SHARP USERS CLUB

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SHARP USERS CLUB
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March 1993

6 Belle Vue
The Esplanade
Weymouth
Dorset DT4 8DR

Telephone
0305 783518

3rd March 1993

In the recent freezing weather, my brain slowed down so much that this issue is going to the printer some days late; blame the ozone layer, or the greenhouse effect, or something.....

First of all, a welcome to Ed Long as the Sub-Editor of the new HANDHELD section. We have tasted Ed's wares already, and very good they are; but it's even better to have them on a permanent basis.

Greg Chapman, having sold his 'best' MZ-80A, has decided to hand over his Section to someone else. That someone, luckily for us, is DUG Grout who, in his maiden editorial, reminds us of Greg's many SUC successes. One thing DUG forgot - Greg was the ONLY member of the SUC who spotted my April Fool bit in the July 1990 issue. What can I say ?? That incident, like so many others, showed that Greg was always 'on the ball'. In a word, we shall miss him, though he assures me that we shall be hearing from him from time to time.

Before I forget, John Duxbury has asked me to mention a very important point. When writing cheques etc., make them payable to SHARP USERS CLUB in FULL please - under the latest legislation, Banks can and do refuse items which do not carry the name of the account EXACTLY as it is registered (i.e. S.U.C will NOT do!!).

A member recently reported trouble with his MZ-80K, and from the symptoms we diagnosed possible RAM problems. So we sent him a RAM CHECK program and then instructed him, over the 'phone, how to use it to find the faulty chip. He then located replacement chips for £1-45 each. The chip is 4116-15nL, obtained from the Progressive Radio Stores, at 93 Dale St., Liverpool L2 2JD (051 236 0982).

Sackcloth and ashes time ! A young member rang up recently to complain that my '50XX CENTRONICS$' program gives 'SYNTAX ERROR'. I didn't believe it - I had tested the program myself personally - but sure enough, when I ran my master, he was right. I soon found why - after my final testing I had added some REM's, and one of them was after a colon, at the end of a DATA line. I should have known better! You can't mix REM and DATA on the same line (the reason is, I think, that most Basics give them the same token).

In this issue I have tried to 'tie things up', especially for new members. So there are lists of programs for all pre-IBM Sharp computers, an overall survey of CP/M on all these machines, and an illustrated recap on our 'Centronics' hardware modifications for the older MZ- machines. Also, an updated list of 'Special Request' programs, a summary of our hardware kits, a list of useful 'phone numbers, and details of PC-3201/MZ-3500/5500/5600 system switches.

But we never stand still. Having recently enrolled members with PC-3201's or MZ-3500's, we felt obliged to untangle Sharp FDOS on those machines (no relation whatsoever to FDOS on the MZ-80K/B/A, which is an Editor/Assembler/Compiler). Finally, I must mention the truly international co-operation, across 12,000 miles, which has put Sharp's MZ-800 PCP/M on our 80-column MZ-700's. What do they say in Australia for 'a feather in our caps' ??

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Committee members, Sub-Editors and Librarians

MZ-80B Sub-editor
Steve Bass, 17 Glade Croft, Gleadless, Sheffield, S12 2UZ
Telephone 0742 652151

MZ-80K Librarian
Tony Clarke, 55 Linden Crescent, St. Albans, Herts AL1 5AA
Telephone 0727 838335 (week-ends only, please)

Club Treasurer/Club Records Holder
John Duxbury, 52 Kendal Street, Barrow-in-Furness, Cumbria LA14 5HH
Telephone 0229 837853

Club Hardware Consultant
John Edwards, Oaken Piggeries, Holyhead Road, Codsall, Nr.W'hampton
Postcode WV8 2HX; Telephone 0902 845273

Club Secretary/Newcomers Section Editor
Andrew Ferguson, 11 Harcourt Close, Henley-on-Thames, Oxon RG9 1UZ
Telephone 0491 574850

MZ-80A Sub-Editor and Librarian
'DUG' Grout, Underwood, Ogwell, Newton Abbot, Devon, TQ12 6BH
Telephone 0626 51435 (or FAX 0626 55575)

Chief Magazine Editor
Maurice Hawes, 6 Belle Vue, The Esplanade, Weymouth, Dorset DT4 8DR
Telephone 0305 783518

MZ-80B Librarian
John Ibberson, 38 Elliott Drive, Inkersall, Chesterfield S43 3DP
Telephone 0246 472894

Handheld Section Sub-Editor
Ed Long, 113 Bishops Road, Peterborough, Cambridgeshire PE1 5AT
Telephone 0733 67529 (weekends only please)

MS-DOS and Comms Sections, Sub-Editor
Mike Mallett, 19 Knollmead, Calcot, Reading, RG3 7DQ
Telephone 0734 410597

MZ-700/800 Sub-Editor and Librarian
Paul Trainer, 1 Montagu Gardens, Oakwood, Leeds LS8 2RN
Telephone 0532 498985

Bulletin Board Organiser
Peter Tuffs, 48 Mackie Drive, Guisborough, Cleveland TS14 6DJ
Telephone 0287 610139

BACK ISSUES AND SOFTWARE MANUALS (POST FREE, FROM WEYMOUTH)

Old issues (2/1, 2/3, 3/2, 8/3) 60p each/£2-00 for 4)
SUC Vol.10 (No.'s 1,2,3) £2 each/£4-00 for all 3) NOTE
SUC Vol.11 (No.'s 1,2,3) £2 each/£4-00 for all 3) THESE
SUC Vol.12 (No.'s 1,2,3) £2 each/£4-00 for all 3) PRICES!!
SM I ('K' SP-5060, SP-5060 EPSON, Hu-BASIC, Z80 MACHINE) £2-00
SM II ('K' Hi-Res programs by J.J. Labarthe) £1-00
SM III (MZ-80K/B/A/700/800 computers & their Basics) £2-00.

ALSO most Sharpsoft MZ-80 and MZ-700 issues, ring for details

VERY CHEAP MZ-80K COMPUTERS AND EXPANSION BOXES

These were fully described on page 4 of Vol.12 No.3, and we still have a few left. The computers are with Peter Hustler, in Bradford (0274 663510). Only £20 for an MZ-80K in working order, and less for one that is not !! You can't afford not to, it must be worth that for the tape recorder and keyboard alone !!!

Ditto the Expansion Boxes.....<<WITH PRINTER AND DISK CARDS>> These are split between Andrew Ferguson, Maurice Hawes and Fred White. £15 per box (plus carriage). We are talking about £200 of gear here --- don't blame me if you're too late, the chance will NEVER occur again !!! The addresses of Andrew and Maurice are on page 3, and Fred White lives near Harrogate (Tel.0423 780992).

SHARP BOOKS (all available from the Chief Editor in Weymouth)

All as in last issue - Starting Machine-code, Starting MZ-700, MZ-80K/A Explained, MZ-700 Explained, P&P MZ-700, P & P MZ-80A, all at £1 INCLUDING POSTAGE (£2 overseas) WE MUST BE MAD !!!!!

MZ-700/800 Exposed, £4; B graphics, £3; MZ-80A (SUC) Manual £10 Plus 3 years' back issues, Software Manuals, and Sharpsoft back issues, all for PEANUTS, as advertised at the bottom of page 3.

<<IF SOMEONE DOESN'T SHOW SOME INTEREST IN ALL THESE BOOKS>>
<<VERY SOON, MY DEAR WIFE IS GOING TO BURN THEM ALL, AND I>>
<<CAN HARDLY BLAME HER, THEY'RE HALFWAY UP THE STAIRS!!!!!>>

ITEMS FOR SALE PRIVATELY

*** Paul Trainer (page 3) still has many of the items listed in Vol.12/3 (but not the RAM board, B Pascal, or the P5 printer)

*** Miss R. Moghul (Bradford, 0274 666096) has an MZ-5600 with a COLOUR Monitor and a HARD disk, plus software, for £100 (!!)

*** Dean Wilson (B. Auckland 0388 662917) - Microvitec CUB colour Monitor 14" (Manual, MZ-700 lead) £70. Also cheap paper.

*** B.Meehan (061 945 8781) - MZ-80B, P5 printer, dual disks, £80

*** P.Irving (Lancaster, 0524 65096) - has a Sharp PC-1500 pocket computer for sale, Easifile software, £50 or near offer.

*** DUG Grout (page 3) has an MZ-80B with Basic tape for sale, £50

*** Mike Mallett (page 3) - CE-452R RAM upgrade card for PC-4502; 128K on board, room for as much again. Any sane offer, or swap?

ITEMS DESPERATELY WANTED BY MEMBERS

*** Phoneless unemployed Member is desperate for an MZ-80A tape deck. Please ring the Chief Editor if you can help.

*** The Chief Editor has just acquired a SILVER REED EXP 550 daisywheel printer, but NO MANUAL. This printer would come in very handy for printing the Magazine - Can anyone help ??

*** Jack Pepper (0946 831255) desperate for EPSON LX-86 Manual !!

THE S.U.C. 'SPECIAL REQUEST' LIBRARY, 1993

The 'Special Request' Library is for programs which need a lot of photocopied documentation, or special knowledge, or both.

DISX and DISCMOD3/4/5/7 are on the list only because they need special knowledge; their Manuals were published in Vol.11 No.2.

Prices include postage, but you are expected to supply the blank tape or disk, and programs are available ONLY AS DETAILED IMMEDIATELY BELOW (the relevant addresses are on page 3):-

John Edwards supplies TAPE 68, DISKEDIT, and the LIST/T progs.
Andrew Ferguson supplies the SEETEX drivers (MZ-80K).
Paul Trainer supplies the ZIP-700 package (MZ-700).
Maurice Hawes supplies ALL OTHER 'Special Request' progs.

In cases marked (*V*) it is VITAL to specify the machine you use!

Name	Description	Machine(s)	Price + Medium
BAS MOD 3.75	SA-5510 Toolkit	K only	£6-00 + Tape
BAS MOD 3.74	SA-5510 Toolkit	A only	£6-00 + Tape
BAS MOD 700	S-BASIC toolkit	700 only	£2-00 + Tape
DISKEDIT V4	Direct Disk-editing	KBA78 (*V*)	£1-00 + Tape
ED/ASS	P.Tuffs Disk Macro	K only	£3-00 + Disk
LIST/T SP-6015.2	Program transfer K/A	K only	£1-00 + Tape
LIST/T SA-6510.2	Program transfer A/K	A only	£1-00 + Tape
M 7.4.1	P.Tuffs Tape Macro	K/700	£3-00 + Tape
SEETEX drivers	Printer routines	K only	£1-00 + Tape
TAPE 68	Drives Eprom progr'r	K only	£1-00 + Tape
WDPRO 2.25(SDOS)	Word Processor	K Disk only	£6-00 + Disk
WDPRO 2.3xxT	Word Processor	See *** (*V*)	£6-00 + Tape
ZEN (AVALON)	Original Version	KBA (*V*)	£2-00 + Tape(*)
ZEN X	Original Version	700 only	£2-00 + Tape(*)
ZEN 700/S	New S.U.C Version	700 only	£2-00 + Tape(*)
ZEN MOD v7 E/G/P	SUC versions	KA7 (*V*)	£2-00 + Tape
ZEN MOD v8	Original version	B only	£2-00 + Tape
ZEN DOS	DOS with ZEN	K only	£2-00 + Disk
ZENDOS MOD E/G/P	New SUC versions	K only	£2-00 + Disk
ZIP-700	Basic + Compiler	700 only	£4-00 + Tape

CP/M Programs (N.B. 780 = MZ-700 + with 80-column mod.)

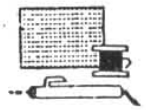
DISCMOD3/4/5/7	Direct disk-editors	See ** (*V*)	S.A.E.+ Disk
DISX	Z80 Disassembler	All	S.A.E.+ Disk
WDPRO 2.XXXD	Word Processor	See *** (*V*)	£6-00 + Disk
ZENASMB2 or BT	Z80 Assembler	B only	£2-00 + Disk
ZENASMA2	Z80 Assembler	A/780	£2-00 + Disk
ZENASMAT	Z80 Assembler	A only	£2-00 + Disk
(700)PCP/M	Modified System	780 only	S.A.E.+ Disk

NOTES

(*) ZEN MANUAL is £2; Assembly listing of ZEN is an extra £6

(**) v3 for A/B/700; v4 for 3500; v5 for PCPM; and v7 for PC-3201.

(***) WDPRO TAPE Versions 2.37KT, 2.37AT, 2.36BT, 702.35T, 782.36T
(***) WDPRO CP/M DISK Versions 2.37AD, 2.38BD, 702.37D, 782.37D



CURRENT HARDWARE PROJECTS (1993) by John Edwards

(Please note that the prices below are estimates only, as we are negotiating with a new supplier. This applies particularly to the MZ-80K 80-column kit; if I have to upgrade existing chips in the machine as well, the cost is certainly more than £15).

MZ-80K - CP/M ROM-switching board (kit) and test disk.....£6-00
MZ-80K - 80-column kit (basic kit only, upgrades extra)....£15-00
MZ-80A - 80-column kit (2732 Eprom).....£10-00
MZ-80A - 80-column kit (Dual Eprom and switch).....£16-00
MZ-700 - 700 Eprom for 'A' Disk Card (1,2,or 3-way)....from £6-00
MZ-700 - 80-column kit.....£15-00
MZ-700 - Triple EPROM (Monitor/Minidos/QD-IPL).....£15-00
P3/K - New character eprom (set of 2 matching).....£10-00
P5/P6 - 1-way character EPROM ('K' or 'A' or 'B' or 'B_')..£5-00
P5/P6 - 4-way character EPROM plus switch (kit)..... £10-00

Most kits require only moderate soldering skills. If you will pay postage and packing both ways, I will install any kit, but please note that I CANNOT DO THIS SORT OF WORK IN A HURRY.

The MZ-700 F.D. EPROM fits the MZ-80A disk card, which will then drive 5.25" disks on the 700. The 1-way type is for K&P; the 2-way for K&P/Sharp 2Z-009E; and the 3-way for K&P/2Z-009E/SA-6510.

The MZ-700 Triple Eprom was originally designed to boot MZ-700 QDBasic via an MZ-800 QD card. However, as finally developed, this Eprom also contains a 5.25" boot program and a MINIDOS, brought in by special links. It is then possible to run 5.25" disks from an MZ-80A card by disabling the F.D. Eprom, instead of replacing it.

The MZ-80A 80-col kits are available from Maurice Hawes; other kits are available from me. All prices include postage, and both our addresses are on page 3 of this issue.

USEFUL TELEPHONE NUMBERS

CBM (SHARPSOFT) 071 729 5588 (old friends, will help if poss.)

COMPUTER 100 0734 753100 (MZ-80K/80A/3500/5600 spares)

DBE SYSTEMS 061 343 2271 (former Sharp repairers, try them)

FRC ELECTRONICS 0734 479550 (supply/service all disk drives)

M & B ELECTRICAL SUPPLIES 0273 430380 (cheap MZ-700/800 spares)

SHARP ELECTRONICS U.K. 061 205 2333 (for the record)

STRATUM TECHNOLOGY 0734 441236 (hard disk upgrades)

TEEGA AGENCIES 0282 38072 (Sharp's agent for all Manuals)

WILLOW VALE ELECTRONICS 061 684 8441 (all Sharp repairs)
0734 876444 (branch in Reading (?))

W.T.S. ELECTRONICS 0582 491949 (will quote for computer repairs)

CENTRONICS WIRING MODIFICATION (MZ-80K/A/B/700)

As many of you know, the four earliest Sharp MZ- computers are designed to operate with Sharp printers. In order to use them with standard ASCII ('Centronics') printers, two of the printer signals must must be inverted. The necessary modifications first appeared in Vol.10 No.1 on page 8; by popular request, they are reprinted below, with additional information in the form of diagrams. In all cases, the points 'A' and 'B' are EXISTING solder pads:-

MZ-80K

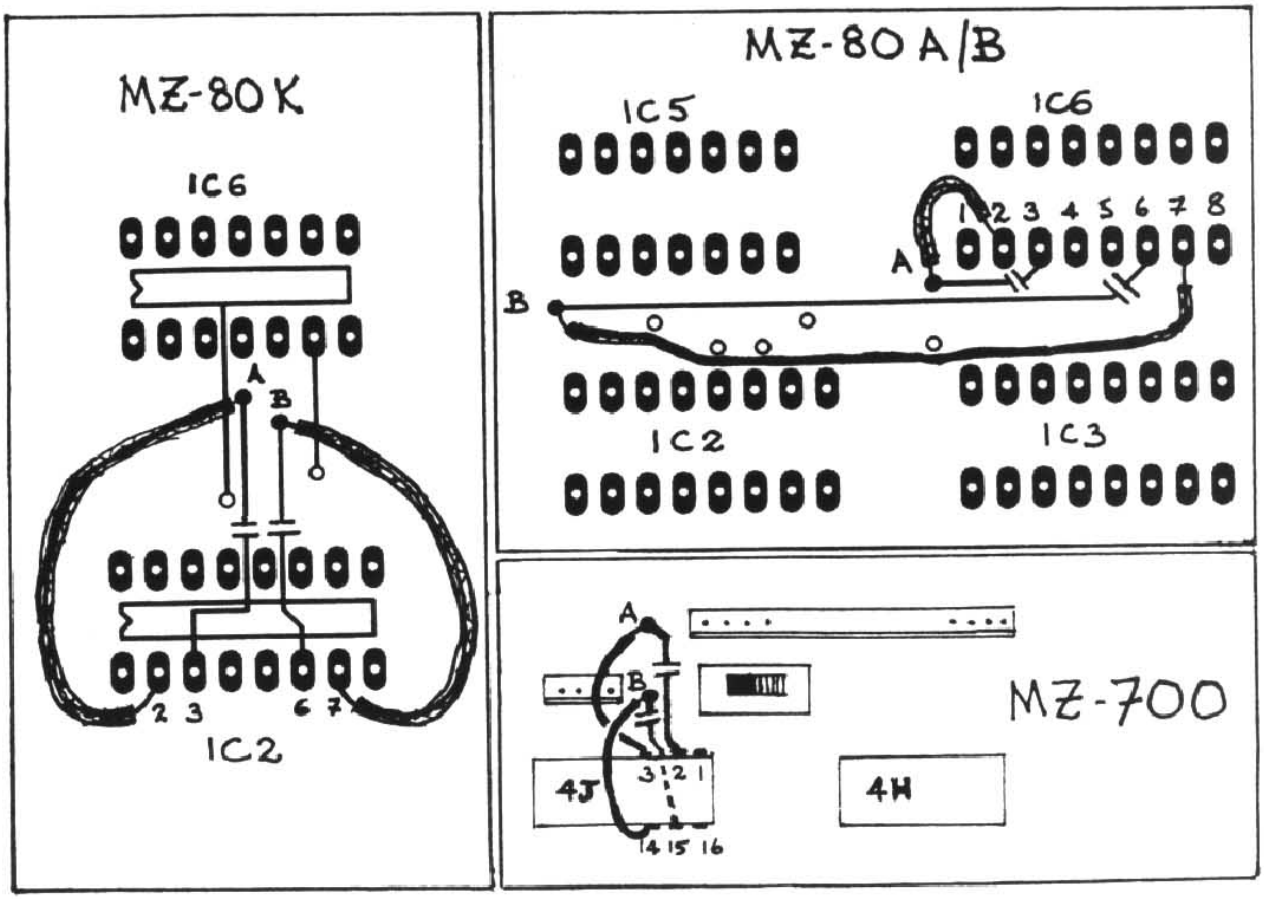
Cut 2 tracks on TOP side of printer i/f card, at positions shown by ⫩ ; then solder a wire from PIN 2 of chip IC2 to point 'A', and another wire from PIN 7 of chip IC2 to point 'B'.

MZ-80A and MZ-80B (these computers use the same printer card)

Cut 2 tracks on BOTTOM side of printer i/f card, at positions shown by ✕ ; then solder a wire from PIN 2 of chip IC6 to point 'A', and another wire from PIN 7 of chip IC6 to point 'B'.

MZ-700

Cut 2 tracks on TOP side of main computer PCB, at positions shown by ⫩ ; then solder a wire from PIN 3 of chip IC4J to point 'A', and another wire from PIN 14 of chip IC4J to point 'B'.



THE EDITOR GOES TO THE FAIR ('Some you win, some you lose!')

In my last editorial, I promised that I would try to get to the the 'All Formats Computer Fair' in Bristol on November 15th. As it happened, John Edwards was in Weymouth that weekend, so we decided to take advantage of the coincidence, and see what was on offer.

To cut a long story short, I borrowed a large sum from John to help me pay £215 cash for a Tandon 286-12 computer, with a 40MB HD and a 1.2MB 5.25" floppy. I also bought a 3-way printer switch, and some cheap disks. John didn't buy much; he wasn't tempted by a 386 machine with SVGA and 40MB for around £425, and although there was a lot of cheap software and books around, he'd seen most of it before. Nevertheless, we returned home pleased with our day, and soon had a 3.5" 720K drive attached to the Tandon, as drive 'B:'.

I spent the next few days transferring all my favourite software from my Sharp MS-DOS machines (MZ-5600/PC-7000A) to the Tandon. In the process I made several very interesting discoveries:-

1) MZ-5600 720K DOS format is the same as SANYO MBC 4050 DOS

2) Most MZ-5600 MS-DOS programs will run on an IBM-compatible, provided that ANSI.SYS is installed, and any function keys are re-defined to suit the program concerned.

3) Sharp MS-DOS 2.11 uses an idiosyncratic ANSI code to reset a key to its defaults e.g. to reset FUNCTION KEY FN1 :-

```
In Sharp DOS send      $e[00;59;00p
In TANDON DOS send     $e[00;59;00;59p
```

In general terms, to reset a key to its default, the technique in Sharp DOS 2.11 is to send the ASCII key scan code (in the example above, the 'extended' code 00;59) then send '00' plus the usual 'p'. But in TANDON DOS, and I suspect most other versions of DOS, you send the key scan code, and then send it again (plus 'p'). (N.B. the '00' trick does nothing in a normal DOS, and a repeated sequence will cause Sharp's DOS to crash!).

Armed with the above knowledge, I can transfer software in all directions, and can usually get it running a few minutes. Also, I can now edit MZ-5600 software on the Tandon, using PCTOOLS; this has allowed me to tidy up several of my MZ-5600 'EXE' programs, a process I had been putting off because I cannot edit 'EXE' files directly on the MZ-5600. All in all, I think our trip to Bristol was well worth while, as it has definitely increased my ability to work on Sharp software, and it has also satisfied my curiosity regarding IBM compatibles. The Tandon is quite nice, really...

****

On Sunday 7th February I happened to be in Cardiff, visiting my eldest son and his family, and would you believe it, there was another ALL FORMATS COMPUTER FAIR there, on that very day! I was permitted to pay a short visit, and came away carrying a Sharp portable PC-7000 and a pristine copy of PEACHPAK for an IBM. It felt like my birthday at the time, but I have since discovered that the PC-7000 has a fault on it (the disk drive motor runs all the time), and PEACHPAK-IBM is full of bugs. Oh well.....

Edited by Andrew Ferguson
11 Harcourt Close,
Henley-on-Thames,
Oxon.
RG9 1UZ

Introduction and review

As we launch into Part 6 of *Sharp* Basic, let's recall that in the last issue we took an in depth look at the use of 2 dimension arrays. In the course of looking at an actual program employing a 2 dimension array we studies nested loops, considered the benefits of using an array to hold printer codes, and came across the function **STR$( )**, which is used to obtain the string value of a number. We also employed **GOSUB** routines, but it is now time to look at them in a bit more detail. Forgive a bit of repetition necessary to make this article self-contained. Also before looking at **GOSUB** let's reconsider escaping from **FOR NEXT** loops

FOR NEXT loops

In Part 4 of this series we saw how the end of a data series could be identified by checking to see if the data element was a null string. You may remember that I found that three commas were *required* after the last data element in order that a null string should be picked up by SP-5060. I asked Maurice if he could think why this was. He could not come up with a ready explanation, but made the sensible point that the more normal way of identifying the end of a data series is to insert a number that could not possibly occur naturally in the required data series, for example -99. Then the **FOR NEXT** loop can be terminated with the condition: **IF A$ = -99**, etc. This is a more useful approach as it allows null strings to appear in the data series if required.

GOSUB

Frequently a particular action has to be carried out many times at various points in a program. It would make the program very long if the same bit of code had to be repeated each time this action had to be performed. The solution is to have a subroutine which can be used again and again. The command required to call the subroutine is, for example, **GOSUB 1000**, where 1000 is the subroutine's starting LINE number. At the end of the subroutine there is always a command **RETURN**. This tells the interpreter to return execution to the statement after the one containing the **GOSUB** command, and, having done so, to knock the related temporary address off the 'stack'. The significance of this last point will be discussed later. Let's give the simplest possible example of using **GOSUB**:

```
10 GOTO 1000
100 PRINT"BBBBBB ";: RETURN
1000 PRINT"AAAAAA ";: GOSUB 100: PRINT"CCCCCC ";
1010 PRINT"DDDDDD": STOP
```

RUNNING would result in an output of:

```
AAAAAA BBBBBB CCCCCC DDDDDD
BREAK IN 1010
```

Though the example is so simple, there are a couple of points to note. The subroutine has been put *early* in the program: this, you may remember, improves speed in some *Sharp* Basics. Secondly, on return from the subroutine it is the next *statement* which is executed not the next *LINE*: obvious really, but you can't always expect Basic to behave in an obviously helpful manner!

Now we'll look at a subroutine which is really useful. In fact it has quite an interesting history. In order to get a neat output it is often necessary to format numbers so that they are printed with a consistent number of digits in front of, and also after, the decimal point. *Xtal 3.1* Basic has a simple command to cover this, but *Sharp* Basic has none. Long ago I decided to write a subroutine for *Sharp* Basic. My subroutine was 9 lines long. I showed it to another Club member, Geoff Childs, and he reduced it to 4 lines: I published this in Vol. 8/1. John Edwards then looked at it and observed that it produced problems with an INPUT of 0 or a small negative number. Not only did he note the problem, but he came to the rescue with a splendid 3 line program. Moreover John's program is a slight improvement in that it automatically allows room for a minus sign. Here it is:

```
100 L7=6: T7=2: REM Or set as desired for test.
200 INPUT "VAL= ";N7: GOSUB 1000: PRINT"↑";TAB(25);"=";N7$:
    GOTO 200
989 ************************************************
990 FORMAT SUBROUTINE FOR SP-5025/5060
991 ON ENTRY N7 IS NUMBER.
992 L7=NUMBER OF DIGITS BEFORE DECIMAL PLACE.
993 T7=NUMBER OF DIGITS AFTER DECIMAL PLACE.
994 L7+T7 CANNOT BE GREATER THAN 8 DUE TO SHARP'S 8 DIGIT
    ACCURACY.
995 ON EXIT N7$ IS FORMATTED STRING.
999 ************************************************
1000 N7$=" ": IF N7<0 THEN N7$="-": N7=ABS(N7)
1010 N7$=RIGHT$("        "+N7$+STR$(INT(N7)),L7+1):
     IF T7=0 THEN RETURN
1020 N7$=N7$+"."+RIGHT$("0000000"+STR$(INT((N7-INT(N7))
     *10↑T7+.5)),T7): RETURN
```

The above LISTING was typed out, and hence it was possible to smarten up its appearance a bit. But typing out LISTINGS is notoriously prone to error; I can only say I've tried very hard to get it right! Now let's look at it.

The first two LINES are just there as a test of the subroutine which starts at LINE 1000. LINES 990-995 serve to jog the memory on various points about the subroutine. On coming back to look at code years later, such REM LINES can be invaluable. By then one has probably forgotten which interpreters the routine was written for. If I were writing the subroutine now I would probably also include the date that it was written and its file name, as that would help me locate the copy I have on tape.

POPping out of a subroutine

It is possible to call a second subroutine from the first, and a third from the second. Each time a subroutine is called the interpreter needs to keep track of the address that it must return to when it meets the RETURN command. It does this by keeping what

is known as a "stack" of addresses. This explains why (as mentioned a few paragraphs earlier) an address must be knocked off the stack when execution returns from the subroutine to the main program.

However there are some subroutines, for example ones which offer a menu of different choices to the user, in which it is convenient for execution not to return to the point of departure, but instead to jump to one of many different places in the program depending on what the user wants to do next. But if we keep jumping out of subroutines the stack of addresses is going to get bigger and bigger, until eventually it exceeds the space reserved for it and the program crashes. Unfortunately neither SP-5025 or SP-5060 have a command to facilitate jumping out of a subroutine, but the Club variant SP-5025.K2 does (as does *Xtal 3.1*). To save space in the 5025.K2 interpreter the command is **RETURNP** (instead of the **POP** command used by *Xtal 3.1* Basic). SP-5025.K2 will be the subject of a major article in the next edition of the magazine.

DATA, READ, RESTORE

We saw how **READ** statements pick up, sequentially, the elements of data which are provided by the **DATA** statements. This works all right if early in the program all the DATA statements are READ. However imagine the situation in which one has an initial menu page offering the option to choose any one of say five different programs. There is no knowing which the user is going to choose. And the one that is chosen may require only a little data to be READ into Variables. In such cases it is much more convenient to ensure that on running the program the data, which is READ, is specifically the data required by that program. This is easy to do with an interpreter which allows data to be READ starting at a specified LINE. For instance in the general type of program that we have just considered, one of the sub-programs might start at LINE 5000, and have **DATA** statements at LINE 5005. Using **RESTORE** [LINE NUMBER] the main part of this sub-program might start at 5100, with LINES like this:

```
5100 RESTORE 5005
5110 DIM PRICE(9)
5120 FOR Z= 1 TO 9 :READ PRICE(Z): NEXT
```

LINE 5100 ensures that the data which is READ by line 5120 is taken *starting from* LINE 5005. This important facility is not offered either by the original SP-5025 or by SP-5060, but is available in SP-5025.K2. **RESTORE** [LINE NUMBER] would of course be used in the other sub-programs to ensure that they to used the correct DATA.

Both the original SP-5025 and SP-5060 offer **RESTORE** by itself, but this merely ensures that DATA is READ again from the very first item of DATA, and is not particularly useful.

LOAD, SAVE, VERIFY

In Vol. 11/2, when this series on Basic commenced, a few pages were devoted to getting started on the MZ-80K. They mentioned the capabilities of the *Monitor*,. In one sense of that word *Monitor* refers to the small program in ROM that allows some simple things to be done as soon as the computer is switched on.

LOAD was the *Monitor* command which allowed us to get Basic loaded into the computer's memory. Once the Basic interpreter has been loaded, the interpreter itself has a **LOAD** command which allows programs written in Basic to be loaded. To use it, just type the simple command **LOAD**, then press **CR**. This will bring up a prompt to play the tape recorder. The interpreter will then attempt to load into memory whatever Basic program it next comes across on the tape. Normally we know where each program starts on the tape, so often this is the simplest method to use in order to load a program. However if you know the name of the program (i.e. its file name) but not precisely where it is on the tape, then you can use the command **LOAD** "*filename*". *Sharp* Basic allows 16 characters to be used as a file name. Incidentally this is rather generous as compared to CP/M and DOS, which only allow eight characters as the file name, then a full stop, plus a further three characters as the *extension*: in other words 11 characters in all. *Sharp* Basic will even allow a space to be included, though CP/M, DOS and some other Basics will require that you use a _ character instead of a space. Letters and numbers can be used in a file name in any combination.

After making changes to a program, or indeed writing a new one, you will need to save the program from the computer's memory on to tape. This is done by typing **SAVE** "*filename*" and pressing CR. *Sharp* Basic has a rather curious way of saving programs to tape. It saves *two* copies one after the other. I have very rarely experienced the situation in which the first copy of the program failed to load, but the second copy loaded, so this 'double save' seems to be a time-wasting procedure. Especially since the process of SAVING to tape is quite slow.

Speed of SAVING to tape. Transference of information to tape occurs at a rate of 1200 bits per second. As each character requires 8 bits (which is normally referred to as a byte), this means that the rate is 150 bytes per second. *Sharp* Basic records a 'header' on the tape, as well as recording the information which is in the program itself. This is so that it can recognise not only the filename, but a number of other things like file type and length of file. Recording the header takes as much as 18 seconds of tape time. Using this information you can work out how long a particular file will take to record. Take for example a file which is 30,000 bytes in size. This will take (30,000/150) x 2 + 18 = 418 seconds, or nearly 7 minutes. Having recorded the file you will then need to rewind the tape and and enter the command **VERIFY**. If you've wound the tape to the right place the first header that will be encountered will be the one you have just recorded, so there is no need to type in the full command **VERIFY** "*filename*". However verification is going to take another 7 minutes, so you can see that *Sharp's* idea of doing a double recording was not a good one. Fortunately this is another thing which has been tackled with SP-5025.K2. It only does a single recording.

Permanence of recordings. Have no fear. Provided you use a good tape, such as TDK, recordings seem to have a long life. I have not noticed any problems with the recordings made 10 years ago. **

A SURVEY OF CP/M ON SHARP COMPUTERS - by Maurice Hawes

INTRODUCTION

In recent months, we have enrolled several new members because they have just acquired their first computers from boot sales or Oxfam shops, and the computers happened to be by Sharp. In many cases these members know nothing about the CP/M operating system. Therefore, at the risk of teaching a few grandmothers how to suck eggs, I offer this survey of the CP/M operating system, as it has been applied to Z80-based Sharp computers; in other words, to the MZ-80K, MZ-80B, PC-3201, MZ-80A, MZ-700, MZ-3500 and MZ-800.

GENERAL

These days, if you ask a young computer salesman about CP/M, he will probably look at you as if you had come from Mars. Ten years ago, things were different; CP/M was the standard operating system for all Z80-based computers; in practice that meant every serious business micro you could name, except for the Apple. The Z-80 CPU, with its limited address range of 64K, was king; the 8086 was still in the laboratory, and MS-DOS had not even been launched.

The CP/M system was invented by Dr Gary Kildall. It was intended for Intel 8080-based machines; but as it happened, it also suited the more powerful and popular Zilog Z80 CPU, and this eventually led to CP/M's success. In a nutshell, CP/M is a software interface between programs and hardware, which makes all Z80 hardware 'look' the same; or at least, as nearly the same as can be managed.

CP/M demands a machine with disk drives and at least 20K of RAM (which must start at $0000). And although there is no theoretical lower limit on VDU width, less than 64 columns is impracticable. Some of Sharp's Z80-based machines meet all the criteria, but some do not. Given their divergent designs, one cannot generalise; so I now turn to the individual machines, in chronological order.

MZ-80K (1979)

The MZ-80K was designed as a direct competitor to the Commodore 'PET', and Sharp probably never intended it as a serious business micro. As manufactured, it does not meet two of the criteria; its screen is only 40 columns, and it has a fixed ROM at $0000-$0FFF.

Crystal Research of Torquay devised a 'fix' for the ROM problem, and wrote a 46K CP/M system for the MZ-80K which, initially, was designed for the MZ-80K's 40-column screen. But the package never really took off; this was probably due to the unhelpful attitude of Digital Research, the limited capacity of the MZ-80K's 35-track 5.25" disks (143K), and difficulties in upgrading the 40-column screen, rather than any deficiencies in Crystal's CP/M software.

The Sharp Users Club has done a lot of work in an attempt to resuscitate the idea of CP/M on the MZ-80K, but we have recently concluded that the problems are almost insurmountable.

This does not mean that the 'K' is no use. Other 'K' DOS systems (e.g. Brian Gladman's SDOS and ZEN DOS) offer facilities similar to CP/M without demanding expensive and difficult hardware mods., and they turn a disk-based 'K' into a useful software platform.

MZ-80B (1980)

Although it appeared only a year after the MZ-80K, the MZ-80B is very different, especially in the context of CP/M. As manufactured it has a switchable 40/80-column screen, 64K of RAM, and 35-track 5.25" disk drives with a capacity around 300K. Therefore it does not have to be modified in any way, to run CP/M.

Nevertheless, it appears that Sharp did not see the MZ-80B as a business machine; at any rate, they didn't produce a CP/M system for it. The job was left to MicroTechnology Ltd.; and a very good job they did, too. They not only produced a reliable and friendly system, they also increased the capacity per disk, from Sharp's original figure of 286K, to 350K (and that was done using Sharp's 35-track drives - on 40-track drives it would have been 400K).

As a result, the MZ-80B was accepted as a business machine, and MicroTechnology went on to produce a hard disk system which gained many customers. They also implemented CP/M PLUS on the MZ-80B; but this was overtaken by events, and was never properly debugged.

PC-3201 (1980)

Sharp made it clear that they intended the PC-3201 as a business machine, and they co-operated with Digital Research to produce a CP/M system for it; but it was such a cockeyed version that it was bound to fail. The PC-3201 failed the RAM criterion because it had a BASIC-in-ROM at $0000-$4000, and Sharp 'solved' this problem by creating an unorthodox CP/M system which started at $4200 instead of $0000, with programs loading at $4300. This was quite unlike anybody else's version of CP/M, and therefore virtually useless.

The proper solution to the problem came from MicroTechnology; they designed a 'Relocator Board' which plugs into one of the I/O slots at the rear of the PC-3201. The BASIC-in-ROM chips are then removed from the main PCB and plugged into the 'Relocator Board', after which they are automatically switched out of the main 64K area whenever the user loads the M-T version of PC-3201 CP/M.

M-T's version 'looks and feels' identical to their MZ-80B CP/M; so anyone used to M-T CP/M will feel at home on either machine. But for some reason the two systems use different disk formats - 350K/disk on the MZ-80B, but only 256K/disk on the PC-3201. As it happens, this is not a serious problem today; MicroTechnology's CP/M system for the later Sharp MZ-3500 can handle both of these (and some other) 'foreign' disk formats.

MZ-80A (1981)

The MZ-80A, as manufactured, does not have an 80-column screen; but MicroTechnology (and others) soon discovered that it is easy to to fit an 80-column option. M-T then modified their 64K MZ-80B version of CP/M, to form a 48K system on the MZ-80A; the two systems appear identical to the user, and they use the same disk format (35-track, 350K per disk). But there are some important differences between the system files, see later in this article.

We can legally supply our members with Kuma's MZ-80A 80-column kit. We also offer an enhanced version which allows you to restore the MZ-80A to its original 40-column MZ-80A/MZ-80K configuration.

MZ-3500 (1982)

The MZ-3500 is related to the PC-3201 and, like that machine, it was seen by Sharp as a business computer. By this time, Sharp knew a bit about CP/M, and the MZ-3500 satisfies the main criteria; but once again, surprisingly, Sharp made a bit of a mess of writing a CP/M system for it. This is evidenced by the fact that there are several different versions of Sharp's MZ-3500 CP/M, and none of them is really satisfactory. Again, MicroTechnology came to the rescue, and produced a more standard, user-friendly, and versatile version of MZ-3500 CP/M. It 'looks and feels' like M-T's earlier CP/M's for Sharp computers, except that it has extra utilities which enable it to handle 'foreign' CP/M disk formats, including MZ-80B/A and PC-3201. However, because it uses all 40 tracks, its own 'native' disk format is different again - 320K per disk.

MZ-700 (1983)

Neither Sharp nor MicroTechnology offered a version of CP/M for the MZ-700. The stumbling-block is the screen hardware, which is built around a customised LSI chip, and is meant for 40 columns.

Tim Cowell, a member of the Sharp Users Club, and the Sub-editor of the MZ-700 section in 1985-1988, designed a plug-in module which solved the problem by utilising the Z80's external 'ports'; Peterson Electronics showed considerable initial interest in this device, but for some reason they did not follow it up. Sharpsoft and Kuma also announced 80-column kits (possibly the same kit in each case), but nothing concrete ever seems to have appeared.

In 1989 the SUC took the first step towards a full-scale CP/M for the MZ-700, when member Dave Bagshaw modified the 48K MZ-80A version of CP/M to form a 52K system on the MZ-700, albeit in 40 columns only. This was a good start, enabling us to offer MZ-700 owners a disk version of our ever-popular WDPRO Word Processor.

Then, in 1990, John Edwards devised a very ingenious 80-column modification, involving a small additional PCB with flying leads and a few alterations to the main PCB. The SUC can supply the mod., in kit form for around £15 (to members only); once this is fitted, the MZ-700 screen may be switched into 80 columns.

Shortly afterwards John wrote a CP/M patch (CPM780.COM) which modifies Dave Bagshaw's 40-column CP/M to suit the 80-column hardware. In essence, the MZ-700 can now run almost any standard CP/M software; but to take full advantage of the 80-column screen you really do need a proper computer VDU, rather than a TV set.

The story does not end there. As reported in the 700 section of this issue, we now have an MZ-700 version of the 64K PCP/M system that Sharp marketed with MZ-800. By the time this issue appears, anyone who uses an 80-column MZ-700 with 40-track drives will be able to choose between TWO different CP/M systems - one based on M-T's MZ-80A CP/M, and the other based on Sharp's MZ-800 PCP/M. The PCP/M disk format is 40-track, 320K (but with some odd-ball features, see Vol.12 No.1 p.60); but PCP/M has a DISKDEF utility which allows Drive B: to read other Sharp-CP/M 35/40-track formats (MZ-80B, MZ-3500, MZ-5500); so there is good inherent flexibility.

MZ-800 (1984)

The MZ-800 was the last of Sharp's Z80 computers, and to go with it Sharp/D.R introduced their 64K 'Personal CP/M' (PCP/M). This, with its 'Visual Console Command Processor' (VCCP) and its 'Status Line' display, was a belated attempt to revitalise CP/M. The VCCP presents a 'facade' at which system operations may be performed by cursor-controlled selection from a list. In some cases this offers no advantage over the 'command line'; but in others it certainly does, and PCP/M itself also includes three VERY useful 'extra' utilities which work similarly (DISKDEF, DISKEDIT & SETUP). The 320K disk format used by PCP/M is discussed under 'MZ-700' above.

COMPATIBILITY and PROGRAM TRANSFER

Thanks to MicroTechnology Ltd., we have 'look-alike' versions of CP/M for the MZ-80B, the PC-3201, the MZ-80A, the MZ-3500, and the MZ-700. And we also have Sharp's PCP/M on the MZ-800 and MZ-700.

There are points to watch. M-T's various CP/M's do not all use the same disk format, and PCP/M's disk format is different again. Having said that, there is no problem transferring CP/M software between machines. The 'key' is in M-T CP/M on the MZ-3500; this can read/write M-T CP/M disks from the PC-3201 and MZ-80B/A/700; and its own disks can be read/written by PCP/M.

DIFFERENCES IN SYSTEM FILES

Finally, a warning. The above-mentioned disk-transfer facilities allow you to transfer CP/M 'applications' programs from one Sharp machine to another, with little fuss. For example, I now have my favourite W.P. (no, no, they cry, not PEACHTEXT again!!) running on ALL my Sharp computers except the 'K'. But you CANNOT transfer systems utilities between machines. So after any program-transfer session, you must ensure that all systems utilities files remain on their original machines. I fell for this recently - FORMAT.COM on the MZ-80B is the same size as FORMAT.COM on the MZ-80A/700, (it even comes up with the same version number, 1.3). But when I accidentally tried to FORMAT a disk on my MZ-700, using MZ-80B 'FORMAT.COM', I kept getting 'VERIFY ERROR'. It took me an hour to find out why, and in the process I discovered that sometimes you can tell which version of a program you are in from its screen messages. For example, MZ-80B FORMAT.COM prints the message:

Format disk B, when ready type return to start

all on one line; but MZ-80A FORMAT.COM prints the same message on two lines. Having discovered this, I compared the corresponding CP/M systems files on the MZ-80B and the MZ-80A. The results were:

PIP, SUBMIT, XSUB, ED, ASM, DDT, LOAD, STAT and DUMP, SYSGEN, DEL, EJECT, and BUGFIX are all absolutely identical.

MOVCPM, BACKUP, CMT, CONSOLE, CONFIG, COPY, FILES, FORMAT, IODEFS, and TIME are different.

In the next issue, I shall discuss the individual files in M-T's various versions of CP/M, and in PCP/M, including those files which M-T or Sharp added to the standard Digital Research list.

MZ-80K Librarian:
Tony Clarke
55 Linden Crescent
St.Albans
HERTS AL1 5DD

Tel: (0727) 838335 (Weekends only please)

MZ80K News

I hope you all had a great Christmas and a happy start to the New Year, and thank you for enrolling for 1993. Naturally, the SUC Library has to take second place to my work; but in spite of that, and Christmas festivities too, I was able to find time to finish the new list; as I indicated last time, the MZ-80K Library is now divided into sections as below, so when ordering please make it quite clear which section your requirements are in:-

1. GAMES
2. LANGUAGES UTILITIES
3. BUSINESS PROGRAMS
4. SPECIALS (HIRES, JOYSTICK etc.)

I know it looks a bit complicated, but it means that I can add new programs without moving every volume down one to make space.

Also, I have managed to obtain a large quantity of old 5.25" disks; so from now on, when requesting programs on disk, you can either send me your own pre-formatted disks, plus return postage; OR a cheque made payable to me for 50p per disk required. I will pay postage and packing, any profit will be paid into Club funds.

This does not mean that I don't want any new material for the Library, I am always ready to add new programs to the lists. And please remember that all of the Library programs listed below are stored on disks; so if you have disk drives, please order your programs on disks rather than tapes; it is easier and quicker for me to copy a whole disk, than it is to copy one program on tape!

Those members who only use tapes should note that the new list, which occupies the next six pages, still does not contain those programs from the old tape Library which are only of interest to tape-based users (e.g. the numerous tape Basics which were written to overcome the deficiencies of SP-5025, tape copying programs, and so on). By the next issue, I hope to find time to sort these out into a new, slimmer tape-only Library; until then, tape-based users who are looking for this kind of program are asked to refer to the MZ-80K tape Library list in Vol.12 No.2.

As far as photocopying costs go, I have been unable to obtain a copier to date; if any member can let me have one free or cheap I will do away with these charges altogether. Until then, numbers in [] brackets indicate the number of first class stamps required to cover copying costs (or add the equivalent to your cheque).

There is one more thing I should mention. The entire Library List is now on WORDSTAR, so if in the future someone else takes over from me, all he will need is a computer that can accept WORDSTAR files (and an MZ-80K to do the copying on, of course!). Not that I am thinking of resigning just yet - but it's just as well to plan ahead if you can.....

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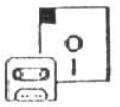
(The MZ-80K Library list for 1993 starts overleaf)



MZ-80K SECTION; DISK LIBRARY LIST

This is the new format for the MZ-80K Library, as usual the number in square brackets [] denotes the number of first class stamps to be sent to cover photocopying costs, over and above postage costs.

GAMES.....BTX

Vol. 1 : Adventure Plus; Dogstar Adventure; White Barrows; Haunted House; House of Mystery; Adventure Game.

Vol. 2 [8]: The Valley; Wizards Castle; Adventure (NEW); Treasure House; Cells and Serpents; Colditz; Mexican Adventure.

Vol. 3 [1]: Magic Adventure; Cave Adventure; Transylvania; Zrymm; Devil's Triangle; Secret Kingdom; Adventureland 2.

Vol. 4 : Witch's Fortress; Tombs of Karnak; The Brass Helm; Dragonquest; Revenge of the Balrog.

Vol. 5 : Tana Battle; Demon Driver; Moonbase Alert; Star Raiders; Sound Effects; Pinball; Orbit; Road Runner; Space War; Defender; Quizmaster; Road Man; Duck Shoot; Duck Shoot2; UXB; Ghost Attack; Storm; Startrek

Vol. 6 : Mah-Jong; Bridge.

Vol. 7 [1]: (ONLY RUNS UNDER SP-6015) Kaeon's Dungeon
(Adventure with monsters and treasure)

Vol. 8 [5]: (ONLY RUNS UNDER SP-6015) Planetfall
(Intergalactic trading game)

Vol. 9 [1]: (Special Text Basic - see SUC Volume 3/1 for rules)
Fairytale II - Complete with Text Basic and instructions

Vol.10 : Duck Shoot; Stamp out; Jumping Balls; Othello; War; Klingon Attack; Colditz 2; Hunter and Devil; Mad Max; Vampire; Master Builder; Novnograd; Pontoon.

Vol.11 [5]: (Two-player games)
Connect-Four; Hangman; Galactic Chess; Tank Battle; Minopoly; Mortar; Attack; Ludo; Snakes and Ladders; Yahtzee; Exploding Atoms; Cricket; El Alamein; Around the Horn; Gunslinger; Chomp; Critical Mass

Vol.12 : Towers of Brahma; Alligator Swamp; Blockstop; Golf; New Golf; Pro-Golf; Air Attack; Alian; Nibblers; 3DD Maze; S.S.T.; Invaders; Sharp Shooter; Bumpers; Lunar Landing; Giant Slalom; Breakout; Defender.

Vol.13 : Russian Gold; Tornado; Salvo; Panic; Startrek
Sharp Startrek; Monopoly v Computer; Digger; U-Boat; Battleships v Computer

Vol.14 : Cribbage; Backgammon; Tenpin Bowling; Goldminer; Trader Smith; Bouncing Ball; Fighter Command; Autocross; Football Manager; Super Spider; Moleman Mk.2; Connect-Four v Computer; Caesar's Invasion.

Vol.15 : Hamurabi; World Power; Electric Company; Whitehall; Nuclear Power Plant; Battle of Britain; Dr. Livingstone; Empire II; Executive; Lost in the Jungle

Vol.16 : Slot machine; Musical Hangman; Railroad; Mosaic; Solitaire; L-Shape Game; Poker; Murder at the Manor; Blackjack; Maze-Monster; Airplane; Noughts and Crosses; Race-Chase; Imphex; Contract Bridge; Cyborg.

Vol.17 [1]: Football; Galactic Escape; Stella Adventure; Number Advance; Monkey Climb; Blake Seven; Mastermind v Computr Miz-Maze; Intruder; Q-Bert; Dominoes; Balloons.

Vol.18 : (see SUC Volume 3/1 for Serendipity rules). Serendipity; Black Box; Encounter; Pin-Ball; Roadrunner; Target Pong; Basketball; Squash; Alberbaron; Zombie Is.; Piracy; Starmission; Rebel Attack; Swordsman; Dragon Dungeon; Camelot; Laser Defence; Cosmiad Mk.2.

Vol.19 [1]: Entrepreneur; Tudor Village; Oil Strike; Fall of Rome.

Vol.20 : Doom Mountain 1,2,3, and 4; Doom Mountain Instructions; Data for Doom Mountain and file copy program; Dungeons of Death; 10 levels of Data and file copy program.

****

The next 6 tapes require the SP-6025a Special Basic for long programs; a copy is on each volume supplied, plus a guide:-

Vol.25 [1]: SP-6025a; Bloodstone Castle; Bloodstone Castle Data.

Vol.26 [1]: SP-6025a; Journey into Chessland; Computerists' Quest; The Complex; Data for the 3 programs.

Vol.27 [1]: SP-6025a; As the Crow Flies; As the Crow Flies Data.

Vol.28 [3]: SP-6025a; Castle Quest; Cursed Chambers; Quest.

Vol.29 [3]: SP-6025a; Coup D'Etat; Election 84; World Cup Manager.

Vol.30 [1]: SP-6025a; American War; Dark Star; Galaxy 7000.

****

Vol.31 : Slalom; Labyrinth; Reverse; Scramble; Cribbage MOD; Animal; Fallout; Pontoon 3; Concentration.

Vol.32 : (SP-7011) (OBJ and BTX) Galaxy Invaders; Race Chase; Breakout 2; FD I/O Ormas; Backgammon 2; Space Game (German); Stockmarket 6; Pontoon; Fallout.

GAMES.....OBJ

Vol.50 : Galactican; Galaxi Form; Space Invaders; Intruders; Breakout; Galac. Attack; Asteroids; S.Invaders 2; Alien Attack; Escape Force 2; Pak-Man; Othello; Block Kuzushi.

Vol.51 : Towering Inferno; Jintorri-game; Canyon Raider; Fender (Osprey); Kastchei I; Cars; Scramble; Skyscraper; Campaign 14; Defender; Minotaur's Cave.

Vol.52 : Scrambler; Greedy Gremlins; Frogger (Osprey); Andromeda; Star Killer; Collision Cobra; SOS Island; Space Crash; Super Simon; Condot (Squares); Neutraliser; Sky Ship.

Vol.53 : Spider Invasion; Attacker; Astro War; Donkey Kong; Bridge Rescue; Gomoku Machine; Goldspur; Batrer; Superdefender; Space Panic; The Red Baron; William Tell; Lady Bug (English Version).

Vol.54 : Asteroid II; Space Guerilla; Stadte Retten; Centipedes; Elecron 22622; UFO Caves; Cowboy Duell; Munchies.

Vol.55 [5]: Chess (Record); Chess (Sargon v2.71); Chess (M/C v1.6); Chess (Rel 1A); Chess (Apollo v2.0).

Vol.56 : Galaxia; Head-On; Obj-E; Proteous I; Galaxy Invaders 2; Hunter Killer; Stargate Mission.

Vol.57 : Pyramid of Doom; Base Zero; Antares; Atlantis II; Flight Simulator; Sea Raider CMP; Shudo (Ludo v Computer).

Vol.58 : Sharp-Man; Jungle Kong PCG; Penguin PCG.

GAMES.....XTAL

Vol. 61 : Xtal Disk-Loader; Keys of Kraal; Stoneville Manor; Lost Dutch Gold; Pirate Adventure; Everest MZ-80K; Treasure House; TicTacToe; Mosaic; Pinball; Obstacle; Card Sharp; Pontoon; Ghost Hunter.

The following games all run on (ZEN) DOS v1.0, and most of them were supplied and written by Tony Kemp. When ordering for the first time, please send two disks, so that one can contain (ZEN) DOS v1.0.

GAMES.....DOS v1.0

Vol.65: Master Copier; Copy; Moris-miner; Cat-Crawl; Roadhogs; Kemps Invaders; City-Attack; Shootout; Duck Shoot; Aliens; Brick-Head; Space-Snake; Maze-Eater; Springy-Thingy.

Vol.66: Obliterator; Joanns Sums; Joanns Sums 2; Notepad; Bowls/A; Bowls(D/B); Maze-Eater (HR); Griders (HR); Obliterator (HR).

Vol.67: Alpha Attack; Moon Buggy; Rope Runner; Alian Egg; Send-1; Raid; Hunchy; Scrambler; Ravenous.

Vol.68: Xanagrams; The Word Game.

Vol.69: New Invaders; Missile Command; Ladders; Man-Hunt; Gridbugs; Tank-Attack; Dogz; << Mazog >>.

The next part of the revamped MZ-80K Library is for business and education programs, formerly referred to as 'Practical Programs'.

BUSINESS AND EDUCATION

Vol. 1 : French Vocabulary; Test; Morse Translator; Recursive Anagram; Garden Planner; Sums Game (Tutor); Apothecary (Chemistry Formulae); Geomaths (Quadratic Equations, Logs, etc.); Number Recognition (up to 9); Decimals Tutorials 1 and 2; Fractions Tutorial; Eliza (Converse with a computer!); Monopoly Finance; Petrol Consumption Calculator; Metric Conversion; Hex/Dec Convertor; Pythagoras'Theorem; Written Time; Times Tables.

Vol. 2 : IQ Test; M'way Signs Test; Calculate %; Disk Alarm Call

Vol. 3 [3]: Ham Radio Log; 6 Band Check Log; Morse Tutor; Transmission Lines; QAR/QRB; R.A.E., Tutor; Antennae; NGR to Locator; Lat/Lon to Loc; Loc to Lat/Lon; NGR to NGR Distance; Yagi Antenna Design; HPF/LUF Prediction; MUF Prediction; HF Aurora Prediction; Cubical Quad Des; EME Contact Program; Moon Almanac; Oscar Morse Transl'r; Loop Antenna 1; Loop Antenna 2; QST Loop Antenna; W.W.C.W. Rx; R.S.G.B.C.W. Rx; Coax Trap.

Vol. 4 : L.F. Tuned Circuit; R.F. Tuned Circuit; Capacative XC; Inductive XL; Bypass Capacitor; Parallel Resistors; Pi and T Filters; Tuner Tracking; Intermodulation; Transmission Line Calcs.; Std Resistors; Trans Ratio; Attenuator; Tranamp Class A; Unbalanced Min. Loss Pad; Attenuation Programs; HiPass Pi Filter; Complex Addit'n and Subtr'n; Inductance; Meter Range Ext'n; Capacitors; Ohm's law; Trans Design; Resis. Color Codes; Network 1; Network 2; Resonant Circuits; Turns/Henries; Turns/SWG

Vol. 5 : CW-Decoder (ML); CW-Trainer; MZ80-RTTY v2.0P; QSO SEIRI v1.2; RTTY-Barth; 6 Band Check Log; Transceiver; Antennas; Capacitors; CW 5er GRUPPEN; CW-Decoder; Frequences; Ham File; Keyboard Morse; Morse; Morse G4ECB; Morse G8VHB; Morse Tutor; QRA Locator; R.A.E. Formulaes.

Vol. 6 : Dispensolabel (Chemist's Prescription Labels); Phone Charges (still needs update); Sound Effects.

Vol. 7 : Sharp Inventory Control Program; Hucalc 80K+/S; Hucalc 80K+/M (both Hucalc programs save to tape only).

Vol. 8 : (SDOS v1.0) WDPRO v2.25KD; Copy; Init; WDPRO%M; WDPRO; letter; letter 2; WP225J; letter nlq2; SDOS INSTR.

Vol. 9 : (CMT-based Word-Processors and Database) APOLLO WORD v1.9; WDPRO 2.37KT ; WORDPOWER; DATAPOWER.

Vol.10 : (CMT-based Word-Processors, letter-writers, etc.) APOLLO WORD v2.3; Sharp Pencil K1; DATABANK; DATABANK PLUS; Mailing List K1; Reportwriter; Letterwriter.

(BUSINESS AND EDUCATION programs, continued)

Vol.11 : (SP-7011) Home Accounts; Set up DATA.

Vol.12 : Pools Generator; Perms 1; Perms 2; Perms 3; Perms-Total; Sun Plan 40 v7; Pools Plan 40v7.

Vol.13 : Stock Control; setup DATA; Report Generator; Graph TX; Report TX; DSPTO ?+F; Tabulation TX; Regression Line; Regression Curve; Histogram TX; Inventory Control; Inventory Statements; Screen Dump; Home a/c; Home Budget

LANGUAGES AND UTILITIES (for Notes A-1 TO A-9, see Appendix)

Vol. 1[10]: Belgian SP-7011 (see A-1) with AUTO RUN and PRINT (Sharp printer driver); 7011 Instructions (English).

Vol. 2 : C.P.E. 6015 Disk Basic, incorporating Disk Basic Plus and Hi Res EP (Prints Sharp Graphics on Epson printers)

Vol. 3 : Belgian SP-7011 (see A-1) with Epson driver but no graphics); 7011 Instructions (Engl.); Master Disk Copy; Any Sort DE (List/Sort, Epson); Data File EDC (Epson); Address Book (Record/Sort/Print Names/Addresses, Epson)

Vol. 4 (See A-2 to A-5) : Saveall Disk/CMT; Disk Util v2.0; Master Copy; Saveall CMT/Disk; Master Boot; FD to CMT; CMT to FD; Change Vol.No.; Object DOS; QDOS SP-6015; Supertape 2; QDOS DIWO; Basic Compiler; SP-6015 with Ardensoft; SP-5025; Disk Commander; S-Diskette Init; Diskedit.K4; SP-6015/CMT; DIWO PRINT (Sharp & Epson)

Vol. 5 : Boot Slave; FD-Copy (For A & B); FD-Copy; Init. Disk; DSK TAP; TAP DSK; '$' Makes Master; Disk Basic MX-80; Disk Initialise; Diskcopy; Mastercopy; DiskDisk (1 file at a time);Disk Util 01 (French - A-1); Master Boot; ASM LBT 2001/E; Crowood Floppy (translation from German instructions follow this Library List).

Vol. 6 : SP-6015+AUTO RUN; Single-Drive Copy; Trk/Sec Calculator; Load Plus; Change Vol. No.; Saveall Disk/CMT; Saveall CMT/Disk; 1 Program Disk/CMT; 1 Program CMT/Disk; Hex/Dec Convert; Drive 1 to Drive 2 Mastercopy (Basic).

Vol. 7 : Disk Pascal SP-6610
Vol. 8 : S-DOM Disk Operating System. (See A-6)
Vol. 9 : Sharp F-DOS Floppy Disk Operating System.

Vol.10 : HU-Basic; HU-Basic v1.4 note; SP>HU-Basic Convertor; ED-ASS; Club Mon v5.24; Type v1.9.

Vol.11 [1]: S-Diskette Initialise; Diskette Copy; Cassette to Disk; Disk to Cassette; Master Disk Copy; Expert Machine Code; Probe B600; B880 MASTER (See A-7)

Vol.12 : DIWO/P (Sharp & Epson, see A-3); QDOS SP-6015; Master Disk Copy; Init. Disk; QDOS DIWO (M/C); Single File Copy

(LANGUAGES AND UTILITIES, continued)

Vol.13 : SP-6015; Superdisk 1D; Superdisk 2D (Copy any 80K disk using 1 or 2 drives. No pre-formatting needed).

Vol.14 : ORMAS Disk Basic
Vol.15 : DOS v1.0 (A-8 with Express Basic (for progs. by T.Kemp)

Vol.16 : SP-6015; S-Diskette Init; Filing-CMT; Disk Copy v2.0; Basic SP-5025; Prologue; Fashion; Clock; Take-down Game Diskedit.K4; Disk-Util 01; 6015 Centronics; Auto Run. (The SUC-upgraded master of SP-6015, see A-9

Vol.17 : 6015/ARDENSFT/P3; 6015/ARDENSFT/EP (see A-5); S-Diskette Init; Disk Util V2.0 (A-2); Master Boot.

Vol.18 : Basic 5060 Epson; CPE Basic Epson; HI-RES 5025 Epson; HUDSON 24K Basic; 5025+COMMANDER; SP-5060VM; Basic 5510.

Vol.19 : DAVID Basic-C; Basic 5025; AVALON ZEN; * ZEN Toolkit *; DR.1 to DR.2 Master Copy.

Vol.20 : ZEN-DOS (see A-9) Data files

SPECIAL CATEGORY PROGRAMS
(For those with HI-RES or other add-ons e.g. Joysticks)

Vol. 1 : (HI-RES) Asteroid war PCG; CG Rally 'X'; Imperium PCG; Lander PCG; Scramjet PCG; Supper Alien PCG; Tomahawk PCG; Towering Mouse PCG.

Vol. 2 : (HI-RES) Batrer PCG; Galaxain PCG; Hal Demo PCG; Jungle Kong PCG; Penguin PCG; Schach PCG; Star Fire PCG; Warp 1.

Vol. 3 : (JOYSTICKS) Road Hog; Micro Doodle; Grand Prix; Nibblers; Fallout; Astrodoge; Galactic Escape; Laser Defence; Digger; Frogger; Indy 5000; Bumpers; Nun Runner; Mad Max; Gate Crasher; Blitz H; Sh/shooter; Defender; Tilt; Puckman

APPENDIX A - Notes A-1 to A-9, on Language and Utility Programs

A-1) SP-7011 has the same programming commands as SP-5060, plus disk commands; it originated in Belgium, and its associated HELP file was translated into English at Yeovil College. For details of SP-5060 programming commands, see SOFTWARE MANUAL I, or Vol.2 No.1 pp.3-4.

A-2) DISK UTIL 01 is in French, and DISK UTIL V2.0 is in English. For details see Vol.12 No.2 pp.36-37.

A-3) DIWO, QDOS DIWO, DIWO/P etc. - see Vol.11 No.3 pp.36-37.

A-4 DISKEDIT.K4 is a sector-editing program. To use it, you MUST know exactly what you are doing ! For details see Vol.10 No.3 pp.30.

A-5) ARDENSOFT, COMMANDER, other Basic toolkits - see Vol.11 No.3.
A-6) S-DOM - see the article by P.Tuffs in Vol.8 No.1 pp.24-29.
A-7) B880 MASTER and PROBE - see Vol.10 No.3 pp.20-27.
A-8) ZEN DOS and SDOS - see Vol.12 No.3 pp.22-23.
A-9) SUC-upgraded Master disk of SP-6015 - see Vol.11 No.3 p.36.

REVIEW OF CROWOOD FLOPPY (Language/Utility Library Disk Vol.5)

By Tony Clarke

'Crowood Floppy' is a word-processing program that not only handles disk files on the MZ-80K, but tape files as well. I am not using it myself at present because my MZ-80K printer card has gone down, but if you feel like giving it a trial, it is a fairly easy program to use providing you can read German (is there anyone out there who can read German AND understand machine code - if so, whoever you are, how about having a go at translating the program for the MZ-80K Library !).

Recently, I was lucky enough to find someone who could translate the commands (on paper) for me; they are as follows:-

B	GOTO START OF FILE
G	CONTINUE AT THE SAME PLACE
S	SEARCH FOR TEXT
L	READ CMT/DISK
W	WRITE CMT/DISK
A	READ CMT/DISK + MERGE
I	DIRECTORY OF DISK
D	PRINT TEXT
F	SET FORMAT OF OUTPUT
P	PRINTER ON
N	PRINTER OFF
V	GOTO TOP OF NEXT PAGE
O	SET TOP OF PAGE
T	GRAPHICS KEYBOARD
X	STANDARD KEYBOARD
Y	SWOP Y AND Z (on keyboard)
↑	ERASE TEXT (up-arrow)
\	END OF PROGRAM
H	INFORMATION (FREE SPACE)

Other things I have come across in various different situations include the following error messages and prompts:-

FEHLER	ERROR
SIE WUNSCHEN	YOU WISH
CASS/DISK VORBEREITET	CMT/DISK READY
DISKETTE NICHT KLAR	DISK NOT READY
LOSCHEN:DATEN-NAME	ERASE:FILE NAME
SUCHTEXT	TEXT TO SEACH FOR
PAPIER(ZOLL)	PAPER(PROBLEMS)
ZEILEN/SEITE	ROW/PAGE
ZEICHEN/ZEILE	LETTER/ROW
WIRKLICH LOSCHEN	ARE YOU SURE YOU WANT TO ERASE

There may be others, so if you find one that I have not listed above, let me know what it is and I will get it translated for you (thanks are due to an unnamed student at Hertfordshire University for the translation services !).

****

MZ-80B Sub-editor:
Steve Bass
17 Glade Croft
Gleadless
Sheffield S12 2UZ
Tel (0742) 652151

MZ80B News

It's hard to believe that March is nearly on us, and here we are starting a new Volume of the SUC magazine. So much has happened to me in the last year: I have moved, I got married on Boxing Day, and I had my car broken into whilst I was still moving my computer files from Deepcar to Gleadless. Unfortunately one of the items stolen was a binder which contained all the MZ-80B information that I had put together over the years; it was the only thing they took which could not be replaced, and to me it was priceless.

That's enough of my moaning; I am now happily married to Shirley who, fortunately, understands my love of computers even though she does not understand computers. So she is prepared for us to buy a house big enough for both of us AND all my computers. Hopefully, by some time in May we should have moved in, and when that happens your Sub-editor will have yet another change of address; so look out for its announcement in the July issue of the Magazine.

Whilst I was in this refective mood, it suddenly occurred to me how fortunate we MZ-80B users are to have what I believe is the best of the Z80-based computers that Sharp ever produced. When you think about it, it has everything you need to create fairly decent graphics on separate screens and then superimpose them on one another, or on the normal text screen; you can connect floppy disk drives, hard disk drives, printers, modems or other serial devices; and you can run a full 64K CP/M (or even CP/M Plus); all this is possible without major surgery, and you do not need masses of separate hardware connected as appendages out of the back of the machine. This all helps towards reliability and robustness. I certainly miss the use of my MZ-80B, and cannot wait to move into a bigger place so that it can be unpacked and set up in the computer room. To me, it is a sad fact of computer life that my Epson 386 PC and Acorn Archimedes have to take precedence in the space available to me at the moment, since it is these machines I use to help me in my work.

Of course, a lot of people recognised the virtues of the MZ-80B when it first appeared in the U.K. in 1981; it was used by many companies, some small and some large, as a serious business tool (Kuma Computers, who should know, used MZ-80B's with hard disk drives for their accounts, right up until last year!). In fact, we are talking about a machine which, in its heyday, was a very smart cookie - and I believe it still is.

What do YOU do with YOUR MZ-80B ? Or, to widen the scope of the question, what do you do with your computer(s) ? I would love to hear from members about their computer(s) and what use they put them to; or even what use they would LIKE to put them to but cannot, for whatever reason. Let's have your answers (a postcard will do, but a disk or tape would be better). That's about I have room for 'till next time, happy computing,.....

MZ-80B Librarian:-
John Ibberson
38 ELLIOTT DRIVE
INKERSALL
CHESTERFIELD
S43 3DP
Telephone 0246-472894

The MZ-80B LIBRARY LIST for 1993

GENERAL MZ-80B LIBRARY NOTE

New members are asked to note that nearly all the programs in the MZ-80B Library are stored on disk, for convenience and speed of access. However, almost ALL the files listed on the next four pages CAN be supplied on tape; but it should be noted that some of them are written ON THE ASSUMPTION that disk access is available, and such programs will not run on a tape-only system. Further information is available from the Librarian.

A few programs are designed to be loaded from tape, and/or used with other tape files. These programs are listed immediately below, and will be supplied on tape unless otherwise requested.

Programs which are SPECIFICALLY supplied on tape

SB-5510 (Sharp's ORIGINAL Tape Basic for the MZ-80B)
Knight Commander (TAPE toolkit for DISK Basic, see Vol.11/3)
Knights Easy Assembler (No instructions)
Club K>B converter (Converts MZ-80K tapes to MZ-80B format)
HUCALC 80B+ (Spreadsheet which uses tape files only)
DSPRZBM(U) (Disassemble, Search, Zero memory; see Vol.5/1 p.45)
RAMB(U) (Renumber, Append, Merge tape progs.; see Vol.5/1 p.45)

***** THE MZ-80B LIBRARY ON DISKS *****

S.U.C. DISK 1 (BASIC)

World Cup
Personalysis
Dog Star Venture
Battle of Britain
Garden Planner-1
Parliament
Greetings
E.S.P.
World Power
Day of a Date
Easter Days
Mugwump
Profit Margins
Reading Test
Polynomial
Morse
Rectangle Demo
Morse Code
Days 'tween 2 Dates
World Cup Soccer
Dscntd Cash Flow
Whitehall
Fibonacci
Hangman
Next to Last 1
The Clock
'B' CHR$
Lunar Lander
Bouncing Ball
DECBINHEX
Music Box
Sentences
Stockmarket
Self Portrait
Morse Tutor
French Vocab
Football Forecast
T'phone Charges
Time of Death
Golf
Susan's 3 in 1 Clock
Easter Day
Set Alarm
Stock-taking
Raffle Draw
Factorisation
Calendar

S.U.C.DISK 2 (BASIC)

Pick a Number	TIC-TAC-TOE	Scot Tunes
Chord Finder	Benchmarks	Planets
Chomp	Graph1 Demo	Graph2 Demo
Graph3 Demo	Graph4 Demo	Graph5 Demo
Graph6 Demo	Graph7 Demo	Graph8 Demo
P6 Line Spacer	Castle Quest	Bio Chart
Bomber Pilot	5-Pin Bowling	Bridge
Connect 5	Golf1	Hangman 1
Hex-Pawn Game	Letter Slide	'B' Patience
Crapping Dice	MZ-80B Mastermind	Op-Amp Design
Bumpers	Obstacles	Solitaire
Greek Quiz	SOLGOR	

S.U.C Disk 3 all related Programs (BASIC)

Machine Drawing	Symbols	Graphsave
MC/4	Mould	3D Fig
World	Rotate	GOTO 12000
Backwards	Graph-disc	HAT
Squares	MAP1	MAP2
Readfont	Sharpfont	

S.U.C. Disk 4 all related programs (Basic)

Intro	Shapemaker	Error Mess'g
Numberloader	Help	Citybold.23T
Shapenumbers.pat	Shapelab.M/C	BodySans.14T
Simpletype.23T	Symbols.Pat	Demotext.PS
Typewriter.PS	Pattern Editor	Blackbox
Maze	Basic Keyrepeat	M.Code Repeat
Sound f x 1	Sound f x 2	Wall/Hi-res
Wall/Lo-res	Poke-Repeat	Newjob
Jobdata	Char-Graph	Bumpers
Talkprog	Stringsort.obj	Stringsort.Doc
Testsort.Bas	Basecon.obj	Baseconv.Bas
Graph/disk	Set Quiz	Fruit Machine
Zrymm		

S.U.C. DISK 5 (Basic)

Haunted House	Title Test	One-Arm-Bandit
Plane Game	Pontoon	Tape Directory
Address Label	Titletest5	P.C.D.Drilling
A2	A3	Case3
Allergy Diagnosis	P/Charts	Answers
History	Help	Wordpro/T
Wordpro/D	Lifeplus	Lifepluscode
BK-Converter	Scrn$SB-5510	Scrn$SB-6510
CLS SB-5510	CLS SB-6510	CLS SB-6511
CLS SB-6610	HUCALC 80B+	Barchart Prntr
Histogrammer-F	Space Odyssey	Mah Jong.B1
Apollo Chess V2.0B		

S.U.C. DISK 6 (BASIC)

Track Select	Disk Test	Start/Stop
Motor Test	Memory Test	P5/P6 TEST
Display Test	P4 Test	Test
		Map
Map2	DSKCHK	Track Select

Jump$1173 (>>>J'umps to this address via Monitor)

S.U.C. Disk 7 (RIHA SPECIAL BASIC)

** N.B. DISK NURSE will only run under RIHA SPECIAL BASIC **

Auto-Repeat	Orig.IPL $F000	Disk Nurse
E000-Charcaters	Charsets	

S.U.C. DISK No 8 (M. Howard-Radley's DRAWING SYSTEM)

** N.B. No INSTRUCTIONS are available for this system **

Clock Data	Int Calc	Draw
Cursor	Newdraw	Drowning
Prog' Filename	*Drawing System*	Trans/swap Dat

S.U.C.DISK No 9 (INFORMATION & MODs re 'B' BASIC)

80K Symbols	Beep	Beep-2
Prog Command	CRSR Speed	CRSR Char
Get Repeat	Break I/O	VDU I/O
Keybrd Mod	Keybrd Din	Keybrd Fra
Keybrd Test	CMT Control	PEEK VDU
PEEK VDU-2	POKE VDU	POKE VDU-2
PEEK G-Ram	POKE G-Ram	80K Codes
Tone Genrtr	Bubble Sort	Shell Sort
Shell-M sort	ASCII Sort	Functions
RAM + 255B	Reset F1-10	On Err Goto
LPT Escape	PGM DIR	BTX Protect
Transfer Graph	Transfer BSD	Transfr OBJ>FD
IEE-488 Driver	RS-232 Driver	RS-232 I/F Tst
RS-232C Modem	Z80-Data Convert	Repeat Cursor
P5/P6 Control	G-RAM>FD XFER	RS-232C M/C
Tape > Speaker	Speaker Test	Music Editor
Epson LN Ctrl	Line Space Epson	

S.U.C. Disk No 10 (A French Variant of BASIC SB-6510)

Utility-SBM	DIR FD1	DIR FD2
X-RAY	DISKFER	SYSGEN
SONORISATION	SONO2M	SBM
LIST ME	Brinsonp56	Utility SBM(2)
Keys		

S.U.C. Disk No 11 (NEW CLUB BASIC MASTER DISK)

SB-7510 (Debugged and improved disk Basic, see Vol.12 No.3)

UTILITY V2	F-KEY LABEL	AUTO-REPEAT
B-COMMANDER	B800 MK6	DISKEDIT B4
BK CONVERTER	SUPERTAPE 2B	6510B-CENTRONICS

S.U.C. CP/M Disk No 1

XWD.Com	IPL.ASM	WRDCOUNT.COM
WASH.COM	DESK.COM	B-FIND.COM
MDM714-A.COM	MDM714-B.COM	DSKED.COM

** PLUS ALL THE ASSOCIATED FILES FOR DESK.COM **

S.U.C. CP/M DISK No.2

This Disk is an assortment of programs written in XTAL BASIC i.e. THEY WILL NOT RUN WITHOUT XTAL BASIC (which is NOT supplied on the disk as it's still the patent of XTAL RESEARCH Ltd.)

BANKPROG	CALENDAR	BANKPROG2	DATECALC
WORDS2	EASTER	WORDS	CHARSET
CASHBAL	INVOICE	APPCOSTS	DARTSCORE
XTALVAR	HOMONYMS	WALLPAPR	VATCALC
COMPOUND	LPPROG	TRIPLAN	SHOPLIST
TABLES	FRENCH	MONOFIN	DECBINHEX
RECKONER	LPPROG2		

S.U.C. CP/M DISK No.3

CERTIFY	RESET	QK	XLATE
SPZ	DU	CPMSTERM	SSIB
NSWP205	XLD	DISKC	FINDBAD
DER	UKM7	TELL	

S.U.C. CP/M DISK No.4

(Programs on this disk were described in Vols. 11/2 & 12/1)

ZENASMB2.COM	DISPLAY1.COM	DISCMOD3.COM
ZENASMA2.COM	DISPLAY2.COM	DISX.COM
ZENASMBT.COM	NEWBCHAR.DAT	
ZENASMAT.COM	NEWACHAR.DAT	

S.U.C. FDOS DISK No 1

INFO-Program.obj (Calculates the cost of a manufactured article, given material costs, wage costs, and margins).

S.U.C. FDOS DISK No 2

A collection of useful sub-routines by Sidney Smith. The List is too long to reproduce here (but see page 49 of Vol.11 No.1).

TAILPIECE

Copying tape files takes a long time, so please be patient if your request takes a while. Disk Copying, in contrast, can be done quickly, and I would expect, on average, no more than 2 days delay in returning your disk (or disks). PLEASE REMEMBER .... REQUEST + RETURN ADDRESS LABEL + POSTAGE to the address at the top of this section is all I need (but when sending DISKS, pack them between pieces of STIFF CARD or even HARDBOARD, to discourage the Post Office from folding the envelope !). Or, of course, if you can get hold of proper DISK MAILERS, use them. John.D.N.Ibberson ***

MZ-80A Sub-editor
Doug Grout
'Underwood'
Ogwell, Newton Abbot
Devon TQ12 6BH
Tel: (0626) 51435 (or FAX 0626 55575)

MZ80A News

HELLO AND WELCOME....

Greg Chapman has finally succumbed to the blandishments of the IBM-PC, sold his 'number one' MZ-80A with disk drives, and very reluctantly decided that he cannot sensibly continue to edit this section. So here I am, doing my best.

We shall miss Greg (but not altogether, I gather from Maurice that he has already contributed to the PC section of this issue, in his usual style). He has been one of the pillars of the Club for several years, and will be long remembered for many things, such as his early attempts to sort out WDPRO and HISOFT PASCAL, his own CLUB COPY and CASH FLOW programs, and his recent work on Sharp Basic compilers. I think we shall probably hear from him again, but in the meantime I am sure you would like me to thank him for all his efforts on our behalf, and wish him well.

OTHELLO - by DUG Grout

I don't like computer games at all, but somebody requested this one and out of curiosity I tried it. It is very good and I find it fairly relaxing. It came up on the screen with no instructions and hitting a few keys did not produce any progress. It then dawned on me that the real name of the game was 'REVERSI', and a quick look in Hoyle's book on games confirmed this. More enquiries revealed the story that in the early '80s a Japanese programmer came to this country, discovered 'REVERSI', which had been about since the 18th century at least, wrote a program for it and then, looking for a typical English name, called it 'OTHELLO'. If this is true, he did a good job - 'REVERSI' is listed as a clone of 'OTHELLO'!

According to Hoyle, the game is for 2 players, using a board with 64 squares, and 64 pieces which are white on one face and black on the other. White plays first. The object is to 'reverse' as many of your opponent's pieces as you can. The winner is the one with the most pieces on the board when it is full. The game is started by White placing a piece on one of the 4 central squares D4/E4/D5/E5. Black then places his first piece in another of these squares and then White and Black play again to fill the central squares as shown in Fig.1. The position of the first four pieces is optional, but it is supposed to be bad play if White places his 2nd piece diagonally with his first (but see Ref. 2 below).

The mode of play now changes. Each player in turn tries to place one of his pieces on the board so that another of his pieces is in line with it and there are enemy pieces in between them. The enemy pieces thus 'surrounded' are deemed 'taken', and are reversed to show the opposite colour. This rule applies to any number of lines of 'enemy' pieces converging on the piece just placed, as long as those lines have pieces of the player's colour at both ends. A piece once placed on the board never moves off its square, but it may be reversed several times. If a player cannot place a piece on the board according to the rules, he loses his turn. (continued..)

For example, Fig.1 shows a position after 4 moves and White to play. He can place a man on F3, F4, F5, or F6. If he plays on F3 (Fig.2) he will 'take' the Black piece on E4 and reverse it to white. If he plays on F4 (Fig.3) he will again take the Black piece on E4, but on a different line. The simultaneous reversing of a number of lines cannot occur until later in the game.

During the early part of a game both players try to keep within the central 16 squares. The most desirable to occupy are the ones at the corners, and the first to be forced outside these limits is placed at a disadvantage. The most important squares are the four corners A1/H1/A8/H8, and the holder of these stands a good chance of winning the game. Next best are the squares next but one to the corners, C1/E1/A3/A6/H3/H6/C8/F8. The worst squares are those that are diagonally next to the corners, B2/G2/B7/G7 (because a player who occupies one of these helps his opponent to occupy a corner square). For the same reason, this applies to a lesser degree to the other squares next to the corners.

But in practice the importance of a square varies with the state of the game. The desirability of a square will depend upon the pieces in the next squares e.g. when a corner square is occupied, the 'worst' squares around it may suddenly become desirable.

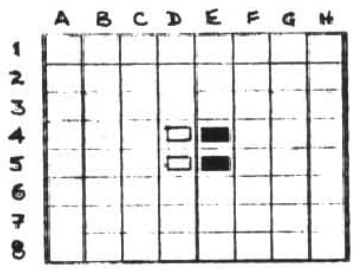


FIGURE 1
AFTER FIRST 4 MOVES
WHITE TO PLAY

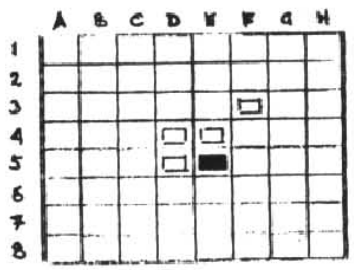


FIGURE 2.
WHITE PLAYS F3

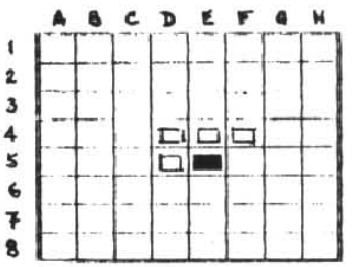


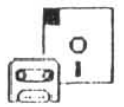
FIGURE 3.
WHITE PLAYS F4

REFERENCES

1). 'Hoyle's Games Modernised', L.H.Dawson, 20th Edition 1950, Routledge Keegan Paul Ltd, ISBN 0 7100 1566 6, first published in 1742. Article on 'REVERSI'.

2). SUC Magazine July 1987 Vol.7 No.2 pp.16. Article by Greg Chapman discussing the rules and technical aspects of the program in the MZ-80A Library. Note that in that program, the first 4 moves are automatic and the pieces are placed diagonally (!)

MZ-80A Librarian:
Doug Grout
'Underwood'
Ogwell, Newton Abbot
Devon TQ12 6BH
Tel: (0626) 51435 (or FAX 0626 55575)



MZ-80A LIBRARY LIST 1993

There have been very few additions to the MZ-80A Library during the last year. Therefore, mainly for the benefit of newer members, I shall summarise the most recent new programs, starting with those which were first mentioned in the November 1991 Magazine.

'XPATCH 5510 V2.2' is a toolkit which adds several new commands to SA-5510 tape Basic. Its Manual was printed in Vol.10 No.3.

Disk DB13 a compendium which includes several programs given to the Club by David and Edwin Loverseed (alias 'DCS COMPUTERS').

Subsequently, SHARP PENCIL (.A1 and .ALF) and SCROOGE ACCOUNTS were added to disk DB13; and the large Manual for SCROOGE ACCOUNTS was added to CP/M disk CW1 (in the form of 15 WDPRO '.UFT' files).

(Therefore, please note that when ordering SCROOGE ACCOUNTS you must send TWO disks, both UNFORMATTED please, to avoid confusion.)

SHARP PENCIL.A1 sends CR at the end of each line (Sharp printer or 'Centronics' printer with AUTO LF ON). SHARP PENCIL.ALF sends LF at the end of each line ('Centronics' printer with AUTO LF OFF). The Manual for SHARP PENCIL was reprinted in Vol.10 No.2.

Those with disks and 80 columns can select from the CP/M section of the MZ-80B Library, and from the CP/M section of the 'Special Request' list on p.5 of this issue.

The most recent additions to the MZ-80A Library (HUCALC 80A+ and the updates to Greg's Chapman's CASH FLOW) were all mentioned in Vol.12 No.3. The HUCALC 80A+ tape-based spreadsheet comes in two versions, /S for Sharp printers, and /M for 'Centronics' printers.

Finally, may I remind you of the "ground rules" of the MZ-80A Library - no more than 6 tape programs at one time, use C60 tapes, leave a tape in its box, and include tape labels. Do not format disks, include disk sleeves and disk labels, and when ordering programs off 2 disks, please send 2 disks (disks are only copied whole). And most important of all, DON'T FORGET THE POSTAGE !!

SPECIAL TAPE - XPATCH 5510 v2.2(on tape only)

S.U.C. DISK ID1 (unformatted)

BASIC.SA-6510	FILING(CMT)	UTILITY 2
PROLOGUE MZ-80A	CLOCK	TAKE-DOWN GAME
INVENTORY CTRL	ANAGRAM	DISK>CMT.A6B
CLUB COPY.U1	RAM CHECK A	BASIC.SA-5510
BASIC TUTORIAL 1	BASIC TUTORIAL 2	BASIC TUTORIAL3
BASIC TUTORIAL 4	GEOGRAPHY	HOME BUDGET
BANK RECONCII	BANK LOAN	MORTGAGE
HANGMAN	COMPUTER PIANO	

S.U.C. DISK ID2 (unformatted)

ARITHMETIC	LUNAR LANDER	TEN-PIN BOWLING
SPACE FIGHTER	IDENTI-KIT	CLEVER CRIBBER
D-DAY	BREAKOUT	STARTREK
SCRAMBLE	SPACE INVADERS	AUTO RUN
IQ TEST	CATTLE DRIVE	TEST MATCH
DONKEY DERBY	SPIDER MAZE	YOU COUNT
SA-6510 KEYWORDS		

S.U.C. DISK DB1 (Sharp Disk Basic format)

SP-5060.A1/S	Z80 MACHINE.A1/S	CLUB MON.A1/S
SP-5060.A1/M	Z80 MACHINE.A1/M	CLUB MON.A1/M
HU-BASIC.A1/S	HU-BASIC.A1/M	SP-CONVERT.A1
BASIC.SA-5510	COPIER	CONVERTER
PROBE/A B600	PROBE/A 8000	PROBE/A 1200
HU-BASIC.A2/80S	HU-BASIC.A2/M	SECTOR R/W
SECTOR R/W(NEC)	EXPRESS PLUS	COMPILER/A2
RAM CHECK A	CLUB COPY.U1	

S.U.C. DISK DB2 (Sharp Disk Basic format)

Z80DISASSEMBLER	PENULTIMATE	DISK>CMT.A6B
REPEAT POKE		

S.U.C. DISK DB3 (Sharp Disk Basic format)

MINI DATACARD	TEXT ED V1.2	INSTRUCS V1.1
CFLOWINIT	POSTERS	N.T.L.O.
HAMS LOG	LOG PAD SHEETS	DISPENSOLABLE
COMPUTER PIANO	CAPACITOR	EPHEMERIDES
RES/NETWORK	RESISTOR CODES	CFLOWMAIN
CFLOWUTIL	CFLOWCONV	

S.U.C. DISK DB4 (Sharp Disk Basic format)

FOOTBALL POOLS	FOOTBALL HONOURS	FOOTBALL FORECAST
STATISTICS	CORRELL COEFF	BINOMIAL
POLYNOMIAL	EQUATION 2,3,4.	DISTANCES
DAYCALC	GARDEN PLANNER	RAFFLE DRAW
PLOTTER	DECBINHEX	METRIC CONV
DCF	STOCKTAKE	PROFIT MARGINS
CHEQUE DISK	INTEREST	I CHING
FORTUNE	CHESS TIMER	BIOPRINTER
DIGITAL CLOCK	HUCALC 80A+/S	HUCALC 80A+/M

S.U.C. DISK DB5 (Sharp Disk Basic format)

SPACE INVADERS	GALAXI FORM	BREAKOUT
SARGON 2.71	OTHELLO	M/C RACE CHASE
M/C BREAKOUT 2	GALAXY INVADERS	SCRAMBLE/A
M/C HISSING SID	TEXT BASIC I	COLONY
LE MANS	NEW INVADERS	GREEDY GREMLINS
DEFENDER	MZ-80A GALACTIC	SUPERFIRE
APOLLO CHESS v2A		

S.U.C. DISK DB6 (Sharp Disk Basic format)

NEW GOLF	SUPER GOLF 2	HAMURABI
L-SHAPE GAME	CELLS AND SERPS	ELECTRIC COMPANY
STOCKMARKET	ESCAPE	OBSTACLES
STARFIRE	DR LIVINGSTONE	SWEEPER
WHAM	STAR WARS	MONEY MAZE
ROAD2	STARTREK	YAHTZEE
MUSIC HANGMAN	HANGMAN2	HANGMAN3
HANGMAN4	IMPHEX	BRICKSTOP
DUCK SHOOT	DRAUGHTS	PONTOON
ALLIGATOR	BOUNCING BALL	FOOTBALL
EXPLODING ATOMS	MUGWUMP	ALIEN EAGLE
QBERT	LUNAR LANDER2	SPACEFIGHTER
GIANT SLAMEN	CRIBBAGE	MADNESS
WHITEHALL	WEED KILLER	TANK BATTLE
MISSILE ATTACK	HORSE RACE2	TREASURE HOUSE

S.U.C. DISK DB7 (Sharp Disk Basic format)

SPACE ATTACK	RACE CHASE	CATCH THE MEN
SOLITAIRE	MOSAIC	WHITE BARROWS
MINOPOLY	MAD MAX 2	BATTLE OF BRIT
GALACTIC CHESS	WORLD CUP	PUCKMAN
SUPER TILT	NUCLEAR REACTOR	DEFENDER
THE MEANIES	RIVER CROSSING	SLOT MACHINE
FRUIT MACHINE	MASTERMIND	TUNNEL RUN
LUDO	REVERSE	DOG STAR 2
SERENDIPITY	DOG AND FLEA	ACEY DUCEY
DEMON DRIVER	BUMPERS	RIBBIT V2
NUN RUNNER	DIGGER	BLOCKING
CONNECT 4	ALIEN ATTACK	PUTTING
DICE	SHARP SHOOTER	AIR LANDER
AIRLINE PILOT	FLYING MISSION	

S.U.C. DISK DB8 (Sharp Disk Basic format)

SPATIAL HUNT	LABYRINTH	SHARP SKYING A
DEFENDER	FROGGER	SIEGE
INDY 5000	BATTLESHIPS	MASTERMIND2
EPIDEMIC	WIGGLY WORM	GALLOWS
MUNCHERS 2	GROAN	3-D MAZE
BALLOONS	VIER GEWINT(2)	TIC-TAC-TOE
MEMORY	WITCHES	GHOST MAZE
STARSHIP MK2	CASTLEMAZE ADV	TUNNEL ADV
FOREST OF DOOM	TRAINS	BACKGAMMON
PRO-SHOT GOLF	WIZARD'S CASTLE	LASER DEFENCE

S.U.C. DISK DB9 (Sharp Disk Basic format)

READING TEST	THERMOMETER	SYNTAX
VOWEL LANGUAGE	TABLES	ELEMENT
CHEMIST	MORSE TUTOR	MORSE TRANSLATOR
FRENCH VOCAB	KEYBOARD TESTER	TYPING TUTOR 2
TUTOR1	TUTOR2	SUMS GAME
COUNTING GAME	NEW DYNAMICS	AT.ORB1
AT.ORB2	SINE	FACTORISATION
CURVE FIT1	CURVE FIT2	PERIMAREA
GEOMATHS	APOTHECARY	SUPER DIARY
GEOGRAPHY	MATHS SOLVER	MUSIC WRITER

S.U.C. DISK DB10 (Sharp Disk Basic format)

BINARY COUNT	SCREEN HANDLER	GRAPHICS KIT
CARTOON	TYROLESE MUSIC	LISSAJOUS
ROSSETTES	SORT DEMO 1	SORT DEMO 2
SOUND EFFECTS		

S.U.C. DISK DB11 (Sharp Disk Basic format)

SA-5510 COMPILER	EXPRESS BAS/700	EXPRESS COMPILER
FILING(CMT)	SA-5510+KN.COMM.	BASIC SA-5580
B880 MASTER	BAS MOD V3.74	

S.U.C. DISK DB12 (Sharp Disk Basic format)

SPOOKS	FRED	DEMONS CASTLE
ENTREPRENEUR	GUESS THE NUMBER	THE LILY POND
AGENT 007	PINBALL	BIORHYTHMS
ARTILLERY	NOUGHTS+CROSSES	MOON LANDING
PAWNS MOVE	JUNIOR HANGMAN	DEMON DRIVER
CONNECT 4	HANGMAN	STAR WARS
FRUIT MACHINE	SMUGGLERS	BEANFEAST
BATTLESHIPS	VIDEO DRAUGHTS	TUDOR VILLAGE
ELECTRONIC ORGAN	TOWERS OF BRAHMA	TRENCH MORTARS
TARGET PRACTICE	LIGHTNING	WAR AT SEA
REACTION TESTER	SIMEON	SIXTH SENSE(A)
NAVVY	REVERSAL(A)	BUGSPLAT(A)
NUMBERCRUNCH	SKI RUN	BOMB RUN
SPACE COMBAT	BATTLESHIPS BAS	LUNAR
STARTREK	MAH-JONG.A1	

S.U.C. DISK DB13 (Sharp Disk Basic format)

MILK ROUND	TIMECHARGE	DOG FIGHT(A)
POLAR SUB	BATTLESHIP BAS	MATHS SOLVER
MATHS & PHYSICS	PAINTBOX.BAS	ADDRESS BOOK
INVOICE CONTROL	SUNDRY CREDITORS	MAGIC PAINTBOX
JIGSAW	SNOWFLAKES	STOCK CONTROL
SOUND EFFECTS	GEOGRAPHY	Y GEIRFA
LP GAS FLOW	DEFERMENT	LETTERWRITER
MAILING LIST	PRINTER PACK	REPORTWRITER
MUSIC WRITER	POSTER PRINTER	TYPING TEST
DATABANK 2	DATABANK	BYTESAVER MZ-80A
BASIC MOD A	INVENTORY	TIMECHARGE 2
DCS MZ80A APPEND	DCS MZ80A RENUM	CONVERTER A>700
BASIC CYMRAEG A1	STKEEPER2BAS700A	FRENCH VOCAB
SHARP PENCIL.A1	SHARP PENCIL.ALF	SCROOGE ACCOUNTS

S.U.C. DISK CX1 (CP/M format, requires XTAL BASIC 3.1C)

LAGRANGE	BISECTIO	SYSEQU	LINPROG	ITFUS
DTFUS	INTFNC	DNTF	RKFIDE	LINSYS
ASMD	XTALBANK	LPPROG/S	LPPROG/M	

S.U.C. DISK CW1 (CP/M format, all WDPRO (MZ-80A) .UFT files)

CCOPYMAN	CBMONMAN	GRKITMAN	ILPTRMAN	CFMAN1
CFMAN2	CFMAN3	APOKEMAN	SCROOGE(1-15)	

*** (The SCROOGE Manual occupies 15 files, one per chapter) ***

Your Sub-Editor is:-
Paul Trainer
1 Montagu Gardens Tel. (0532) 498985
Oakwood, Leeds
West Yorkshire LS8 2RN

MZ700 News

RESET

The MZ-700 Series is ten years old this year and to mark this milestone I intend to list all the items produced for the machine and commercial supporters of it. I know of all the main players in the 700's history, but do you know of any obscure piece of software or hardware or retailing outfit worthy of note? Let me know before October please.

LETTERS

From Eric Stanley, Bexhill On Sea, E. Sussex.

Following our phone contact last week I have been trying to find out why the FILING CMT utility on the K&P 3.55 DBASIC disk doesn't work as it should, all I can come up with is that it 'appears' that some code is missing. Perhaps someone better qualified than I can find a solution.

Anyway, whilst checking through the code for converting 3.55 to K&P V2 (the version with all the extra commands), I have found a bug in the code for ELSE. To correct this, use DISKEDIT as follows:-

DISKEDIT use 'E' and 'W'

TRACK 5 SECTOR 15.1	$2E34 overtype A3 with 80
TRACK 6 SECTOR 1.1	$3037 overtype 14 with 23
	$3038 overtype 19 with 23
TRACK 6 SECTOR 7.2	$36FF overtype C2 with B3

K&P DBASIC is slightly different to S-BASIC in the coding for IF and may explain why ELSE sometimes requires the use of a colon before it.

******

From Solo Software. (Remember Solo's notice that a previous mailshot would be their last? Well they obviously spoke too soon. See below)

Fully reconditioned Quickdisk drives including QDbasic, manuals and interface. £55.00 (Are these M&B units?)

Matrix printers (a bit vague!)(including free Microbyte interface worth £60.00) £195.00

Sharp MZ-800 (as new) with QD drive and MZ-800 specific games. £195.00

Trippler I/O expander at a very tempting £5.00

Most of you will be aware of this latest offer, but for those who don't, Solo live at 95b Blackpole Trading Estate, Worcester, WR3 8TJ. Tel. 0905 58351

The disk enclosed is a copy of K&P DBASIC 3.55 and is modified to be compatible with the added commands found in SOLO EXTENDER. This is a much better attempt than the earlier K&P V2.0 5.25" DBASIC which you have already mentioned in the magazine.

MODIFIED K&P DBASIC 3.55 V.1.
by Eric Stanley

This BASIC contains the following extra commands and functions:-

NEW COMMANDS:

BEEP Sounds bell.
BDR n (0-7) Prints coloured border on screen.
DEEK Double PEEK.
DOKE Double POKE.
DUMP Copies screen to printer.
EDIT Fast edit facility.
ELSE Adds ELSE to IF THEN.
LVAR(/p)(1-6)
Prints variables with values to screen or printer.

LVAR	Prints all variables.
LVAR 1	" un-dimensioned numeric variables.
LVAR 2	" Single dimension variables.
LVAR 3	" multi-dimension variables.
LVAR 4	" un-dimensioned string variables.
LVAR 5	" single dimension strings.
LVAR 6	" multi-dimension strings.

NCOLS n,n	Changes fore and background colours.
PRSKEY	Prints "Press any key to continue" at the bottom of the screen and awaits a key press.
QUIET	Switches SOUND off.
REPEAT UNTIL	Conditional loop.
SOUND nnnn	Sounds note determined by nnnn.
WHILE WEND	Conditional loop.

FUNCTIONS:

AND OR NOT Used without brackets (the normal * and + with brackets may still be used)

CTRL+D Initializes colours and CONSOLE.

DELETIONS:

The plotter commands have been removed to make room for the extra code.

The new commands are compatible with SOLO EXTENDER and the command table has been re-written to ensure that the tokens are the same. The KEYWORDS program on the disk shows the new names and addresses of the coding, but note that the address table start and end addresses have not been altered.

The utility programs "UTILITY" and "FILING CMT" have been taken from the disk containing the 5.25" K&P DBASIC as the 3.55 UTILITY formats to 40 tracks and CMT FILING just doesn't work.

RUNNING MC FILES FROM SHARP DBASIC
by Paul Trainer

I've had 5.25" floppies on my MZ-700 over three years now and during that time I have concluded that only limited success is achieved when RUNning MC programs from within Sharp DBASIC MZ-2Z009 and its QD equivalent. Success is usually gained when the MC program was designed to RUN from these BASICs or if the program refused to RUN, you could go into the ROM Monitor and jump to its start address (sometimes). The alternative to this was/is to RUN your MC programs from the German KERSTEN & PARTNERS Disk BASIC. K&P DBASIC has lots of success with the RUNning of MC files, but refuses to RUN the two utilities; FDCOPY and TRANS, both being RUNable from SHARP DBASIC. Another alternative is to store any MC files on QD and RUN them from the QD IPL. As you can gather, a floppy user can just about RUN all MC files and if the machine has the QD IPL either in the QD interface or as part of the SUC triple ROM, MC files can also be BOOTed from QuickDisk.

So why am I telling you this? Well, I was using the MZ-800 and its SHARP DBASIC and referring to the BASIC manual from time to time as one does, and came across two appendages to the statement RUN. They were ',A' and ',R' that's comma A and comma R. The 'A' allows you to RUN a BSD filetype program which has been saved as ASCII code and the most important, 'R' which lets you RUN a MC file from SHARP DBASIC. I knew the MZ-700 had the 'A' facility with SAVEing and LOADing BASIC files, but could it also be an option with RUN and allow users to RUN MC programs from Sharp DBASIC? YES it has the option and even mentions it in the DBASIC manual and adds that the 'R' option is needed when Running MZ-80K MC files on the 700. There still seems to be a few limits though, one being that the MC program cannot be larger than the free size left once BASIC has loaded.

We should now do two things; No.1 - Read our manuals and magazines from cover to cover searching for the solutions to our programming problems before approaching others. And No.2 Apologise to Maurice and John for all the work they put into searching for the reason why K&P DBASIC would while SHARP DBASIC wouldn't. Especially when the answer was under our noses all the time. Apologies to Maurice and John from 700 section floppy users.

By the way, if you want to look for the information yourself, page 36 of the small MZ-700 Sharp DBASIC manual and page 6-43 of the MZ-800 Tape manual (yes tape BASIC which has disk commands).

MORE HU BASIC FINDINGS
by Paul Trainer

While checking filename parameters in Hu BASIC, I found that commas are accepted and seen as any other character. A filename can be up to 13 characters long and can be made up of 13 commas. Full stops can be used, but everything is ignored after the first. Like Sharp DBASIC, Hu BASIC also accepts the attribute ,A (comma A) after a filename and the program is then saved as an ASCII type. I tried to load Hu BASIC ASCII files into Sharp DBASIC with little success, but reversing the process i.e. Sharp DBASIC BSD type 03 into Hu BASIC proved to be very encouraging. Because of this, all S-BASIC/DBASIC programs should, in theory, load and run using Hu BASIC.700B

MZ-700 Library

BAS MOD 700. What is it? BASMOD TOOLKIT by APOLLO SOFTWARE. BASMOD is a program which modifies S-BASIC to add extra useful facilities. Some new functions include; COPY, PUT, TONE, QUIET, BEEP, DOKE, IF THEN ELSE, DEEK, LABEL x, GOTO x, GOSUB x, WHILE WEND and REPEAT UNTIL. The major intentions of this ultimate in toolkits is to allow the user a large degree of structure, plus error handling and an extensive configuration routine.
This and other 'SPECIAL REQUEST PROGRAMS' are available from Maurice Hawes and are detailed earlier in this issue.

SCREEN CATALOGUE by Paul Trainer is a BASIC database program which lets a user LOAD in a file and scroll through each item in the 700 Software Library. I have adapted a good mailing list type program, but instead of handling names and addresses, SCREEN CATALOGUE deals with program names, authors, program size, program type and gives a star-rating. The program also has a section called DATA which allows for a short description of the program. SCREEN CATALOGUE is a software version of the printed catalogue I print on request. The program is menu driven and the general options are REVIEW, ALTER, INSERT, SEARCH, DELETE, SAVE/LOAD and SORT RECORDS. There's an option to turn the printer on, it then echoes that of the screen, a further option is to print program labels. There is a tape as well as disk version of SCREEN CATALOGUE and the program can be used to catalogue your own software collection and store it as a separate BSD file on disk or tape. If this version is popular, I will delete the printed catalogue. It should be ready by March - fingers crossed.

SCROOGE ACCOUNTS.700 is a disk-based business accounts package which I have converted from the original program in the MZ-80A Library. It was written by B. D. GIBBS with a small business or a self-employed person in mind and helps with the day to day running of their trading with a suite of programs namely; ADDRESS DATABASE, SALES LEDGER, PURCHASE LEDGER, INVOICE PRODUCTION, PETTY CASH and BANK REPORTS, END OF MONTH ROUTINE and STATEMENT PRODUCTION. There are 17 pages of instructions in WDPRO format on CP/M disk, these can be printed in the normal way. If you are interested in SCROOGE ACCOUNTS.700, send me two formatted disks, one of which should be CP/M formatted.

HUBAS700B/PLT, HUBAS700B/P4A and HUBAS700B KWDS. These are three BASIC proglets for use with HU BASIC 700B. The first modifies Hu BASIC's plotter routines so that it emulates S-BASIC. The second modifies BASIC for use with the Sharp P4A printer and the third lists Hu BASIC's KEYWORDS and TOKENS. All three were written by Maurice Hawes.

I am still getting requests from tape users for more (and sometimes a lot more) than the maximum 20 programs from anywhere in the library. READ MY LIPS - you don't have to request full disk volumes! I have repeated below, instructions of how to use the Library for users of different media.

HOW TO USE THE LIBRARY - TAPE USERS:

1) Send a good quality tape with stamped addressed label or S.A.E.

2) The tape must be long enough to hold the programs that you are requesting. Do not ask for more than 20 programs, from anywhere in the Library; these should fit on a C60.

3) If you want optional printed instructions, pay for these with EXTRA 1st class postage stamps, as shown on the list below.

HOW TO USE THE LIBRARY - DISK USERS:

1) Send pre-formatted disk/s, stating the volume/s requested, and don't forget disk labels, and stamped address label or S.A.E. *** N.B. QD users should send 2 disks for every full volume ***

2) I can supply 5.25" disks if you wish, at £1.00 per disk, or £10.00 for the complete 17-disk (5.25") Library. If you would like them in a 100-capacity storage box, add £4.50 (all prices include P+P). P.S. I only have one box left, so ring first.

3) As (3) above.

N.B. Disk users should note that all BASIC programs are in Sharp format type 02. K&P DBASIC writes BASIC programs as type 05 and sees type 02 files as coming from the MZ-80A or 80B, so it tries to convert them. If you use K&P DBASIC, you will need to use DISKEDIT to change their filetype from 02 to 05, or ask me for the version of Sharp DBASIC which loads via the K&P FD ROM.

MZ-700 SPECIAL REQUEST PROGRAM

Zip Basic/Compiler. Zip BASIC runs 3 x faster than S-BASIC, the Compiler turns the BASIC program into a stand-alone M-C version which then runs 60 times faster than S-BASIC. GET IT. Available from Paul Trainer, £4.00 plus blank tape. Cheques payable to the SHARP USERS CLUB please (£4 is for a VERY nice 28-page manual).

STAMP CHARGES FOR DOCUMENTATION (ADDITIONAL to return postage):

Eye of Mordeaus	= 1	(first class stamp)
Typing Test	= 1	Great Type tutor by DCS
Letterwriter	= 2	(Interacts with Reportwriter and Databank)
Reportwriter	= 2	(Interacts with Letterwriter and Databank)
Sundry Creditors	= 2	(keeps a check on the slow payers)
G.E.M.Searcher	= 1	(novelty manager for QD BASIC)
Mailing List	= 1	(Interacts with Databank)
Invoice Control	= 2	(first class stamps)
Databank	= 4	(comprehensive database, password protected)
Databank 2	= 1	(Databank 2 is an additional module for Databank. It performs calculations)
80A-700 Converter	= 1	(guess what this does!)
Supertape II	= 1	(tape copying program)
Sketchplot	= 1	(outputs graphic design to plotter)
Probe B600	= 2	(disassembler/debugger/single-stepper))
Z80 Machine	= 1	(many uses, including comparing files)
BASIC+700	= 2	(DCS extended BASIC)
HEADLINER	= 2	(Printer utility plus demo files)
APOLLO WORD	= 5	Comprehensive WP donated by Apollo Software.

Tape only programs which can't be transferred to disk

MISSION ZED MC, STAR MAKER MC, SHOPLIST MC, ZIP BASIC SOURCE PROGRAMS, BINGO 6 CARD MC, GALACTICAN and the ZIP package(Monitor, BASIC and Compiler) Zip is on special request. There are five HUBASIC programs which are also 'tape only' and they are called MZ BLOCK LAND, ANGLE BALL HUBAS700B/PLT, HUBAS700B/P4A and HUBAS700B KWDS. HUBASIC is a tape based BASIC, but can be RUN from disk.

Club Copy.Ul instructions on WDpro file, Keystroke index on BRD file. Some of the memory gobbling adventures are held on disk but will only RUN under S-BASIC and therefore will need TRANSing back to tape at your end.

700 Software Printed Catalogue. Greater detail, info. and rates all 700 software. Eight printed pages costs 5 first class postage stamps plus large S.A.E.

700 Software Screen Catalogue This is a software version of the above catalogue. Written in BASIC and includes 3 BSD files. Disk and tape versions are available.

For the latest update on CP/M materials contact Maurice Hawes.

All programs are stored on 5.25" floppy disks. If a program has QD as an extension, it is for use with QDBASIC and Sharp DBASIC. Most S-BASIC programs run fine with disk BASIC!

Vol. No.1 - BASIC GAMES (full)
Backgammon, Head on 700, Alpha Leap, Stock Market, Wordsearch, Murder 1, Concentration, Wordsearch 3, Towers of Hanoi, Defender 700, Spatial Hunt, Labrynth, Flying Mission, Sharp Skiing, Asterock, Mini Pacman, Pontoon, Cribbage, Draughts, Space Bomber, Bi-plane, Tic-Tac-Toe, Go Fish, Hangman, Racer, Pacman, Chase, Doggies, Othello, Letterslide, Battle Planets, Worms, Nightfighter, Octave, and White Barrows.

Vol. No.2 - S-BASIC GAMES and ADVENTURES (full)
Eye of Mordaeus(I)1, 3D OXO, Yahtzee, Solitaire, Mind out, Startrek, Golden Galleon, Livingstone, Dog Star, Labyrinth, Crypt, Trio, Patience, Chain Reaction, Cyborg, Ognib, Bug Snapper, Star Mission, Space Gun and Bingo 4 Card....

Vol. No.3 - S-BASIC ADVENTURES etc. (full)
Giants Gold, Pyramid of Doom, Treasure House, Witches Fortress, Miniopoly, World Cup, Lost in Jungle, Cells and Serpents, Castle, Pyramid, Valley, Murder at Manor, Secret Silver, Galactic Escape, Monkey Mania and Mystery Mansion...

Vol. No.4 - S-BASIC GAMES (57K free)
Roulette, Bingo 6 Card, MZ-Talker+,Haunted House, Breakthrough, Siege, Battleships, 6 Card Bingo, Poker, Pools Forecast, More Forecasts, Three Dice Game, Put and Take, Draughts, Checkers, Mah-Jong.701, Jigsaw.DCS, Startrek 80K, Fruit Machine, Harmony, Slot Hudson, Psycho Horror, League Table, Robot Hunter and Sharp Oil.

Vol. No.5 - MC GAMES (full)
Ludo, Logger, Chess 2.7, Mission X, Mushroom Loader and Mushroom, New Invaders, Flag Rally, Space Invaders, Gomuku, Breakout, Grand Prix, Up Up and Away, Up the Pole and Bingo 6 Card...

NB. Some MC programs have loaders which contain information used by the main program. These loaders and programs may have to be copied back to tape to allow them to load and run successfully.

Vol. No.6 - DCS PROGRAMS (BASIC unless stated) (20K free)
Agent 007, Demon Driver, Lily Pond, Simeon, Spooks Demo, Demons Castle, Smugglers, Fred, Tudor Village, Maths/Physics, Maths Solver, Mailing List, Printer Pack, Databank, Databank2, Typing Test, Sundry Creditors, Polar Sub and Bomb Run, Invoice Control, Sound Effects, Paintbox(mc), Starbase(mc), Snowflake(mc), Entrepreneur and 80A-700 Converter.....

Vol. No.7 - DCS LANGUAGE (176k free)
DCS BASIC B, DCS BASIC C, EXPRESS BASIC 700, EXPRESS COMPILER 700, EXPRESS BASIC K, EXPRESS COMPILER K, BASIC+700 and BASIC E700.

Vol. No.8 - PRINTER and PLOTTER (50K free)
Bug Kill, Weed Label, Spine Labels, Post Card, Plotting Graph, Address Labels, Garden Labels, Invoice, Ticket, Cassette Labels, Menu-Maker, Green Fee, Print-a-Letter, Bar Chart, Space Guide, World Globe, Sketchplot, Club Fonts, Fontastic+, Headliner + 3 BSD files, and Sideliner..

Vol. No.9 - GENERAL UTILITIES (full)
S-BAS NEW TRON, 700QD NEW TRON, Hex Calculator, Metric Converter, Screen Designer, Poke Demo, 36K Demo, Statistics, Ham File.701, Ham File.702, SupertapeII, RT Clock, B'Code2.D700/DCS, Title Maker, Phone List, Easi-extract, Rec Tape Cat, Print Tape File, Data Maker, Hucalc.701, Club Copy.U1, K&P NEW TRON, PAUL'S DEMO, Colour 2, 009 NEW TRON, Masterfile.702, SER EPROM CODE, MZ-MODEM TEST, Colmem, Digi-clock, Screen Utils, Digi-Alarm, Edfield, Alarm Clock 1-3, MZ-Tick Tock, S-BAS Mod Prog., Opening Demo, and Opening Music.

Vol. No.9B - GENERAL UTILITIES
Sound poke demo, Mosaic and Console.

Vol. No.10 - LANGUAGE (115K free)
HU-BASIC.700/ S and M, PROBE B600, SP-5025 BASIC, ZEN.700, Z80 MACHINE, SA-5510 BASIC, SP-5060.EP, SP-5060, S-BASIC, S-BASIC+COPY and S-OUND BASIC ...

Vol. No.11 - WORD PROCESSING (100K free)
Sharp Pencil.700, Sharp Pencil.7LF, Sentence Pro S/QD/MC, Letterwriter S/QD, Reportwriter S/QD, WDPRO 782.35/702.35 and Apollo Word.

Vol. No.12 - EDUCATION (140K free)
Fractions.700, Coordinates, Times Tables, North America, Numbervaders, Apothecary, Metric Con, Geo Maths, Type Tutor, Curved Fittings, Sharp Maths and MZ ALPHABET.....

Vol. NO.13 - Sharp DBASIC Programs (full)
Mailing List, Golden Galleon, G.E.M.S., Mystery Mansion, Backgammon, Head on 700, Defender 700, Spatial Hunt, Sharp Skiing, Asterock, Space Bomber, Searcher, Hangman, Racer, Lily Pond, Type Test, Databank, Phone Add List, Rec Tape List, Printer Pack, Battleplanets, Bug Snapper, Labyrinth, Monkey Mania, Nightfighter, Witches Fortress, 3D OXO and Coordinates.

Vol. No.14 - Sharp DBASIC Programs (10K free)
Times Tables, Music, Octave, MZ-Talker+, Databank2, Roulette, Math/physics, Patience, Sketchplot, Chain Reaction, Mind Out, MZ-Tick Tock, Title Design, 36K Demo, Title Maker, Sound Effects, Lost in Jungle, Worms, Paul's Demo, Invoice Control, Sundry Creditors, Agent 007, Spooks Demo and Smugglers.

Vol. No.14a - Sharp DBASIC Programs
Entrepreneur and MZ Alphabet.

N.B. The above two volumes contain S-BASIC programs which I have modified to run under Sharp QD and DBASICs. These programs caused errors before modification. Remember that most of the S-BASIC programs in the Library will work fine without changes under disk BASICs.

Vol. No.15 - Music and Sound (194K free)
Bunyon Hymn, All Through Night, Golden Slumber, My Aunt, Fragment, John Peel, Frankie and John, Composer, Music Box, Music, Sound Effects, Octave and Hi-Composer...

Vol. No.16 - UFO PROGRAMS. BASIC and MC (40K free)
UFO BASIC V2, UFO BASIC V2c, UFO BASIC V2CP, BASIC BOOT SAVE, BASIC BOOT LOAD, UFO BASIC COMMANDS, UFO UNIV PMP, UFO W/P, Title Maker, Labels, Backup and Turbo Load.

Vol. No.17 - MC Games (100k free)
The first 10 of these were bundled with most 700's when bought new. Land Escape, Painful Man, Send-1, Battle Game (with loader), Searcher (with loader), Snake and Snake, Circus Star (with loader), Super Puckman, Round Shoot, Manhunt, Atlantis, Apollo Chess v2 and TETRIS (formerly called SHARPSHAPES).

BOOTable disks - (all BOOTable from the K&P disk ROM) K&P DBASIC, Sharp DBASIC MZ-2Z009KP, K&P DBASIC + S*CALGO, K&P DBASIC + DISASSEMBLER, K&P DBASIC + EXTRA COMMANDS, K&P 3.5" DBASIC(can be copied to 5.25") and MZ-700 CP/M.....

MZ-80K ANNEX - This is two disks full of programs taken from the 80K Library by Tony Clarke. Their contents have been listed in earlier issues and most are bug-free.

This time last year I had copied from the Library some 1268 times, this time the total for the year is around 670.

****

LATE ITEM: Fred White of Summerbridge near Harrogate is now handling the Club's northern consignment of the MZ-80K interface boxes which I collected from Andrew Ferguson last year. Fred can be contacted on 0423 780992. Thanks Fred and happy retirement.

HUBASIC 700B - LATE EXTRA by Maurice Hawes

As the last issue went to press, there were still a few gaps in our understanding of HUBASIC 700B; but as they were small ones, we decided to publish what we knew. Since then, Paul Trainer and I, between us, have cracked most of the remaining problems; so after this 'late extra' we shall put HUBASIC 700B on the back burner.

FILENAMES

Paul's filename tests are reported elsewhere in this issue. I repeat them below, merely to get everything we know on 1 page:-

Filenames are up to 13 characters. COMMAS are treated as normal characters, but a FULL STOP is only accepted in positions 10-13, where it acts as a terminator (any characters typed after it form an 'extension' which is saved or loaded but not shown on screen).

SAVE "Filename",A saves a program in ASCII format. The Manual mentions LOAD "Filename"',A as well; but in fact LOAD detects an ASCII file and handles it as required, so ',A' is NOT needed. On all media, an ASCII file is in 256-byte blocks, BSD, TYPE 4.

LLIST, LPRINT, End-of-line character

The LLIST command is set up for a plotter/printer (PLT:); whereas the LPRINT command is set up for a 'CENTRONICS' printer (LPT:).

Therefore, if you have a plotter/p, or a Sharp printer fitted with a 'K' or 'A' character ROM, LLIST will work O.K., but LPRINT will not. To get LPRINT working properly, POKE &H4BC8,&H64.

On the other hand, if you have a 'Centronics' printer, LPRINT will work O.K., but LLIST will not. The simplest solution here is to do LIST "LPT:" (or LLIST "LPT:"); or you can POKE&H4F7B,&HA9.

To change $0D at the end of each line, to $0A, POKE&H17A8,&H0A

The DEVICE command

The command DEVICE "XXX:" sets up device XXX: as the default LOAD and SAVE device. Any device name is accepted, but a daft command such as DEVICE "LPT:" will cause subsequent errors.

Valid device names include EMMn: (n=0-9). This is probably for a RAM card, but I could not check this as I do not have one.

The INIT command

INIT alone initialises the default device (but if this device is other than SCR:, CRT:, or EMMn: you get a 'bad file' error).

INIT SCR: or INIT CRT: resets the screen to a full 25 lines
INIT EMMn: (n=0-9) initialises a RAM card (probably erases it!!)
INIT (ANY OTHER DEV:) gives a 'bad file' error.

From the Z80 code, it appears that 'n' in an EMMn: type command determines the range of port numbers addressed. EMM0: = ports 1-4, EMM1: = ports 5-8, and so on, up to EMM9: = ports 37-40. *****

MZ-800 PCP/M ON THE MZ-700

By Robin Hill, John Edwards and Maurice Hawes

In December 1991 Terry Daly, from Adelaide, Australia, wrote to John Edwards for an SUC MZ-700 80-column kit. In his letter, Terry explained that he wanted the 80-column kit because Robin Hill, of the Queensland Sharp Group, had given him MZ-800 PCP/M, converted to run on the MZ-700, and most of the programs were in 80 columns.

John told me of Terry's letter, and I wrote to Terry explaining that our MZ-700 80-column system uses an 'interlaced' screen which would not work with PCP/M, even if it had been converted to run on a normal MZ-700. I suggested that either we could send him the SUC 80-column MZ-700 CP/M; or he could send us Robin's MZ-700 PCP/M, and we would see if we could adapt it to the SUC 80-column system.

Terry contacted Robin Hill and, as a result, a copy of Robin's MZ-700 PCP/M arrived in Weymouth on April 14th 1992. 2 days later, coincidentally, John arrived for Easter, and we decided to look at PCP/M - but we could not even boot the disk ! This seemed odd, as I could boot PCP/M on my MZ-800; but then it hit me - my 700 was on Sharp drives, but my 800 was on Epson TF-16's. So I changed the MZ-700 drives to TF-16, and <BINGO>, the disk booted first time.

We soon had PCP/M running in 80 columns; but we had no cursor, and (in some programs) no menu-bar; and we still couldn't boot from Sharp drives. The cursor problem was a red herring; my 700 was on an old mono VDU, and when I substituted a portable B&W TV set, the cursor reappeared. But the menu-bar in DISKDEF and SETUP was still missing, and to check these programs we had to count keypresses, to work out where the menu-bar should be !

At this point, John returned home; later, on May 13th, I wrote to Robin Hill, to ask if he could suggest why his disk would not boot on Sharp drives, and wondering if he had any problems with the menu-bar (expecting the answer 'NO', because I thought the problem was in our 80-column system). It took Robin a long time to answer, because he did have the menu-bar problem, and was busy solving it ! Then, on New Year's Day 1993, he sent me a revised MZ-700 PCP/M, with the menu-bar working, in programs which he had converted to 40 columns because he does not (yet) have 80-columns. With the disk, Robin sent assembler listings of his changes.

The revised version got here on January 8th, and it took three weeks to sort out all the 80-column changes and the disk-booting problem. I could write pages, but I will restrict myself to three topics. First, when the menu-bar is variable-length on the MZ-800, it is a single white square on the MZ-700. Second, on the MZ-700, the status line shows the cursor position and its address in RAM (in place of the 'time'). Third, and most important, I got the system to boot up on Sharp drives by using SETUP to change what Sharp call the 'stepping rate'. In tests, I discovered that, if you have Sharp MZ-80FD or MZ-80FB drives, you MUST use a 'stepping rate' of 12mS or more; the 6mS setting in the distribution version of MZ-800 PCP/M is too fast. In the end, I set the 'stepping rate' to 30mS because my Sharp drives sounded happiest at that setting.

For MZ-700 owners who wish to try out PCP/M, the main features of both versions are summarised on the next page.

THE PRINCIPAL FEATURES OF SHARP'S MZ-800 PCP/M

MZ-800 PCP/M is a fairly standard implementation of CP/M 2.2, with 'user friendly' additions. It 'Auto-executes' VCCP.COM, which has 2 'windows'; the l.h. window displays the directory of the disk you have just booted, and the r.h. window lists PCP/M's built in commands. Also, there is a highlighted 'status line' at the bottom of the screen which shows function-key settings, 'time', and the state of CAPS (highlighted = ON, normal display = OFF).

A highlighted cursor-bar sits at the top of the r.h. window, and you may cursor up and down to select a command; then CR moves you to the l.h. window, where you execute the command. At any stage, you can cry HELP (CTRL/D), or ABORT (CTRL/C); HELP messages are displayed at various points in the L.H. window, in framed 'boxes'; and ABORT restarts the VCCP as if you had just booted up.

(On the 80-column MZ-700, the HELP boxes are not framed, and the current 'time' is replaced by the current cursor position.)

The function keys are in 4 sets of 4. The current set is on keys F1-F4, and key F5 is used to 'rotate' F1-F4 to the NEXT set.

Most of the systems programs in PCP/M are standard, and require no comment. But there are 3 additional programs of Sharp origin, all of which are VERY friendly and EXTREMELY useful:-

DISKEDIT.COM can be used to directly edit a PCP/M disk. You can select BLOCK, FILE or SECTOR mode, or you can TARGET a new drive. DISKEDIT.COM was used to make ALL the changes needed to get PCP/M working on an 80-column MZ-700. Its operation is self-explanatory, but note that it CANNOT read and write correctly to tracks 0 and 79 (the two outside tracks) on a PCP/M disk.

DISKDEF.COM can redefine the format accepted by drive B:. The options include 2 Sharp-CP/M formats (MZ-80B, MZ-3500) plus 3 other formats (1D-IBM, 2D-IBM, MZ-5500). I am pretty sure that the last 3 formats are CP/M-86, but I have not been able to check.

SETUP.COM enables you to customise nine different items. These include the AUTO EXECUTE file (default VCCP); screen colours and intensities; CP/M 'devices' and the number of drives; floppy-drive read after write & stepping rate; keyclick; masking of high bits; printer type (Sharp/ASCII), and printer CRLF; RS-232 settings; and, very useful, redefining the four function keys, the cursor keys, and the shifted and unshifted INST/DEL/TAB/BLANK keys.

(On the 80-column MZ-700, the highlighted menu-bar in DISKDEF and SETUP is changed to a single white square).

*** WARNING - when using SETUP, do NOT reduce the floppy ***
*** drive stepping rate to 6mS, unless you are using very ***
*** modern disk drives, and are SURE that they can cope. ***

As you can imagine, this has been a complex operation, and it would be silly to assume that we have solved ALL the problems. So for now, 80-column MZ-700 PCP/M is available from MAH in Weymouth as a 'beta' disk. If satisfactory, it will be put in the Library.

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PC-3201/MZ-3500 Section
Edited by the Chief Editor

SOFTWARE FOR THE PC-3201/MZ-3500

First I should explain why I decided to lump these two machines together; essentially it is because they are similar so many ways. Their keyboards are almost identical, they run virtually the same Sharp FDOS (of which more below), and both machines can run CP/M.

As far as software is concerned, FDOS is best forgotten (unless you want to write your own programs in Sharp Basic, in which case you must use FDOS to run the interpreter). However, you may decide to familiarise yourself with the workings of FDOS just in case, so I have written an introduction to the system on the next 2 pages.

CP/M is a different matter; there is a lot of CP/M software in the Public Domain, and if you learn how to use CP/M commands, it is all available to you. But I would recommend that you forget all the Sharp versions of CP/M on these machines, and use the more standard Microtechnology version in each case, as this will enable you to run almost any CP/M software without much trouble. There is one major proviso for PC-3201 users here - in order to run the MicroTechnology version of CP/M on the PC-3201, the machine MUST be fitted with the 'SYSTEMS OF TOMORROW' Relocator Board No. 004 (the technical reasons for this are given on p.30 of Vol.12 No.3). MZ-3500 users have no such problems; the standard MZ-3500 will run CP/M without any hardware modifications of this kind.

Unfortunately, commercial CP/M software for the PC-3201/MZ-3500 is no longer available, and the SUC cannot legally supply copies. All we can do in this area is list the software that we have seen with our own eyes, and leave you to hunt for it at auction sales, computer fairs, etc. Once you have found it, we can support it.

We CAN supply copies of CP/M programs to which we have legal 'rights' (e.g. DISX and DISCMOD). In these cases, you can obtain a copy by sending a blank disk and SAE to me in Weymouth.

PC-3201 FIRMWARE/SOFTWARE

SHARP Basic in ROM	- B-01
SHARP system known to exist	- FDOS V-051 (and earlier V-041)
SHARP Basic known to exist	- BASIC on disk B-01
CP/M systems known to exist	- Sharp YX-3200 CP/M V2.2 (A.1)
	- MicroTechnology CP/M V2.2.2.00
CP/M programs known to exist	- PEACHTEXT, CALCSTAR, WORDSTAR v3
CP/M programs we can supply	- DISX, DISCMOD7

MZ-3500 SOFTWARE

SHARP system known to exist	- FDOS V2Z-007A
SHARP program known to exist	- BASIC 2Z-007B
CP/M systems known to exist	- Sharp V1.2B and 2.0A; M-T V2.2.1.00
CP/M programs known to exist	- PEACHTEXT, PEACHCALC, WORDSTAR v3 MAILING LIST MANAGER
CP/M programs we can supply	- DISX, DISCMOD4, ZENASM

LEARNING TO USE FDOS ON THE PC-3201 AND MZ-3500

A new member rang recently, close to tears after trying to copy an FDOS disk on his MZ-3500. After I had tried to explain things to him, I was close to tears as well ! The underlying problem is in FDOS disk drive nomenclature, with its CHANNEL A and CHANNEL B. On the PC-3201 all disk drives are external; two CHANNELS arise because the I/O box can have two disk cards in it. On the MZ-3500, CHANNEL A refers to the built-in drives, and CHANNEL B refers to the socket for 'extra' disk drives, at the rear of the machine.

On most machines there are either 1 or 2 drives on CHANNEL A, and no drives at all on CHANNEL B. If, as is very common, there are two drives on CHANNEL A, FDOS labels the 'first' drive '0', and the 'second' drive '1'; in such a case, the full FDOS references for the two CHANNEL A drives are 'A0' and 'A1'.

So far, so good. You boot from 'A0', and the command 'CAT A0' tells you what is on the disk. You can run any SYSTEM program, by typing its name (without the /SYS extension). Or you can put a disk in the second drive, and do 'CAT A1'; and so on.

At some stage, especially if you are a beginner, you are liable to get a very irritating error message with bell noises, and the cursor sitting near the bottom of the screen and refusing to move. The remedy is UP ARROW ('gerrup' !). Usually, the error is caused by a mistyped command; in FDOS, ALL commands must be in CAPITAL letters, with spaces between words; for example, CAT A0 is O.K., but cata0 is not (on the MZ-3500, you can set SYSTEM SWITCH 8 to give normal Upper-case, see the last paragraph of this article).

One of the first things you will want to do is format a new disk and then copy your master FDOS disk onto it, as a backup. This is where you need a sense of humour, and a lot of patience.....

FORMATTING A BLANK DISK FOR FDOS

Put an FDOS system disk into the 'first' drive (which may be labelled 'A' or '0', depending on the inclinations of any previous owners) and type INIT (ENTER). You are then faced by:

```
* CH.A(0) OR CH.B(1)?   (answer '0' because you want Channel A)
* DRIVE NUMBER?         (answer '0' or '1', see next paragraph)
```

The answer to the second question depends on how many drives you have. If you have only 1 drive, you must answer '0'. If you have 2 drives, you may answer '0' or '1'; however, it is a good idea to answer '1', to format any disk in the 'second' drive.

To summarise, with a 1-drive machine, answer '0' then '0'.
with a 2-drive machine, answer '0' then '1'.

and then follow the instructions (these include choosing a volume name, which must be in CAPITALS and not more than 6 letters).

*** Before you press the final ENTER, make ABSOLUTELY sure you have got a blank (or scrap) disk in the drive you have chosen !!

COPYING AN FDOS DISK

The BACKUP procedure, like INIT above, is confused by drive nomenclature. To simplify things I shall assume a machine with 2 drives on CHANNEL A, and none on CHANNEL B, and I shall copy the disk in the 'first' drive, to the disk in the 'second' drive. To start the process, type the command BACKUP(ENTER). Then:

```
(SOURCE DISK)
CH.A(0) OR CH.B(1)? (answer '0')
DRIVE NUMBER? (answer '0')

(DESTINATION DISK)
CH.A(0) OR CH.B(1)? (answer '0')
DRIVE NUMBER? (answer '1')
```

Before you press the final ENTER key, make sure that the disk you want to copy FROM is in the 'first' drive, and the disk you want to copy TO is in the 'second' drive. Once you've done it a few times, there's nothing to it ....but I have to admit that it ties me in knots every time. I wonder why ?

One final point. If you make a mistake, and want to start INIT or BACKUP all over again, CTRL/A gets you back to FDOS.

THE PC-3201 and MZ-3500 SYSTEM SWITCHES

These are on the underside of the main unit; on the PC-3201, there are 4 switches; on the MZ-3500, there are 9 switches.

The PC-3201 Owner's Manual mentions these switches on page 8, but it does not explain what they all do. The PC-3201 Service Manual does not mention the system switches in the text, but the circuit diagram of the CPU block on sheet 4 contains a table which lists the functions of the switches in a cryptic way. The MZ-3500 Owner's Manual covers the system switches in APPENDIX 8. The relevant information, for both machines, is reproduced below:

PC-3201	ON	OFF	NORMAL U.K.
SW1 sets D.P. character	COMMA	FULL STOP	OFF
SW2 sets printer I/F	CENTRONICS	QUME	ON
SW3 sets character set	ASCII	JIS	ON
SW4 sets printer type	CE-332P	CE-330/331P	ON

MZ-3500	ON	OFF	NORMAL U.K.
SW1) SW1/SW2 selects	ON/ON, OFF/ON, ON/OFF		ON/ON (**)
SW2) from 3 printers	(OFF/OFF IS NOT USED)		
SW3 'CRT display'.....	.....		..ALWAYS ON
SW4 sets D.P. character	FULL STOP	COMMA	ON
SW5 RS-232 ER signal	ACTIVE	INACTIVE	Depends
SW6 RS-232 CD signal	ALWAYS HIGH	HIGH on O/P	Depends
SW7 RS-232 PO signal	ERROR HIGH	ERROR LOW	Depends
SW8 Normal keyboard	Upper Case	Lower Case	(***)
SW9 'CRT CG'.....	.....		..ALWAYS ON

(**) The Manual shows 3 Sharp printers; ON/ON suits CENTRONICS

(***) When using MZ-3500 FDOS, SW8 is best ON (normal U/Case)
When using MZ-3500 CP/M, SW8 is best OFF (esp. for W.P.)

Your Sub-Editor is:-
Paul Trainer
1 Montagu Gardens Tel. (0532) 498985
Oakwood, Leeds
West Yorkshire LS8 2RN

MORE THAN JUST A PRETTY ROM

We already know about QL, QS and QD, these being commands available under the MZ-800 Quickdisk ROM 9Z-504M, but recently I was looking at a monitor dump and noticed an "OK Y/N" prompt. It looked very similar to the prompt screened when using INIT to format a QD in QD BASIC. Could there be a format facility from the ROM MONITOR? Yes and it's called QF, and further searching revealed QC which loads a program or file without execution and allows you to copy it to another QDisk. Finally we have QX which is as above but the file (OBJ/BTX/BSD) is loaded from tape.

MZ-800 Software Library

The Library falls into just two groups at the moment. The first is a disk full of demo/graphic/clock reference type:-

LINES, SYMBOL, STARSHIP, SOUND, WAVES, MUSIC, 3D-PLOTTER.800, GRAPH.800, OLDE FONTE, WORLD CLOCK.800, FANCY TIME.800, PIE CHART.800, WORLD TIME.800, OPENING 800, OPENING DATA, UNION FRED, GRAPH DEMO 1-8, PHOTO OF AN MZ-80B, BOXES, CIRCLES, MZ-800 TIME

and a selection of programs which are a bit more useful:-

LETTERWRITER.800, REPORTWRITER.800, PLANETS and S*CALGO which has an optional 50 page manual at a cost of £5.00 made payable to me.

For the latest update on CP/M materials contact Maurice Hawes.

HEY PAL LEND A HAND..

In fits and starts over the last few months I have been trying to write (in BASIC) a screen drawing type program on the MZ-800. I wrote and was happy with the bulk of it, but had a little trouble trying to gain speed when dumping the screen to a Centronics printer. I have sorted that out now, but I'm still looking for a way of accessing VRAM and copying its contents to disk. Any ideas please. PAL is another area of 800 BASIC which I had trouble getting my head around. If you can explain it in plain English then please do so. I wrote this "GAP-FILLER" when experimenting.

```
10 PAL 0,0:CLS
20 R=INT(RND*10)
30 C=INT(RND*6)+R:PAL 3,C
40 W=INT(RND*4):PAL W,W
50 X=INT(150*RND*RND):Y=INT(100*RND*RND)
60 SET[W]160+X,96+Y:SET[W]160+X,95-Y
70 SET[W]159-X,96+Y:SET[W]159-X,95-Y
80 GOTO 20
```

MZ-5600 Section
Edited by the Chief Editor

PROGRAMS WHICH RUN ON THE SHARP MZ-5500/MZ-5600

All commercial programs for these machines are now obsolete, so you will not find a dealer who can supply MZ-5500/5600 software, or support any software you already have. The SUC CANNOT supply copies either, but we can tell which programs we have seen with our own eyes, and leave you to find them at computer fairs, or wherever. And we can support any software you already have.

We CAN of course supply programs written by Club members (e.g. PTKEYS and DBKEYS); these are obtainable from me in Weymouth.

MZ-5500

CP/M-86 system known to exist - 2Z-017A (two disks); DEMO disk
CP/M-86 programs known to exist - SHARP BASIC 2Z-017B; SUPERCALC 2
MS-DOS system known to exist - 2Z-013 (V2.11)
MS-DOS programs known to exist - PEACHTEXT, DBASE 2.4
MS-DOS programs we can supply - PTKEYS, DBKEYS (with AUTOEXECS)

MZ-5600

CP/M-86 system known to exist - 2Z-038A (one disk); DEMO disk
CP/M-86 programs known to exist - SHARP BASIC 2Z-038B; SUPERCALC 2
MS-DOS system known to exist - 2Z-036 (V2.11)
MS-DOS programs known to exist - DBASE 2.4, WORDSTAR 3.3, TURBO PASCAL, PEACHTEXT CHIT CHAT, LOGISTIX
MS-DOS programs we can supply - PTKEYS, DBKEYS (with AUTOEXECS)

THE MZ-5500/5600 SYSTEM SWITCHES

Recently, a member rang up in despair because his newly-acquired MZ-5600 would not boot up. After much ado, we discovered that this was because SYSTEM SWITCH SW3 (underneath the machine) was OFF.

The MZ-5600 'Owners Manual' (a rare document) deals with all 8 of these switches on page 3-1. Most of them are normally OFF, but SW3 is an exception - in the words of the Manual 'The switch (SW3) must be kept ON, otherwise the system may not work properly'. To clarify the situation, the table on p.3-1 is reproduced below:-

SW1 - NORMALLY OFF (standard 400-line VDU)	ON = 200-line VDU
SW2 - NORMALLY OFF	ON = SELF-TEST MODE
SW3 -	...MUST ALWAYS BE ON
SW4 - MUST ALWAYS BE OFF	
SW5 - NORMALLY OFF (8MHz clock)	ON = 5MHz Clock
SW6 - NORMALLY OFF (No 8087 fitted)	ON = 8087 fitted
SW7 - MUST ALWAYS BE OFF	
SW8 - MUST ALWAYS BE OFF	

MZ-5600 PRINTER LEAD

Just a reminder that a diagram of this lead, which has a couple of rather naughty crossed connections, appeared in Vol.12 No.3, which is still available from me as a back issue.

PC Section Editor:
Mike Mallett
19 Knollmead
Calcot
Reading RG3 7DQ
Tel (Voice/Fax) Reading (0734) 410597

This time we take a further look at operating systems, starting with Greg's views on MS-DOS 5, and Ed's Long's views on the rival DR DOS 6 (bearing in mind that this year may well see the release of MS-DOS 6 and DR DOS 7 !). In future issues I would like to look at Windows and even UNIX; I run Windows 3.1 on my desktop but this cannot be used on my PC-4501 so I would like to hear from users of 286 and 386 portables as soon as possible.

I am trying to complete coverage of all the Sharp PC-compatibles, and would be interested if anyone has a list of all the models made to date. I would also appreciate any material or photocopies relating to the PC-4xxx, 5xxx and 7xxx series.

Lastly, if anyone is interested, I am doing some work on Russian and Cyrillic characters.

****

DOS 5 - DO YOU NEED IT - NOT WITH THE HELP OF PD SOFTWARE ?

By Greg Chapman

I read Mike Mallett's suggestions re DOS 5 for SHARP portables with great interest, as I have a theory for the lack of SHARP support for DOS 5 on their early machines. One reason may be that it is often impossible to install it all! And although it is said to increase available RAM, this only applies to 80286 machines or higher. Not mentioned in any review I saw is the requirement for a minimum 512k RAM!

Reviewers praised QBASIC, but QBASIC.EXE is a 255k file (which probably accounts for that minimum RAM requirement!). Also praised was the "Full-screen editor" - but little mention of the fact that it needs access to that enormous QBASIC file to run. But don't get too excited over the task-swapping capability, unless you have masses of memory and a hard disk! In the end, what it comes down to is that most of the "improvements" only apply if you have a 386 (or later) processor, a hard disk, and lots and lots of RAM.

DOS 5, however, does have some very good points. The /Q switch in FORMAT, which can reformat a disk in a couple of seconds, is great. UNFORMAT and UNDELETE are overdue, and DOSKEY is wonderful, as are the plethora of additional switches to control DIR output. The HELP facility is also welcome, for those less familiar with MS-DOS commands. But most of this is available in PD programs.

PC Magazine started a UK edition in April 1992. The "coverdisk" on Issue 1 was "50 Hot Utilities"; and another 'freebie', called "75 Power User Utilities" was given to subscribers. Unlike most magazines, it has in-house programmers, who do nothing but write small assembler programs. These two disks alone have supplied almost all my needs on the utilities front. On the next page, I list a selection of my favourites, to whet your appetite...

PD SUBSTITUTES FOR DOS 5 FACILITIES by Greg Chapman

ALIAS.....ideal DOSKEY substitute!
ANSI.....an uninstallable version of ANSI.SYS which can save precious RAM when ANSI facilities are not required.

BATCHMAN.....48 batch utilities, many of which are available separately on the disk, in one 6k program. Includes clear screen, echo, and a crude window creation, with colour; a quickformat command, cursor location and cursor size setting, screen dump, disk space test, date and time tests and delays, warm and cold boots, directory renaming, individual and multiple key testing, keyboard toggles etc., etc. The list goes on and on.....

BAT2EXEC.....compiles batch files.
BLOAD/BSAVE....save and load screen images.
BROWSE..... controllable two-way text file listing.
CO.....copy, move or delete files.
DR.....gives sorted DIR, and file-management functions.
DRAW.....draw graphic images.
FFF.....find files fast. Search a whole disk for that file! (similar to the new DIR/S command.
INSTALL/REMOVE load and unload TSR's without re-booting.
KEY-FAKE..... feed a sequence of key strokes to a program. Great for by-passing opening screens.
MEMMAP.....lists DOS memory map, the DOS 4/5 MEM facility
PAINT.....screen designer
PRUNE.....displays directory structure of a disk. Allows renaming, moving and reorganisation of directories
RED.....moves files.
RENDIR.....rename directories
TED..... Text Editor. I use it in preference to DOS 5 EDIT (it's only 3k in size and handles files up to 64k; features include cut and paste, 248 column, ability to enter all 256 ASCII characters, printing of part files, and line and part line delete, with undo.
ZCOPY.....high speed serial file transfer. Why buy Laplink?

Another source provided CED, an alternative ALIAS/DOSKEY program. My favourite DOSSHELL substitute is PCBOSS. Although crude, it works well without a mouse, and appears faster than DOSSHELL on startup because it does not read a directory until you move to it (i.e. it does not read the entire disk). Be warned, however, its internal file-viewer only moves forwards, and does not like ANSI.SYS. Also, it does not have a menu facility; for this I use MENU, which appeared on a 'WHAT PC' coverdisk.

None of the programs mentioned above are Shareware, or require a fee to be paid to the author. Mike Mallett now has these disks, which are rather full 3.5 inch disks. One of the documentation files is 218k and is intended to be used with its own 18k viewing utility; this may need splitting on machines with only 256k RAM.

****

Using DR DOS 6.0 by Ed Long

When DR DOS first appeared on the market it created considerable impact, and caused Microsoft to rush around and produce MS-DOS 5. As a result, DR DOS 6 is not currently in the limelight; but it still offers considerable advantages for anyone who uses a hard disk on his computer, so let's have a look at what it offers.

Installing DR DOS

Installation is menu driven, and very easy. The installation disk is put into drive A, and the computer rebooted; a DR DOS directory is created on the hard disk, and the AUTOEXEC.BAT and CONFIG.SYS files are updated automatically, unless you specify a manual update. There is little risk of losing data, but it is recommended that a back-up is made before installation is started. The DR DOS 'RESTORE' command will restore files backed up with any version of MS DOS. The installation thus created runs DR DOS without many of its best features installed, so you can try out the operating system before any non-reversible changes are made.

Hard Disk Utilities

Almost all DR DOS's commands are improvements on their MS-DOS equivalents, and all have on-line help, simply by typing "/H" (e.g. DIR/H gives all the "Dir" options). However, the most exciting feature of DR DOS is probably its SUPERSTOR hard disk compression utility. This effectively doubles, or at least considerably expands, the hard disk capacity. It is installed by typing SSTOR at the command line, and a series of menus tells you what you are doing. When it runs, it converts every file on your hard disk to a compressed version, and this proces9s can take up to an hour or so, depending on how much data you have on your hard disk. When SSTOR has finished you reboot your computer, whereupon everything appears identical, except that your hard disk capacity has been increased. When installing SUPERSTOR, you will be asked if you wish to reserve a section of the H.D. in an uncompressed format; if you opt to do this, you create a separate drive; this will be necessary for certain "Windows" files.

Apart from SUPERSTOR, DR DOS also contains a hard-disk cache to increase the hard-disk speed, and a hard-disk defragmentation utility. On my 286 machine, with these options fitted, the machine worked at least as fast as before, probably faster, and without any problems whatsoever; using a wide range of computer-aided design, drawing and PCB design programs, as well as more normal applications such as spreadsheets and word-processors.

Other Utilities

If you use Windows, you won't normally have much to do with DR DOS; but you will still have the advantages of increased hard disk capacity. For non-Windows users, or those whose machines won't run Windows, DR DOS has some very useful features. VIEWMAX is a shell, which shows an XTREE-like display, with folders for the different directories. MEMMAX installs DR DOS into higher memory to allow more room for programs. TASKMAX is a task switcher; it allows up to 20 programs to be installed, and you may switch between them, without leaving any of them. If you need to exchange data between a spreadsheet and a word processor, TASKMAX may be the answer.

(DR-DOS 6 continued)

FILELINK is a Laplink-like utility for transferring information between computers, and it transfers its own FILELINK software to the SLAVE computer through the RS-232 link ! Also included are an UNDELETE utility, various programs to safeguard deletion and prevent errors, and a much-improved ASCII Text-Editor.

Conclusions

DR DOS gives increased HD capacity, and this alone justifies the cost. Its numerous utilities give a computer a new lease of life.

A note from MM:

Most of us know that DR stands for Digital Research. However, not everyone knows the DR was recently taken over by Novell (of network fame). As a result, DR DOS is now sold under the Novell name, with support for their network systems, and comes with a very useful booklet called 'Optimization and Configuration Tips'. Old hands may remember that DR wrote CP/M; sadly, Novell have just confirmed to me that this product is no longer sold or supported.

Which brings in the Editor:

Where does that leave CP/M (and PCP/M, CP/M-86 etc., etc.) ??? In the Public Domain, or just in a dog's basket where no-one will sell them to you, but you can't copy them either.....???xx??..****

Expanding your PC by Mike Mallet

With a conventional PC is easy to add extra devices, using the standard expansion slots supplied. But standard slots are rarely provided in portables; many portable haves slots which are unique to themselves, and can only use matching devices which, for many early models, are now discontinued. However, I recently came across two devices which connect to the parallel printer port:-

SOUNDBLASTER is one of the leading PC soundcards; it has sold in large numbers in the past few years, and is supported by a wide range of software. Just announced is PORTBLASTER for portables, with 20-voice FM music synthesis, sampling rates up to 44.1 kHz, built-in amplifier and speaker, MIDI interface, microphone input etc., etc. Power is provide by 4 AAA batteries, or an AC adapter. A selection of software is available. I have no price details, but believe it is about £150. For details contact the UK supplier :-

Westpoint Creative
Delta House, 264 Monkmoor Road, SHREWSBURY, Shropshire SY2 5ST
Tel:0743 248590 Fax:0743 248199 BBS:0743 360287

I have the full size Soundblaster Pro fitted to my desktop PC, and would recommend it to any keen games player or serious sound and music users. If there is enough interest, Ed Long will tell us more about MIDI (Music Instrument digital Interface), which allows a computer to control a range of musical instruments.

Something called a PARALLEL GAME PORT allows a joystick to be used on a portable. Unfortunately I only have the telephone number of the US manufacturer : Genovation 010 1 714 833 3355. ***

PCMCIA PC CARDS - by Mike Mallett

As many of you will know, laptops often give rise to problems when you try to add extra devices, as they rarely take standard IBM expansion cards. Where manufacturers have made proprietary devices, the production runs are usually short, making prices very high in comparison with those for standard IBM cards, for which there is a vast market. Another problem is the limited space available, and this has become worse with the advent of notebooks, palmtops, handhelds, and now the PDA (Personal Digital Assistant). If these small machines are to meet the needs of the marketplace, a standardised range of expansion units is required. A number of memory cards have been produced over the years, but in 1989 the PCMCIA (Personal Computer Memory Card International Association) was formed. The standard was based on a card like a credit card, but thicker, with 68 pins (similar to the Japanese JEIDA card).

The first standard, PCMCIA 1, for cards 3.3mm thick, was meant primarily for memory cards. This standard is used on the PC-3000. Depending on the type of memory, cards with capacities of 8MB and more are available. Pricing is very competitive e.g. Westcoast (0734 752272) supply 64k @ £28.71, and 2mb @ £214.20 (exc. VAT). Software can be supplied as XIP (eXecute In Place); this may be run from the card, without loading the computer's main RAM.

Later, PCMCIA 2.0 was introduced, for 5.0mm cards, to allow more space for the requirements for modem, LAN and radio peripherals. Modems often have an external module which can be changed to suit the needs of the local telephone system. External modules are often required for the other devices as well. This type of socket is fitted on the PC-6781 and PC-6881. A range of modems, some with fax facilities, is already available.

The more recent PCMCIA 3.0, for cards 10.5mm thick, for more complex components, has already been agreed. This could include hard disk drives of up to 42mb capacity !

The technology is ideal for small computers, but it may also be used in printers, faxes, or virtually any electronic device meant for consumer or industrial use. In addition, PC-card 'drives' can be fitted to conventional PCs.

This has been a very brief look into the future. All the above was taken from a comprehensive information pack supplied by the PCMCIA, who are to be found at:

1030G East Duane Avenue, Sunnyvale, CA 94086. USA.

I hope to bring you more news in future issues.

**** SPECIAL OFFER FROM SHARPSOFT ****

Talking of the SHARP PC-3000, Sharpsoft have just informed us, very quietly, that they have a very special offer on the PC-3000 which may not last very long and is unlikely to be repeated:-

**** PC-3000 £250 plus VAT (£293-75) ****

If you are interested, give them a ring (071 729 5588), ask for Leslie Herbert, and don't forget to mention the Sharp Users Club !

PC-3000 Spot by Mike Mallett

Recently, I actually managed to get hold of a PC-3000 for half an hour, to try it out. I will not go into great detail, as the machine has been reviewed in many magazines, and user reviews have been sent to Compuserve (I have copy, if you are interested). But I must just say that I was impressed by the compact size of the machine, and by its keyboard. Unfortunately, the special cable which connects the PC-3000 to a desktop PC was not available, so I was not able to try out my favourite PC programs; but I hope to be able to do this soon. The PC-3000 can also use PCMCIA 1.0 cards, which are discussed in general terms elsewhere in this section.

Prices have changed since I last wrote. As reported elsewhere in this section, Sharpsoft are offering the PC-3000 for £250 + VAT. And DIP (who designed it) are in at £299.95 + VAT, including a free Laplink serial cable, and PIM software (the PC-3000 Personal Information Manager, altered to run on a normal PC). DIP also offer 10% off the list price of all peripherals; and the PC-3100, which has an extra 1MB of RAM, at £399.95 + VAT. Contact:-

DIP Systems Ltd.
Surrey Research Park, GUILDFORD, Surrey GU2 5XN
Tel: 0483 301555 Fax: 0483 578072.

INFORMATION ABOUT THE SHARP PC-5000, and 'NOC'

I would be interested to hear more about the PC-5000, which was an early, experimental Sharp 'portable'. I believe it had an 8086 processor, bubble memory and an LCD screen. It ran a Sharp MS-DOS, but like its contemporary, the MZ-5600, it was not IBM-compatible.

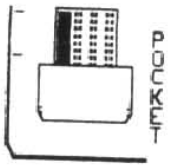
I have heard that the PC-5000 was used extensively by JAARS, and by the Summer Institute of Linguistics, for their research into linguistics, literacy and bible translation in far-flung corners of the globe. I recently contacted them, and it appears the work is now mainly done on Toshiba portables. Nevertheless, they kindly sent me a copy of their newsletter, called 'Notes on Computing', which has 48 x A5 pages full of useful articles and tips on all aspects of computing, including working with foreign alphabets. This cost $14 per year (8 issues) plus $12 for overseas airmail. If interested contact NOC, Box 248, Waxhaw, NC 28713 - 0248, USA.

SPECIAL OFFER FROM MORGANS ON SHARP PC-6XXX

In the last issue I referred to Morgan's special offer on the PC-6220. Not long afterwards the price came down to £468.83, which must have been good, because they have all sold out ! Morgans do still have LIMITED stocks of VGA external monitor cards CE-621 @ £41.13, and 1MB RAM upgrades @ £57.58. And they are now selling the very similar Texas Travelmate for the same price as they were selling the PC-6220. If interested, call Morgan on 021 456 5565.

I would be pleased to hear from anyone who has a PC-6220, as I was thinking of buying one myself; in particular, I would be very interested to hear any comments about the lack of a floppy drive. Also, as these machines were being sold as 'end of line', it will be very surprising if people do not have the usual problems in obtaining add-on options; so literally any information on sources or alternatives for PC-6XXX add-ons would be very welcome indeed.

Handheld Editor :-
Ed Long
113 Bishops Road
PETERBOROUGH
Cambridgeshire
PE1 5AT
Telephone (0733) 67529 (weekends only)



The Handheld Section starts a separate existence

Having recently acquired a PC-1403, I have agreed to take over the Handheld section from Mike Mallet who, despite not having a Sharp Handheld himself, was manfully 'holding the fort'. However, as I also have a PC-4501, and the use of other PC's, I will of course still contribute to the PC-compatible and Comms sections.

We've had useful input this month from Ian Hoar and Bob Macey. I am still finding my PC-1403 useful for scientific calculations, but my programming skills are small-time compared to Ian's. He has written a 3-part article on programming the PC-1403 in Assembler (a thing it's not really meant to do !). The first part appears on the next page, and more will follow in the next issue. If you are looking for information on the PC-1403, please write to me; I have a lot of details on that machine, all supplied by Ian Hoar.

Bob Macey has written with a list of addresses for obtaining parts for the various Sharp Organisers and Pocket Computers. The list is a bit long to print here, so if you care to write to me, I will send you whatever information I can.

New Basics for Sharp IQ computers

Kuma have released a new book about BASIC programming on the SHARP IQ series of computers. "Using Basic on the Sharp IQ" is concerned with writing BASIC on Sharp IQ-7000 and IQ-8000 pocket organisers. It costs £14.95. For more details contact:

Kuma Computers Ltd, 12 Horseshoe Park, Pangbourne, Berks, RG8 7JW.
Tel: 0734-844335.

The new IQ-9000: by Mike Mallett

The IQ-9000 is the latest machine in the IQ range (I believe it is sold in the USA as the 'Wizard'). From the outside it looks very similar to the IQ-8000; but once opened its unique feature is revealed - the screen is touch sensitive, and may be operated by the small stylus supplied. Handwritten notes may be saved as graphics, but as yet cannot be recognised as text. Also most of the inbuilt functions of the IQ-8000 have been updated. Last, but not least, communication with the outside world is handled by an infra-red port, with an adapter which can be fitted to a parallel printer. The expected price is £300-400. More details will follow as and when they are received from Sharp.

Special offer on IQ-7620 from Morgan's

Morgan are currently offering the IQ-7620 at £79. It has 64k, an 8-line LCD, calendar, phone/address book and calculator. A 32k RAM upgrade is £29 (all prices plus VAT). Call 021 456 5565 for mail order or details of branches in London, Manchester and Birmingham.

Graphics on the Sharp PC-1403 by Ian Hoar

Have you ever fancied doing high resolution graphics on your PC-1403 ? Although you may not realise it, it is possible. The only drawbacks are the screen size and a convoluted mapping system which means that you need a look-up table for screen addresses, which tends to slow things down to the point where BASIC isn't fast enough for anything except static or slow-moving displays.

The PC-1403 manual is misleading in suggesting, on p.213, that PEEK, POKE and CALL don't work on the 1403; they do, though all the ROM CALL addresses are different from those on other Sharp handhelds. There are also 18 other commands not listed in the manual, all of which appear to be concerned with a disk drive.

As you may have noticed while the computer is performing calculations etc., the display is blanked out. Therefore the first thing to do is to turn it back on. CALL 5450 will do this (in a program), but it waits for a key to be pressed before continuing program execution. Commands which temporarily halt the program, such as BEEP, PRINT, PAUSE, etc., will cause the screen to blank out again, and the CALL plus the key press must be repeated to turn it on again. Note, if a BEEP is performed, the previous data will reappear. Otherwise the data will be lost. Of course this means that any text which needs be displayed at the same time as graphics will need to be stored elsewhere (REM or DATA statement maybe) as pixel data, and will have to be POKEd onto the screen.

Once the screen is ON, data in the form of pixel patterns can be POKEd to the screen at addresses &3000-303B and &3040-307B for the left and right halves of the screen respectively. But, as shown in the table in Fig. 1 below, the relationship between addresses and screen locations is not straightforward. The contents of an address defines a vertical column of seven pixels, bits 0-6 of the contents controlling the pixels from top to bottom respectively, e.g. POKE &3000,1 would cause the top pixel in the leftmost column to show (after CALL 5450). Note that Bit 7 of each address has no effect on the display.

A slight problem will manifest itself if complex calculations are performed with the display active - the computer appears to use the rightmost character as a temporary storage location, which means that it cannot be used for display purposes. Also the 17th pixel column from the right (address &3050) has a zero stored there fairly regularly, sometimes as often as every second, which deletes any other pixel data at that address. Fig. 2 lists a short demo program which shows what can be done on the PC-1403.

The other annunciators on the screen (CAL, RUN, E, SHIFT,etc.) may be displayed by POKEing to the addresses shown in Fig. 3. These all work without using CALL 5450, although some cause the program to crash as the mode is changed i.e. from RUN to PRO, etc.

As you will see, BASIC is pretty slow at graphics. Of course machine language would be much faster, but I cannot find out which variant of assembly language the PC-1403 uses (even SHARP Japan can't help). If anyone can help with this, please let me know. The machine code for RTS (ReTurn from Subroutine) is 55D (&37).

(Figs. 1-3 appear on the next page)

(Graphics on the PC-1403, Figs. 1-3):

Fig. 1 Character Map

Character No.	Screen Address (Hex)
1	3000-3004
2	3005-3009
3	300A-300E
4	300F-3013
5	3014-3018
6	3019-301D
7	302D-3031
8	3032-3036
9	3037-303B
10	301E-3022
11	3023-3027
12	3028-302C
13	306C-3068
14	3067-3063
15	3062-305E
16	307B-3077
17	3076-3072
18	3071-306D
19	305D-3059
20	3058-3054
21	3053-304F
22	304E-304A
23	3049-3045
24	3044-3040

Fig. 2 Sample program

```
10 "A": CALL 5450: REM*SUC DEMO*
20 RESTORE 50
30 FOR C=&3000 TO &303B: READ Q: POKE C,Q: NEXT C
40 CALL 5450: END
50 DATA 38,105,73,75,50,63,64,64,64,63,62,65,65,99,
   34,8,18,16,18,8,99,127,65,65
60 DATA 62,99,127,73,73,65,127,69,111,71,111,71,111,
   71,111,65,107,65,107,65,127
70 DATA 126,1,30,1,126,62,65,65,65,62,0,0,0,0,0
```

Fig. 3 Screen Symbol Addresses

ADDRESS	BIT 0	1	2	3	4	5	6
&303C			SML	STAT	MATRIX	BLACK	BLANK
&303D	BUSY	DEF	SHIFT	HYP	PRO	(RUN)	(CAL)
&307C	E	M	( )	RAD	G	DE	PRINT

****

Editor:
Mike Mallett
19 Knollmead
Calcot
Reading RG3 7DQ
Tel. (Voice/Fax) 0734 410597
Silicon Village Mailbox 081011088

Bulletin board Organiser:
Peter Tuffs
48 Mackie Drive
Guisborough
Cleveland TS14 6DJ
Tel. (Voice/Fax) 0287 610139

COMMS EDITORIAL

Having covered the basics of modems, I now turn to the necessary software. To start the ball rolling, on the next page, I review some of the software for modern PC-compatibles. But I would be very interested to hear from users of earlier machines. In fact, 'comms' can often extend the life of an old machine as, apart from a modem, the hardware requirements need not be very demanding.

Space precludes listing all the local BBS numbers which would help to keep your phone bills down, but either Peter or I should be able to help. And I have a list of FAXBACK numbers for leading companies such as Microsoft and Lotus, which will allow you to get technical support notes printed out on your Fax machine.

At present, Peter cannot supply a second telephone line for a Club BBS. I am exploring other avenues, including Sharp U.K., who recently opened their own BBS on 061 204 2495; I assume that it is 24-hour, but I have encountered problems outside office hours. I have managed to contacted their SYSOP Colin Wilcox, and hope that he will be able to supply more information, and perhaps allow us some space on the board. The list below shows some of the current SHARP-specific files on the BBS (column 2 is the filesize):-

PC files

55EMS10.ZIP	10344	CE-551B EMS Software Version 1.0A
6700UTES.ZIP	0	PC-6700 Utilities
ALTVID.ZIP	444	Change Video Display on PC-6600
INSTALL.ZIP	15275	Install Program For Sharp PC Demos
PC-PCX.ZIP	123077	.PCX Pictures Of Sharp Laptops
PC3000SW.ZIP	677489	Pre-Release SW For PC-3000 - Passworded
STD.ZIP	29154	File For Jon Leung
WS5600.ZIP	126996	MZ-5600 Wordstar For Ian Johnson

Sharp demos

4700DEMO.ZIP	171234	PC-4700 Rolling Demo. (May 14th 1991)
5541DEMO.ZIP	Offline	PC-5541 Rolling Demo. (June 1990)
5741DEMO.ZIP	743821	PC-5700 Rolling Demo (14th May 1991)
6200DEMO.ZIP	675807	PC-6220/40 Rolling Demo
6220DEMO.ZIP	676053	PC-6220 Rolling Demo. (October 24th 1990)
6500DEMO.ZIP	669408	PC-6500 Series Rolling Demo
6600DEMO.ZIP	989428	PC-6600 Series Rolling Demo (May 1991)
6700DEMO.ZIP	633250	Rolling Demo For PC-6700 (Comdex Fall 91)
6800DEMO.ZIP	631073	Rolling Demo For PC-6800 (Comdex Fall 91)
8000DEMO.ZIP	Offline	PC-8000 Rolling Demo. (June 1990)
8501DEMO.ARJ	1607010	Slightly more compressed 8501 Demo
8501DEMO.ZIP	1753001	PC-8501 Rolling Demo (June 1991)
9300DEMO.ZIP	142997	JX-9300 Demo Pages
GHDEMO.ZIP	106147	Graham Hughes' Rolling Demo.
IQDEMO.ZIP	167764	IQ-7000 Rolling Demo. (Requires SPS)

MODEM SOFTWARE by Mike Mallett

In this field the best programs are usually shareware, written by committed 'comms' enthusiasts. My personal favourite is a program from Canada called TELIX, now at version 3.20. Its features are too numerous to mention in detail but it should cope with most needs; however, like many similar programs, it comes from North America and therefore does not support V23 or Viewdata. I can supply an evaluation copy, a full registered copy may be bought from the Canadian supplier or from:

Top Modem, 136 Holland Street, GLASGOW G2 4NB
Tel : 041 204 4310

TELIX costs only £29 plus delivery and VAT. This is money well spent, and a number of supporting utilities are available in the public domain, or as shareware. In addition, Top Modem's catalogue contains an excellent guide to all aspects of 'comms'.

***

For Viewdata services such as Prestel, Silicon Village, and the Berkshire Viewdata Service, I use TRANSEND, which came with my Dataflex modem. But I would suggest new users look at ODYSSEY, a U.K. shareware program which supports Viewdata and also has a full range of features for standard services. The full version costs £89 plus delivery and VAT, but evaluation copies are supplied by:

Shareware PLC, 3a Queen Street, SEATON, Devon EX12 2NY
Tel: 0297 24088 Fax: 0297 24091.

****

Personics - the Modem company by Mike Mallett

Since I mentioned them in the last issue they have sent me a leaflet listing 10 uses for a modem. The list is not exactly earth-shattering, but it may give you some ideas:

1 - Transfer any computer file over the telephone line
2 - Get online support for any software you use
3 - Make use of any financial information services
4 - Use electronic mail for efficiency - even world wide
5 - Buy and sell items without leaving your computer
6 - Discuss any issues via your keyboard
7 - Link two sites together for instant data updates
8 - Send faxes too (this needs a modem with fax facilities)
9 - Communicate from anywhere, at any time to suit you.
10 - BT Phonebase directory enquiries Electronic Yellow Pages

For details call 0252 311332, or Fax 0252 311660, or see their area on the Shaking Hands BBS (***).

(***) Formerly known as BOOG, see the update after Ed Long's article on RS-232 communication, later in this section.

Serial Communications by Ed Long

In a recent letter to the Editor, R. Macey asked for information about serial communications. This article stops short of being a tutorial, but I hope it will point users in the right direction.

If you have a PC (such as the SHARP PC-4501A), you generally have two ports through which data can be transferred. There is the Centronics or parallel port, normally used for the printer; and the RS-232 or serial port, normally used for communications. The word serial means that data is being transferred one bit after another, down a single wire (in parallel mode, data is transferred one word at a time, through eight wires in parallel). You can use a parallel port for communications, but this is not usual.

The big problem with RS-232 is that there never was an adequate specification for it, so different manufacturers did their own thing. To get it to work, you need a correctly-connected cable, and both computers need to have their serial ports set to the same mode. Let's deal with the mode problem first.

If you are using a DOS computer, there is a command called MODE. This command may be used to set an RS-232 port, using syntax along the following lines:-

```
MODE COM1:96,E,7,1
```

In the above example, the port is COM1 (many computers have 2 RS-232 ports), the transfer rate is 9600 baud (only the first two figures of the Baud rate are needed), parity is 'even' (this is a check made to ensure that a computer 'word' has been correctly transferred), the number of data bits is 7, and the number of stop bits is 1. Depending on the version of DOS you are using, the parameters may be in a different order, but the MODE command is always along the lines given above, though it may be menu-driven. On CP/M machines the corresponding command is CONFIG.

Any of the parameters may be changed by appropriate use of the MODE (or CONFIG) command. You don't actually have to worry about these details, except to ensure that both computers have the same setting. To do this on the particular computer or computers that you are using, you have to find a MODE or similar type command, and set all parameters to be the same at both ends of the link (on many Sharp machines it may also be done from the SETUP menu - MM). The default setting in DOS 3.3 is COM1:(Baud),E,7,1.

Now comes the cabling. This is the tricky bit, and I must now introduce another concept relating to RS-232 communications. In RS-232, a device can be labelled as either the TRANSMITTER of information (Data Terminal Equipment, DTE), or the RECEIVER of information (Data Communication Equipment, DCE). In many of the applications for which RS-232 was originally designed, a DTE would be connected to a DCE, resulting in a straightforward set of connections. However, when you are trying to connect one computer to another, this is one DTE talking to another DTE, which gives rise to cross-over cable configurations - and much confusion. To simplify matters, the next page shows the connections recommended by Digital Research, in the DR DOS manual, for inter-computer communication. The 25-pin connectors are used on IBM XT machines and the 9-pin connectors are used on IBM AT (and later) machines.

25-pin to 25-pin cable.

```
7----7
2----3
3----2
4----5
5----4
6----20
20---6
```

9-pin to 25-pin cable

```
5----7
3----2
2----3
7----5
8----4
6----20
4----6
```

9-pin to 9-pin cable

```
5----5
3----2
2----3
7----8
8----7
6----4
4----6
```

Conclusion.

There is nothing mysterious about RS-232, but there is a lot of confusion and non-standardness. In short, all you need is the correct cable, and the same mode settings at each end.

References: Horowitz and Hill, The Art of Electronics, pp.723-725.

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The Shaking Hands BBS by Mike Mallett

In the last issue I briefly mentioned BOOG (which incidentally stands for British Osborne Owners Group). Since then I have heard from their SYSOP (system operator) Jeremy Browne that it has been renamed the Shaking Hands BBS, as he is supporting the Parkinson's Disease Society. Areas include DOS and CP/M software to download, info on Personics Ltd. (see next page), and the Sharp Users Club !

Call 0252 626233 using V21, 22, 22bis, V32, or V32bis and 8,N,1 (this is shorthand for 8 data bits, NO parity, 1 stop bit, and is used on almost all systems. Ed Long's article above explains these terms and the use of MODE; but in most cases these parameters will be set up automatically by your Comms software.)

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