of experience with Torch Computers." If you phone them on 021- 236 3455, they will give you further details.

BBC BASIC Z80

M-TEC have agreed to supply members of Sidelight with Version 2.3 of BBC BASIC Z80 at the special price of £95.00 plus VAT for a limited period. If you would like to take up this offer, send them a cheque for £109.25 together with the coupon from the back cover. Please remember to fill out your membership number on the coupon and send it to M-TEC Computer Services, Ollands Road, Reepham, Norfolk NR10 4EL.

Ed.

RECOVERING .FIN

The query in issue 2 on recovering Perfect Writer .FIN files has prompted a response from a couple of people. Goff Sargent has supplied the most sophisticated programmes and these are reproduced below. Essentially, all that must be done is to remove the control codes which are inserted during formatting. There are two versions - the BBC BASIC Z80 version is preferable but the 6502 version is O.K. if you don't have BBC BASIC Z80. If you use the 6502 version, you must of course transfer the file you wish to recover to an Acorn disc using WRTACORN and then read it back, after recovering, using RDACORN. Alternatively, use RWACORN. If using WRTACORN and RDACORN, they must support the transfer of binary files. RWACORN on version 1.8 of the system disc does this. Simply run Goff's programme and follow the instructions. You will of course have to replace the formatting commands when the file has been recovered. Ed.

```

5 REM*****RECOVER FROM FORMATTED FILE USING Z80 BASIC*****
10 DIM BLOCK%(256)
20 INPUT"FROM WHICH FILE DO YOU WISH TO RECOVER? "A$
30 B$="":FORAX=1TOLEN(A$):C$=MID$(A$,AX,1):IFC$="."AZ=99:ELSEB$=B$+C$
40 NEXTAX:C$=B$+"REC"
50 KK%=1
60 PRINT"RECOVERING ";A$;" TO ";C$
70 ZZ=OPENIN(A$):YY=OPENOUT(C$)
80 IFZZ=0PRINT"UNABLE TO OPEN "A$;CLOSE#0:END
90 IFYY=0PRINT"UNABLE TO WRITE TO ";C$;CLOSE#0:END
100 REPEAT
110 PRINT"RECOVERING BLOCK ";KK%;
120 FORZZ%=0TO255:
130 AX=BGET#ZZ:IFAX=1360TO150:ELSE IFAX>31 AND AX<127 60TO160
140 A%=32:60TO160
150 BLOCK%(ZZ%)=13:ZZ%=ZZ%+1:AX=10
160 BLOCK%(ZZ%)=AX
170 SS%=ZZ%:IFEOF#ZZ:ZZ%=255
180 NEXTZZ
190 FORZZ%=0TOSS%:BPUT#YY,BLOCK%(ZZ%):NEXTZZ:PRINTCHR#13;:KK%=KK%+1
200 UNTIL EOF#ZZ:BPUT#YY,26:CLOSE#0:PRINT"RECOVERY COMPLETE"

```

```

5 REM*****RECOVER FROM FORMATTED FILE USING 6502 BASIC*****
10 DIM BLOCK%(256)
20 INPUT"FROM WHICH FILE DO YOU WISH TO RECOVER? "A$
40 KK%=1
50 C$=A$+"-R"
60 PRINT"RECOVERING ";A$;" TO ";C$
70 ZZ=OPENIN(A$):YY=OPENOUT(C$)
80 IFZZ=0PRINT"UNABLE TO OPEN ";A$;CLOSE#0:END
90 IFYY=0PRINT"UNABLE TO WRITE TO ";C$;CLOSE#0:END
100 REPEAT
110 PRINT"RECOVERING BLOCK ";KK%;
120 FORZZ%=0TO255:
130 AX=BGET#ZZ:IFAX=1360TO150:ELSE IFAX>31 AND AX<127 60TO160
140 A%=32:60TO160
150 BLOCK%(ZZ%)=13:ZZ%=ZZ%+1:AX=10
160 BLOCK%(ZZ%)=AX
170 SS%=ZZ%:IFEOF#ZZ:ZZ%=255
180 NEXTZZ
190 FORZZ%=0TOSS%:BPUT#YY,BLOCK%(ZZ%):NEXTZZ:PRINTCHR#13;:KK%=KK%+1
200 UNTIL EOF#ZZ:BPUT#YY,26:CLOSE#0:PRINT"RECOVERY COMPLETE"

```

PRACTICAL USER

Net Note

It's possible to attach a Beeb with an Econet interface and a ZEP card to a Torch network producing a very cost effective work station. Unfortunately Acorn's NFS ROM (version 3.34) isn't suitable for this. This isn't widely known and isn't explained in Torch's documentation. Many users have found themselves 'timed out' (i.e. when one machine gives up waiting to talk to another) from the network with consequent lost files and much frustration. In their own machines Torch use version 3.35 of the NFS which doesn't produce these problems. Typing "*HELP" will tell you which NFS you have got. Getting an appropriate upgrade from your Torch dealer for a modest handling charge (or free, if you purchased the Beeb and ZEP at the same time for network use) shouldn't present any problem. Alternatively you can get Torch to provide the upgrade at a price. Acorn's DNFS ROM won't normally work at all, unless you have Torch's latest MCP ROM, Plus 100, and would have to be replaced with an NFS 3.35 (and a DFS ROM if required).

Silver Linings

Paul Beverley's piece in January's ACORN USER will have depressed many a Torch User and puzzled many more. In the article (Second Processor Power) he asks "Do second processors speed things up?" and answers "not as much as one might have hoped". Neither Acorn's Z80 nor the Torch ZEP come out brilliantly but Torch's ZEP comes off worse. A long aside, entitled "A Torch 'Funny'", served to rub salt into the wound. I found some of Paul's results distinctly curious and set out to retrace his steps and see what I could learn. I made a number of practical discoveries of benefit to all Torch users and found the full picture was rather encouraging.

There are two main reasons why a second processor might speed things up when added to a Beeb. The first is that the second processor might work at a higher speed and/or be more powerful. The second is the fact that the TUBE allows the two processors to work in parallel.

PCW Bench Tests are normally used to test the first and the ZEP came out of the comparison with Acorn's Z80 rather badly. Indeed Paul's tests showed the ZEP as trailing behind the Beeb.

Of course the PCW Bench Tests are as much a test of the interpreter being used as they are of the processor. The 6502 BBCBASIC is very fast. The need to maintain compatibility limits the opportunities available to optimise the Z80 BBCBASIC. Interfacing with the TUBE delays matters a little as well, particularly with the Torch.

I re-ran the Bench Tests and my results were very much closer to the Acorn's than Paul's were. This was in part explained by the fact that I have the Torch Z80B which, like Acorn's Z80, runs 50% faster than the normal ZEP. This fact alone didn't explain the difference between Paul's results and mine. Another major factor was the version of Z80 BBCBASIC in use. Acorn's Z80s have version 2.3 while most Torch ZEP owners have version 1.92 (including Paul) and this turned out to be much slower. It was about 25% slower at doing the calculation element of Paul's test programme and 12% slower doing both calculation and plotting in parallel. The first lesson then is that if speed is important to you upgrade to 2.3. 2.3 introduced other improvements too.

How significant was the actual speed difference between the ZEP and the faster Torch/Acorn processors? The concept of "parallelism" is fundamental to the Beeb and its TUBE. In an ideal world both processors would be working flat out in parallel and the speed gains would be considerable. Running Paul's "parallelism" test proved most informative. The test consisted of a calculation routine which was done by the Torch (or whatever), a plotting routine (done by the 6502) and then both were done together. As one would expect, the ZEP took significantly longer to do the calculation than either of the faster Z80s. All of the processors performed well in the "parallelism" part of the test with the faster Torch only taking just .01 of a second longer to do both plotting and calculation as against the plotting alone. The speed gain over, say, the same processors on a traditional bus system was around 53%. The ZEP's speed gain was only slightly less, 49% or about .02 of a second slower. Moreover it was clear that the Z80s, particularly the faster Z80s, could have done a great deal more without the whole process taking significantly longer. Obviously, in a longer programme, particularly one where the Z80 had more to do, the differences would be more significant but, frankly, I doubt if I would spend more on a Z80B on that account alone.

Paul's "Torch 'Funny'" turned out not to be much to do with Torch and not to be terribly important. During his "parallelism" test his ZEP turned in variable results during repeated runs. In some runs there was virtually no parallel operation. Z80 BBCBASIC causes the Z80 to "poll" the ESCAPE key every 10 statements and, when this happened while the 6502 was engaged with its plotting, had to wait for a reply. In a major application this could slow things down quite a bit. Disabling the ESCAPE (with *FX 229,1) doesn't stop this. Richard Russell, the author of Z80 BBCBASIC, has provided a solution to the problem. It is done by reducing the polling ratio by poking a new value directly into BASIC. For example, the following line added to the beginning of a programme will result in the ESCAPE key being tested only after 256 statements:

```
1 ?%3619=0 (for v. 1.92) or 1 ?%37C4=0 (for v. 2.3)
```

You can poke in any value between 0 and 255 so experiment to find the most suitable for you. Reducing the frequency of polling of the ESCAPE key would be acceptable in most circumstances and would speed up a serious BBCBASIC application considerably.

What had put me onto the BBCBASIC polling was the fact that I knew that the Z80 polls the Econet (again on a ratio of 10:1) and I decided to explore this a little. This polling takes place even if the Torch is not actually connected to a network. Increasing the ratio to say 255:1 when not attached to the network, results in a significant increase in speed across the board. For example, I gained around 14% when loading Wordstar on a stand alone Torch 725. I don't know of any way the Z80/Econet polling ratio can be varied with the pre-Plus 100 MCP/CCCPs. Perhaps Torch can help? Torch supplies a programme (MCPVARS.COM) to do this with Plus 100. Plus 100 also eliminates the polling automatically if the NFS chip is absent. MCPVARS also permits one to vary other MCP variables like "time out" times. With judicious fiddling with these variables one can make speed gains with networked machines as well. I got a general speed improvement of around 8% on five of my office stations which was very welcome indeed. The Plus 100 itself offers significant speed improvements in terms of loading programmes. I'll attempt a full review of Plus 100 for the next SIDELIGHT.

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Who needs PWBIND.COM ?

A word of explanation for those baffled by the title: PWBIND.COM, its associated program WRTBIND.COM and data file FUNCTS.TXT are the files supplied by Perfect Software to configure Perfect Writer for a particular terminal. In some cases, like the Torch, this configuration is done by the supplier and the files are not supplied to the end user. This is reasonable, provided that the supplier has installed Perfect Writer properly for the terminal on which it is to be used. Torch installed it for their extended Torch keyboard not for the BBC which is why you will find Goff Sargent and me lamenting the missing files. It is also why you have trouble with the eccentric delete key.

Well, I have been digging and I have found that all is not that bad. A bit of calm thought one night told me that Perfect Writer had to use a jump table to implement its keyboard definitions and, what is more, the jump table had to be in PW.SWP. And sure enough it is. An hour or so with Perfect Filer to collate the jump table entries with the keyboard commands and I have a list of all the command codes and the corresponding entries. Try very gingerly poking a couple of table entries to change them and it works, now I have a fully programmable keyboard (well more or less).

A word of warning

Meddling with jump tables is dangerous unless you know what you are doing - even then you need to be very careful. Wrong entries can wreak havoc with your programs, make sure you have back-up and tread carefully.

Neither I nor Sidelight take any responsibility for anything you do as a result of this article.

Following this article is a list of the entry points, the Perfect Writer mnemonics and my descriptions. Using this and Torchbug it is possible to alter the table entries; note that the entries are in 'low byte, high byte' sequence, the list is not. I have quite deliberately not said where the table is in PW.SWP, if like mine yours is 65k long it will take a while to find and you might by then have learnt a bit about what you are doing. (If you already know what you are doing you will find it in five minutes.)

For those who find the foregoing thoroughly frustrating I hope to have a BBC Basic Z80 program on the Sidelight disc shortly which will let you change the table at will. For those without without Basic or courage then possibly Sidelight and I can find some way of configuring your file for you. If you would be interested then please drop a line to the editor, if there is some interest then we will try to arrange something.

Bob Janes

Bobs BBC Basic (Z80) programme is now on SL/LIB Vol. 01. Ed.

Perfect Writer Jump Table

<u>Mnemonic</u>	<u>Entry</u>	<u>Description</u>
BWORD	&505A	Cursor to previous word
FWORD	&50D6	Cursor to next word forward
HELP	&45F2	Help
MAHORT	&4B3B	Cancel current instruction
MADDMODE	&5B79	Add mode to mode list
MARG	&3E75	Repeat next command
MARGDGT	&418B	Numeric argument prefix

MBLINE	&3C23	Cursor to beginning of line
MBPARA	&526B	Cursor to start of paragraph
MBSENT	&5034	Cursor to start of sentence
MCAPLWOD	&5077	Capitalise current word forward
MCLOSEWH	&40D1	Remove spaces including <NL>
MCNTRLIN	&51AA	Center current line
MCOPYRGN	&5256	Copy region to kill buffer
MCTRLX	&4D0F	Extended command prefix
MDELCHAR	&4E22	Delete current character and forward
MDELELIN	&4FD3	Delete whole line
MDELINDE	&4E05	Delete indentation on current line
MDELLIN	&4B47	Delete line forward from cursor
MDELMODE	&5597	Delete mode from mode list
MDELRCN	&4CFA	Delete current region
MDELSENT	&510C	Delete current sentence
MDELWHIT	&52A7	Delete whitespace
MDELWORD	&50A7	Delete current word forward
MDROPLIN	&4126	Drop remainder of line vertically
MEXIT	&54F0	Quit
MFILEREA	&55CD	Read file into current buffer
MFILESAB	&56CC	Save current buffer to current filename
MFILEWRI	&5733	Save current buffer to another filename
MFILLPAR	&3F7D	Reformat paragraph on screen
MFINDFIL	&5509	Find file (read to another buffer)
MFLINE	&3C31	Cursor to end of line
MFARA	&52FC	Cursor to next paragraph
MFSENT	&50C8	Cursor to end of current sentence
MGOSPELL	&5ECA	Call Perfect Speller
MGROWWIN	&5E27	Increase size of current window
MINCRSEA	&3C3F	Reverse search
MINCSEAR	&3D5C	Forward search from cursor
MINDNL	&40C8	Indent following new lines like this
MINDNTRG	&42B3	Indent region
MINDREST	&3E8C	Indent rest of line same as this
MINSERT	&4ADE	Enter character at cursor
MINSFI	&41A9	Insert file at cursor
MKILLBUF	&59D4	Delete buffer
MLOWWORD	&516E	Lowercase current word forward
MLSTBUFF	&53C5	List buffers
MMAKEDEL	&5015	Turn on '+' in Mode line
MMETA	&4DB9	<ESC> Meta command prefix
MMRKPARA	&50F3	Define current paragraph as region
MNEWDSF	&3EBE	Refresh screen display
MNEWLIN	&4BA2	<CR> Carriage return
MNEXTCHA	&4B2A	Cursor forward one character
MNEXTLIN	&4BAD	Cursor down to next line
MNEXTTAG	&4CC5	Next screen
MNOTIMPL	&4F77	*** Unknown command
MNXTOTHR	&5DC3	Other window: next screen
MONEWIND	&5C98	One window mode
MOPENIND	&4167	Indent leading new line like this
MOPENLIN	&4BE2	Insert a new line at cursor
MPREVCHA	&4B05	Cursor back one character
MPREVLIN	&4BF5	Cursor up to previous line
MPREVPAG	&4F98	Next screen
MPRINTPD	&5806	Display current buffer status
MPRVOTHR	&5DF5	Other window: previous screen
MQRYPRLC	&500A	Query replace (whole text ?)

MQUOTE	&4C2A	Insert <control> character at cursor
MRDELCHA	&4B19	Delete previous character and backwards
MRDELWOR	&5325	Delete previous word
MREPLACE	&519F	Global replace (no query)
MRNEWDSP	&4082	Reverse scroll redisplay ???
MSETFILL	&5B39	Set Fill column
MSETINDE	&57C4	Set the screen indent column
MSETMRK	&4AE9	Sets the mark at cursor
MSETTABS	&5574	Set tab stops
MSWAPCHA	&4C78	Transpose characters cursor - previous
MSWAPMRK	&57B3	Swap cursor and current mark
MSWAPWOR	&5346	Transpose words; current <> previous
MSWITCHT	&5917	Switch to another buffer
MSWPWIND	&5D2A	Switch to other window
MTOEND	&5026	Move to end of buffer
MTGCLC	&3F04	Toggle case of character at cursor
MTOSTART	&5018	Move to start of buffer
MTRIMWHI	&5E9D	Global delete of trailing whitespace
MTWOWIND	&5CDE	Two window mode
MUNDNTRG	&428E	Undent region
MUPWORD	&5225	Uppercase current word forward
MWHATVER	&4590	Display version and release date
MWTRGN	&429C	Write region to file
MYANK	&4D63	Yank delete buffer to cursor

Bob Janes

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Changing the Z80/Econet polling ratio very nearly eliminated the speed differences between the Torch Z80B and Acorn's Z80. It is undoubtedly true that the relationship between the 6502 and Acorn's Z80 via the Tube is very much more sophisticated than it is in Torch's case. If you are Richard Russell and you are writing a Z80 BBCBASIC this will be enormously important. If on the other hand you are basically running standard CP/M software like Wordstar, DBaseII et al which doesn't in any event make very effective use of the TUBE and parallel processing it is unlikely to be significant. Certainly Torch's greater disc accessing speed (particularly with Plus 100) is of considerably more importance in such cases.

In sum, the combined effect of upgrading from MCP .41 (or earlier) and BBCBASIC 1.92 to Plus 100 and 2.3 and of changing the ESCAPE and ECONET polling ratios to 256:1 would be fairly massive on any large BBCBASIC application. Careful programming to ensure as much parallel processing as is possible and avoiding situations in which the 6502 and the Z80 have to wait for one another could make as much of a difference again. Even if one is using fairly standard CP/M software, Plus 100 and the adjustment of the Z80/Econet polling ratio makes a substantial difference.

Patrick Lefevre

INTRODUCTION TO THE TORCH SYSTEM

So far, in this series of articles, we have looked at the hardware and the firmware in the Beeb. We now digress to look at CP/M.

CP/M is said by Torch to be compatible with CP/M. What does this mean, is it true, what is CP/M what is CP/M compatible software and why make CP/M compatible with CP/M? By the time you have read this article, hopefully, you should know some of the answers. The others will follow from future articles.

A little history is often useful so lets start at the beginning. Our story starts at Intel's research laboratory in U.S.A's Silicon Valley. It was here that the first commercial micro processors were built - the 4004 and then the 8008. In 1973, the 8080 was Intel's newest and most sophisticated product to date. Dr. Gary Kildall who was a software consultant there had his own 8080 system. One suspects that it must have been a Heath Robinson affair with a worn out 8" disc drive. I cannot say what his motives were but it was for this system that he developed CP/M.

He offered CP/M to Intel who, it seems, were not interested. In fact, their operating system ISIS shares many characteristics with CP/M. Writing an operating system is, however, a slow and expensive process. He was able, therefore, to sell it to a couple of companies making fairly low numbers of systems for amateurs. In those days, you had to be really enthusiastic to have your own computer and it was largely a result of this enthusiasm, which included CP/M, that more manufacturers sold systems with CP/M.

CP/M soon became the de facto standard, there was, at this time, no other operating system common to more than one manufacturer. Commercial programmes were gradually written for use with it. These early programmes were languages and utilities. They were normally full of bugs and were usually poorly documented, hence the need for enthusiasm. Software developed on a CP/M system was naturally CP/M compatible and so the number of users mushroomed. There are three common versions of CPM80, ie CP/M which runs on Z80, 8080 or 8085 microprocessors; Versions 1.4, 2.2 & 3. This description essentially covers version 2.2.

Few people would suggest that CP/M is a 'state of the art' operating system. The point is, it provides the essential environment to run a wide variety of programmes. It was available when needed and due to a snowball effect, this has resulted in a vast amount of "CP/M compatible" software. To understand what this means we must look at what it has to offer.

The major components of CP/M are:-

- (a) CCP - Console Command Processor
- (b) BDOS - Basic Disc Operating System
- (c) BIOS - Basic Input Output System
- (d) Transient command programmes

In order to use CP/M it must normally be loaded or 'booted' up from disc. Every CP/M disc usually has two tracks reserved for systems software. This consists of the CCP, BDOS and BIOS. We shall ignore transient command programmes for the moment. A CP/M based computer only needs a small programme permanently resident - its purpose is to load the system tracks into RAM. Once this is done, the loaded programme is executed.

We shall start looking at the components of CP/M with the CCP. This contains the following 'built in' commands:-

- (a) DIR similar to CPN DIR
- (b) ERA similar to CPN DEL
- (c) REN similar to CPN REN
- (d) SAVE same as CPN SAVE
- (e) TYPE same as CPN TYPE
- (f) USER similar to CPN USER
- (g) d: same as CPN d:

The CCP contains the high level software to perform these functions, calling low level routines from the BDOS as required. The CCP also handles line editing commands which consist of eleven control keys. Thus the CCP acts as the interface between the user and the computer.

The BDOS supplies all the low level routines to the CCP and indeed to other programmes which run under CP/M - these are termed transient programmes. Transient programmes access the BDOS via a location at the bottom of memory known as the base page. More about this later. When a programme calls the BDOS, it passes a number which indicates the 'user function' required and an entry parameter. The entry parameter is not required for all functions. For example, when the call is to read the keyboard, the function number indicates that it is a console read, there will be no entry parameter and the returned parameter will be the code from the keyboard. There is little point in listing the thirty eight functions here but they fall into the following categories:-

- (a) Disc input and output
- (b) Listing device output
- (c) Teletype input and output
- (d) Paper tape reader input
- (e) Paper tape punch output
- (f) System control status input and output

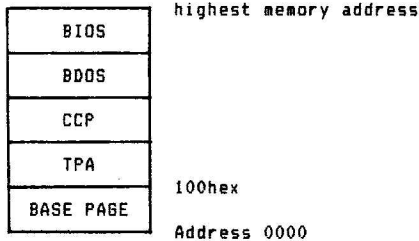
The majority of the functions are concerned with disc operations - twenty six out of the total thirty eight. The devices which are assumed by CP/M reflect its age - in the early '70s, Teletypes (a sort of mechanical/electrical printer with a keyboard) were high technology, paper tape was king and an 8" floppy disc with a total of 250k storage was state of the art. VDUs were also primitive by today's standards. All CP/M allows for in addition to the disc operations, is simply writing a character to the screen or paper tape punch and reading one from the keyboard or paper tape reader. This is a major weakness as we shall see. One may, however, change the devices to which a programme reads and writes. This is done by altering the mapping of physical and logical devices. Physical devices are the actual peripherals, logical devices are what the programme thinks it is writing to. The net effect is similar to changing the I/O stream in the Beeb but it is usually more awkward to perform.

The BIOS is the lowest level of software in CP/M. When the BDOS reads from or writes to a peripheral device it does so by calling a BIOS routine. The BIOS for each machine is specially written for the particular hardware available but the way in which the BDOS accesses these routines is always the same. Thus, by writing a comparatively small and simple programme, one can install CP/M on most computers which use a Z80, 8080 or 8085 microprocessor.

It is the combination of the BIOS and the 'user functions' which make CP/M so flexible. It allows any programme which follows certain well defined methods of input and output to run on any machine which contains CP/M

CP/M isolates the transient programme from its environment. The BIOS makes all peripherals of a certain type look the same to the BDOS.

CP/M fits into memory as shown below:



The only memory locations which are invariable are those in the base page. The BIOS, BDOS and CCP are always at the top of memory in the order shown, whatever its size. The TPA fills the rest of the memory and sits in the middle. The TPA, which is the largest single part is the transient programme area. This is where transient programmes are loaded. The CCP is not used by transient programmes and may therefore be overwritten. A Warm boot is performed by a transient programme when returning to CP/M. This reloads the CCP from disc.

Although user functions are the preferred method for a programme to interface with CP/M, there are other methods. Both the BDOS and the BIOS contain a jump table. The jump tables are at a fixed position relative to the start of the module they are in. Thus it is possible for a programme to calculate the location of a particular entry point and bypass the base page entry for user functions. There are even more direct and even less desirable means of access - these I shall not lower myself to discuss!

What then makes a programme truly CP/M compatible? Strictly speaking, a programme which uses only standard CP/M user functions for all its input and output operations. Such a programme, and there are many, can be loaded into any CP/M system and will operate satisfactorily. What, in terms of CP/M does 'loaded' mean? What is it loaded from? Well you could load it from a paper tape reader if your system had one. Alternatively, you could load it from your systems 8" disc. These are the peripheral devices for which CP/M was designed to work, together with correctly defined data formats, hence there would be no difficulties. Few new systems have either device.

So the programme must be loaded from your 5.25" disc. What's the problem? The problem is that CP/M defines the way in which the data must be arranged on a 250k byte, single sided, single density, 77 track, 48 tracks per inch 8" disc. There are various 5.25" disc capacities available: 100k bytes, 165k bytes, 200k bytes, 400k bytes, 800k bytes, 1.2M bytes and 3.3M bytes to name but a few! What's missing? - Right - there is no 250k byte 5.25" disc format. This means that manufacturers have devised their own formats for 5.25" discs. As long as the BIOS can manipulate the data when reading and writing the disc so that it appears to be correct to the BDOS all is well. You will remember that the BIOS reads and writes the disc and is tailored for each system. In order for this to be achieved, certain constraints on disc layout must still be observed.

The major constraint is the location of the discs directory and the information which it contains for each entry. The directory is required so that a user may see what the disc contains. It also specifies the location of the information on the disc. In order to make good use of the disc, a single file - this may be a programme or set of data - need not be in contiguous areas of the disc.

The directory thus contains one entry for each 'extent' of the file. Each directory entry contains other information about the file such as the user number and whether the file is read only or read/write. There is also a single bit which indicates if the file has been erased. Thus it is RELATIVELY simple to un-erase a file which has been erased erroneously.

CP/M assumes that discs are single sided. It is the BIOS which makes double sided discs look single sided. The data is stored on the discs in 'sectors'. A sector is the smallest amount of information which may be written to or read from a disc. Sectors vary in size from 128 bytes to 4k bytes for different formats. CP/M only knows about 128 byte sectors so the BIOS must buffer longer sectors so that they appear to the BIOS to be 128 bytes. The way in which the sectors are arranged on the disc varies from system to system in order to read and write discs as fast as possible. All in all, there are hundreds of possible ways in which the data may be arranged on the disc.

We have now learnt of the first problem with CP/M compatible software, namely the disc format. This means that somewhere along the CP/M compatible distribution chain, software must be formatted in many different ways. There are a few companies which provide this service and, to get in a quick commercial, Sidelight can reformat most CP/M discs to be Torch compatible at a very competitive price- for details see the Library pages.

We have now covered the first part of the meaning of CP/M compatibility. Our conclusion must be that unless we have an 8" disc drive, it is not possible to load CP/M media compatible programmes but we have not discovered any significant problem. It is simply a matter of either buying programmes on the correct format disc or paying between £12.50 and £25.00 to have disc format conversion carried out.

We learnt earlier that when CP/M was written, VDUs were fairly simple. Unfortunately, the most useful applications programmes rely on the availability of a sophisticated VDU. Word processor, spread sheet and database programmes must all be able to move the cursor around the screen at will. Other facilities such as emphasising certain parts of the display, deleting/replacing the characters at a specified location and clearing the screen all improve the user-machine-interface. CP/M allows these facilities to be used but does not provide any common method of accessing them. Due to the fact that the method of controlling these facilities varies from system to system any software which uses them must be tailored to suit the system it is to run on. This is termed "hardware dependance".

There are other hardware dependances. The most common arises from communications programmes. An RS232 serial port is common but the way in which the port is set up and written/read is hardware dependant. Any graphics facilities are of course hardware dependant. Similar problems exist with peripherals. Teletypes and paper tape readers or punches are rarely used nowadays. The read and write user functions to the CP/M device may still be used for other peripherals such as modems but of course we have the problem of hardware dependance.

Different programmes tackle hardware dependance in different ways. A common technique is that employed by PFCONFIG, ie. they are menu driven; others require the use of a debugger to patch a special area of memory. The latter method requires a knowledge of assembler programming.

We saw earlier that CP/M has only a very limited number of built in commands. There is not even a means of transferring a file from one disc to another.

When CP/M was designed, this made good sense. At that time, 1k bytes of memory cost about £100. Taking inflation into account, it would be about £400 at today's value. Thus, 64k bytes of memory would now cost £25,000. Systems had much smaller memories then! This meant that everything possible was kept on disc until required. When, for example, you wish to transfer a file between discs, with CP/M you load a programme to do this into the TPA in the same way as you would any other programme. The utilities used in this way which are supplied with CP/M are as follows:-

- (a) PIP - Peripheral interchange programme, this transfers files between devices. It is similar to CPN COPY but provides more destinations, sources and options.
- (b) STAT - provides data on peripheral devices and files. Also used to change certain characteristics. CPN DIR [SL] provides some of STAT's facilities.
- (c) PRINT - prints a file. Same as in CPN.
- * (d) COPY - Copies a complete disc. Similar to CPN DUP.
- * (e) FORMAT - Disc formatter. Similar to CPN FORMAT.
- (f) DUMP - Dumps a file in hex to the screen.
- (g) SUBMIT - Batch processing. CPN SUBMIT includes this and XSUB facilities.
- (h) XSUB - Used by SUBMIT to answer queries from programmes.
- (i) SYSGEN - System generation, writes system tracks on disc. Not required for CPN.
- * (j) MOVECPM - Modifies CP/M to operate with different sizes of memory. Not required for CPN.
- (k) ED - Editor, a very simple line editor.
- (l) ASM - Assembler
- (m) DDT - Dynamic Debugging Tool, allows assembly and dis-assembly of instructions, break points, single stepping, memory and register dump and modify. TORCHBUG provides similar dump and modify facilities plus a save facility.
- (n) LOAD - Converts a hex file produced by the assembler into a .COM file.

Most of these utilities are standard for all CP/M systems but those which are starred (*) are normally provided by the computer manufacturer because they are hardware dependant.

Items (a) to (h) may be considered as transient commands. They are loaded when you type the command name but they don't ask any questions - they merely perform their task and return to CP/M level. The exception is PIP which may be used as a command or interactively. Items (i) and (j) are utilities which anyone might need. Items (k) to (n) are utilities used by assembler programmers. ED may be useful to others but it's horrible to use!

In summary then, CP/M compatible software may be, but usually is not, media compatible. Hardware dependant software may be considered CP/M compatible but requires installation on the target computer. These problems are common to all users of CP/M systems.

In the next article, we shall look at CPN's structure and see how comparable it is with CP/M.

Grahame Perchick

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WHEN YOU WRITE TO US

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Ed.

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