

All copy for this newsletter is supplied by members of the club.
If you have any material at all, please forward it to Mick Rowney,
Geoff Niland or Col Elphick. This can only be continued with support.

EXATRON MM-800 MEMORY EXPANSION BOARD from Michael Cooper

A new release from Exatron, makers of the Stringy Floppy, could herald a new lease of life for your tired old Model 1. Using state of the art 64K memory chips, this board allows memory expansion inside the Keyboard unit. Primarily designed for users of the stringy floppy who wish to upgrade to 48K without buying an expansion interface, this board can also be utilised by owners of disk based systems as well. As well as the included memory, the board also implements a two speed system clock which should enable users to run their system at either 2.66MHz (+50%) or 3.54MHz (+100%). Most systems will run reliably at 2.66MHz as is, but those of you keen to go double speed may need to substitute a Z-80A micro-processor for the standard Z-80, and also modify the RAS timing (a simple job for those handy with a soldering iron).

Disk users are not forgotten, as having all main memory in the Keyboard can only increase the reliability. In addition to the 2-speed clock, which is software selectable, the board has provision to do other useful things, such as allowing ROM to be replaced by RAM. This allows simple modification of BASIC, for example, to enable lower case by changing just one byte, as well as making CPM and other systems requiring RAM from address 0000H a real possibility. Another feature supported is a RAM - I/O switching. This enables the user to overlay all memory addresses from 3000H to 4000H with actual RAM. These addresses are currently used for the Video, Keyboard and Disk. Best of all the options are all software selectable via Port 254 (FEH). Currently 4 of the 8 available Bits are implemented so it will be possible to create up to 4 other selectable features. Possible uses include bank selection of the top 32K of memory to enable up to 224K of RAM. This technique is used in the APPLE 3 machine to great effect. Owners of expansion interfaces already have the first 32K bank, so a 96K Model 1 could be yours with little modification.

Fitting the board to the Keyboard unit requires removal of the Z-80 chip, the 16K memory chips and the DIP shunt X3. The Z-80 plugs into the MM-800 board which in turn plugs into the Z-80 socket, the first 16K chip socket and the X-3 shunt socket. Five wires are then soldered to various points on the main circuit board and presto, all done. You will then have 8 x 16K memory chips spare. These can be used towards one of the 32K banks if you wish, or thrown away (only worth \$2-00 each these days - how much did you pay for yours ???).

I have purposely left the price to last as that is the most amazing feature of the board. You can buy it ready built and tested for \$199-00 which is not unreasonable, but for all those hardware hackers the bare circuit board (with Manual) is available for \$19-95 (yes nineteen dollars and ninety-five little cents) which just has to be the best bargain in computing this year. I estimate the cost to build yourself as \$20 dollars plus the cost of the 8 x 4164 memory chips (currently about \$10-00 each but available cheaper in quantity). As a project for club members wishing to work together in developing the potential of their Model 1, I feel it has great advantages.

Whats your TRS-80 worth?

The answer to this question really depends on what you are using it to do.
BUT, if you want the cash, the following may help. These are the prices asked for TRS-80 model 1s in the Trading Post for September.

- 1) 48 K, E.I., 1 drive, \$1195
- 2) 16 K, \$400
- 3) 48 K, E.I., 3 drives, printer \$2450
- 4) 16 K, printer, \$1099
- 5) 16 K, printer, \$750
- 6) 48 K,(?), \$550
- 7) to 9) 16 k, \$600, \$600, \$699
- 10) 32K, E.I., 3 drives, printer, \$2000

AJBITS from Alan Johnson

THIS MONTH I HAVE YET ANOTHER NEW VERSION OF MY SYSTEM MODS, NOW AT VERSION 5.4. I DON'T ENVISAGE ANY FURTHER MAJOR CHANGES AT THIS STAGE, MAINLY BECAUSE I CAN'T THINK OF ANYTHING ELSE THAT I WANT. HOWEVER, I AM ALWAYS RECEPTIVE TO SUGGESTIONS, AND I WOULD LIKE TO THANK THOSE OF YOU THAT HAVE COMMENTED TO ME ON MY SOFTWARE. IN FACT, ONE OF THE NEW FEATURES OF THE LATEST VERSION, THE BOOT-UP MESSAGE, WAS SUGGESTED BY MIKE ROWNEY.

APART FROM THE BOOT-UP MESSAGE, THE OTHER MAIN CHANGES TO SYSADD ARE EXTRA PRINTER SUPPORT, PARTICULARLY FOR THE C. ITOH 8510, AND A MUCH IMPROVED VERSION OF AUTOMATIC DISK FORMAT DETERMINATION. PROVIDED THAT A DISK DRIVE CAN PHYSICALLY READ A DISK, ADFD WILL SORT OUT ANY (AND I MEAN ANY) NEWDOS80.2 FORMATTED DISK. THIS INCLUDES READING 35 TRACK DISKS ON 80 TRACK DRIVES! ALTHOUGH NO SPECIAL RECOGNITION IS CURRENTLY MADE OF NEWDOS80 VER 1 DISKS, THIS CAN BE PUT IN IF ANYONE HAS A NEED FOR IT (EG SUPPORTING LARGER DIRECTORIES). CALL ME IF YOU HAVE A NEED FOR THIS.

THERE ARE ALSO A COUPLE OF MINOR CHANGES TO PENFIX. THESE CONSIST OF FIXES FOR A COUPLE OF MINOR BUGS (ONE MINE, ONE MICHAEL SHRYVER'S), PLUS A BIT OF SUPPORT FOR THE MX80.

INCIDENTLY, IF YOU'RE WONDERING WHY I DON'T HAVE ANY SUPPORT IN THE SYSTEM FOR YOUR FAVOURITE PRINTER, IT'S BECAUSE I DON'T HAVE ANY INFORMATION ABOUT IT. ROBERT GAREB GETS THE CREDIT FOR THE PENFIX MX80 SUPPORT, SINCE HE BOTH POINTED OUT HIS PROBLEM TO ME, AND ALSO GAVE ME THE INFORMATION I NEEDED TO FIX IT.

I HAVE HAD QUITE A NUMBER OF PEOPLE EXPRESSING SURPRISE THAT I GIVE MY SOFTWARE AWAY. THERE ARE QUITE A NUMBER OF REASONS FOR THIS, THE MAIN ONE BEING THAT MY TRS80 IS MY HOBBY (OR AT LEAST ONE OF MY HOBBIES) - I WRITE ALL MY SOFTWARE FOR MYSELF FOR FUN, AND THE MOMENT I START TO PRODUCE SOFTWARE SPECIFICALLY FOR OTHER PEOPLE FOR A PRICE IT BECOMES WORK. WHILE I WILL OFTEN WRITE SOMETHING FOR SOMEONE ON REQUEST, I WILL ONLY DO IT IF I CONSIDER IT INTERESTING, AND ONLY WHEN (AND IF) IT SUITS ME - NO DEADLINES, NO PRESSURES. ALSO, SINCE I SPEND MY WORKING DAY DEVELOPING SOFTWARE FOR A FEE (IE. MY SALARY - I WORK FOR AN AMERICAN SOFTWARE COMPANY PRODUCING SYSTEM SOFTWARE WITH \$100,000 UP PRICE-TAGS FOR LARGE MAINFRAME COMPUTERS), THEN ANY SOFTWARE DEVELOPMENT AT HOME IS PURELY A LEISURE-TIME ACTIVITY. OK?

MY OTHER OFFERINGS THIS MONTH CONSIST OF (1) PRINTBUF/CMD - AN IN-MEMORY PRINTER BUFFER. (2) DSPOOL/CMD -- A TRUE DISK SPOOLER WHICH IS FULLY AUTOMATIC. WHILE THERE IS A SPOOLING PROGRAM PROVIDED WITH NEWDOS80 (IE ASPOOL), THERE WERE, I FELT, A NUMBER OF DRAWBACKS TO IT. FIRST, THE FACT THAT WHILE THE FIRST POOL FILE IS BEING FILLED, MY PRINTER WAS SITTING IDLE. ALSO, THE SAME PROBLEM HAPPENS BETWEEN POOL FILES. I FELT THAT A SPOOL PROGRAM SHOULD KEEP MY PRINTER AS BUSY AS POSSIBLE AS OFTEN AS POSSIBLE. SECOND, THERE WAS THE PROBLEM OF HAVING TO REMEMBER EITHER THE *ASP COMMAND PARAMETERS OR THE SPECIAL CHARACTERS REQUIRED TO DRIVE ASPOOL. A SPOOL SYSTEM SHOULD ALWAYS BE AS 'INVISIBLE' AS POSSIBLE. AND, THIRD, ASPOOL WON'T SPOOL FROM DOS!!

SO, WHEN I WROTE MY SPOOLER A WEEK AGO, I TRIED TO COVER ALL THESE POINTS. FIRST, DSPOOL WILL DO IT'S BEST TO KEEP THE PRINTER BUSY AT ALL TIMES. SINCE THE DISK BUFFER FILE IS TREATED AS A DYNAMIC BUFFER, IT DOESN'T HAVE TO FILL UP FIRST AND THEN BE EMPTIED - IT IS CONTINUALLY HAVING THE PRINT DATA PASSED THROUGH IT. SECOND, WHILE I HAVE INCLUDED 3 NEW DOS COMMANDS WITH DSPOOL, I HAVE ATTEMPTED TO MAKE THEM EASY TO REMEMBER AND USE. THIRD, DSPOOL WILL SPOOL FROM DOS OR ANYWHERE ELSE.

NOTE TO ANYONE WRITING SOFTWARE THAT RELOCATES ITSELF TO THE TOP OF MEMORY - WHEN RESETTNG THE HIMEM VALUE AT 4049H TO PROTECT YOUR CODE, THERE IS A HIMEM2 AT 43A9H WHICH IS USED BY THE NEWDOS80 'CLEAR' COMMAND. YOU SHOULD SET BOTH OF THESE LOCATIONS TO THE NEW VALUE.

IF ANYONE IS USING THE MISO SYS EDTASM, I HAVE WRITTEN A LITTLE PATCH THAT CHANGES THE PD COMMAND FROM 'PRINT DIRECTORY' TO 'PASS TO DOS' SO THAT ANY DOS COMMAND THAT IS VALID IN MINI-DOS CAN BE USED. CONTACT ME FOR DETAILS.

PRINTBUF

THIS PROGRAM SETS UP A PRINT BUFFER IN RAM. TO START IT UP, USE THE COMMAND:

PRINTBUF BUFSIZE

WHERE 'BUFSIZE' IS THE SIZE OF THE PRINT BUFFER YOU WANT. FOR EXAMPLE, 'PRINTBUF 10000' RESERVES 10,000 BYTES OF RAM MEMORY AS A PRINTER BUFFER. IF 'BUFSIZE' IS NOT SPECIFIED, IT DEFAULTS TO 1024 (1K). IN ORDER TO MAKE THE BEST USE OF RAM STORAGE, THIS BUFFER PROGRAM WILL COMPRESS ALL BLANKS IN ORDER TO MAKE MAXIMUM USE OF RAM. THIS WILL OBVIOUSLY BE OF MOST USE WHEN PRODUCING FORMATTED LISTINGS (EG EDTASM OUTPUT). THERE IS A TRADE-OFF HOWEVER - GRAPHICS CHARACTERS TAKE UP MORE SPACE.

DSPPOOL

THIS PROGRAM BEHAVES JUST LIKE PRINTBUF, EXCEPT THAT THERE IS NO BLANK COMPRESSION, AND MOST OF THE BUFFER IS KEPT ON DISK (THAT'S WHY IT DOESN'T NEED BLANK COMPRESSION). TO START SPOOLING, USE THE COMMAND:

DSPPOOL PARAMETERS...

WHERE THE POSSIBLE PARAMETERS ARE ONE OR MORE OF THE FOLLOWING IN ANY ORDER:

'FILENAME' - THE NAME OF THE DISK FILE TO BE USED AS A PRINT BUFFER (DEFAULTS TO DSPPOOL/BUF), AND WHICH WILL BE CREATED BY DSPPOOL IF NECESSARY. YOU MAY ALSO SPECIFY ':D' AS SHORTHAND FOR DSPPOOL/BUF:D

'SIZE' OR 'BUFSIZE=SIZE' (EITHER FORM IS ACCEPTABLE) IS THE SIZE OF THE PRINT BUFFER DISK FILE IN SECTORS.

IF 'SIZE' IS SPECIFIED, THE DISK FILE IS SET TO THE SPECIFIED SIZE.

IF 'SIZE' IS NOT SPECIFIED AND THE DISK FILE CONTAINS NO RECORDS (EG A NEW FILE), IT IS SET TO 100 RECORDS.

IF 'SIZE' IS NOT SPECIFIED AND THE DISK FILE CONTAINS RECORDS, IT IS LEFT AT THE CURRENT SIZE. UNDERSTAND ALL THAT???

'DELAY=N' IS THE NUMBER OF SECONDS DELAY AFTER ANY KEYBOARD CHARACTER HAS BEEN READ BEFORE ANY DISK I/O IS DONE. THE REASON FOR THIS IS THAT SINCE ALL INTERRUPTS ARE DISABLED DURING DISK I/O, AND DISK I/O CAN TAKE A WHILE TO PERFORM, THEN YOU WILL LOSE CHARACTERS IF YOU ARE TYPING AT THE SAME TIME THAT SPOOLED PRINT CHARACTERS ARE BEING READ BACK FROM THE DISK. DELAY MAY BE SPECIFIED AS 1 TO 6 SECONDS, AND DEFAULTS TO 2 IF NOT SPECIFIED. THE EFFECT OF THE DELAY IS THAT PRINTING MAY STOP WHILE YOU ARE TYPING. THIS IS NOT TOO BAD IF YOUR PRINTER HAS A REASONABLY SIZED INTERNAL BUFFER.

NOTE: SINCE I USE ONE OF THE ROM ROUTINES TO CONVERT NUMERIC PARAMETERS, AND IT IGNORES BLANKS, THE SEQUENCE 'DELAY=N SIZE' WON'T WORK, ALTHOUGH 'DELAY=N SIZE WILL.

ACTUALLY, THE EASIEST WAY TO USE THIS PROGRAM IS TO DECIDE HOW MUCH DISK SPACE YOU CAN SPARE FOR A BUFFER (GRAMS*5=SIZE) AND THEN INVOKE DSPPOOL THE FIRST TIME WITH:

DSPPOOL :D XXXX

(WHERE :D IS THE DRIVE YOU WANT THE PRINT BUFFER FILE ON AND XXXX = THE SIZE OF FILE YOU WANT) AND FROM THEN ON JUST INVOKE IT WITH:

DSPPOOL

THREE NEW COMMANDS ARE PROVIDED WITH DSPPOOL. THESE ARE:

(1) *NEWPAGE - THIS SENDS A FORM FEED (CHR*(12)) TO THE PRINTER, WHICH WILL BE SPOOLED IF NECESSARY.

(2) *CLEARSP - THIS ONE CLEARS ALL SPOOL BUFFERS, BOTH ON DISK AND IN MEMORY.

(3) *PRODSPL - BEFORE EXPLAINING WHAT THIS ONE DOES, I FIRST NEED TO EXPLAIN SOME OF DSPPOOL'S THEORY OF OPERATION. FIRST, THERE ARE TWO MAIN ROUTINES IN DSPPOOL, WHICH I CALL SPOOL AND PRINT. SPOOL PUTS A PRINT CHARACTER INTO THE PRINT BUFFER, WHILE PRINT TAKES A CHARACTER OUT OF THE PRINT BUFFER AND SENDS IT TO THE PRINTER. THE ONLY WAY THAT SPOOL GETS CONTROL IS WHEN A PRINT REQUEST IS MADE BY A PROGRAM. PRINT, ON THE OTHER HAND, CAN BE CALLED FROM THREE DIFFERENT PLACES, THESE BEING (1) WHEN A CALL IS MADE TO THE KEYBOARD INPUT ROUTINE; (2) FROM THE INTERRUPT PROCESSOR AND (3) FROM SPOOL ITSELF. BECAUSE OF INTERRUPTS, IT IS POSSIBLE FOR PRINT TO BE CALLED EITHER WHEN SPOOL IS MANIPULATING BUFFER INFORMATION OR WHEN PRINT IS ALREADY RUNNING! SINCE EITHER OF THESE SITUATIONS WILL CAUSE SOME UNDESIRABLE RESULTS, TO SAY THE VERY LEAST, BOTH ROUTINES USE A SET OF FLAGS TO INDICATE WHOM IS DOING WHAT TO WHO WHEN. NOW COMES THE CRUNCH. IF YOU CAUSE AN INTERRUPT TO EITHER SPOOL OR PRINT, USUALLY BY ENTERING MINI-DOS (DFG) OR BY ENTERING DEBUG (123), THEN THERE IS A CHANCE THAT THE INTERRUPT COULD OCCUR WHILE ONE OF THESE ROUTINES IS PROCESSING. AT THIS POINT, WHAT HAPPENS IS THAT SPOOLING WINDS DOWN, AND YOUR PRINTING STOPS. DON'T PANIC. THERE IS NOTHING TO WORRY ABOUT, AS SPOOLING WILL RESTART AS SOON AS YOU RETURN FROM THE INTERRUPT WITH EITHER MDRET (FROM MINI-DOS) OR G (FROM DEBUG). THE PROBLEM OCCURS IF YOU DON'T RETURN WHERE YOU CAME FROM - THAT IS, YOU EXIT FROM MINI-DOS WITH MDBORT OR YOU EXIT FROM DEBUG WITH Q (OR G402D). IF YOU DO THIS, YOU LEAVE SPOOL OR PRINT WITH FLAGS SET INDICATING THAT AT LEAST ONE OF THOSE ROUTINES IS STILL ACTIVE, SO THAT SPOOLING IS EFFECTIVELY 'STUCK'. NOW (AT LAST) WE FINALLY GET TO THE POINT OF *PRODSPL. ALL THIS COMMAND DOES IS TO PROD DSPPOOL TO CONVINCE IT THAT IT IS ALL RIGHT TO CARRY ON.

IMPORTANT WHEN I SAID "DON'T PANIC", THAT ALSO MEANS DON'T USE *PRODSPL IF SPOOLING STOPS IN MINI-DOS - DOING SO WILL STUFF UP YOUR PRINTING.

DSPool MAY BE TERMINATED WITH THE COMMAND: 'DSPool KILL'. DSPool CAN ONLY BE TERMINATED WHEN THE PRINT BUFFER IS EMPTY. IF NECESSARY, USE *CLEARSP first.

NOTE THAT SINCE DSPool ONLY USES THE DISK BUFFER FILE AS AND WHEN NECESSARY, IT CAN NOT BE USED AS AN EQUIVALENT TO THE LDOS ROUTE COMMAND. THE DATA ON DISK MAY WELL BE ONLY BITS AND PIECES OF WHAT GOES TO THE PRINTER. DOES ANYONE WANT OR NEED A PROGRAM TO ROUTE PRINT DATA TO A DISK FILE?

DSPool AND PRINTBUF COULD ALSO BE MODIFIED IN OTHER DOS'S IF REQUIRED.

I GUESS I OUGHT TO POINT OUT THAT ALTHOUGH PRINTBUF DOESN'T HAVE USEFUL FEATURES LIKE *PRODSPL, IT MAY STILL SUFFER FROM THE SAME POSSIBLE LOCKOUTS OF DSPool. ALSO, THERE IS NO 'KILL' OPTION IN PRINTBUF. THE MAIN REASON FOR THESE LACKS IS THAT I DIDN'T BOTHER SINCE I NOW USE DSPool ALL THE TIME. IN FACT, APART FROM BEING WOEFULLY SHORT ON DISK SPACE, AND I DON'T SEE HOW THAT IS POSSIBLE WITH THE SYDTRUG DISK DRIVE PRICES, THEN I CAN'T THINK OF ANY REASON TO USE PRINTBUF IN PREFERENCE TO DSPool. IN FACT, I'M NOT EVEN SURE WHY I INCLUDED IT HERE. STILL, IF ANYONE FINDS THAT THEY HAVE A USE FOR PRINTBUF, AND WOULD LIKE THE SAME FEATURES AS DSPool, JUST LET ME KNOW.

I AM CURRENTLY TAKING ADVANTAGE OF HAVING TWO DOUBLE-SIDED 80-TRACK DRIVES (PLUS A DOUBLE-SIDED 40-TRACKER AS MY SYSTEM DRIVE) AND DOUBLE DENSITY (I'M GREEDY). IF I HAVE A LOT OF PRINTING, I USE DSPool WITH A 2000 RECORD BUFFER - THAT'S HALF A MEGABYTE OF PRINTER BUFFER!! KEEPS MY PRINTER GOING FOR AGES.

CAN YOU HELP FILL THIS SPACE WITH

- Requests for help and information.
 - Programs and tricks that you have found useful.
 - Opinions of programs that you have bought.
 - Reviews of books that you have read.
 - ANYTHING.
-