SHARP USERS CLUB

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NOTE: Articles marked *** are also of GENERAL interest !

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I think this is one of the best Magazines we have ever produced, but then, I would say that, wouldn't I ? But however you look at it, I am sure it is 'very satisfactory', which in Naval parlance, as I recollect, means 'pretty good'. There is meat for all users of the old MZ-80 and MZ-700/800 machines, and I am not thinking of just SUPERCOPY PLUS and the incredible spin-off that came from its development, important as that is. There are heavyweight items in all sections, and though we do not award gold stars, I feel that I should say 'thank you' on your behalf, to John Ibberson for his constant enthusiasm and support, and also to John Edwards for his limitless technical ingenuity, which has given us many superb SUC programs in the past, and has now given us 'SUPERCOPY PLUS'.

And Peter Perkins drops a timely reminder that, given Sharp's unorthodox 'SWAP' and 'CHAIN' commands, disk-based MZ-users can run Basic programs that are much larger than the RAM available.

Paul Trainer keeps the MZ-700 and MZ-800 sections afloat on his own, and the MZ-700 section is the largest in the Club, so he is the busiest Librarian as well; yet his sections of the Magazine, always good to read, are always first through my letter-box ready printed; a large chunk done before I even start (thanks, Paul!).

And Tony Clarke has come up with the novel idea of sending every MZ-80K member an up-to-date Library List as a Christmas present; a very sensible step indeed, and one that also releases an awful lot of Magazine space for other things.

The PC-Section continues to expand in the capable hands of Mike Mallett who, living in Silicon Valley, is in a position to keep us all in touch with the 'real world', and does so very efficiently.

This is not a press release for the BAFTA awards, so why am I going on like this ? Well, it's quite simple, really. Members of the SUC belong to one of the best Computer Clubs in the business, and those who use a Sharp computer, or have one somewhere in the family, must need their brains testing if they don't keep up their SUC memberships. I am only too well aware of the attractions of an ESCOM 486DX PC at around £600 including VAT, but how can ANYONE think twice about paying £7 a year for all we have to offer ?

In other words, please pay your 1996 subscription, and please do it promptly. This is not quite a matter of life and death, but it's pretty near it, as the number of SUC members has dropped rather drastically this year, and if it drops as much again next year we may have to put up the shutters well before the year 2000. No-one, I am sure, wants that to happen. I certainly don't !

So pull out the middle sheet of this Magazine and post it off to John Duxbury NOW, with your cheque. Then start reading one of the best Magazines in its field, and lick your lips over all the new SUC-inspired software that will be available early in 1996.....

Happy Christmas !

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BACK ISSUES (POST FREE, FROM WEYMOUTH)

Still in plentiful supply:
Vols. 2/1, 8/3, 10/2 and 10/3 - £1 each
Vols. 11, 12, 13 and 14 (all issues) £1-50 each, or any 3 for £3
SM I (£2), SM III (£2). Index to all Sharpsoft Mags (£1)

Scarce (1 or 2 copies only, prices negotiable, check first):
***   2/3, 3/2, 3/3, 3/4, 4/3, 4/4, 9/2, 9/3, 10/1, SM II.
Set of 3 SUC index books (covering Vols. 1-10 & 3 S.M's)

Most Sharpsoft MZ-80 & MZ-700 Mags. available, ring for details.

ITEMS FOR SALE BY THE S.U.C.

Sharp Computers, Peripherals, and Spares

Long-time member Leslie Avery of Torquay has very generously donated his Sharp MZ-80K collection to the Club. Maurice Hawes and John Edwards recently travelled to Torquay to pick up the items. Some are now in Weymouth, the others are in Codsall, and they are for disposal at low prices, all for Club funds - so we are not putting values on them, but leave it to you to decide how much you would like to help the Club, and help yourself at the same time:

In CODSALL: Two MZ-80K's (one with Quantum Hi-Res)
             One P3 printer (and another with a fault)

In WEYMOUTH: One P3 printer, Two P3 printer Manuals
             One MZ-80K I/O Box with disk and printer cards
             Sharp MZ-80K Owner's Manual
             Sharp MZ-80K Disk Basic Manual (hard cover)
             Sharp Machine Language Manual (SP-2001)
             Sharp Systems Prog. Manual (SP-2102/2202/2301/2401)
             XTALBAS 2.2 Manual (2 copies, 1 with Hack's Guide)
             SP-1002 Monitor Listing
             BAS MOD v.3Manual (circa 60 pages!)
             PEEKING and POKEING the SHARP MZ-80K (v. scarce)
             'Software Secrets' (G.Beech) (relevant to Sharps)

****

On a more mundane note, Maurice has FOUR MZ-80A's which came from Computer 100. They are now in working order, with Expansion Boxes and printer cards (but no disk cards). Two are 4MHz, the other two are normal 2MHz machines. They could be used, with a printer, for tape-based word-processing, or are ideal as spares, all for the funds. £?? each, buyer collects or pays carriage.

Tony Clarke has located 3 sets of original MZ-1F02 double disk drives for the MZ-700, boxed, with interface boxes and cards. Unfortunately the owner regards them as 'collectors items' and wants £60 per set. If interested, contact Tony Clarke (page 3).

Peter Hustler (Bradford, 01274 408822 PLEASE NOTE CHANGE) still has two wrecked MZ-80K's and some spares, any offers will be accepted for these items to clear, again all for Club funds.

John Edwards still has now MZ-5600 Monitors, open to offers...

MZ-80K Expansion Boxes with cards still held by Tony Clarke, Andrew Ferguson and Paul Trainer. Again, any offers to clear...

OTHER ITEMS - No space to list details this time, please refer to page 4 of the July 1995 issue. Here is a reminder...

SUC Manuals for HUCALC, MICROEASE, 'SIRS', 'SHARPLAN',
Z80 MACHINE', MZ-80B 80B UTIL.
Sharp MZ-80B MS-232 Manual, MS-DOS 3.3 and GW BASIC Manuals
Various Sharp books at give-away prices
SUC VERSION of the MZ-80A OWNER'S Manual
'Centronics' printer leads for MZ-700, MZ-80A, MZ-3500
MZ-80B and MZ-3500 CP/M Manuals, MZ-80A CP/M Supplement

ITEMS FOR SALE PRIVATELY

*** The Chief Editor has a few original MZ-80A and MZ-700 Owner's Manuals - £10 each post free, ring first (01305 783518).

*** Harold Thompson (01629 812507, Bakewell) is selling his Sharp collection, lock, stock and barrel:

THREE MZ-80As (1 with 80 col.mod)
TWO MZ-80A I/O boxes with cards
ONE MZ-80K with I/O box and cards
THREE sets of double disk drives (1 x MZ-80FD, 2 x MZ-80FB)
THREE printers (Seikosha, Sharp P3, Brother HR10 Daisywheel),
93 tapes and 67 disks (including almost all the 'A' Library)
THREE MZ-80A Service Manuals (MZ-80A, I/O Box, F.D. card)

plus all SUC and Sharpsoft Magazines, Sharp software Manuals,
and books on Sharp computers. This lot was advertised last time at
£250, but the telephone number was transposed (Mia Culpa - Ed.) so
let's have another go, this time at £200, bearing in mind that
Harold would prefer to sell it all in one go but will haggle.

Matthew Little (01666 860577) has an MZ-731 for sale with built-in tape recorder and plotter/printer... £35 o.n.o.

David Dicken (01642 829230, Middlesbrough) has an MZ-80A with an Expansion Box and printer i/f, lights up but has a fault somewhere (possibly RAM). FREE to a good home, for spares....

ITEMS WANTED

Eric Paul (01792 851102) is desperate for an MBA or similar 'Centronics' printer interface card for his MZ-80B, to run his Panasonic KX-P1081 printer (this will not run off a Sharp card, see elsewhere in this issue for the full story!). Eric is also looking for a Manual for his NEC 3550 'Spinwriter' printer. If you can help with these items, please ring Eric (or the Chief Editor).

Jac van Schoor (S. Africa) is looking for a copy of an early version of Kuma 'PORTH' for the MZ-80K, written by Dr Neale Fordham. If you can help, please contact the Chief Editor.

The Chief Editor is still desperately looking for:

1) ANY MZ-2500 SOFTWARE
2) Old S.U.C. Magazines up to and including Vol.10 No.1
3) The set of 3 'S' ROMs (CENTRONICS) for a Sharp P4 printer
4) 'KNIGHT COMMANDER' for MZ-80B TAPE Basic SB-5510.

********* L A T E   E X T R A **********

**** F. A. LAPPIN & SONS, 72 PARLIAMENT ROAD, MIDDLESBROUGH ****
sell BLACK pens suitable for the MZ-700 plotter/printer, at
£5-90 for a pack of 4 (they are actually meant for a Silver Reed machine, and the relevant part number is EB50/JB10).

***** WDPRO TIP.... The MZ-80A/700 SUC versions of WDPRO *******

will run a P5/6 PRINTER with an 80B EPROM, if you choose printer
option 'I' (i.e. you do not HAVE to fit an MZ-80A printer ROM).

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MAKING DIR PROGRAMMABLE IN SHARP DISK BASICS (J.Ibberson)

On another page, this issue, in the list of useful MZ-80B PEEKS, POKES and USRs, I showed how to do a DIR within a program by using a USR call followed by :GO TO nn (line number). Since then I have found that this method may give problems, if you swap disks or try to DIR a 'slave' disk in FD2, with a different volume number.

Another way may be possible. I am still testing it, but it has worked O.K. so far in SB-6510 and its SUC relations. If you change the DIR address in Basic from $45F4 to $45F7 (POKE $1DAB, $F7), the first call in DIR (a check for command line mode) is cut out, and DIR FD0:GOTO nn (line number) can be used in a program. Note that the immediately following :GOTO nn is still necessary; I have not met any other problems so far, and if it proves safe I shall incorporate it permanently into any new SUC Basic for the MZ-80B.

Ed - I cannot see why a similar approach should not work in other Sharp Basics, but this information came in so late that I have not had time to try it. I shall do so as soon as possible, and if it is safe it will be made a permanent feature of ALL the new Basics referred to below, or as many of them as possible.

NEW DISK SUPERBASICS FOR THE MZ-80B/A/700 and the MZ-80K

Early in 1996 we shall offer new master Basic disks for the MZ-80B, the MZ-80A, and the MZ-700. They will all be based on the latest SUC derivatives of the standard Sharp Basics (i.e. based on SB-6577, SA-6577, K&P DBASIC and ZZ-009 v1.2R), but in each case the master disk will be arranged so that the directory is only allocated space on track 1, and the Basic Interpreter starts on the previously pre-allocated but unused track 2. In this way each disk will contain 4096 bytes more free space than ever before.

This change will not affect the user in any other way, and the Basics themselves will be virtually the same as before (but may include any other enhancements that come to light in the meantime, such as the programmable DIR command mentioned above).

However, in order to avoid any possible confusion between these and earlier Basics, they will all be given numbers ending in '82' e.g. SB-6582, SA-6582, K&P DBASIC v82, ZZ-009 v82, each with its own RevC variant for use with standard ASCII printers. The number '82' was chosen because it is a little higher than any number used previously, and also because the final '2' should remind users that Basic starts on track 2, rather than the customary track 3.

The main utilities on all these disks will be SUPERCOPY PLUS and DISKEDIT; RevC variants of these programs are not required because they both offer a Sharp/ASCII printer option at start time. Also, thanks to John Ibberson, each new disk will carry a COMMAND.HELP file, to help beginners to learn how to use that particular BASIC.

New master disks will also be provided for the MZ-80K, but in this case the Basic Interpreter (e.g. SP-6083) will still start on track 3, as tracks 1-2 are COMPLETELY taken up by the directory.

SUPERCOPY PLUS - the latest versions

By John Edwards and Maurice Hawes

During the last few months the 'phone wires between Weymouth and Wolverhampton have been buzzing with technical discussions about SUPERCOPY PLUS. At one stage, John's mother threatened to have the telephone cut off, but we survived that crisis and several others, and are happy to announce that SUPERCOPY PLUS is now available for all the early Sharp MZ- machines. As you can see from the table below, the MZ-80K version is somewhat different to all the others:

```
MZ-80K - SUPERCOPY 3.3K (Size $1800, Load $8000, Exec $8000)
MZ-80A - SUPERCOPY 4.4A (Size $1F00, Size $1FF2, Exec $1FF2)
MZ-700 - SUPERCOPY 4.7S (Size $2000, Size $1FF2, Exec $1FF2)
MZ-80B - SUPERCOPY 9.5B (Size $1E00, Size $1FF2, Exec $1FF2)
```

The MZ-80K version loads and executes at its working location of $8000. The MZ-80A/700/B versions load at $1FF2 and then SELF-COPY to their working location of $A000; this is done for two reasons:

a) SUPERCOPY PLUS may be RUN from any original Sharp disk Basic which 'bugs' a machine-code program if it has to copy it UP in memory to RUN it (e.g. SB-6510, SB-6610, ZZ-009E).

b) SUPERCOPY PLUS may be (RL)oaded into its own work area, and then be modified/re-saved/re-run etc., etc.

The new versions are listed in the table above to show how they were developed i.e. the MZ-80K version came first and was based on the original French MZ-80K 'UTIL 2.0' program. The MZ-80A version was developed from it, a big step as all the disk routines had to be drastically changed. From the MZ-80A to the MZ-700 was tricky on account of disk-synchronising problems and the fact that MZ-700 Basic disk files may be TYPE 2 or 5. The final step to the MZ-80B involved much rewriting and many tests, due to the very different Monitor code and screen handling, and the automatic tape controls.

The MZ-80K version can copy TYPE 3 (BSD) and TYPE 4 (BRD) files because the code was already in the original French version. But at present the MZ-80A/700/B versions cannot copy these types of files, because they are constructed in a very different way, and we did not want to to hold back SUPERCOPY PLUS on those machines whilst we grappled with the various and very extensive problems.

On the other hand, the MZ-80A/700/B versions can RENAME and ZAP (i.e DELETE) disk files, singly or in wildcard groups. These two new commands are not yet in the MZ-80K version - we anticipate that ZAP, in particular, will be difficult on the MZ-80K, due to the way in the directory is reshuffled each time a file is deleted.

The MZ-80K version, like the original French version, saves ONCE when copying from disk to tape, but saves TWICE in the traditional Sharp manner when saving an area of memory to tape, and expects a double copy when verifying. We never discovered why the original French program worked this way, but assumed there must have been a good reason, so we made our MZ-80K version the same. But in the subsequent MZ-80A/700/B versions we had second thoughts, and in those you can set any tape routine to handle ONE-copy or TWO-copy files, as you wish, at ANY time, with a simple 1-byte W(RITE).

SUMMARY OF THE NEW VERSIONS

These can copy TYPE 1 and TYPE 2 Sharp-format files between disk and tape, singly or in wildcard groups; format, copy, or back up disks to tape; display a full directory or change a disk volume number; load TYPE 1 programs into memory, and view, search, modify and/or resave them to tape or disk; and if a TYPE 1 file has been loaded at its normal location, it may be RUN. And you can verify a tape file immediately after it has been saved, or dump the screen to the printer at any time as a record of what you have just done.

The MZ-80K version saves ONCE when exporting files or backing-up a disk to tape, but saves TWICE when it is saving from memory to tape. The MZ-80A/700/B versions can be set to save tape files once or twice, as you wish, by altering the following locations:

$A003 controls #B, #C, #E and #I (Default setting $01, can be $02)
$A004 controls L, S, and V   (Default setting $02, can be $01)

The MZ-80K version can copy BRD (Type 3) and BSD (Type 4) files, and the MZ-80A/700/B versions can RENAME and ZAP disk files.

(We hope that, eventually, all versions will do everything. In the meantime, to RENAME or DELETE a disk file on the MZ-80K, you must return to Basic. And on the MZ-80A/700/B, to copy BSD or BRD files, copy the whole disk and then ZAP the unwanted files, or, if you have access to an MZ-700, copy BSD/BRD files with TRANS).

COMMANDS IN THE LATEST MZ-80K VERSION OF SUPERCOPY PLUS

The commands in version 3.3K are the same as in 3.0K, as listed in Vol.15/1. Recent upgrades have removed an obscure R/#R 'bug', improved the print screen routine, and made cosmetic changes, but these do not affect the commands. On first loading, SUPERCOPY PLUS asks what sort of printer you have (Sharp or ASCII   S/A ?). The screen then clears and you get the 'LIST OF COMMANDS':

```
L / #L  LOAD program   from tape / disk
R / #R  RUN  program    from tape / disk
S / #S  SAVE memory area to tape / disk
V       VERIFY tape (just made with S)

F xxxxx yyyy FIND STRING (ASC/HEX option)
G xxxxx      GOTO$xxxx$    ( ! = GOTO$0000$)
M xxxx yyyy  MEMORY DUMP (defaults CR CR)
W xxxx nn..  WRITE to $xxxx (and onwards)

#B BACKUP disk to tape (5 files, A-E)
#C CREATE disk from BACKUP tape
#D DIRECTORY of disk
#E EXPORT file(s) to  tape
#I IMPORT file(s) from tape
#T TRANSFER files(s) disk to disk

#F FORMAT disk
#Q QUICKCOPY any disk via 1 or 2 drives
#V VOLUME NUMBER CHANGE
°P PRINT SCREEN
```

Enter Command (H = HELP) ?

COMMANDS IN THE LATEST MZ-80A/700/B VERSIONS OF SUPERCOPY PLUS

On first loading, SUPERCOPY PLUS asks which type of printer you have (Sharp or ASCII S/A ?), and reminds you how to control the number of times a tape file is saved or verified. The screen then clears to display a slightly different 'LIST OF COMMANDS':

```
L / #L   LOAD program   from tape / disk
S / #S   SAVE memory area to tape / disk
V        VERIFY tape (just made with S)

F xxxx yyyy FIND STRING (ASC/HEX option)
G xxxx      GOTO$xxxx    ( ! = GOTO$0000) (or ! = IPL on MZ-80B)
M xxxx yyyy MEMORY DUMP (defaults CR CR)
W xxxx nn.. WRITE to $xxxx (and onwards)

#F FORMAT disk (Init plus Slave Init)
#Q QUICKCOPY any disk via 1 or 2 drives
#B BACKUP disk to tape (9 files, A-1)
#C CREATE disk from BACKUP tape
#V VOLUME NUMBER CHANGE
#D DIRECTORY of disk

#E EXPORT file(s)  to  tape
#I IMPORT file(s) from tape
#T TRANSFER files(s) disk to disk
#R RENAME file(s) on disk (/SET BTX Filetype 02/05 on MZ-700)
#Z ZAP (DELETE) file(s) on disk
^P (Shift/P) = PRINT SCREEN

Enter Command (H = HELP) ?
```

The new #F(ORMAT) command formats a disk so that the Directory is allocated only TRACK 1, and the filespace begins on Track 2. This gives every disk an extra 16 x 256-byte sectors capacity.

The old R/#R commands, for LOADING and then RUNNING files, have been dropped, and the L/#L commands have been altered so that, after a file has been loaded, you are told its location and, if it is in its 'normal' location, you are offered the chance to RUN it.

A new command #R can RENAME disk files, singly or in 'wildcard' groups. On the MZ-700 only the #R command also be used to set ALL Basic files on a given disk to TYPE 2 (Sharp) or TYPE 5 (K&P).

Also, on the MZ-700 only, when a Basic file is saved to TAPE, it is always made TYPE 5 (i.e. SUPERCOPY behaves like all 700 Basics)

A new command #Z can ZAP (i.e. DELETE) disk files, singly or in 'wildcard' groups.

In the MZ-80B version, the V-RAM data passed by PRINT SCREEN is also sent to the MAIN RAM area at $D000. You can then use the 'M' command to view the MAIN RAM at $D000, to see what the actual codes on the screen were (on the MZ-80A/700 this is possible in any case, as the SUPERCOPY screen is permanently switched 'in').

In the MZ-80B version only, the '!' command returns to the IPL (to get to the SB-1510 Monitor, use G $0000), and the tape deck is controlled automatically.

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DISK FILE HANDLING IN SUPERCOPY PLUS

SUPERCOPY PLUS allows multi-duplicated filenames at all stages of directory expansion, and handles the resulting list of names in a logical manner whenever it can, treating 'LOCKED' and 'UNLOCKED' files in the same way. Thus, you may #R(ENAME) or #Z(AP) a locked file without unlocking it, or you can copy the same file onto the same disk as often as you wish, to give a directory in which the same filename appears more than once and in the order that the files were copied over.

If you then carry out any '*?' wildcard operation on that disk, the operation will pause at each directory filename in turn, and ask you if you want to carry out the current operation on that file. This means that you can please yourself whether you treat all copies of the duplicated file in the same way, or differently. For example, if there are two copies of the same file on a disk, with the same name, and you do a #R(ENAME) operation using the wildcard '*?', you can choose to rename the first copy of the file but not the second copy, or vice versa.

The same principle applies to all other commands which offer the wildcard options (and you are always reminded that wildcards may be used, on the screen, whenever you start up a relevant command).

This is a very powerful facility; you may not need to use it often, but when you do need it, you need it badly ! For example, Maurice recently created a 32K file full of the character used by Sharp when formatting a disk ($BF), copied the 32K file several times onto a copy of a badly tangled master disk from which all the files had been deleted, #Z(APPED) all the 32K files, and then copied the original files back onto the disk. If you can't work this one out for yourself, give Maurice a ring !

SPECIAL VERSIONS OF DISKEDIT FOR USE WITH SUPERCOPY

Whilst developing the MZ-80A/700/B versions of SUPERCOPY PLUS, we frequently used DISKEDIT in the middle a test run to modify the erstwhile version of SUPERCOPY PLUS on disk. We then realised that all the existing versions of DISKEDIT use the area $B000-$C000 for work buffers, and thus corrupt any version of SUPERCOPY already in memory. We therefore wrote special versions of DISKEDIT in which its work buffers are situated below $A000:

```
                DISKEDIT.A6 for the MZ-80A
                DISKEDIT.S6 for the MZ-700
                DISKEDIT.B6 for the MZ-80B
```

These versions of DISKEDIT include the newly-developed STARTUP and PRINT SCREEN routines from SUPERCOPY, and the '!' command is modified so that, if DISKEDIT was launched from SUPERCOPY in the first place, '!' returns to SUPERCOPY. It is thus possible to use DISKEDIT from within SUPERCOPY, with the proviso that you cannot assume that DISKEDIT remains in memory for ever, and every time you need it you should load it with L/#L, and RUN it from scratch.

If you wish, these versions of DISKEDIT may be used on their own i.e. loaded from the Monitor or from Disk Basic, and in that case the '!' command returns to the Monitor (or IPL on the MZ-80B).

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SUPERCOPY PLUS - SPIN-OFF AND FUTURE DEVELOPMENTS

At first, our objective was to ease the lot of our hard-working Librarians, by offering them one program that could format and copy disks, or copy groups of files between disks, or between disk and tape. In the end, the program developed into something that can do a lot more, and we think it will be useful to all members, and enable them to get more out of their Sharp computers, especially if they are prepared to get to grips with DISKEDIT as well.

And there has been a lot of unexpected spin-off, which led us to understand, for the first time, the sources of some very obscure 'bugs' in the MZ-80K/A/700 ROM Monitors, and helped us to find cures for them. It also revealed major discrepancies between the official Sharp SB-1510 Monitor Listing and the code in MZ-80B RAM, and revealed that the original Sharp disk format as used by the MZ-80A/700/B Basics reserves Track 2 for the Directory but never uses it. It also enabled us to develop a better routine than any we had before, for sorting out the control code problems that are inevitable when you dump a screen full of Hex code to the printer.

All this has already produced major progress on other fronts. In particular, we know how to make the MZ-80A Basics print all the characters in the Sharp ASCII set AS SCREEN CHARACTERS, and thus avoid the unwanted screen effects that some of them can produce.

And we have already started taking advantage of the extra space that is available on a Sharp-format disk on the MZ-80A/700/B if you start by arranging the F.A.T. on the blank disk so that the very first file loads on track 2 instead of track 3. New master disks for all MZ-80A/700/B Basics will soon be available with the master Basic file starting on Track 2 and SUPERCOPY PLUS as the standard formatting and copying utility, in place of Sharp's old, oversized and very limited 'Filing CMT' and 'Utility' programs.

On all these new master Basic disks, which will be introduced in the next issue of the Magazine, the master Basic file on track 2 will be an SUC-enhanced version of the relevant Basic, which will incorporate all the improvements that we can master. Alternative 'RevC' versions of these Basics, and of any other programs we decide to put on these disks, will also be available for those who use standard ASCII printers (the new versions of SUPERCOPY PLUS and DISKEDIT do not need RevC alternatives, as the printer option offered on their opening screens covers all types of printer).

And of course we hope that SUPERCOPY PLUS on the MZ-80A/700/B will soon be able to copy TYPE 3 and TYPE 4 files, and that MZ-80K users will soon be able to BR(ENAME) and KZ(AP) files, and will have a complementary version of DISKEDIT. We may go even further, and offer a file-tagging facility, who knows ?

All you have to do is 'Watch this space' !!

P.S. The latest versions of SUPERCOPY PLUS and DISKEDIT are now available from the relevant Librarian:

```
MZ-80K - SUPERCOPY 3.3K (no new DISKEDIT at present)
MZ-80A - SUPERCOPY 4.4A and DISKEDIT.A6
MZ-700 - SUPERCOPY 4.7S and DISKEDIT.S6
MZ-80B - SUPERCOPY 9.5B and DISKEDIT.B6
```

'Bugs' in MZ-80K/80B/80A/700 Monitors

By Maurice Hawes

INTRODUCTION

During the last year or so, one of my main preoccupations has been working with John Edwards to develop the latest versions of 'SUPERCOPY PLUS', referred to elsewhere in this issue. One of my jobs was to carry out the final testing and de-bugging of the programs, in the course of which I had to test the 'print screen' routines on Sharp and ASCII printers, and the special keyboard routines which we had written for the MZ-80B. It was then that I found very strange things happening, and had to find their causes.

In the case of the 'print screen' routines on the MZ-80K/A/700, the main problems came from 'bugs' in the DISPLAY-ASCII conversion routines in the ROM Monitors, when used to convert DISPLAY codes on the screen to the ASCII codes for the printer. Other problems arose because the MZ-80K/A/700 Monitor routines which print characters on the screen are 'bugged'. And when writing a flashing cursor routine for the MZ-80B keyboard, we found a discrepancy between the code in the MZ-80B Monitor Manual, and that in RAM.

MZ-80K Monitor 'bug' in DISPLAY-ASCII routine at $0BCE

The MZ-80K ROM Monitor SP-1002 uses one table at $0BD6 (SPECIAL) to convert SHARP ASCII codes to DISPLAY codes, and another table at $0CC6 (NORMAL) to convert DISPLAY codes to ASCII codes. There are no 'bugs' in the SPECIAL table, but there is a nasty 'bug' in the NORMAL table. The first value in this table converts DISPLAY code $00 to ASCII $20 (SPACE), and so on up to the last value in the table at $0DA5, which converts DISPLAY code $DF to ASCII $69. But there the table stops, and is immediately followed by normal, executable Z80 code at $0DA6 and upwards.

As a result, if you ask the DISPLAY-ASCII routine at $0BCE to convert a DISPLAY code $E0 or higher to ASCII, it obediently goes through the motions, but it runs out of data at DISPLAY code $DF, and DISPLAY codes $E0 or higher are wrongly translated because the routine treats the executable code at $0DA6 and on as part of its own 'table'. Thus, for example, DISPLAY code $E0 is 'converted' to $F5, $E1 is converted to $3A, $E2 is converted to $02, and so on.

This 'bug' does not surface in many applications, because the MZ-80K graphics characters with display codes $E0 and higher are not available as characters on the MZ-80K keyboard; but they can all be POKED to the screen, and some of them can be put on the screen with PRINT CHR$(.. and if that is done, problems arise if you then try to dump the screen to a printer.

I first discovered this 'bug' in 1983, when testing XTAL BASIC 3.1K to a P3 printer. I wrote to XTAL RESEARCH at the time, and they came up with a very elegant solution, which I was able to recover from my files, and adapt for use in SUPERCOPY, to solve this particular problem. But is is of more general application, and you should call the adapted routine NORMPATCH which follows, in place of CALL $0BCE, in any MZ-80K machine-code routine which is designed to dump the MZ-80K screen to a printer (see over):

```
NORMPATCH:   CP  $E0           FE E0
             JP C, $0BCE       DA CE 0B
             SUB BEO           D6 E0             All relocatable
             PUSH BC           C5                     except
             PUSH HL           E5                      for
             LD HL, TABLE      21 xx xx          xx xx TABLE: address
             LD C, A           4F
             LD B, $00         06 00
             ADD HL,BC         09
             PUSH HL           E5
             LD A, (HL)        7E
             POP HL            E1
             POP BC            C1
             RET               C9

TABLE:       DEFB          20 20 20 20 20 20 20 6A
                           6B 6C 6D 20 20 6E 6F 20 20
                           20 40 40 40 40 40 40 40
                           40 40 40 40 40 40 40 40
```

Using the above, any DISPLAY code in the range $E0-$FF which
corresponds to a character on a Sharp printer is converted to the
correct SHARP ASCII code. Other DISPLAY codes in this range are
converted to a SPACE, or to '●'. The conversion of $F0 to SPACE is
particularly useful, as many MZ-80K m/c programs use DISPLAY code
$F0 for a SPACE on the screen, and without the patch this is
changed to SHARP ASCII $C5, which would print on a Sharp printer as any
MZ-80K printer system (a Sharp printer prints a vertical line, and
an ASCII printer will print its usual graphics substitute).

MZ-80K Monitor 'bug' in VIDEO routine

There is another, minor 'bug' in the MZ-80K Monitor routine at
$0935, which in the MZ-80K Monitor listing is called VIDEO. Its
DECODE subroutine at $0946 should divert DISPLAY codes $C1-$C6 to
the CONTROL routine at $0DDC so that, instead of being printed as
characters, they do screen control operations (CURSOR DOWN, UP,
RIGHT, LEFT, HOME, CLS). The routine does this O.K., but it also
diverts DISPLAY code $C0; so if you try to use this ROM routine to
print the PRESS PLAY symbol (DISPLAY code $C0), it scrolls the
screen up 1 line, instead of printing the character !

I think Sharp were aware of this 'bug', and chose to ignore it,
as it would have meant reblowing the MZ-80K Monitor ROM. I say
this because all standard MZ-80K Basics contain a VMESSAGE routine
of their own, used ONLY by the PRINT command, which eliminates
this bug i.e. PRINT CHR$(127) works in Basic because PRINT uses
its own VMESSAGE routine, and not the VIDEO routine in ROM!

The 'official' but rapidly-withdrawn listing of Basic SP-5025
describes VMESSAGE at $3017 as 'faster than the SP-1002 one'; but
this may not be the main reason why Sharp tacked this routine on
to the very end of SP-5025, as it DOES cure the CHR$(127) 'bug' in
the MZ-80K Monitor in a logical and neat way. However, this MAY
have been accidental, as a related but far worse and uncorrected
'bug' appears in the later MZ-80A ROM, and a similar 'bug' is only
corrected in BASIC on the MZ-700 (see below for more on these).

For a detailed explanation of the VMESSAGE routines in SP-5025,
SP-6015, and SP-6115, see the MZ-80K section of this issue.

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MZ-80A Monitor 'bugs'

In Monitor SA-1510 there is only one table, at $0AB5-0BB4, for converting between ASCII and DISPLAY codes, and it is used in both directions. This is O.K. in theory, but it does not work correctly in this case because the table contains duplicate codes:

DISPLAY code $CC is at $0AB5 (ASCII $00) and $0B1A (ASCII $65)
DISPLAY code $CE is at $0AB9 (ASCII $04) and $0B1C (ASCII $67)
DISPLAY code $CF is at $0ABA (ASCII $05) and $0B1D (ASCII $68)

The ASCII to DISPLAY routine at $0BB9 jumps to the specified ASCII position in the table and picks up the DISPLAY code there; so two groups of ASCII codes. ($00, $04, $05) and ($65, $67, $68), are converted to DISPLAY codes ($CC, $CE, $CF). The DISPLAY to ASCII routine at $0BCE searches for the specified DISPLAY code, notes its FIRST POSITION in the table, and takes this position as the ASCII code; so DISPLAY codes $CC, $CE and $CF are always converted to $00, $04 and $05, and never to $65, $67 and $68.

This is bad enough, but it is compounded by a serious error in the ?PRNT routine at $0946 in the MZ-80A Monitor. This ought to divert DISPLAY codes $C1-$C6 to act as screen control codes DOWN, UP, RIGHT, LEFT, HOME, CLS. But it actually diverts codes $C0-$CF, and sends them ALL to CONTROL. As a result, DISPLAY codes $C0 and $C7-$CF (alias ASCII codes $7F, $60-$68, plus $00,$04,$05) produce screen control effects instead of spaceships/faces/little men etc.

In this case, Sharp did NOT add VMESSAGE routines to the MZ-80A Basics to correct these problems, and the PRINT command calls the Monitor MSG routine at $0015, which uses ?PRNT and thus behaves as above. But the MSGX routine at $0018 treats ALL characters except $0D as printable; so by altering PRINT to call $0018 instead of $0015, 255 ASCII characters can be displayed (3 are duplicates, but none produce control effects). In SA-5510 and its derivatives, POKE $2BF7,$18. In SA-6510 and its derivatives, POKE $30CA,$18.

Any 'Print Screen' has problems due to duplicate entries in the DISPLAY/ASCII table, and to alter these entries the MZ-80A Monitor ROM would have to be re-blown; but for a reasonable 'Print Screen' solution you can call NORMPATCH (in place of NORMAL at $0BCE):

```
NORMPATCH: CP $CC        FE CC
           JR NZ, NP2    20 03
           LD A, $65     3E 65
           RET           C9              All
NP2:       CP $CE        FE CE
           JR NZ, NP3    20 03
           LD A, $67     3E 67           Relocatable
           RET           C9
NP3:       CP $CF        FE CF
           JR Z, NP4     20 03
           LD A, $68     3E 68
           RET           C9
NP4:       JP $0BCE      C3 CE 0B
```

Using this patch, a 'print screen' routine will produce ASCII characters $65, $67 and $68 wherever the DISPLAY characters $CC, $CE and $CF are displayed on the screen. This is not perfect, but under the circumstances it is the best compromise I can find.

MZ-700 ROM Monitor 'bugs'

The ?PRNT routine in the MZ-700 Monitor ROM is virtually the same as the VIDEO routine in the MZ-80K Monitor ROM, and therefore treats DISPLAY code $C0 (ASCII $7F) as a screen control character. As on the MZ-80K, Sharp corrected their Basics on this point, but in this case they did it by altering the ?PRNT routine in the RAM Monitor. Therefore, in any MZ-700 Basic, you can PRINT CHR$(127).

The MZ-700, like the MZ-80A, has only one ASCII/DISPLAY table in ROM, used in both directions. Again, it has duplicate entries, but on the MZ-700 they are quite logical - DISPLAY code $F0 appears in all ASCII positions below $20 EXCEPT for $03, $05, and $11-$16, so most ASCII codes below $20 become DISPLAY $F0 and thus appear on the screen as a SPACE. And in the reverse direction, any spaces on the screen due to DISPLAY $F0 become ASCII $00. The only 'hangup' is that ASCII $03 or $05, sent to the screen, appear as graphics.

None of this has a serious effect when it comes to dumping the screen to a printer. But there is a minor problem due to the fact that the ROM ASCII/DISPLAY table has two DISPLAY codes transposed:

At $0B12, $80 should be $40
At $0B52, $40 should be $80

For many applications, this transposition has no effect, because the table is either not used at all, or it is used once in each direction and the errors cancel out. There are times, however, when the ASCII/DISPLAY routine is used only once, and in that case the characters with DISPLAY codes $40 and $80 (ASCII $80 and $C0) will be transposed. This may occur when dumping the screen to the printer, but it depends how the codes got onto the screen in the first place ! I first encountered this problem years ago, when I had to modify the Sharp printer routine in the MZ-700 version of SHARP PENCIL to cover this point; in this program, the conversion routine is only used once, to convert text for the printer.

SUPERCOPY reveals this point quite neatly. If you write codes $80 and $C0 to memory, and then display that memory on SCREEN with the 'M' command, the two characters are crossed over because the conversion routine has been used only once. But if you then dump that screen to a Sharp printer, the characters on the printer are correct, because the conversion routine has been used twice !

As with the ?PRNT routine, Sharp have corrected this bug in the RAM monitors used with their Basics. In these, the ASCII/DISPLAY table has the characters $40 and $80 in their correct positions. So this transposition problem does not arise in any Basic program.

DISCREPANCIES IN MZ-80B RAM MONITOR CODE

There are serious differences between the listing in the SB-1510 Monitor Manual, and the code in RAM for the standard U.K. version of SB-6510 (and its SUC derivatives). They are in the GETL routine at $06A4. The code in RAM starts off as listed, but soon deviates, and near its end at $086F it is quite different. There is then a NOP at $0870, to ensure that the next routine, GETKY, starts as listed at $0871. We found this when we attempted to CALL FLASW at $0868 in RAM as listed in the Manual. In fact, FLASW is at $085D !

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Universal PMOD routine for screen printing by J.E/M.H

Whilst developing SUPERCOPY, we met problems dumping the current screen to the printer, due to the different SHARP and ASCII/Epson systems of control/character codes. So we wrote a 'core' routine that could be altered in a few places to suit any computer/printer combination. Members may find it useful for other applications!

	'CORE' code	ASCII printer code		SHARP printer code	
		B	K--A--700	B	K--A--700
ENTER:	CP $FF	$FF	---$FF---	$00	---$00---
	JR Z, 00SPACE				
PMOD:	CP LIMIT	$20	---$20---	$1F	---$20---
	JR NC, NOTCTRL				
	OR A				
	JR Z, 00SPACE				
	CP PCRLF	$0A	---$0A---	$0A	---$0D---
	RET Z				
	CP INVERSE 1	$00	---$00---	$01	---$11---
	JR C, ILLEGAL				
	CP INVERSE 2	$00	---$00---	$07	---$17---
	RET C				
ILLEGAL:	LD A, $40				
NOTCTRL:	CP LASTASCII	$7F	---$5F---	-- Not relevant--	
	RET C				
	JR DEFLT-3	$18,$09	- $00,$00 ---	---- $C9,$00 ----	
CONV:	CALL $0BB9				
	SUB $20				
	CP $7B				
	JR NC, DEFAULT				
DEFLT-3:	CP $A0	$A0	---$61---	-- Not relevant --	
	RET NC				
DEFAULT:	LD A, $2E				
	RET				
00SPACE:	LD A, $20				
	RET (END)				

PCRLF is $0D on a Sharp MZ-80K/A/700 printer, on other printers it is usually $0A. If it occurs at positions on the screen other than EOL, the PROGRAM must display it in some other way. $00 on the screen becomes a SPACE, 'illegal' control codes become '@'.

In all ASCII routines, $FF is trapped in case it does DEL; the K/A/700 ASCII routines change Sharp lower-case to ASCII and all codes above $5F to '.' The B EPSON routine converts $7F-$9F to '.' (because some ASCII printers see $7F-$9F as CONTROL CODES).

$1F is a character on a Sharp P5/6 on the MZ-80B, and all Sharp printers can print 'cursor' characters; so the SHARP routines let it through $01-$06 & $1F on the MZ-80B, $11-$16 on the MZ-80K/A/700.

SUMMARY OF CHANGES TO 'CORE' PMOD CODE, FOR DIFFERENT PRINTERS

80B Core ASCII: as above ($FF,$00,$0A,$00,$7F, $18-$09, $A1)
80B   Sharp: 6 changes ($00,$1F,$0A,$01,$07,--- $C9-$00 ---)
K/A/700 ASCII: 4 changes ($FF,$00,$0A,$00,$5F, $00-$00, $61)
K/A/700 Sharp: 6 changes ($00,$00,$0D,$11,$17,--- $C9-$00, ---)

(The POUT routine in the main program must also be changed to suit the printer i.e. PCRLF = $0A<>$0D, Sharp $01<>Centronics $00)

MORE PRINTER PROBLEMS   by Maurice Hawes

New member Eric Paul joined the SUC after acquiring an MZ-700 with an MHA 'Printerface' and a Panasonic KX-P1081 printer. The combination worked well and suited his purposes, but when he heard of an MZ-80B with disk drives for sale, not far from his home near Swansea, he was tempted, and fell. And a few days later, he could not refuse an ancient NEC 3550 'Spinwriter' printer, offered on the basis that he would pay £20 for it if he could get it working.

By this time Eric was in touch with me on a regular basis, and when I heard about the 'Spinwriter' I was curious, as I had heard of the machine, but never seen one. Eric then described it to me over the 'phone, and I realised that it lacked a vital part - the 'print thimble', as it is called. Finding one of these proved much easier than we expected - a Swansea dealer produced one in a few days - but Eric still couldn't get his 'Spinwriter' to function.

At this point John Edwards was shortly due in Weymouth, and Eric needed a 'Sharp-to-Centronics' lead anyway, to suit the Sharp printer card on his MZ-80B; so he brought the 'Spinwriter' to Weymouth, and collected his new printer lead at the same time.

When John arrived in Weymouth, he took the 'Spinwriter' apart and after a bit of cleaning, sliding cards in and out, moving a few panel switches, and mending a few small broken parts, he had it working on his PC (which he had brought with him as usual). The 'print thimble', by the way, is a kind of daisywheel, but it is cup-shaped rather than flat, and rotates round a vertical axis.

Then we had a 'phone call from Eric. The Panasonic would not work on his MZ-80B - it wouldn't even stay on line, and with all our expertise, all we could manage over the telephone was to keep the printer 'on line' by cutting off the superfluous connections (i.e. leaving only cores 1-9, 11, and SG). No printing, no-how !

Later, after John had returned home, Eric travelled to Weymouth again, to collect the 'Spinwriter' and bring his MZ-80B and the Panasonic printer for me to work on. The day was very frustrating; Eric's Panasonic printer worked on his MZ-80B via my one and only MHA printerface; but I could not make it work via a modified Sharp card, whatever software I used - yet my Epson FX-80, with the same card and software, worked perfectly. And the 'Spinwriter', which had worked a week before on John's PC, wouldn't work on my own PC when I tried to demonstrate it to Eric before he took it away.

There is a happier ending, though. When Eric got home, he worked until 3.30 a.m., and eventually got his 'Spinwriter' working O.K. (but NOT on his MZ-80B !). And I have since learned that there IS another MZ-80B CENTRONICS card (made by 'PAD') that will run the KX-P1081. Paul Trainer has one and has lent it to me for tests.

Eric has just written me a very nice 'thank you' letter on his 'Spinwriter', and made my day......but to fill my cup completely, I need (or rather, Eric needs) an MHA or similar printer interface for the MZ-80B. If you have a spare, please, please let us know..

We are still not sure why some ASCII printers will not work with a modified Sharp card. John is working on it, and with the help of Paul's card and Robin Hill's software, we intend to find out...

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MZ-80K LIBRARIAN
Tony Clarke   Tel/Fax. (01727) 838335
55 Linden Crescent   weekends only please
St.Albans
Herts AL1 5DD

Well, yet another year over, and not much to report other than
that only 2 members have used the Library in the past couple of
months. They were both new to the Club, I suppose most of you were
outside relaxing in the heat with a nice cool beer.

This Christmas, I shall send all MZ-80K members a present of the
latest Library list, plus the latest tape and disk-copying program
(on tape); there will then be NO excuse for not sending programs
to me, and it might also regenerate your enthusiasm, most of us
need a kick sometimes, I know I do (yes, I admit my limitations !)

The latest Library list has one or two new entries, and a couple
of minor corrections from Maurice. Any member who does not have an
MZ-80K but would nevertheless like this list, please send me an A4
envelope, plus 2 first class stamps, and I will send you a copy.
(MZ-700 owners please note, S-BASIC loads any MZ-80K tape program,
and automatically converts all standard MZ-80K commands to MZ-700
format; so if the program has no special commands, PEEKS or POKES
or USRs, there is a good chance that it will RUN first time).

I have had communications with DEAN SOFTWARE, some of you may
know that they produced a very good database program for most of
the early Sharp machines, and some other very interesting stuff as
well. Peter Noblett, the owner, has said that he was not willing
to let the copyrights go, but he will let us sell the programs for
£10 each, the money when sent to him will go to SAVE THE CHIDREN
FUND. Which Maurice and I both feel is better than letting the
programs disappear for ever, and helps a good charity to boot!!

I am looking for a games card for the 80K, they did exist, any
member who has one or knows the whereabouts of one please let me
know (I want to work out the feasibility of building one).

As per always, any programs you have for the Library please
send me them, all disks should be good quality pre-formatted, no
more than 5 disks at any one time (exception to this rule is Alan
Turnball !!!!!). I like to have a quick turn round, but this can
only be possible if you give me the correct volume number and the
grouping e.g. G23, BE3, U12. Also, please remember to specify tape
or disk, I know that sounds silly but it does happen. I will try
to answer any problems, but please remember I have a full time
job, run 2 companies, and my house is falling down around me.

'BUGS' in SP-1002, and a related peculiarity in PRINT

Finally, Maurice tells me that in polishing-up the screen dump
routine in SUPERCOPY PLUS 3.3K, he discovered (or re-discovered)
two obscure 'bugs' in the MZ-80K Monitor SP-1002, and a related
peculiarity in the PRINT command in MZ-80K Basics.

The latest versions of SUPERCOPY PLUS for the 80K/80B/80A/700,
and these SP-1002 'bugs' (along with 'bugs' in other MZ- Monitors)
are all dealt with elsewhere in this issue. The peculiarity in the
PRINT command in MZ-80K Basics is covered on the next page.

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PECULIARITIES IN THE 'PRINT' COMMAND IN MZ-80K BASICS

By Maurice Hawes

I cannot believe that it has taken me so long to discover that, in all the Sharp MZ-80K Basics, PRINT uses a special routine to put a line on the screen. My defence is that I was put right off the scent by the 'banned' Kuma listing of SP-5025, in which the routine at $3D17 is called VMESSAGE and is headed by the comment:

```
*********************************
*    INTERNAL VIDEO DRIVER      *
*    FASTER THAN THE SP-1002 ONE *
*********************************
```

There is a similar routine at $3AE5 in SP-6015, and at $37B4 in SP-6115; and in all cases it is called ONCE, by PRINT.

I discovered these facts because of problems with PRINT SCREEN in SUPERBODY PLUS. A close look at the 'MSG' routines at $0015 in the MZ-80K/A/700 ROM Monitors revealed that they all treat DISPLAY code $C0 as a screen control character. But then I found that the MZ-80K (and MZ-700) Basics still PRINT that character (ASCII 127 or $7F) on the screen. I was completely baffled, until I suddenly spotted the call to VMESSAGE in SP-5025, and a similar thing in the other two MZ-80K Basics. Why (I asked myself) did Sharp add a long routine to MZ-80K Basics to do something that, on the MZ-80A and MZ-80B, is done by a simple 3-byte call to a standard Monitor Routine (at $0015 on the MZ-80A, or $08DB on the MZ-80B) ?

The answer is that VMESSAGE, in effect, puts a patch into the SP-1002 'MSG' routine at $0015. This patch works as follows:

A standard $0015 call enters the subroutine at $0946 with the current ASCII character in the 'C' register. The code at $0946 puts the character into A, calls SPECIAL at $09B9 to alter ASCII to DISPLAY, rejects DISPLAY codes $F0 and higher, then attempts to intercept DISPLAY codes $C1-$C6 and divert them to act as SCREEN CONTROL codes. But it diverts $C0 as well, so PRESS PLAY (ASCII $7F, DISPLAY $C0), coming via this routine, scrolls the screen !

A call to VMESSAGE (instead of $0015) ensures, very early on, that the only codes passed to the routine at $0946 are ASCII $00-$1F; these are converted by SPECIAL as before; but in this limited range ASCII codes $11-$16 are converted to DISPLAY codes $C1-$C6, and all others ($00-$10 and $17-$1F) become $F0. The $F0 codes are rejected as before, leaving only DISPLAY codes $C1-$C6, which are correctly diverted as screen control codes......Q.E.D.

It is of course possible that the MZ-80K VMESSAGE routines ARE faster than the 'MSG' routine at $0015; but they also avoid the problem with ASCII $7F, and I am driven to wonder if this was an accident, or whether it was the real reason why they were used ?

As a matter of interest, the MZ-80A ROM call at $0015 has even more 'bugs'; but MZ-80A Basics have no VMESSAGE routines and PRINT calls $0015, with bizaar results (avoided by changing the call to $0018, see MZ-80A section this issue). On the MZ-700, the $0015 routine in ROM resembles that on the MZ-80K but the $0015 routines in the Basic RAM Monitors are corrected...what a funny old world !

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MHA Printer Patches for MZ-80K Basics

By Maurice Hawes

Earlier this year a South African member. Jac van Schoor, asked me to send him copies of two MHA printer patches for MZ-80K Basics (P101/O for SP-5025, and P111/O for SP-6025). I had one of these patches, but not the other, in my own MZ-80K Library; however, thanks to Tony Clarke, I was able to obtain a copy of the patch I did not have, and another patch as well, called GRAPH PATCH MX/O.

For the record, I reproduce the letter which I sent to Jac, with all 3 patches, WHICH ARE NOW IN THE MZ-80K LIBRARY (Tape BU 61).

****

I have at last been able to acquire the two MHA printer patches you asked for (P101/O and P111/O), plus another one which is even more interesting (GRAPH PATCH MX/O) and which, from its coding, is obviously from the same stable. But I have NOT been able to get hold of any documentation for them, so I eventually disassembled them to see how they work, and what they do.

MHA PATCH P101/O

This is a small program ($01FB bytes), meant to be loaded FROM THE MONITOR after first loading SP-5025. It loads itself onto the end of SP-5025 at $4806-$4A00, and then auto-executes at $4806. In the process, it modifies SP-5025 so that the S.O.F is raised from $4806 to $4A00, sets appropriate data in the tape buffer header, plus the name 'SP5025 BASIC/MHA', and the returns to Sharp Basic at $1200. At that point, if you wish, you can use USR(33):USR(36) to save a copy of the newly modified Basic on tape.

The patch changes the orginal SP-5025 printer routine so that:

a) Control codes (< $20) are modified to suit an ASCII printer.
   ($07, $08, $0F, $11, $12, $13, $14, $15, $16 are changed to)
   ($00, $00, $00, $5F, $5E, $3E, $3C, $48, $43 respectively)

b) Lower-case letter-codes are changed to standard ASCII.

c) All graphics characters are changed to the '$' sign.

MHA PATCH P111/O

This is an even smaller program ($0181 bytes), meant to be loaded FROM THE MONITOR after first loading disk Basic SP-6015. It loads high in memory, at $CE00, and has an 'execution' address of $11A3. The only significance of this address is, I think, that it is lower than $1200, so the program does not execute at all.

I therefore assume that there must have been some instructions with the program, which told you how to actually execute the patch program and get back into SP-6015. I can only guess at what they might have been, probably something along the lines of:

(See next page)

(MHA Patch P111/O, possible instructions for):

1) LOAD SP-6015, do LIMIT $CE00 then BYE, and load P111/O off tape, from the Monitor.

2) On account of the execution address, you end up in the Monitor once again. I therefore assume that, from there, you need to return to SP-6015 with GOTO$2245 (or something similar).

3) From SP-6015, do USR(52736) to RUN the patch (which installs itself without changing the BASIC S.O.F. and returns to Basic).

This seems complicated, but without any documentation I cannot see any other way of doing it (I tried putting the P111 file onto a disk and using the RUN command from SP-6015, but it gave an error).

Once installed, P111/O works in exactly the same way as P101/O, as far as the printer is concerned i.e. it modifies codes below $20 to suit a standard printer, changes Sharp lower-case codes to ASCII, and does '$' for graphics.

GRAPH PATCH-MX/O

This is loaded into SP-5025 in exactly the same way as P101/O. However, it is a much longer program ($07EB bytes), so the Basic S.O.F. has to be raised much higher (from $4806 to $4E00), and the resulting new Basic is much longer. The reason is that the patch contains an extra, very long, table to convert all Sharp graphics character codes into bit-image packages, so that the printer can print them correctly, instead of substituting the '$' sign.

From its name, it is pretty obvious that this patch was designed for use with the Epson MX-80 printer, and from its internal coding it was obviously written by the person who wrote P101 and P111. I therefore assume that all 3 of these patches were meant for use with the MZ-80K version of the MHA printer interface. This piece of hardware does NOT have the DIP switches fitted to MHA's later MZ-80A/B printer interface, so it would have needed software modifications such as the above, to allow it to work as intended.

IMPORTANT NOTE ON THE LIMITATIONS OF THESE PATCHES

P101 and GRAPH PATCH MX/O are designed to add themselves onto the end of the STANDARD version of SP-5025, which effectively runs up to $4805 (with its S.O.F. at $4806). Therefore they CANNOT be used with any version of SP-5025 which extends beyond that point e.g. they CANNOT be used SP-5060 or BASIC PLUS 2/PLUS 3. If they CAN be used with any version of SP-5025 that has been 'expanded' by adding code only in its 'spare area' at $3DCC-$43FF e.g. they CAN be used with SP-5025.K2, Knight Commander, Speed Basic, or with Dr. Brian Gladman's 'Basic Extensions'.

P111 sits high in memory, at $CE00, and is unaffected by the size of the Basic interpreter. Therefore it may be used with ANY version or derivative of disk Basic SP-6015, as long as its printer routine is in the original location. In other words, it can also be used with the enhanced MZ-80K Disk Basic SP-7015.

The patches do NOT change the EOL character i.e. they still send $0D as EOL, and therefore require a printer set to AUTO LF.

```
MZ-80B Librarian:-
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```

MZ-80B LIBRARY NEWS

As I mentioned in the last edition, I acquired a copy of VDO.COM, a small but very useful TEXT EDITOR for CP/M. But it took me many months of work, and a lot of head-scratching, to stop the routine dropping back into 40-column mode almost every time I pressed the <CR> key.

Eventually I found a way to stabilise the program in 80-column mode, but alas, it would not scroll up when the screen was full. I was on the point of consigning the project to the dustbin when, talking about it to Maurice, I was reminded that under Sharp CP/M, some screen codes are different those which were commonly assigned to many other CP/M terminals (and VDO.COM was obtained from Public Domain sources). This was the breakthrough which I had been seeking, and shortly afterwards, I had tailored a version of VDO.COM which actually works on the 'B'!

So, after a bit more 'tweeking', my final version is now on our CP/M Library Disk 4. To make its purpose clear, I call it VDO-EDIT.COM; and it comes complete with its own 'Quick Reference File' VDO-EDIT.QRF, which can be printed out on paper as a command reference card. Anyone wanting a copy should request CP/M Library Disk No.4 in the usual way.

So what does it do? And what are the snags?

VDO-EDIT.COM is a small but quite well-endowed TEXT EDITOR, and I would recommend that, if a situation arises where you might be tempted to use ED.COM (perish the thought!), use VDO-EDIT instead. To create or amend a TXT, DOC, SUB, ASM or similar file. The program occupies a mere 1.5K of memory, and leaves all the rest of RAM for your text.

The cursor can be moved EITHER by the orange cursor keys, or by using the 'Magic Diamond' keys popularised by Wordstar:

GRPH+E (up one line), GRPH+X (down one line), GRPH+S (left one space), and GRPH+D (right one space), GRPH+E (18 lines up), GRPH+C (18 lines down) etc ... there are other combinations which move along by words, but since they are all set out quite clearly in the QRF file, I shall not elaborate on them further.

Find and Replace, Block move, Block Copy, Block Delete, Block Save are provided, and to my mind the nicest touch of all is that all the available commands (other than cursor movements) appear on just two drop-down menus (GRPH+Q and GRPH+O) .. as soon as you type either of these commands, the appropriate menu appears and you simply select the function required by typing ONE further letter (if only all W.P.'s were as thoughtful as this !).

There are a few minor snags (as the old TV show used to say):-

('Never mind the quality ... feel the width!').

These snags are listed on the next page.....

(Snags in VDO-EDIT)

1. If you delete text by using Backspace, the deletion does take place, but leaves some deleted text still visible on-screen ... if this annoys, then do GRPH+Q and then press the spacebar to return to editing, whereupon the text screen is re-drawn correctly.

2. If you print the file to a printer, printing will start at the current position of the cursor, so make sure that you are at the beginning of text (GRPH+Q+R). I also find that, for some reason, it pays to insert a BLANK line at the start of text.

3. If you press the INSert key it produces code $03 (which is another way of doing CTRL-C under CP/M). In VDO-EDIT this causes a jump of 18 lines down i.e. if you have less than 18 lines of text on display the screen will go blank (since you are now viewing empty memory!)

4. There is no finite righthand edge to the document. i.e. if you keep typing past column 80, the screen scrolls leftwards to accommodate the text being typed. To stop this happening you have to end each line by pressing the CR key (in producing and ASM or SUB file this is rarely an inconvenience .. and in any case you can always go over the document later and, in insert mode, add the CR's).

All in all, I find VDO-EDIT is certainly worth having and using.

NOSTALGIA CORNER (part of an article in PCW December 1981)
SHARP MZ-80B

continued from page 119	Disk unit (inc controller card and ribbon cable) + FDOS	856.00
	+ CP/M	897.00
	Printer (inc interface card	
computer a useful small busin-	and cable)	477.50
ess system or a laboratory	Universal I/O card	51.75
instrument.After sales service	Disk Basic (singe precision)	35.65
should be above average given	(double precision)	46.00
that Sharp has a UK operation	Pascal interpreter	46.00
and an extensive dealer list.	Basic compiler	34.50
It's already supported by	Hardware system as tested	2735.95
more software than other		

machines have on launch and more will follow from independent houses and the manufacturer. It remains to be seen how many High Level languages will be available which can utilise its excellent graphics potential. Sharp has done most of it right with this product and I wish it well.

Benchmarks:

	(Timing in seconds)	
	Single Precision Basic	Double Precision Basic
BM1	0.6	0.7
BM2	4.5	5.0
BM3	8.5	12.0
BM4	11.5	19.0
BM5	13.0	20.0
BM6	19.0	27.5
BM7	27.5	38.0
BM8	5.0	----

PRICES
(Recommended, incl VAT)

MZ-80B (inc tape Basic and manuals)	1259.00
Expansion port	57.50
Graphic RAM 2	138.00

A few QUERIES answered - by John Ibberson

When booting Basic SB-6577, the opening screen displays the number of
bytes free ... but this differs from that given by PRINT SIZE ..why?

The figure displayed first is that calculated by the Basic system as
it stands at boot-up. However, AUTO RUN loads the B-COMMANDER program
which resides in memory at $FA00 onwards, and sets a lower memory
LIMIT to stop it being overwritten. Hence the lower figure reported by
SIZE (Type LIMIT MAX and try SIZE again to see the difference ...).

The F10 'LOAD' key.

"Why does pressing function key F10 ('LOAD') give an error message   ?"

The command assigned to F10 by the AUTO RUN file is 'LOAD CR' (the
bent arrow represents CR), so if you just press F10 without a filename
already being displayed after it, Basic virtually asks 'LOAD WHAT ?"
by giving the error message. The key is meant to be used after doing
DIR then cursoring up the left side of the screen (Shift + up-arrow)
until it is level with the desired program; at this point, pressing
F10 will overwrite the BTX bit of the display with LOAD and hence load
the program named alongside. (F1, the RUN key, works in the same way.)

Alternatively, you can re-define F10 with the Basic command line
DEFKEY(10)=LOAD " (then press CR to enter the new definition)

This will print LOAD " each time you press F10, leaving you to type
in the filename, add the closing inverted commas, and press CR.

P5/P6 Codes to PRINTER.

I have had a request for information on that perennial problem of
outputting codes DIRECTLY to printer. The standard, unmodified Sharp
Basics all trap, and sometimes alter, the very characters which you
may wish your printer to receive. There is a POKE for each of the
MZ-80B Basics which allows most codes through unchanged (see the
article on PEEKS and POKES which follows) but even then Basic may
still send further codes of which the user is unaware. If you use a
standard printer that will do a HEX DUMP, set it in HEX DUMP mode and
then run the following program:

10 FOR J= 31 to 41:PRINT/P J,CHR$(J):NEXT J
(You may be surprised at what actually is sent to the printer!).

The question actually posed was 'How do I send the codes listed on
pp. 11-15 of the Sharp P5 printer manual?' How well I remember trying
to do just that when I first obtained my own MZ-80B! The manual tells
you what codes are needed, but is very obscure when explaining exactly
how to send them !   Library disk No.9 (Utilities), which was compiled
by a former editor of this section, contains Basic programs called
P5/P6 CONTROL, EPSON LINE CONTROL, and LINE SPACE EPSON, all of which
use the OUT# and INP# commands to demonstrate the setting of line
spacing. I used them as a starting-point, and added lines to reset
PAGE LENGTH and WIDTH, exactly as depicted in the P5 manual. This
extension and the REM's included will, I hope, clarify how all these
things are done. The resulting program, called 'CODES TO PRNTR', is
now on Basic Disk No.9., as an addition to the original programs.

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Some useful MZ-80B Peeks, Pokes, Locations, and USRs.

Over the years, my various MZ-80B projects have produced some useful 'Well! I didn't know you could do that!' surprises, and the details have been published in various issues of this magazine. I thought it might be an idea to list some of the more useful ones all together in one edition of the magazine.... so here goes:-

(SB-6510 addresses also apply to SB-7510, SB-6577, & SB-6582)

SEPARATOR in STRINGS:
Alter the following locations to another value (e.g. $3E ..'>'):

SB-5510	SB-6510	SB-6511	SB-6610
$1A44	$1B63	$1B8F	$1B75

STOP the DISK DRIVE MOTOR in Basic:

SB-5510	SB-6510	SB-6511	SB-6610
	USR($5D5D)	USR($5C5F)	USR($5D5D)

DIRECT ALL PRINT statements to PRINTER:

SB-5510	SB-6510	SB-6511	SB-6610
POKE $3FAB,$82	POKE $49EA,$82	POKE $4842,$82	POKE $4729,$82

(To restore the original function all these locations contain $80)

DIRECT ALL PRINT/P statements to SCREEN:

SB-5510	SB-6510	SB-6511	SB-6610
POKE $409B,$80	POKE $4858,$80	POKE $4FA9,$80	POKE $4B93,$80

(To restore the original function all these locations contain $82)

TO PREVENT FUNCTION KEYS BEING BLANKED ON PRESSING RESET BUTTON:
POKE $0080,$00, $00,$00,$00,$00 (i.e. 5 successive locations)
Since this is a MONITOR function this applies to all DISK basics.
You can add the poke at the end of your AUTO RUN file.

TO ALLOW most CODES DIRECT THROUGH to PRINTER:

SB-5510	SB-6510	SB-6511	SB-6610
POKE $4627,$00	POKE $525C,$00	POKE $53BA,$00	POKE $4F9D,$00

(To restore the original function all these locations contain $20)

TO SET THE DEFAULT DISK DRIVE NUMBER:

SB-5510	SB-6510	SB-6511	SB-6610
	$64D7	$6FD7	$65D7

Poke in the 'LOGICAL' drive No. (0,1,2 or 3, NOT 1,2,3, or 4 !!!)

TO OBTAIN a current DIRECTORY listing:

SB-5510	SB-6510	SB-6511	SB-6610
	USR($4646)	USR($47A2)	USR($42F7)

N.B. If used in a program, this call MUST be followed by the SAME LINE by a GOTO the next line number; and if it is used in AUTO RUN, it MUST be preceded by a POKE to reset the AUTO RUN FLAG e.g. in SB-6510:

```
10 POKE $13D0,0:USR($4646):GOTO 20        (in SB-6511, POKE $13DE,0)
20 PRINT "CONTINUING program ..."         (in SB-6610, POKE $13D5,0)
```

FIRST LINE of a BASIC PROGRAM in memory is at:-

SB-5510	SB-6510	SB-6511	SB-6610
$511E	$675E	$725E	$68DF

(N.B. Each line is preceded by the ABSOLUTE two-byte address of the NEXT line. When the program is SAVED, these addresses are converted to RELATIVE addresses; and when it is re-LOADed, the ABSOLUTE addresses are re-calculated .. making it possible to use the same program in different 'B' Basics, even though it sits at different locations.)

REPAIRS TO THE TAPE RECORDER ON THE MZ-80B

By John Edwards

This year, during my summer visit to Weymouth, we aimed to move our working MZ-80A version of SUPERCOPY PLUS onto the MZ-80B, and from there to the MZ-80B. The move to the MZ-700 went O.K., but when we turned our attention to the MZ-80B we had problems with the tape recorder on Maurice's machine, which suddenly started jamming, and tangling up tapes. His 'spare' machine was the same (that was why it was 'spare'), so we had no option but to stop our MZ-80B testing program for a day, and take the machines apart.

John Ibberson has previously described, in these pages, how to get at the keyboard on an MZ-80B. The same steps, and a few more besides, are required to get at the tape recorder, and believe me, the process is not easy. I will not bore you by repeating J.I's instructions (see p.44 of Vol.8 No.3, still available as a back issue). But I can tell you that the source of this tape recorder problem is likely to be the same as we found on BOTH Maurice's machines - two tiny bits of (artificial rubber?) tubing which fit over two small arms on the mechanism, to act as brakes. In both machines these had perished and disintegrated, leaving a sticky mess on several of the moving parts. We cleaned off the mess and then - inspiration - fitted bits of bicycle valve rubber, bought locally, and they worked perfectly (after a panic on one machine, due to the counter belt slipping off - on the MZ-80B recorder this item is CRUCIAL, as it provides feedback for the auto-controls). While we had the machines apart, we changed several detective function and cursor keys. We then had TWO MZ-80B's in full working order, and could carry on testing SUPERCOPY PLUS for the MZ-80B.

One last and related point. Efficient tape recorder brakes are ESSENTIAL when using SUPERCOPY PLUS to save or load tape files in ONE-COPY mode (that is one reason we designed SUPERCOPY PLUS so that it CAN save files in traditional TWO-COPY mode if you wish).

'TYPE A4' - A HIGH QUALITY TEXT-EDITOR FOR THE MZ-80B

Briefly Reviewed by Maurice Hawes

Steve Tebby, a qualified scientific programmer and Chartered Engineer, and a member of the SUC, has taken up the challenge of producing a simple-to-use but high-quality letter-writing program for the MZ-80B (users of other MZ-80 machines have SHARP PENCIL, but no-one has ever found the time to convert it for the MZ-80B).
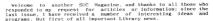
John Ibberson and I have both received 'pre-production' versions of TYPE A4 for test, and find it very satisfactory. Steve has used all the features of the MZ-80B to produce an 80-column 'WYSIWYG' disk-based text-editor with 'cut and paste', jargon-free on-screen help, and many other novel features e.g. if any function or cursor keys is failing, you can use another key in its place.

'TYPE A4' will only run under the special version of MZ-80B disk Basic that comes with it, and will be available to SUC members at the specially reduced price of £19-50 inc. P&P, cheques payable to 'S.W. Tebby' please (Steve has also produced a PC version which sells at £29-99). For the latest information, contact Steve at: 43 Chesham Street, Leamington Spa, Warks CV32 1JS (01926 882931).

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Welcome to another SUC Magazine, and thanks to all those who responded to my request for articles or information; since the last issue, I have received a number of interesting ideas and programs. But first of all important Library news.

I was recently introduced to the benefits of a PC DOS program called "TELEDISK" which, on a PC with a 5.25" drive, can read a Sharp disk and create a compressed image file of it. You can then produce a new copy disk from this image file, whenever you wish. This has a number of benefits for Sharp users as I now store the complete MZ-80A Library on my PC as compressed disk image files.

I can still provide individual Sharp disks using this system, or the complete MZ-80A Disk Library on 2 compressed 1.44MB 3.5" PC disks, or 3 compressed 1.2MB 5.25" PC disks. Members should have access to as many Library programs as possible, and this is a good way of providing them - as long as you have access to a PC with a 5.25" drive to produce the Sharp disks from the compressed files.

Instructions for uncompressing and rebuilding individual disks are included with each compressed copy of the full Library. This development will also speed up replies to normal Library requests.

Another important program received is a revised MZ-80A version of the new club "SUPERCOPY PLUS", version 4.4A, a veritable tour de force from Maurice and John. It enables you to copy Type 1 and Type 2 files from disk to disk, or between disk and tape, and load or save Type 1 disk or tape files from or into memory (which you can view, search and alter). It also allows you to rename or 'zap' disk files, format and copy disks, backup a disk to tape, and dump the screen to a printer. The only thing not covered at present is the transfer of Basic BRD or BSD data files; Maurice tells me that they hope to include these operations at a later date, but did not want to hold back the program whilst they developed the necessary code. With the present version you can get around this by copying the whole disk and then deleting the files you do not require to leave the data files intact; or you can use the program(s) which originally created the data files, to create them on a new disk. (This last method might require a few changes to the program code to achieve the desired results).

The problems of copying memory areas to disk, or Type 1 files off a disk, were serious until now; we only had the Sharp Utility "FILING CMT" to get Type 1 tape programs onto disk, and there was no easy way of copying Type 1 programs from one disk to another, or to tape. "SUPERCOPY PLUS" enables me to deal with member's tape requests much more easily, as I can now download many programs at a time from a Library disk onto tape, all in one simple automatic operation, and they are only saved once, which means there are no long gaps between them when they are reloaded.

As usual standard Library rules apply, i.e. please send enough disks or tapes, and postage to cover items requested.

Lottomizer news

Work is progressing on the conversion of my PC program to Sharp, and a primitive version is now available for disk Basic SA-6510 et al. But until I get around to enhancing it with Z80 assembly routines it remains painfully slow, even on my 4MHz MZ-80A.

As yet, I haven't had any suggestions from members re my last request to improve the Lottomizer optimization routines. Come on, surely someone out there can do better than I can !

Other new Library programs

I have received an interesting disk full of MZ-80A disk Basic SA-6510 programs from member Klaus Friese, a teacher in Hamburg. His suite of chemistry and biology programs is unusual and clever, allowing students to see various chemical reactions and formulae. They have all been included on Library disk DB10, but the text is in German. My language skills are limited to say the least, and I hope someone else will be able to translate them. It's nice to see the trusty Sharp still used in an educational enviroment - Klaus has been using an MZ-80A at his school since 1982!

Library delays

I was on holiday in October, and apologise to members who had to wait for requests. I also have exams and interviews coming up in November/December - I hope they won't affect things, but please bear with me, as I have a lot of preparation and revision to do.

Extra memory

In early Magazines, attention was drawn to the limited memory expansion potential of the Sharp MZ-80A. As you may know, with the 8-bit address bus of the Z80A CPU, the Sharp can only address 64k of memory, which seems pathetic compared with a PC's 640k base memory. Some late Z80 machines (e.g. Epson QX-10, Amstrad PCW range) use CPM PLUS and RAM-swopping techniques to manage more (e.g. 256K, 512K) but still only 64k is active at any one time.

Adding extra physical ram

Sharp kindly left a vacant socket on the main MZ-80A circuit board labelled IC43 USER, and you can actually use this to add 2k of extra RAM or ROM. This might not seem much but I used it very effectively with a special version of my printer buffer and input routine that did not affect the normally available memory at all.

The 6116 2k static ram chip is available from Maplin for about £3.00, and I consider it a very worthwhile addition if you are able to utilise it with modified or special software. A suitable eprom is also available if you have the equipment to program it.

One point I discovered, using the socket, was that programs in RAM before Basic was loaded should begin at $E801 and not $E800, as $E800 is corrupted by Basic as it cold boots.

Don't forget static electricity precautions if you attempt this or any other modifications on your Sharp. When I can afford an eprom programmer I hope to experiment with programs using this storage area. Anybody got an eprom programmer they don't want ?

The SWAP and CHAIN commands

Although it is not feasible to implement sophisticated swapping of dedicated RAM on the Sharp, large Basic programs can be run in segments by using the SA-6510 disk basic SWAP and CHAIN commands. It is thus possible to run a program which, as one chunk, would leave very little memory for variables, or might even be larger than the total amount of free memory available above the Basic.

In general terms, you should split your monster masterpiece into chunks smaller than 25K, to leave useful area free for variables.

SWAP is similiar to the Basic GOSUB command i.e. execution is temporarily transferred to a program on the disk; in the example below this happens when the statement SWAP "PROGRAM2" is reached. All variables and data are passed to 'PROGRAM2', and at the end of 'PROGRAM2' the original 'PROGRAM1' is automatically re-loaded and execution continues where it left off i.e. after the SWAP command.

SWAP allows your program to grow to the size of your disks, so long as it is divided up into chunks smaller than 25K. It may not be as fast as RAM swapping techniques, but it is a close second.

CHAIN is very similiar to the Basic GOTO command; it loads the second program with variables etc. preserved, but at the end of that program it does not return to the first program. To do that, you must CHAIN back to the first program (which will then start executing at its LOWEST line number). Or, of course, you can CHAIN to a completely different section of the program.

This useful command allows your program to grow in (<25k) chunks, moving from one section to the next at your direction.

Example

```
"Program1"
10 A=10
20 swap "Program2"
30 A=A+10
40 goto 20

"Program2"
10 print A
20 end
```

Can you work out what the programs do ? (Answer - "Program1" counts upwards in steps of 10, swaps to "Program2" which prints the result, then returns to "Program1" and continues).

Discipline and well-structured programs are a must if you use SWAP or CHAIN e.g. it is easy to forget which variables etc you were using in the previous section of the program.

AUTO-RUNNING a program

A member asked about auto-running tape Basic SA-5510 programs, i.e. loading program and Basic in one go, followed by automatic program execution. My first thoughts are it should be relatively easy to save the required area to tape using Club Monitor or a similar utility. But what execution address should be specified, and could there be any other problems ? Any ideas ?

MZ-80A POKES to print 255 characters - by Maurice Hawes

If you have ever tried to use the Basic PRINT CHR$( ) command to print control codes $00-$1F, or graphics characters $60-$68 or $7F, you will know that some of them alter the screen, whilst others appear as strange graphics characters. Many of these effects are 'bugs', and they prevent us from using CHR$ to print, say, a SPACE SHIP on the screen (you CAN POKE its DISPLAY code to the screen, but in practice this is neither easy nor convenient). The 'bugs' arise from the MSG routine at $0015 in the MZ-80A Monitor Rom; this treats codes $11-$16 correctly, as DOWN, UP, RIGHT, LEFT, HOME, and CLS; but some of the other codes quoted above, which should be printed as characters, are treated as 'control' codes; and some others that should be ignored are printed as characters that are not even in the Sharp ASCII Table ! The detailed reasons for all this are explained elsewhere in this Magazine.

The following poke, which can be made at any point within a Basic program, will change things radically:

In tape Basic SA-5510 (or any later SUC version) POKE $2BF7,$18
In disk Basic SA-6510 (or any later SUC version) POKE $30CA,$18

After the appropriate POKE you can PRINT CHR$(0-12, and 14-255) on the screen (Note: 3 of them are duplicates, and CHR$(13) does not print a character because it acts as CR). Try it, or get my Basic program 'CHR$(0-255)', which demonstrates all the points.

After this POKE you can't control the screen with the CURSOR, HOME and CLEAR symbols - so you must use the CLS command (which is only available in the later SUC Basics) and/or the CURSOR command. However, you can always return things to 'normal' at any point in a Basic program, by POKEING back the original value of $15.

For those interested, the POKE changes the PRINT routine in the relevant Basic, to call $0018 instead of $0015. The 'MSGX' routine at $0018 treats all ASCII codes except $0D as 'printable', and on the MZ-80A, ALL 'printable' codes below $20 produce a character on the screen. (N.B. This does not apply on the MZ-80K or MZ-700 !).

Chess on the MZ-80A - by Peter Perkins

With much help from Australian member James Coleman, Maurice recently carried out a review of the chess programs available for the MZ- range of computers. Being a keen if irregular player with a estimated BCF grading of 150, I decided to give Apollo V2.00 and Sargon 2.71 a few games. Both programs were played at various levels which gave reasonable response times. i.e. less than 2 minutes a move. Over a series of three games against each machine, two as white and one as black, I managed to win reasonably easily, but found Sargon played a far superior game to Apollo.

Apollo V2.00.

1Q1 This played a reasonable first couple of moves, but then insisted on leaving its Queen en prise on the 5th move. Result 1-0 in 6 moves.

1Q6 After a few book moves the program slipped back into its old ways of moving its Queen far to early in the game, and neglecting normal piece development. Again losing its Queen. Result 0-1

Apollo V2.00 (continued)

IQ10 Again after a reasonable opening played from the book, with more solid and logical development, it overlooked a simple two move combination which left it a piece down. The end rapidly came but it was able to stave off immediate checkmate by sacrificing its Queen. Result 1-0

Sargon 2.71.

Level 1 Sargon quickly established its superiority over Apollo with a reasonable opening, built from normal book moves and one or two well-reasoned and logical ideas it came up with for itself. Although it too succumbed to a two-move combination, at least Sargon tried to get what it could for the piece it was about to lose, rather than allowing it to be taken for nothing. Result 1-0

Level 2 Sargon again played a solid opening with a neat trap which I fell into, losing a pawn! Now I was concentrating again it took about 15 moves to equalise before I was able to spring a three-move combination to gain a winning advantage. Again Sargon proved resourceful in defence, fighting to the last. Result 0-1

Level 3 This was the highest level I tried and it gave the highest level of play. A good opening lead into a complicated middle game with all the pieces still on the board. Sargon parried my first two attacks successfully, but was then unable to develop a cohesive plan of its own. Resorting to making pointless moves with its pawns which produced fatal weaknesses in its overall position. Result 1-0

Conclusion.

Early computer chess programs like Sargon and Apollo suffer from two main problems:

1) Insufficient machine speed to analyse the current position to a reasonable depth. i.e. 4 or 5 ply being a minimum. This resulted in both programs falling victim to simple traps of 3 or 4 ply which were simply over their horizon. (i.e. they didn't even see them coming until it was too late.)

2) Both programs were unable to formulate any sort of long term objective. A human player often looks at particular areas or sections of the board and decides to generally aim to improve, attack or probe an area. Resulting in him or her making moves which often have no immediate benefit. The programs were both incapable of this, but Sargon did show itself to be more aggressive, and was capable of finding quite nice 2 or 3 move tactical combinations. So, finally, Sargon is the much better program of the two, and I would probably rate it at about 100 BCF on level 3.

I have a dedicated chess computer based on the Z80A chip, and this is capable of play upto about 125 BCF. It has a higher 6mhz clock speed and a full 64K program. It clearly shows the advantage of deeper analysis and more planning.

That's it from me for this issue. Please keep your ideas and requests flowing in.   Peter Perkins.

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RESET

If member input was made of rubber, we wouldn't have enough to make a pair of ant's flip-flops! Maybe we've all been busy with work and other things, I certainly have. It's a good job I have a small reservoir of printed information to fall back on.

While Maurice and John have been busy bringing disk users a very comprehensive copying and utility program called SUPERCOPY PLUS, (reviewed in full elsewhere in this super tome) I decided to keep all you tape users happy with instructions for two tape-based programs — Converter MZ-80A to MZ-700, and The Eye of Mordaeaus.

To kick things off though, we have a member's letter which extols the many virtues of the MZ-700 and 8-bit computers in general, I think you will agree with many of the points he makes.

LETTER

From Glyn John, Ellesmere Port.

Good day to all in Sharpland. From one who cannot match the technical knowledge and ability of the usual club contributors but who, nevertheless, uses his good old Sharpie 731 on a regular basis. That which follows can, I suppose, be best described as various musings.

I have a number of interests but one 'hobby' — 8-bit computers, of which I have two, the '731' and a Commodore 64, the Sharp coming into my possession first. An Epson FX-105 printer is connected to the Sharp (an oldie plus an oldie!!), although a future purchase will be of a Star LC100 colour printer from Datel Electronics and which will, hopefully, provide interesting output from both computers.

I was originally given the Sharp by a relative who had rescued it from being 'binned', and from that time, thanks to The Club (and W&B) it has given stirling service. The utilities are a fascinating mix and many of the games fun. The Sharp's main use in recent times has been as a word processor and a database, in the latter case using Databank QD. I am in the first year of an Open university Arts course and have been using WDPRO to produce hard copy of some of the T,M,A's (Tutor Marked Assignments) and where the word count varied from 1000 plus, in the matter of my second to last assignment, 2200 words. What I have found fascinating about WDPRO is the inputting of ASCII code instructions for such things as superscript and subscript etc.

The printer has a wide-carriage capability and Headliner has produced BIG banners when using L-O-N-G sheets of paper cut from a roll.

Coloured-in (a useful means of keeping 'little people' occupied) such banners become family affairs - in a sense, the '731' has become almost like a family pet - there is a certain empathy towards it.

Concerning the games side, the '700' library provides very good examples of the genre. In our opinion one facet which can be forgotten in the this age of increasing megabytes is that 'playability' and interest/endurance are of prime importance. In this respect games such as Bomber Man and Searcher, amongst others, provide us an a family with pleasure. Why? Because although the graphics and sound can be seen as inferior to even '64' games, in the sense that they do not have the same scenic values or sound product, they're still very good to play. I readily accept that we may not be 'sophisticated' (we have no SNES or the like) and appreciate that the BIG machines have, relatively, good graphics but simplicity also has its own virtue.

The machines, games and utilities serve another purpose. Thinking of the future when, no doubt, machines will have hundreds of megabytes of RAM and thousands of megabytes on hard drives. I am sure that I will still find great interest and pleasure in looking at and using 8-bit machines, their programs and the collection of books and magazines which I am accumulating - a living and working history, showing where the greats came from.

Finally, last month I bought the very final issue of the magazine 'Commodore Format'. I had bought it (or rather, we had bought) since issue 41 - No.61 was the last one. So another 'zine' for 'little' machines has gone, BUT the S.U.C. still keeps 'chuggin on' - onwards to the next century. I've used, indeed am using in the case of a '486' (on a desktop publishing course), '286s', '386s' and '486s' and programs such as dbase IV, WordPerfect, Word for Windows, Excel, Pagemaker, Supercalc - nothing spectacular but big programs. Yet I still find '8-bits' fascinating, challenging, very useful and FUN. And I hope to own more in the future.

P.S. Why didn't you include the complete quiz I sent for the last issue, you only printed the questions?

(Ed. I think you've got the bug ! I have many computers and just about all are more 'powerful' than the MZ-700, but I love using it. Keep using your's - after all, this is the Sharp Users Club!

You referred to the Commodore 64 as a 'little' computer, I know what you mean, but it was, in fact, the biggest selling home computer in the world! The No.1 spot in Britain was the 'Speccy'!

I did not have time or space to use your quiz in its full format, but I did appreciate the input. In fact, your letter only just made the deadline! - more would be welcome.

And finally, why did you send me a hand written letter when you could have used your MZ-700, WDPRO and Epson FX105 ? - P.T.)

* * * * *

CONVERTER A TO 700
Donated by David Computer Software

A utility to convert programs recorded on cassette in SA - 5510
BASIC for the Sharp MZ-80A to a format in which they can be loaded
by the MZ-700.

The converter is in machine code, loaded directly from monitor; if
BASIC is resident, before loading press reset, then enter 'L CR'.

The utility will auto-run, prompt the user to insert the cassette
to be converted and press PLAY. The message 'LOADING' is displayed
and once this is complete, conversion takes a second or so. The
user is then asked to insert a blank cassette to save the modified
version, and to press RECORD,PLAY. The utility will return to
start and prompt again for another conversion. EXIT is to reset.

On loading the modified programs on the 700, there is a few
seconds delay whilst the 700 translates them, during which the
screen message 'CONVERTING 700' appears. This short delay can be
avoided on future loads if the converted program, now in RAM, is
immediately re-saved from the 700, preferably on a new tape, using
the normal S-BASIC SAVE "FILENAME" command.

Usually, converted programs will run without difficulty. Because
of differences between the machines and operating systems however,
some things can give problems, and these are detailed below.

1. On the MZ-80A, GET responds to a key already depressed; but on
the 700, it does not. So, if a program seems unresponsive, change
any line which reads e.g. 'GET G$' to 'GET G$: IF PEEK($5F)<>0
THEN G$=CHR$(PEEK($5F))'. This will then cause the same effect.

2. There are 4 little-used MZ-80A commands which Sharp have not
implemented on the 700, one which although included in the 700
interpreter, cannot be handled by the 700 text conversion routine.
So that they can be seen in listings, these are identified in
converted programs by a special code, as shown in the table below,
which also outlines their functions.

STRING$ #F E$=STRING$("A",3) makes E$="AAA"
CHARACTER$ #H CHARACTER$(2,4) gives character 3 across 5 down.
PAGE/P   #N PAGE/P 20 specifies 20-line printer 'pages'.
CSR   #I CSRV/CSRH give vertical/horizontal cursor positions.
COPY/Pi   #M Copies the MZ-80A screen to the printer.

3. There could be pokes to control areas of BASIC. Pokes in the
4608 to 20571 could cause a program to crash. If the purpose of a
poke is unclear, try running the program without it.

4. Please also note that the highest line number is 32767

For the technical:
The DCS CONVERTER program occupies $1200 to $23AA; it loads the
MZ-80A program at $5050, and transfers converted code to $4806.

Further points over.

*(A part alternative to the above is to load a copy of SA-5510
MZ-700 BASIC into the 700 and use the machine as a pseudo MZ-80A.
Some programs will run O.K.*

Any user wanting to explore the MZ-80A Library with an intention

*of converting programs to the 700 should contact Peter Perkins
who runs the MZ-80A Library and abide by his library rules. P.T.)*

*****

The Eye of Mordaeus by Tony Saunders

The Eye of Mordaeus is a graphic adventure game, designed to allow
you to take part without ever leaving your chair. You are
searching for the lost 'Eye of Mordaeus' which is a large jewel
previously belonging to the wizard of Mordaeus. It is hidden
somewhere in a series of locations which you must explore. On the
way there are many tests which you must figure out including some
ingenious riddles.

The computer needs to be given instructions by you, usually in the
form 'VERB'-'NOUN'.... such as 'OPEN DOOR', 'GET LOG', 'MOVE
ROCK', etc. There are many commands which the computer
understands, and it will tell you if it doesn't understand. The
exits from each location are shown in the top right hand corner of
the screen. These are the VISIBLE exits. There maybe more exits
or none shown at all. In these cases you will need to try other
means of escape. Normally however, the directions for moving are
North, South, East, West and Down. These can be entered N,W,S,E
and D to save typing. If you wish to finish the game at any time,
then type 'QUIT'.

No fancy title pages, Instructions or such like...Just a great
adventure!!!!!.......

Now study the riddle.........

> *In this riddle doth lie the truth
> Where lost eye lies, remain aloof
> For hidden here, the clues abound
> Twill save the searching far around.
> Take Dance from Dead and add ie
> To what remains, a mystery ?
> No this describes the hiding place
> Moor run back, a dwelling space.
> Picture now this final clue
> And study what you have to do
> An anagram of moat is nun
> When twisted round half task is done.*

This riddle tells where the Eye of Mordaeus is hidden. If you do
not understand it right away, don't worry. But clues are to be
found during the game so stay alert and good luck.

*(Eye of Mordaeus is a very large tape only program for use with S-
BASIC. I'm sure it is a good, testing graphic adventure, but has
it ever been completed? Please let me know. - P.T.)*

MZ-700 DISK BASIC 2Z-009E - Running Machine-code programs

By Maurice Hawes

A m/c program may be RUN under Disk Basic 2Z-009E in one of two ways, depending on the state at the start of the program:

a) If the machine code program STARTS with code which sets the stack pointer into a safe place and then bank-switches the MZ-700 ROM Monitor into the address space at $0000-$0FFF, then the machine-code program may RUN by typing just the word RUN in front of its filename in the directory.

b) If the machine-code program code does NOT start in the way described above, it may only be RUN by typing the word RUN in front of its filename, AND the suffix ',R' after it. The preliminary stack-setting and bank-switching operations, as described above, will then be carried out by Basic 2Z-009E, AFTER the program has been loaded but BEFORE it is executed.

Typically, the code to perform the necessary operations at the start of a machine-code program is something like:

LD SP, $D000: XOR A: OUT($E4),A   (31 00 D0 AF D3 E4)

Some MZ-700 programs (e.g. SUPERCOPY 4.7S, DISKEDIT.700) do start in this way; they may be RUN by typing just the word RUN in front of the filename in the directory. Many other programs do NOT start in this way, and they require the ',R' after the filename.

Unfortunately, that is not the end of the story; in developing the MZ-700 version of SUPERCOPY, we found a 'bug' in Disk Basic 2Z-009E, in the ',R' routine, if the m/c program has to be copied UP from its initial load address of $85FE (Basic S.O.F.). In this situation the first 2 bytes of a temporary 3-byte bank-switching program (03 E4 C9) overwrite the first two bytes of the already copied-up program, before it is executed. With some programs this is not critical (e.g. in DISASSEMBLER B780/PP they overwrite bytes 1-2 of the plotter conversion table); but if these two bytes are execution code, the program will 'crash' back to the ROM Monitor.

To stop this, John Edwards has devised a simple patch so that two extra bytes are added, in front of the program. These two bytes then get overwritten by E4 C9, but it does not matter:

$5B62
C1 03 03 C5 0B 0B (i.e. POP BC, 2 INC BC's, PUSH BC, 2 DEC BC's)

You can enter this with POKE $5B62,$C1,$03,$03,$C5,$0B,$0B. However, I have produced a version of 2Z-009E with this change incorporated on the master disk. It is called 2Z-009E v1.2R.

This patch replaces the old code at $5B62 (3E 16 DF D3 C1 C5), which clears the screen, and pops and pushes BC without changing it. John's patch, perforce, has to omit the CLEAR SCREEN, so the RUN routine in 2Z-009E v1.2R (with or without ',R') does not clear the screen, and the program must do it. Many programs do start by clearing the screen; if not, DISKEDIT a $16 code into the first character of the opening message on the screen (changing the message ever so slightly, if required, to accommodate it).

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WARM START

It's 10 years since the MZ-800 was released and to mark this
milestone I have decided to retype a very full review of our
machine which appeared in the September 1985 issue of Sharp Focus
- the Australian Users Club magazine. An interesting look back
for MZ-800 users and an insight to it for others. I don't think
this magazine has ever seen a review of the MZ-800.

Review of the MZ-800
by Kevin Poynton

This month will see the release of Sharp's long awaited MZ-800
computer. The MZ-800 with its many options is an attempt by Sharp
to bridge the gap between home and business computers. Will they
succeed where others have failed?

Apart from high-resolution colour graphics and three voice, six
octave sound capability the MZ-800 consists of 64K RAM together
with built-in cassette storage, dual Atari compatible joystick
ports as well as facilities to interface a multitude of extras.

There are many ways to look at the MZ-800 and in all honesty it's
hard to know where to start. Perhaps for those with prior
experience of the MZ-700 a quick comparison could be an entree
followed by a full menu of delights of this new machine.

MZ-700 COMPARISON

The new MZ-800 is similar in many ways to the MZ-700. The design
and keyboard are similar and it even has a built-in MZ-700 mode
capable of running most MZ-700 software. Major differences are of
course high-resolution graphics, better sound and a more
comprehensive Basic. Sharp have also seen fit to incorporate DIP
switches to change the built-in Sharp 25-pin printer interface to
Centronics protocol, and the INIT command in MZ-800 Basic allows
you to alter Basic to send standard ASCII.

Any MZ-700 owners who wish to 'trade up' need not despair. There
is also a DIP switch to provide MZ-700 compatibility.

Perhaps it's as well that we get the bad points over with at this
stage and then look at more positive aspects. Firstly, when in
MZ-700 mode (using the supplied MZ-700 Basic) it is not possible
to run programs using joystick routines. The joystick hardware on
the MZ-800 is totally different to the MZ-700 and this will cause
software houses to have to provide two versions of their joystick
games. Secondly, Basic has again to be loaded from tape (assuming
you have no disk drive) and this takes an amazing 4.30 minutes
for the full MZ-800 Basic and just over 3 minutes for the MZ-700
Basic. Admittedly, some people prefer this because it leaves a
full 64K for machine-code programs and other languages but why,
oh why, can't we have have Basic in ROM that we can switch out?

Well gripes over, it's on to the good news — and there's plenty!

GRAPHICS

The high-resolution graphics must be considered one of the best features of the MZ-800 and they are quite incredible.

In text mode the MZ-800 offers a choice of 40 x 25 or 80 x 25 formats. In graphic mode, high resolution graphics of 320 x 200 pixels are produced. The result on the screen is good as is the graphics interface by Basic. Plotting of user defined graphics anywhere on the screen in any colour is achieved by using the command SYMBOL. It also provides 255 steps of magnification in both the horizontal and vertical directions. Coupled with this, you can plot shapes at 90, 180 and 270 degrees away from the normal. Software houses should have a ball with these features and there can be no excuses for not providing software of the highest quality. Unfortunately the MZ-800 Basic does not support sprites but I've no doubt it won't be long before the 'hackers' learn how to generate them.

SOUND

Unfortunately I never paid much attention to my music teacher when I was at school (or any of the others for that matter!) and my knowledge of that subject and sound generation is extremely limited. I have, therefore, limited my comments to the bare specifications of the facilities provided.

Musical notes of varying duration can be played over six octaves using the MUSIC command. These cover nine noise channels are provided through a programmable sound generator and internal speaker, the latter thankfully having a volume control!
There are three other commands associated with sound; TEMPO which varies the rate which the notes are played; SOUND which creates notes of different pitch and duration for special effects; and NOISE which creates 'white noise' effects.

KEYBOARD

This is divided into three sections — the main alpha keys (in an off-white colour), the function keys and the editing keys (in a light grey/brown colour), all mounted on the lower level of a two tone case in cream and brown. All the keys have a positive feel. A tab key in an addition to the 800 and has forced the shift key on the left to be reduced in size to accommodate a displaced alpha key. This can cause problems with big fingers where the alpha gets hit instead of the shift.

There are five easily defined function keys on the top row towards the left and the insert and delete keys towards the right. Below are the four cursor keys in N, S, E and W format.

DOCUMENTATION

This would have to be the best documentation yet provided by Sharp on a pocket or home computer and we could argue that documentation is too detailed. For example, it includes, within an in-depth hardware section, a number of small circuit diagrams which help to explain how, amongst other things, the Centronics port functions. Nevertheless, the more, the better.

Basic is covered in adequate detail and a section of the system monitor is also included. The manual also gives instructions on how to load the demonstration program (this follows Basic on the tape) and the ensuing demo made the most of the machine's features with fast, smooth screen scrolling within windows and fast line drawing with fill capabilities.

PERIPHERALS

Here's where the going gets really tough as there are so many options - it's a smorgasbord! We'll take each option one by one giving details on what it's for and the level of documentation available.

VIDEO RAM

An extra 16K of video RAM is available and must be fitted by a dealer. The increase in video RAM enhances graphic display to 320 x 200 in 16 colours or 640 x 200 in 4 colours. Naturally, this type of output is usually too much for the poor old telly, so a monitor is recommended if you seriously wish to use the extra video RAM. Documentation for the optional video RAM is provided in The Basic Manual and really needs no further explanation.

RAM DISC

Think of the fun you could have with this! An extra 64K of RAM which BASIC treats as a disc drive. The RAM is recognized as drive 'E' by Basic and will operate in exactly the same way as a standard disc drive. The device is easily fitted by an experienced user but for those who suffer from sweaty fingers I would recommend dealer installation.

SEQUENTIAL DISC

Those of you familiar with 'Quick Disc' available for the MZ-700 will be well aware of the capabilities of this little unit. In brief, this is Sharp's latest offering in the field of supplementary data storage devices. Each side of a 2.8" disc contains 64K of data that is recorded sequentially in a single concentric track. The sequential disc loads programs and data, on average, about 60 times faster than a tape based system thereby loading MZ-700 Basic in approximately 3 seconds and MZ-800 Basic in about 5 seconds. For the technical amongst you - don't waste time asking about operating systems, number of sectors, etc., it's all immaterial. This device is meant for one thing only - fast and secure saving and loading of programs and data. Having had some 12 months experience using this drive I can wholeheartedly recommend its use by the home user or someone running a small business (Tupperware, Nutri-Metrics, or etc.) from home.

FLOPPY DISC

There are two floppy disc options available for the MZ-800 but both use the same casing. The options are, of course, single or dual drives. Each drive is double-sided, double density providing 320K of storage per drive. This is in line with the storage provided with the Sharp MZ-3500 desk top business machine and the MZ-800 can, in fact, read discs in MZ-3500 format as well as the standard IBM format. These facilities provide some exciting possibilities as will be seen later when we discuss software.

There isn't very much to say about floppy discs which is new or exciting as I would expect most people to know what they are and what they can do. Floppy buyers should note that buying a drive does not entitle them to Basic or CP/M or any other software, following Sharp's usual pricing policy on desk tops. These are all extras - you get exactly what you pay for.

SMOKO

For those so inclined I would suggest that you relax, light up and have a cup of coffee, we are now about half-way through and I wouldn't want you to lose concentration.

MONITORS

For those of you into 'high-res' Sharp are releasing two of their monitors for the MZ-800 (there are three available in Japan). The first is a 14" RGB monitor capable of displaying 640 x 200 graphics in 16 colours. All I can say is don't have extra cash available when you go to buy your MZ-800 (and leave your credit card at home). If you see one, you'll land one - enough said.

For business users who NEVER play games (you must be out there somewhere!) there is a 12" monochrome monitor with two magnificent shades of green, (OK, well you try to make it sound exciting). A third option designed to make you less popular at home after spending the housekeeping on the basic computer is to use the family telly.

MZ-1P16 PLOTTER/PRINTER

Again, MZ-700 owners will be familiar with this piece of equipment. For those who aren't the MZ-1P16 is a four colour plotter printer using roll paper about 4" in width. The mechanism allows printing in 3 sizes of 20, 40 or 80 characters per line.

In graphics mode the MZ-1P16 is capable of some amazing tricks which, unfortunately, lack of space at this time precludes us from showing you. Suffice to say it is possible for a novice user to be producing Bar, Line and Pie charts in a very short time and, with more experience, be capable of producing some very detailed drawings. Great for biorythms. Other than the MZ-1P16 any standard Centronics printer should connect to the MZ-800.

RS232C

Unfortunately, I was unable to test this device at the time of writing but hopefully a separate review will be provided at a later date. I understand that the interface takes the form of a card and cable and that software will be available to drive it.

EXPANSION BOX

This device will be a necessary asset for those wishing to connect more than one peripheral to the MZ-800. The expansion box provides two card slots to enable connection of RS232's, floppy discs, sequential disc, etc. Why is it so big?

JOYSTICKS

Sharp have at last seen the light and have provided two industry-standard compatible joystick ports. MZ-700 owners will be pleased to note that joysticks available for the MZ-800 can self-centre without the aid of elastic bands. Can anymore be said about them?

OPERATION
TAPE - Those used to tape-based systems will be well aware of the problems and the MZ-800 is no exception. As stated earlier, loading MZ-700 Basic takes a little over 3 minutes and the MZ-800 Basic about 4.30 minutes. MZ-700 Basic leaves about 36K free for the user whilst the MZ-800 version with its extra commands leaves about 22K free.

It's a pity that Sharp provided a full MZ-800 version of the Basic on tape as this incorporates commands for the Sequential Disc as well as Floppy Disc and RS232 which are unlikely to be used by a person owning a tape-based machine.

SEQUENTIAL DISC - As you may have gathered I am rather fond of this device and I think most end users will see why when they get their hands on one. The Sequential Disc operates in very much the same manner as tape with slightly different commands. Speed is the big difference and at the price this will sell well.

FLOPPY DISC - A little more expensive than the Sequential Disc, the floppy will appeal to those wishing to use the MZ-800 for business. Ease of use does, of course, depend on the operating system being used and here Sharp provide the choice of FDOS (their proprietary operating system) or PCP/M. FDOS is a fairly basic OS allowing the user to create the use of sequential or random access files. It is not the intention of this article to give a full review of PCP/M but suffice to say the system is extremely easy to use and the novice user should have no trouble.

OVERALL
The keyboard is of better quality than the MZ-700 and the whole system is fairly easy to use provided one takes all the options one at a time and learns the full power of each before moving on.

SOFTWARE
This software will be split into 5 sections giving a brief run down on each:-

1. Systems Software
As stated, users have the option of FDOS or CP/M with floppy disc as well as standard tape and SDOS with those devices.

2. Languages
Apart from the half dozen or so languages already available for the MZ-700, Sharp are releasing PASCAL and DR LOGO as options for the MZ-800. No doubt other languages will follow in time, and it is expected that the usual CP/M-based languages will be available in the very near future.

3. Business Software
Already configured for the MZ-800 under CP/M are; Wordstar, Multiplan, dBase II and various accounting packages. Many other packages will become available over the next few months and this is one of the great strengths of the WZ-800.

4. MZ-700 Software

As discussed earlier most MZ-700 software will run without problems on the MZ-800, with over 400 packages available and more coming, this gets the MZ-800 off to a flying start.

5. MZ-800 Software

Apart from some hybrid software which runs differently on the MZ-800 to the way it runs on the MZ-700 there is of course, a number of new titles which are specifically MZ-800.

These include a new spreadsheet, word processor, and some high-resolution arcade games. All will be tape and disc based. All in all the MZ-800 starts its life with a huge software base which would be the envy of most other manufacturers.

SUMMARY

With the wide range of options available I will be very surprised if the MZ-800 doesn't take off. The machine is suited to a number of uses but in turn this will require the backing of a dealer network that knows what it's doing. Sharp again have an advantage in this respect, having built a reputable and knowledgeable dealer network over the last five years.

(Note from Chief Editor - I recently checked the HCOPY and PAGE n commands on the MZ-800, in CENTRONICS mode, having previously set up MZ-800 Basic for a standard printer with no auto LF with:

INIT "LPT:M0,S2,10"   (n.b. 10 decimal = $0A = LF)

The printer (Epson FX-80) worked o.k. with ASCII lower-case, but when I tried to use HCOPY I got the 'Can't Execute' error message.

And when I tried to use PAGE n I did not get an error message, but the printer was not set up to the page length specified. So I then set the printer into HEX DUMP mode, and discovered that PAGE n was working, but was still sending SHARP printer control codes e.g.:

PAGE 10 sends 09 09 30 41   (i.e. 09 09 '0' 'A')

CONCLUSION - as they stand, HCOPY and PAGE n cannot be used in MZ-800 CENTRONICS mode - but I guess they could be re-coded - M.H.)

*****

E.O.F. (End of File)

Helmut Behrens of the German user's magazine MZ-INFO is keeping one or two of us well informed with copies of their own newsletter. I'm sure there is a lot I could relay to you from it, but my German is not good at all. So if anyone will volunteer to do a spot of interpretation and pick out the good stuff I'm sure it would be appreciated. I'm most interested in one of their supplements - it contains all the PEEKS and POKES you could need. Of course, this post is open to any Club member - don't be shy.

And finally, see you all next year - have a good Christmas.

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Editorial

Maurice Hawes recently hinted that members could perhaps put pen to paper to give us editors a break; John Bethell and Denys McNair have responded with excellent articles on the PC-3000, and users of other machines may benefit from the way they solved problems.

Please note my e-mail address was shown incorrectly last time - the correct one is shown above.

Laptop Buyer's Guide and Handbook

This is an American magazine, but it can be found over here, in W.H. Smith's. It is fairly slim, because it concentrates on laptop technology. The latest issue (Vol 13 No. 9) features a mini-review of the PC-3010, which I had not heard of in the UK. It is not a relative of the PC-3000, but a more conventional notebook with a 486 DX2/66 processor, 10.4" colour screen, 4MB RAM, and 320MB hard disc. It sells for around $1799, which is about £1160.

There is also a full review of the PC-8700, which was available in the UK, but is soon to discontinued in the USA. This is a machine with a 486 DX2/50, 4MB RAM, 8.4" colour screen, 250 MB hard disc and soundcard. This is around $2299 or about £1490.

The PC-8900 which I mentioned as costing around £3750 in the UK costs $3199 or about £2065 in the USA. It not easy to compare £ and $ prices, but there seems to be a substantial difference here.

It is interesting that Sharp notebooks are advertised far more than in the UK. Also Sharp USA operates a toll-free support line !

Live '95

I visited this consumer electronics show again, in September, at Earls Court in London. Sharp Electronics were there with a display ranging from microwave ovens to televisions. Computers formed only a very small part of the display, only a few now being available:

PC-8900 486 DX4/75 notebook as detailed in the last issue

FW-550, FW-610, FW-710 word processors, discussed elsewhere.

Zaurus ZR 5000 personal communicator, discussed elsewhere

IQ-8920 organiser which has been mentioned in previous issues.

Also seen were prototypes of new screens, but these are not yet available commercially.

This show covers everything from computers to hi-fi, mobile phones, music, video and photography, and is a worthwhile day out for all the family. You may like to make a note that next year's show, Live '96, is planned for 24-29th September 1996.

PC software Library - by Mike Mallett

The PC section also has its own Library of public domain and shareware software, available to members. This has been compiled from a large number of CD ROMs, bulletin boards and magazine discs. I would not attempt to list them in the magazine as even part of the catalogue would fill up several discs ! it is best to 'phone or write with a rough idea of what you need. I can supply some catalogues on disc.

All this is available FREE to current members if you:

- supply formatted and labelled quality floppy disks
- enclose return postage
- secure packing (ordinary envelopes are not strong enough)
- maximum of six discs at any one time

As the software is for a wide range of machines it would be useful to know :

- Computer model
- CPU (086,286,386,486,586)
- available memory
- screen (colour/mono, MDA/HCG/CGA/EGA/VGA/SVGA)
- disk drives (Hard disk, floppies - 360K, 720k, 1.2mb, 1.44mb)
- version of DOS and Windows

I can handle disks in all the sizes shown above. I will often supply files in a compressed format so a program such as PKUNZIP is needed. If you don't have this utility just send an extra disc.

Remember shareware programs require payment to the author if found useful.

The software is intended for IBM PC compatibles but some may be useful for generic MS DOS machines such as the PC-5000 and later MZ- models. I hope the experts on these machines could do some experimenting with this.

I can also supply CP/M software but this currently only available on PC format discs.

By the way I managed to pick up a book titled "WordStar and CP/M made easy" - rather a contradiction in terms !

BBC Master Computer

In the last issue I asked about software to allow different disc formats to be used on the BBC Master. Thanks to Steve Bass I have now able to obtain some software to allow various BBC, MS-DOS and CP/M formats to be read and written. The CP/M list includes the Sharp MZ-80 B but I have not yet managed to get this to work.

A wanted ad. in Micromart soon yielded an internal 80186 second processor running DOS-plus which gives access to DOS and CP/M 86 software. The same source also supplied an external Z80 second processor which runs CP/M 2.2. And of course the Master still has its own 65C12 (6502 compatible) processor. Switching systems only involves changing discs and a few key presses.

A first look at the Fontwriter FW-700 - by Mike Mallett

After I described the Fontwriter range in the last issue, my brother purchased the top-of-the-range model, the FW-700.

The machine is very neat - there is even a compartment to store the mains lead. As we expect from Sharp, the screen is excellent - almost VGA quality. The keyboard is well-built and has a number of special keys for many functions and for a wide range of special characters. The manual covers all the features of the machine and has a good tutorial, suitable for both beginners and experts.

The printer uses a thermal ribbon, and 3 types are available:

Single strike (60,000 characters approx) .... (circa) £3-40p
Multi-strike (123,000 characters approx) .... (circa) £3-90p
Special O.H.P. ribbon (41,000 characters approx).. (circa) £3-90p

Using the single-strike ribbon, the standard-size characters match the quality of a laser printer, but there is a certain roughness to characters above about 24 points; this is unlikely to be a problem for most users. The standard printing speed is only 70 cps, but this is O.K. for letter and report writing.

The five fonts are Courier, Dutch, Swiss, Script and Futura in point sizes from 8 to 48, in normal, bold, underlined, outlined, italic, subscript, superscript, condensed, with 5 underline styles and 5 different background shades. There are 515 characters and 216 symbols allowing work to be done in most European languages and many scientific disciplines. The spellchecker has an 80,000 word dictionary, plus a small 200-word user dictionary.

The spreadsheet offers auto-sum, 27 functions and sorting.

The address book has 32 fields and can easily be adapted as a database. There is also flexible program for label printing.

The floppy drive uses standard 720k DOS format discs. However, the built-in software cannot handle sub-directories, so there is a limit of 112 files per disc, and any file read in from another machine must be in the root directory. Although the Fontwriter uses its own file format, utilities are supplied to convert to or from plain ASCII, WordPerfect 6, and Lotus 123 v2.4.

Sharp's Technical Support Team were able to answer a few points not covered in the manual:

1) The machines are made in the UK at Sharp's Wrexham plant.

2) The machine uses a Mitsubishi M37721ASP processor (!)

3) As all the software is programmed into ROM, the machine cannot run any other software.

An in-depth review will follow soon, but at this stage I would say that Fontwriters can definitely be recommended. However, you should note that, at the LIVE '95 Show, Sharp showed two new models, the FW-610 and FW-710, with an enhanced screen, more user memory (64K) and a faster 1.44MB disc drive; but there may be more to it than that, and I shall check fully before the next issue.

PC-3000 - a user writes (by Dennis McNair)

I don't have a desk-top PC and am totally dependent on my PC-3000 and additional hardware. The main factors influencing my decision to buy one were Price, Portability, Versatility, and Batteries:

1. Price - I paid £140 second-hand through our local newspaper. I was unemployed at the time, and had just been accepted for a post-graduate course at Strathclyde University, Glasgow. I was therefore looking for a second-hand computer that would help me particularly with word-processing of assignments during my course. (In the end, the written work during the course exceeded 100,000 words, and much of it was typed whilst commuting.)

2. Portability. I wanted a computer that would be sufficiently compact and portable to use on the Express bus between Inverness and Glasgow on my weekly 7 hours round-trip.

3. Versatility, i.e. PC format, laplinking to other PCs, and using PC standard peripherals such as Printer and Floppy Disc Drives.

4. Economical battery power.

Since buying the PC-3000 I have spent quite a bit on peripherals. I have no regrets about these purchases, if only because I have nothing to compare them with. Undoubtedly there will always be something better on offer. The most important criteria in evaluating my purchases have been compatability and reliability.

POWER SUPPLY

My PC-3000 came with a 'ROSS Universal Adaptor'. The previous owner had soldered on a compatible 'Sony' style jack-plug, but unfortunately this unit soon burnt out. Looking for a replacement I had decided that no way was I prepared to pay £30+ for a DIP adapter! Having said that, Sharp Electronics did answer my questions about power-supply specifications, and I have since purchased an ALTAI Universal power-supply for £7.50 ! This has been in use for over a year without problems (available from Tandy/Mail Order and any good Electrical Shop).

It is very important that the power supply meets the correct specifications. Universal adaptors from High Street retailers like Dixons don't meet those specifications because their output current is only 350 mA. If you use one of these adaptors your PC will draw extra current from the 'Main Batteries' to make up for the deficit. In other words the batteries will slowly drain even when the power supply is connected.

When I spoke to Sharp Electronics (Tel. 0161-205-2653) I was told that they were using 750mA and 1 Amp adaptors. I opted on the the safe side, for an ALTAI 750 mA adaptor set at 6 volts. However, I had to solder the Sharp/Sony jack-plug onto the power-supply lead. Through continual wear & tear bending of the power-supply wire, the wires broke inside their plastic sheath. I only realised what had happened when the PC began consuming Duracell batteries at an alarming rate when working at full-power to run the floppy-disc-drive. You can tell if your power supply is working, if your PC clock displays seconds. (Seconds are not displayed in battery mode, or if your power supply is faulty).

POWER SUPPLY (continued)

Tandy's couldn't supply a suitable replacement jack, but I was able to 'operate' on the jack-plug with a junior hacksaw, resolder broken wires, encase it all in silicon, and re-house the repaired plug in a new Tandy plastic sleeve. The operation was a complete success and the 'patient' is enjoying a new lease of life.

BATTERIES

Having tried all kinds of batteries I have concluded that it is not worth the hassle using any other brand other than Duracell. At least with Duracell they can be inserted and removed in record time with the minimum of fuss. Other 'economy' batteries tend to be wider and got stuck in the battery chamber. It was when I had to resort to taking my PC apart that I realised that it was time to stick with Duracell! - it's amazing how long a set of batteries can last particularly if you have the 'ENHANCEMENT' program AND an "INNOVATIONS BATTERY MANAGER" !! (see below).

ENHANCEMENT PROGRAM

The Enhancement Program considerably improves screen clarity, speed, and power economy. Once installed, the processor speed and power mode can easily be altered by selecting 'Options' from the Pop-up Menu, followed by 'Set-up machine'. It is necessary to increase the processor speed from 5MHz to 10MHz and to change from 'Low' to 'High' power when using my 'Backpack' floppy-disc-drive and when running programs like MS Works. Failure to do so will result in the computer freezing/locking-up/crashing and will require you to reboot by pressing ctrl/alt/del simultaneously. (if you have to reboot, then remember to reset power level and microprocessor speed for the application you are using. When using the PIMS built-in software, changing the microprocessor speed from 5Mhz to 10Mhz will speed up command executions. However, if you ALSO set power to 'high' before using the 'Editor' then the PC may lock-up/crash during typing, and your typewriter work will be lost (if it hasn't been 'saved' periodically). As a general rule, set power to 'high' only when using peripherals, and when running programs such as MS Works or Locoscript.

INNOVATIONS BATTERY MANAGER

Wouldn't it be great if you could only recharge your Duracell batteries ! Think how it would benefit the environment and save you £££'s! Too good to be true?! Believe me it's not! In May '95 I ordered an "Innovations Battery Manager" for £9.95 including P&P & VAT. The unit measures 12 x 8 x 4 cms and can recharge 4 x Alkaline (Duracell), Zinc, and NiCad AA & AAA batteries. It will not charge batteries with less than 1 volt residual charge. The LED indicators display red if the battery is rejected, changing which pass the test giving an orange LED during 'charge', changing to green when fully charged. If the LED flashes between orange and green the batteries should be rejected. The manufacturers claim that battery life can be extended up to 10 times. I discovered to my pain that it pays to follow the manufacturers instructions! Any attempt to use 'old' batteries that have been re-charged will cause a major computer crash and an error message "Divide error". Reference to the PC-3000 'Operation Manual' advises "Turn off and contact your Sharp dealer". When I read that message first time my heart sank, and I thought I had irreparably damaged my PC-3000...

INNOVATIONS BATTERY MANAGER (continued)

Thank goodness it was not so! - and a quick telephone call to Sharp Electronics stopped my hair falling out! if you ever find yourself in this situation you will must reset the computer by simultaneously holding down the 'c' & 'b' keys and pressing the 'reset' button on the bottom of the computer. This effectively clears the computer of the corruption in the system. However, you will also lose all of your data on all built-in drives.

I have since found that best procedure is to start with two sets of new batteries, so that one set is being recharged whilst the other is in use. The Innovations Battery Manager definitely has to be my 'best buy' this year! It is advertised in the Summer 1995 "Home Free" catalogue and can be purchased from: Direct Choice, FREEPOST SN918, Swindon, SN5 8ZZ or by credit card via Tele-sales on 01793-480000 or by Fax.01793-487002. Battery Manager MK1 is on page 36 of the catalogue (ref. number EF12437).

FLOPPY DISC DRIVE

I bought a Microsolutions Backpack 1.4.MB floppy disc drive by mail order from 'SMC Computers' on 20/4/94 for £190.35 (inc.VAT @ 17.5%). (The current Aug catalogue price is £140 + VAT).- The unit measures 20 x 4 x 10 cms, and comes with an 800mA AC Adaptor which plugs into the back of the unit. Also at the rear of the unit is a standard connection for a parallel printer cable (the cable is not supplied). There is also a small toggle on/off switch which enables you to use your printer when the 'Backpack' is not in use. The drive comes supplied with a DD disc with 'driver'. Load the driver via Lapllink from a desk-top PC, then execute the program with 'File Manager' and follow the instructions. Unfortunately my driver came with a 'bug' which omitted the slash and colon after the drive letter when loaded into 'config.sys'. This was easily corrected by loading 'config.sys' into the Editor, correcting the error, and saving the amended file. I rebooted by alt/ctrl/del, reset power to high and processor to 10Mhz. With the toggle switch on at the Backpack drive, and a DD disc in the drive, I selected 'File Manager' and the drive whirred into action (it read/writes HD disks, and will read/write DD discs if you reset the PC by ctrl/alt/del (N.B. ctrl/alt/del will reset the processor speed to 10Mhz, which is necessary for 'Backpack', but will drain power if not required for other applications; so I generally use 10Mhz only when using the 'power supply'.) After rebooting the PC don't assume that if it already displays 'high power' that the parallel port has been 'switched on'. Go through the motions of changing from 'low' to 'high' even if it doesn't seem necessary. It will save time in the long-run. It is necessary to purchase a Parallel Adaptor Cable (approx 8" long), to connect the Backpack to the Parallel port. Backpack can be purchased from: SMC Computers, 253-257 Farnham Road, Slough, Berks, SL 1HA. Tel. 01753-550333.

PCMCIA CARDS

Having a floppy drive means there is no limit to the data that can be permanently saved. On the other hand read/write from flopples is slow compared to the PC built-in drives. Also the "Backpack" is not fully portable, because it requires mains power. Whereas the PCMCIA card makes data loading and retrieval fast without clutter, inconvenience or anxiety.

PCMCIA CARDS (continued)

On 19/7/94 I purchased from Technomatic Ltd by Mail Order, a 2MB PCMCIA type 1 SRAM MEMORY CARD, made by Transcend Information Inc. The card comes with a lifetime warranty. The price, £235.01 incl. VAT and £5 First Class Post. On the IC card I keep MS Works and both the 'Enhancement' and Backpack-driver progs in case of having to do a full reboot after total systems failure. All files on the IC card are safe from computer malfunction. For an up-to-date price Tel. Technomatic 0181-205-9558.

PRINTER

I have now had my fully portable Hewlett Packard Deskjet 310 for just over a year (N.B. HP have since replaced it by the HP 320). So far it has presented no problems. But it is not possible to use the colour option with the PC-3000, since this requires 2 MB RAM, but the b/w print quality is excellent. I would love to increase the number of scaleable fonts in conjunction with MS Works, and any advice/help in this matter would be greatly appreciated. Ink refill packs are available from, Print Revival Unit 152 Enterprise Court, Eastways Industrial Estate, Witham, Essex Tel.01376-511288.

Unfortunately I damaged the original printer cartridge through careless handling. Fortunately I was able to buy a reconditioned cartridge PLUS a 5-Refill kit for £24.84 inc. p&p & VAT. (Price quoted was at December 94). Print quality and ink quality have been consistently excellent. Refills are available from P.R.U. for many other printers - packs come with clear instructions - with care, mess is non-existent - orders are quickly despatched.

MS WORKS

I am most grateful to C.P Rogers for his PC-3100 customisation of MS Works, as listed in the SUC magazine, July 1994, Vol 14, Number 2. I now have MS Works up-and-running on my PC-3000. However, I experienced difficulty in the initial setting up. (MS Works only runs if Power is 'High' and processor speed 10Mhz). When I first tried to execute the program the error message "Out of Memory" was displayed. This was rectified by entering DOS, typing INSTALL and changing 'Memory Configuration' to 'Program 640KB: RAM Disk 368KB: EMS 0KB'. The same error message continues to be displayed if "WORKS.EXE" is executed using F6 within File Manager. I overcame this by executing from DOS from the "Pop Up" Menu. If you wish to retain PIMS you can include MS Works in the Pop up Menu. Do this by positioning the cursor where you wish to add to the list, press the 'Ins' key and you will be asked for the new 'title' to be appear in the Menu e.g. 'MSWorks'. 'Enter' your program title and another prompt follows, requesting an execution command. In this instance I typed "a:\WORD\WORKS.EXE" since I have stored MSWorks in PCMCIA card in Drive 'A' within directory "WORD". The Pop-up Menu will now display MSWorks, and if selected it will run (provided 'power' is 'high' and speed is 10MHz).

I hope that these insights and experiences will prove helpful. I would be very pleased to hear from you if I can be of help, or if you have any advice, or experiences of your own to share.

Denys H. McNair,
"Florida", 3 Hermitage Street, Evanton, Ross-shire, IV16 9YJ
Tel. 01349-830407

PC-3000/3100 - A PROBLEM SOLVED !

By John Bethell

I mentioned in Volume 14 Number 3 that I have had a problem with the odd program which, when existed, affected the text display. The normal display for text is that the lines forming characters are two pixels wide, but after the said exit, they are only one pixel wide and highlighting blanks the text. I recently, spoke to Sharp who gave me some clues to a possible solution.

To cut a long story short, the actual combination is fn/f6 which turns out to toggle between the two displays.

This is a great relief as, until now, my only remedy was to take out the batteries for up to 10 minutes to drain the memory and totally reset the machine, followed by reinstalling all of the software held on the D:\ and E:\ drives, which was a little inconvenient, to say the least! I hope this saves other users some heartache! Perhaps it's common knowledge, but I still can't find any reference to it in the Operation Manual!

****

TFORCE - a wargame for the PC-3000

By John Bethell

I wrote this game in GWBASIC for the Sharp, but it will run on any PC with a minimum of CGA graphics. However, the graphics aren't up to much, being restricted to a MONO/CGA display, and I have used the normal graphics from the standard character set to represent trees, buildings, roads, etc. Only the tank symbols themselves are user defined characters, and are fairly small, since I wanted to use the full screen display to represent the entire playing map, which eliminates the need for any fancy scrolling, which uses too much battery power!

TF1.SAV is a game in progress, and will be overwritten if the player wishes to save his own game. The three MAPn.FLE files, are for the three maps from which the game map is randomly selected at the start of a game. The .SAV file isn't really essential, but the remainder are. Instructions are included in the game, and the controls are very simple.

Even though I wrote it, I still get a lot of fun out of it and find it quite challenging. At the harder levels, I lose about as often as I win. The computer "tactics" plus increased numbers of enemy tanks at the harder levels, give an entertaining game. Vision range is restricted, and the enemy uses hidden movement with only a "ghost" cursor indicating the approximate position of each unit, when it moves, until such time as it is actually "sighted", when it appears on the map. Hopefully, it will give some member, or members, a fair amount of fun.

If you would like a copy please send a formatted 1.44 mb disc, disc mailer and postage to the PC Editor.

USER'S VIEW OF THE HP320 DESKJET PRINTER by John Bethell

Two months ago I acquired an HP Deskjet 320 portable ink jet printer. It has proved very satisfactory, and the rechargeable battery, bought with it, gives about 4 hours use, printing around 100 pages in b/w (no, it doesn't actually print the white bits!) Colour printing uses a lot of battery power, depending on the complexity. For colour printing, I used it with a desktop, not having a suitable package on my Sharp PC-3100 (WPerfect 5.1 does not support colour for inkjets!). I got about 25-30 sheets mainly graphics from the WPerfect 6.0 package. I am delighted with the results, but my first colour cartridge was faulty - it ran out of yellow after two pics! I am still waiting for a replacement, but my second colour cartridge is still going strong, I'm glad to say.

FONTS: The following fonts are built in to the printer:

TYPEFACE	Orientation	Pitch	Point Size
Courier	portrait	5, 10, 16.67 20	6, 12
	landscape	10, 16.67, 20	6, 12, 24
CG Times	portrait	proportional	5, 6, 7, 8, 10, 12, 14
L/Gothic	portrait	6, 12, 24	6, 12
	landscape	12, 24.16.67	6, 12, 24, 4.75, 9.5, 19
Univers	portrait	proportional	5, 6, 7, 8, 10, 12, 14

PRINT SPEED/BATTERY CHARGING

In battery mode and LQ mode it produces about 2 pages per minute. Charging takes 6 hrs. but if a partially charged battery is reinstalled the charger goes into trickle charge mode which can take up to 10 hrs. to fully charge a battery. It is possible to buy a rapid charger which can charge a battery pack in about 1 hr.

GRAPHICS RESOLUTION/MEDIA

Full-page 75/100/150/300 dpi; 600 dpi horizontal axis black only. The printer only handles cut sheets, but using the optional sheet feeder (I want one !) it can handle up to 60 sheets. It can handle US Letter-size/A4/US Executive (7"x10+") transparencies, labels.

GENERAL INFO

The printer has a 48k buffer, and weighs 4+lb including battery. It comes with two disks of driver programs, one for DOS, the other for Windows 3.1 (this has 8 new fonts, some very attractive).

The printer settings menu, located inside the printer, amuses me. It is a strategically placed strip of adhesive paper, with various setting options printed on it. To find your present settings, you press a certain combination of buttons, and an adhesive label with an arrow printed on it, stuck to the side of the cartridge cradle, points to the current setting. This device looks decidedly Heath Robinsonish, but it works, so why use anything more complicated?

Glidepoint pointer

In the last issue I mentioned the new pointing device fitted to
the PC-8900. It has the usual two buttons, and it is also possible
to double click in Windows by tapping the touch sensitive pad.

The device is made by ALPS, and can be obtained separately, for
plugging into the serial port of an existing PC. For details call
Capital Electronic Developments Ltd. on 0181 573 6381.

****

The Sharp ZR-5000

This is machine is similar in size and layout to the Sharp IQ
organisers but has many more features :

320 x 240 LCD touch screen (ink note taker)
Intelligent word processor with 1 mb RAM
Spellchecker, graphics support , auto letter , generator
Up to 60 hours battery life
Key functions: activities, contacts, data files, notes, documents,
                outline, calculator, world clock, scrapbook, filler
Options : fax/modem, GSM mobile phone interface

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Suppliers Update
****

Richnight
106 Brighton Road
PURLEY
Surrey CR8 4DB

Tel : 0181 668 4199   Fax : 0181 668 7249

Can supply additional memory for portables. As an example 1MB
for the PC-6220 cost £64.63 (inc. VAT exc. PP). Other machines
supported are : PC-6240, 6440, 6600, 6621, 6641, 6661, 6741, 6781,
6785, 6841, 6881, 6891, 7750, 8150, 8650, 8660, 8501, 8700, 8900.

****

Software Savacentre
3 Quayside Commerce Centre
Lower Quay
FAREHAM

Hampshire PO16 0XR
Tel : 01392 827333   Fax : 01329 827123

The Software Savacentre was listed last time. Gary Kelly told me
he drives past the place twice a day and never realised that it
was there. Apparently most of the good bits go very quickly so he
recommends registering for the catalogue at 50p per issue.

        DON'T FORGET TO MENTION THE SHARP USERS CLUB

Edited by:
Bob Macey
"Oakleigh"
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The General Scene

Casio have brought out a new graphics and scientific calculator
CFX-9800 with a colour LCD and a split-screen facility, and it is
in the Argos catalogue and in Dixon's mail order catalogue. So far
there has been no similar move by Sharp, who seem to be spending
all their energy on pushing their 'Font Writer' word-processors.
These in themselves are commendable machines, and if you have not
yet seen or tried one, I would recommend you to do so, as they are
available in a large number of outlets, large and small, and it
should be possible to find a local business supplies retailer or
stationer's shop who would at least allow you to try one out at
the counter, or perhaps even borrow one for an overnight trial if
they know you well enough. They really are very impressive.

However, Sharp's Font Writers are not really my scene, and as
there is nothing else new from Sharp, I propose to concentrate, in
this issue, on the CE-153 software keyboard and its use with the
older Sharp PC-1500 and PC-1600 handhelds. I did have the use of a
CE-153 keyboard about 5 years ago, but then lost it, and as you
will see below, I have to thank Mike Mallett, our PC Editor, who
recently helped me to obtain a replacement and thus made it
possible for me to write the article from recent practical tests,
rather than from my recollections of the dim and distant past.

The CE-153 Software Keyboard

Mike Mallett very thoughtfully keeps me posted with events on
the handheld/pocket computer/organiser front, and at a radio rally
this summer he acquired a Sharp CE-153 with all its accoutrements
intact, and in first class condition. Knowing that I am a keen
supporter of the Sharp PC-1500/1600 system, he forwarded the board
to me, suggesting that I might like to write an article about it
in the next Magazine. A chance not to be missed !!

The items he sent included the CE-153 itself, a carrying-case, a
shielded connecting cable, a 50-page Manual, 6 transparent plastic
overlays, and a cassette tape containing the essential operating
program (in MACHINE-CODE) and 2 application programs (in BASIC).

THE CE-153 KEYBOARD contains a matrix of 140 touch-sensitive
cells (14 horizontal x 10 vertical), attached by the shielded
cable to a socket on Sharp CE-150 plotter/printer/cassette
interface for the Sharp PC-1500 (or the equivalent Tandy interface
26-3601, for the Tandy PC-2). The whole system is powered by the
Sharp A.C. Adaptor EA-159 (or the Tandy equivalent 26-3605).

The CE-153 may also be used with the equivalent Sharp PC-1600
system (PC-1600 plus CE-1600P printer/cassette interface, plus
optional CE-1600F 2.5" disk drives), but if you do this you will
INITIALLY need to run the PC-1600 in MODE 1 (the PC-1500 mode),
and also refer to the PC-1600 Technical Reference Manual for extra
information (on pages 182-186). Furthermore, it is also necessary
to take into account the important points listed on the next page:

Software changes required for use with PC-1600

a) Change the syntax in the Basic programs on tape, and in those
listed in the CE-153 Manual, to call 3 machine-code routines
at the correct PC-1600 addresses (see below).

b) Remember that, on the PC-1600, the variable Y$, which is used
to store keyboard input, can hold only 16 characters (on the
PC-1500 the equivalent variable Z$(0) can hold 80 characters).
Therefore in the 2 utility programs supplied and the programs
listed in the Manual, Z$(0) must be changed to to Y$, and the
input must not exceed 16 characters.

c) Remember that the PC-1600, in PC-1500 mode, uses different
commands in certain cases e.g. XCALL instead of CALL (see
pages 352-355 of the STANDARD PC-1600 Manual).

The CE-153 gives an extra 140 touch-sensitive keys which can
activate a variety of functions or call different subroutines,
depending on the BASIC program in use. In effect, it is an early
version of a 'mouse', when you press a correctly allocated key,
there is a reassuring BEEP from the computer, and the BASIC can be
made to show its (x,y) location on the screen (if the key is not
allocated you may get a message 'Again', or no response at all).

To prepare this article, I intended to use my PC-1600 set up
with disk drive and A4 plotter, with the CE-153 attached, but
after 15 minutes I smelled burning and saw smoke - nothing to do
with the CE-153, but a fault in the PC-1600P interface unit.

Fortunately, I recently obtained (see last issue) a TANDY PC-2,
and its printer/plotter interface, and I was able to use this
interface with my PC-1600 and the CE-153, and continue my tests.
There was, however, a further snag - I started up the composite
system using the Tandy A.C. Adaptor (26-3605), and after a short
time I got errors due to insufficient power. But when I changed
the adaptor to Sharp's EA-160, all was well, it therefore appears
that Tandy's 26-3605 adaptor is less powerful than Sharp's EA-160.

The three Machine-code Programs

To start the tests I put the PC-1600 into MODE 1 (PC-1500 mode),
set RAM aside for machine-code programs (NEW &44F0), and loaded
the CE-153 machine-code program (CLOADM). Once this program is
loaded (_CE-153 VER.1) you can call up 3 machine-code routines
whenever you wish. The first of these waits for input, and allows
you to input a number of characters from the PC-1500 keyboard and
assign them to one or more of the CE-153 keys. The second (SPECIAL
APPLICATION 1 - see p.33 of the CE-153 Manual) reserves 90 keys on
the left of CE-153 for storing inputs, and the other 50 keys on
the right for some (but not all) of the functions on the actual PC
keyboard, the object being to give the user a larger key to press.
The third call (SPECIAL APPLICATION 2 - see page 34 ibid.) does
NOT wait for input, it scans the keyboard and if a key is pressed
it stores it in Z$ (NOT to be confused with Y$(0), which is a
DIFFERENT variable array); if a key is not being pressed, Z$=0.

The starting addresses of these three routines depend on which
machine you are using, and whether that machine contains any extra
RAM modules, as discussed on the next page.

Starting Addresses for the three machine-code routines

As far as the PC-1500/PC-2 is concerned, I speak from memory but believe the addresses to be as follows:

Routine	PC-1500/PC-2 on its own	PC-1500/PC-2 with extra RAM
1st M/C routine	&40C6	&38C6
Application 1	&40CA	&38CA
Application 2	&40CE	&38CE

On the PC-1600, the corresponding addresses for the machine on its own are &6B50, &6B54 and &6B58. Several RAM modules are available, and these give many alternative possibilities for the three addresses. In the simplest cases there are BASIC commands using XPEEK to call them (see PC-1600 Technical Reference Manual pp. 185-186); in special PC-1600 setups the user may have to do some manual peeking to check on these addresses.

On the PC-1500 the first call can be made by the line:

1000:WAIT 0:CALL 256*PEEK&7863+&C6+(PEEK&78SD-0)*1850

The second and third calls require &CA or &CE in place of &C6.

The two Application Programs

(N.B. if using the PC-1600 in PC-1500 mode, with CE-150/CE-153, one should not NORMALLY need to change the Basic programs, as the internal software in the CE-150 uses PC-1500 commands. But in this case I did have to make one or two changes, see below.)

The two application programs are called SB-1 and SB-2, and two of the overlays are designed for use with them.

SB-1 is a SALES MANAGEMENT program; its purpose is explained on pp.6-15 of the CE-153 Manual, a full listing is on pp. 16-17, and variables are explained on p.18.

SB-2 - called WORD MASTER - allocates 20 areas of the CE-153 keyboard to various objects - the areas are 4 times as large as normal, and are ideal for use by young children who are still learning manipulative skills, or have difficulties with them. Pressing DEF% allows the user to touch one of the 20 pictures and this causes its name and location to be printed on the PC display. Pressing DEF% allows the user to type in the name of the object on the PC keyboard, and then touch the area reserved for the object. If the spelling is wrong you are told so, but the correct spelling is not given. If the spelling is correct, you are told so.

This program could be modified for foreign languages, scientific terms, etc., with the answers written in felt-tip pen or on the blank overlays provided. And you could decrease the area allocated to each object, and thus allow more than 20 objects to be covered.

Both programs ran O.K., but the PC-1600 set up described above, but there was one minor but not critical fault - when inputting characters from the PC keyboard or the 50-character area on the CE-153, the screen scrolls horizontally so that only the last 2 characters remain on the LCD. This does NOT happen with the standard PC-1500/CE-150 setup.

I therefore set about tracing this 'bug', and eventually, after a lot of hacking, I found a solution giving in place of E$(0), and got all the keyed-in characters displayed on the screen at once. Of course, input was restricted to 16 characters instead of 80, but otherwise the programs worked fine. There is not room here for all the details; if you need them, just send me an SAE.

Other CE-153 Programs

There are three other programs listed in the CE-153 Manual, but they are not on the tape, and the user has to type them in:

PRINT CONSTELLATION (pp.37-40) needs extra 4K or 8K RAM on the PC-1500/PS-2. It allocates 30 large 'areas' of the CE-153 board to the names of 30 constellations, and when an 'area' is pressed the constellation is printed out. There are errors in the program - the names on p.37 of the Manual do not match up with the 3-letter abbreviations in DATA lines 605-6 on p.39. Also, the program gives the wrong names to constellations after the first (Andromeda).

The main errors are in LINE 703; this should begin: FOR T=0.. rather than T=1.., and should later set A$ = MID$(F$(0),I+1,3), not A$ = MID$(F$(0),I,3). And LINE 701 should test the condition IF P=22 (not IF P=21). These "errors" may be due to PC-1500 and PC-1600 Basics handling FOR/NEXT loops in different ways.

PAINTER program (pp.41-44) again needs extra RAM modules. This program treats the CE-153 board as a 'canvas' - in the example given, the 'canvas' occupies the lower 112 'keys', and an upper region of 28 'keys' is (partly) used for 10 object names and 3 sizes (small, medium, large). The user can press any object, then its size, then the location where you want it drawn. The resultant pictures are pretty basic but one could easily adapt the program to give more spectacular results. Again, ideal for young children.

INVENTORY CONTROL (pp.45-50) also needs extra RAM modules. It allows you to check stock levels against minimum levels, printout re-order quantities, etc., etc. and it worked O.K. this time (and has done, for me, on other setups in the past).

FINAL COMMENTS

The Manual is well written in a clear style. There are minor errors, some of which I have already mentioned in my notes on the CONSTELLATION program, above. Another very minor quibble (for educational reasons) is that WORD MASTER expects the word GRAPE or CHERRY, but then goes on to show pictures of bunches of GRAPES or CHERRIES. And the American way of spelling AIRPLANE is used - ugh!

The tapes all loaded O.K., as expected, and the CE-153 board worked faultlessly - but do not press with a sharp object, such as a biro or a finger-nail; the eraser end of a pencil works fine. The shielded cable could be longer, to allow more flexibility in positioning the keyboard; and the keyboard prop could be shorter.

The full possibilities of the CE-153 are only hinted at in the Manual - obviously, one could use it for a spreadsheet (of limited size), or for producing tables. In fact, for many applications which today would be programmed for a mouse or trackball. On marks out of 10, I would give it 9.5, but perhaps I'm biased. Anyway, it does show what can be done with 8-bit systems........   R.M.