**QL INTERFACES Admaston, Telford, GREAT BRITAIN - Dennis Briggs**

(This article was originally published in IQLR Volume 4 Issue 2. Unfortunately, the print quality of the original article was not good enough for much of the smaller print to be legible, e.g. the chip numbers)

Over the years there has been many add-ons for the QL. Here are drawings of many of them so that you may identify them easily. If you have one that is not mentioned, then please write to me via the editor of IQLR to help complete the library.

MEDIC - One of the earliest and possibly one of the best boards around albeit very expensive. It has a much vaunted multi layer pcb. Originally it had the silly idea of powering the board down the disk drive signal cable. Unfortunately they fitted the connector to the ribbon cable backwards with the result that the cable melted and a few chips on the board died. Usually it is just the two disk drive buffer chips which suffer. Disk interface, Centronics interface and up to 512K of memory. Dai Griffin produced a circuit diagram whilst QJUMP produced the V1.18 ROM.


MEDIC
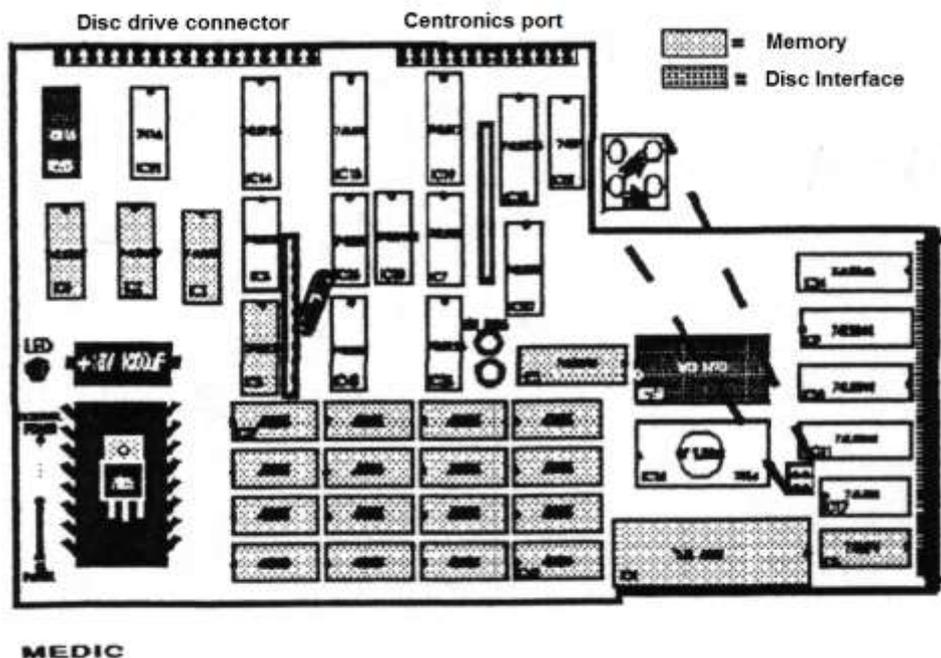
CST - Now there's a name to conjure with. A good early effort with great potential. The disk interface plugs in over the memory board. There is also provision for four EPROMs or static RAMs.
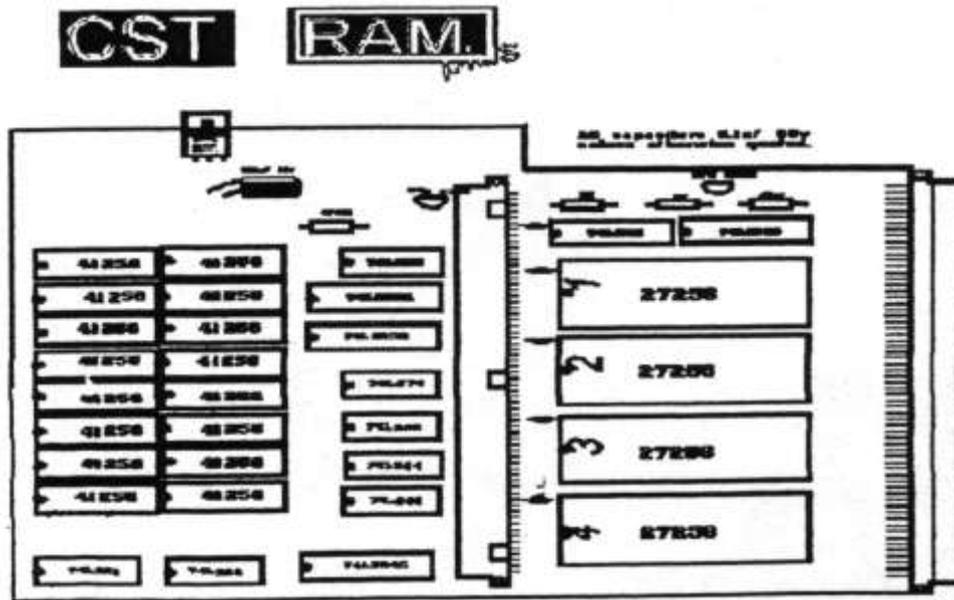
CST - Produced a buffer board based on an unproven assumption from SINCLAIR. In practice buffer chips had to be fitted to all the expansion hoards therefore this hoard buffered all the lines already buffered along with those which did not need buffering. (See QUEST)
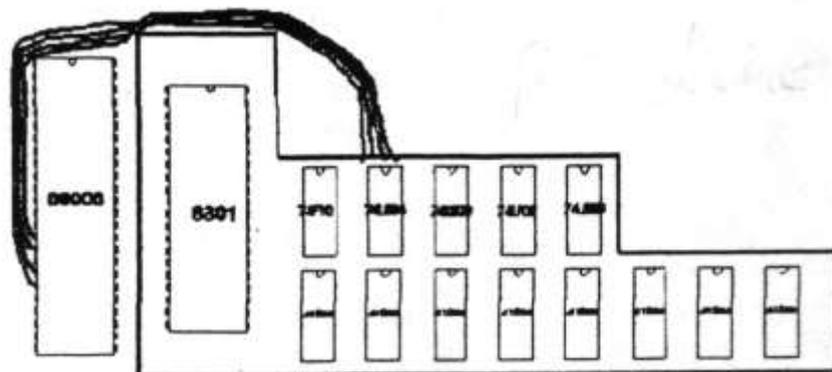

CST EXBB-3
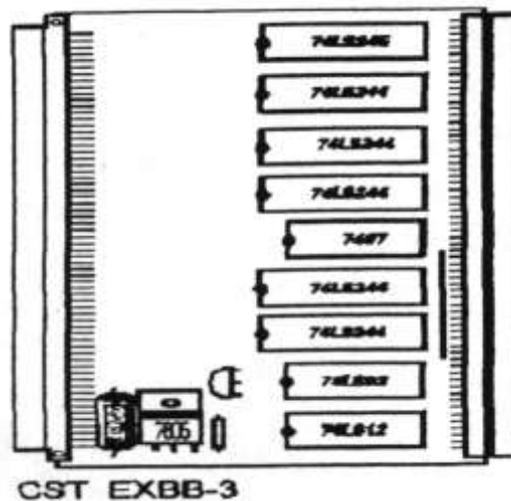
INTERNAL - To avoid bits hanging out of the end of the QL, several manufactures produced an internal 512K memory expansion upgrade. Here is the solder in CST version.
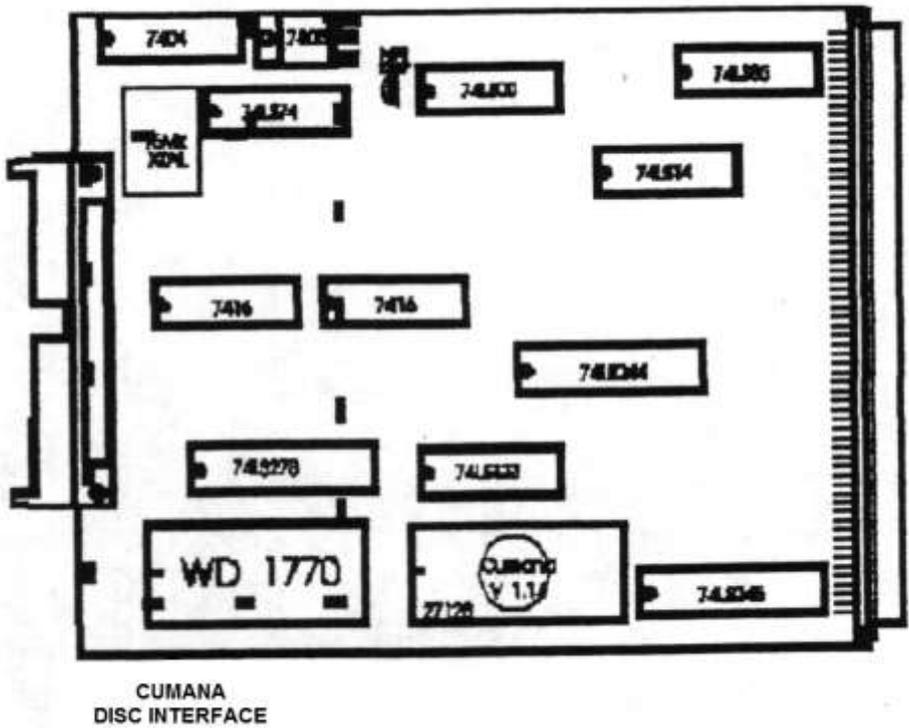
CST EXBB-3
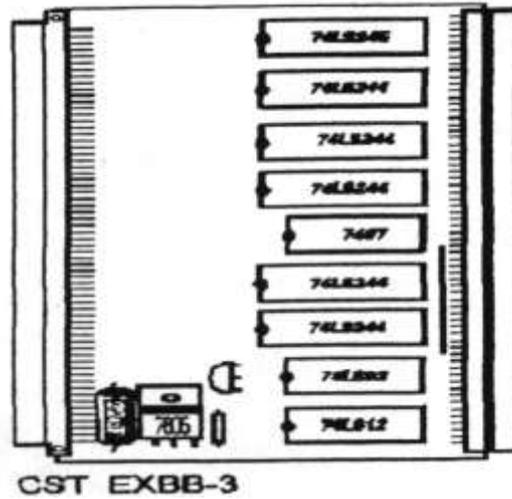
STRONG - This is a plug in version of an internal expansion sold by STRONG COMPUTERS of South Wales.
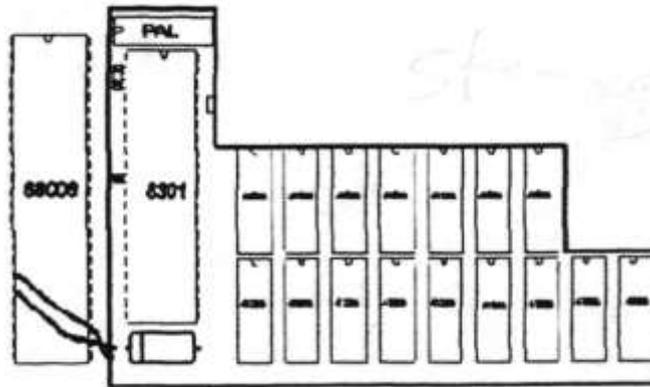

PCML - Another one of unknown manufacture on the same theme, probably from PCML.

KEMPSTON - Produced a Centronics card to fit in the ROM port. The tiny bit of code is in EPROM but there is no provision for fitting a larger one to hold this code and TK2. The later MIRACLE Gold Card prevents the Kempston card functioning correctly as it interferes with A0 address line.

Kempston
printer interface

TR SYSTEMS - A disk interface with or without 128K of additional memory plus a parallel printer port. The additional holes on the board are probably to increase the memory size to 512K. I have not seen a full 512K version therefore have no knowledge of what chips are required. The ROM Vl.12 has a peculiar early FORMAT routine doing 3 passes over the disk. Also it takes at least 3 tries to get a directory.

DELTA TR Systems board

CUMANA - Produced a very nice reliable disk interface and matched it up with some badged disk drives. If there is a bit of wire on the back it is simply to pull the EPROM CE line to ground. If a PROM is used the CE line goes to + 5 volts.

CUMANA
DISC INTERFACE

PCML - Marketed a disk interface and 256K expansion card. The essential part of the QJUMP code is on EPROM. Problems are that the QL will crash if all the memory is used, also there is a PAL used whose code is unknown.


PCML Q+ BOARD
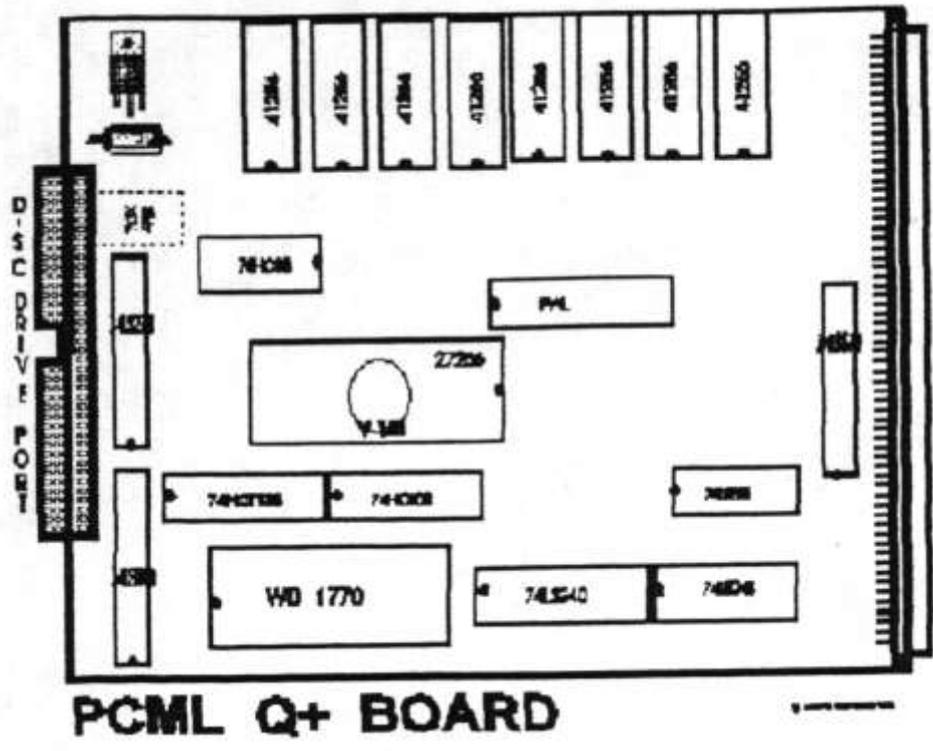
MICRO PERIPHERALS - This company manufactured 100's of disk interfaces selling just a few score. The original ROM code is peculiar to say the least. QJUMP provided an upgraded ROM to make

it compatible with other QJUMP products and also provided a special version for ADMAN SERVICES
. The new ROM makes the DIL switches inoperative. A circuit diagram is available. The MP disk drives
were just cased NEC or EPSON units with the power supply halfway down a long cable. No ventilation
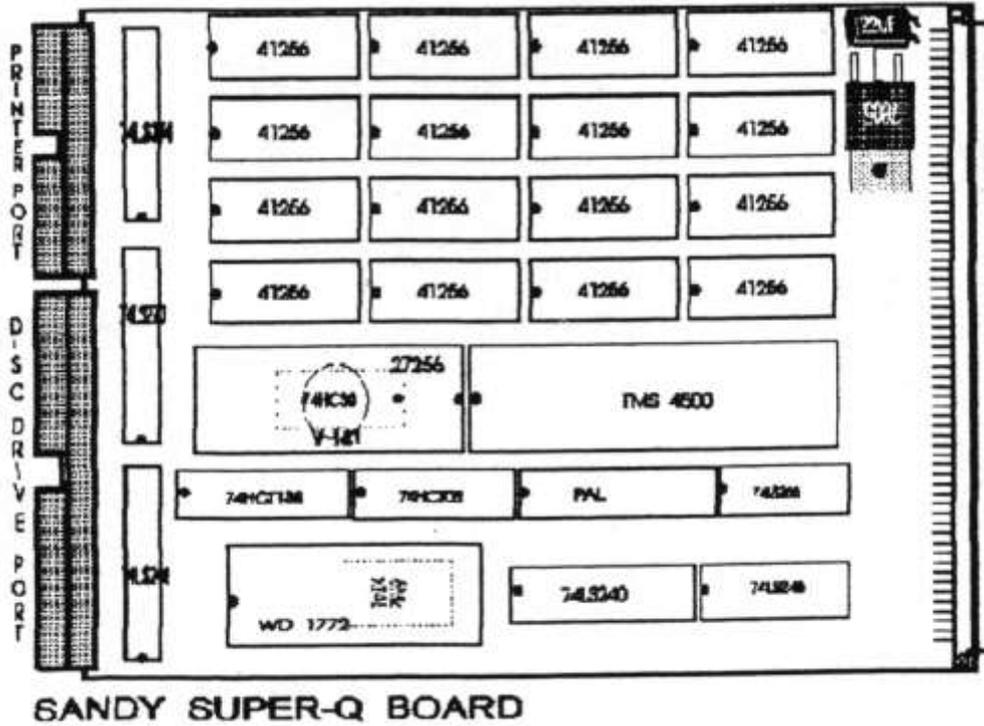or cooling was provided for it so the transformer just burns to a crisp.

MICRO-P
DISC INTERFACE
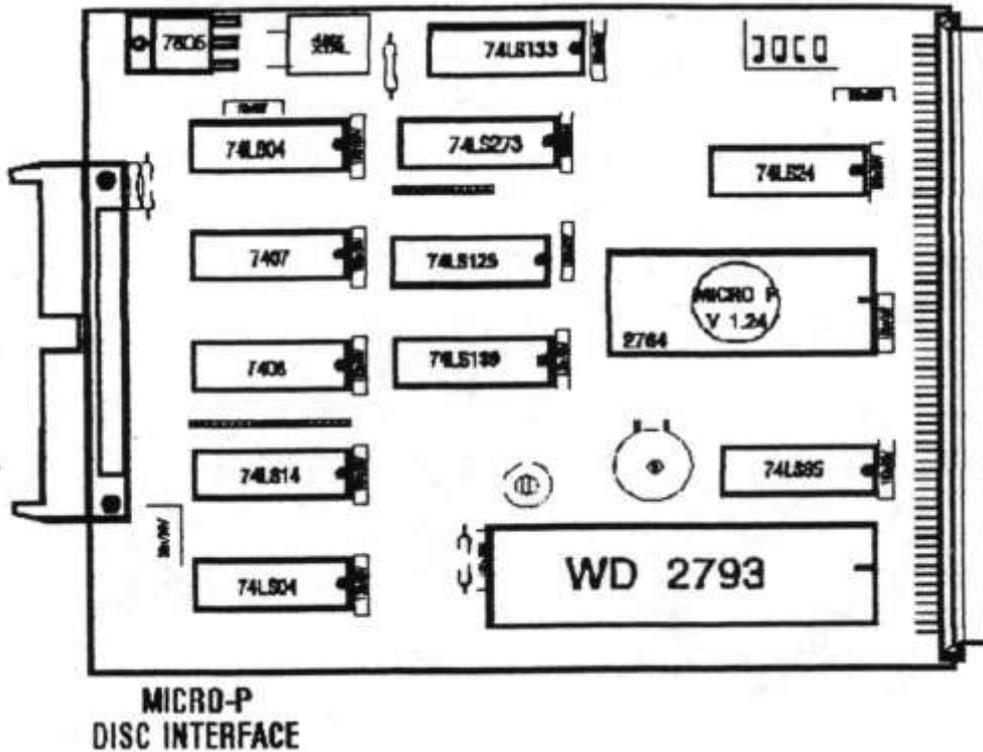
MICRO PERIPHERALS also produced a serial to parallel converter in a little black box. They use
ordinary components so are serviceable. One of the chips is pushed beyond its design limits but the
board works OK provided bodged soldering does not introduce stray capacitance.

MP serial to parallel
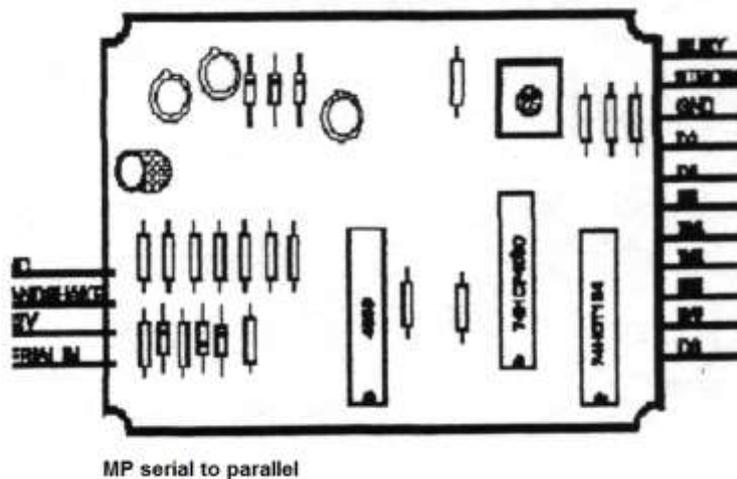
ADMAN SERVICES - As printers became faster, William James deslgned a Centronics card to fit in
the ROM slot. ADMAN SERVICES put it on the market to work with any QL setup apart from the
GOLD CARD.

ADMAN SERVICES
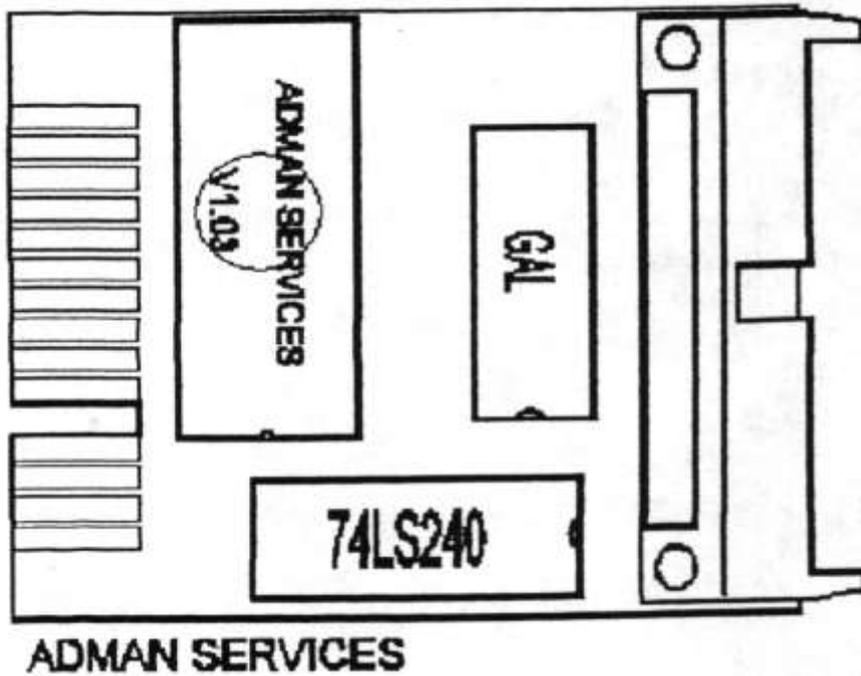
SANDY - Two of their disk interface/ memory cards are shown here. The first one has a memory board piggy backed over the disk interface board. The unpopulated holes are for a mouse which would only work with a small amount of software. The Centronics printer port was of doubtful benefit at the time as the printers were very slow . Some 8 years later a parallel printer port is virtually essential for the fast printers of today.

SANDY - This SANDY produced board is probably of earlier origin as it uses the TMS 4500 memory controller chip. Again this has a parallel printer port.

SANDY SUPER-Q BOARD

SIMPLEX DATA - An early memory expansion board using the TMS 4500 chip. No through connector therefore it cannot be used directly with a disk interface.


Simplex memory expansion
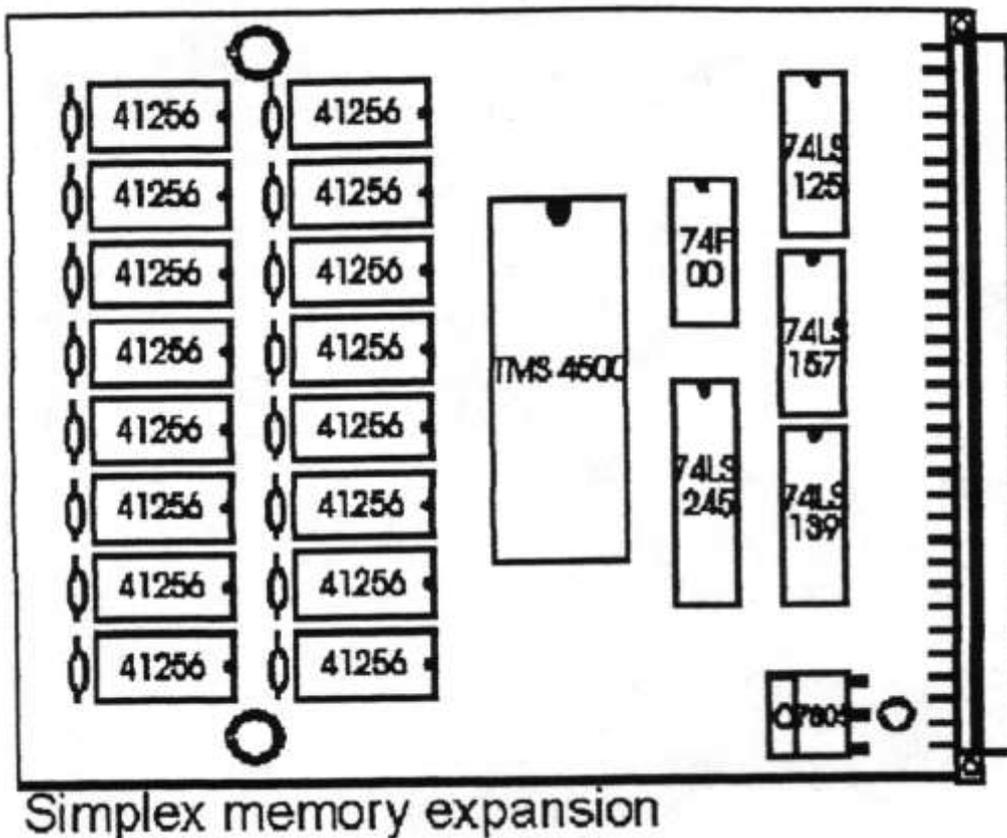
SILICON EXPRESS INSIDER BOARD - From a designer who hated the idea of bits sticking out of the QL. All that can be seen is the essential disk drive connector. The FORMAT routine is peculiar in

that it has three goes at the disk.
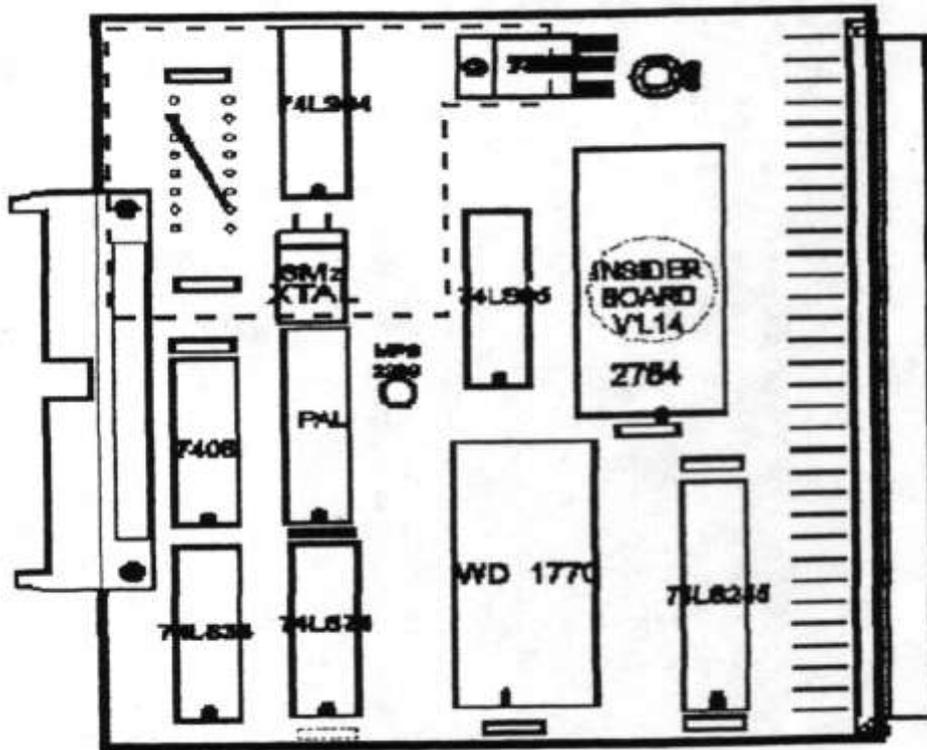
SPEM of Italy produced a short card to hold three EPROMs. It needs some agility to fit it and even more to extract it without damage. Very few were sold as ready coded EPROMs were pricey and difficult to obtain. It tends to crash the QL readily without the simple modification of a small electrolytic on the output side of the regulator . You will have to rack your brains to make extracting the board from the QL easy. The Sinclair/Dixons demo board was very similar but without the through connector.
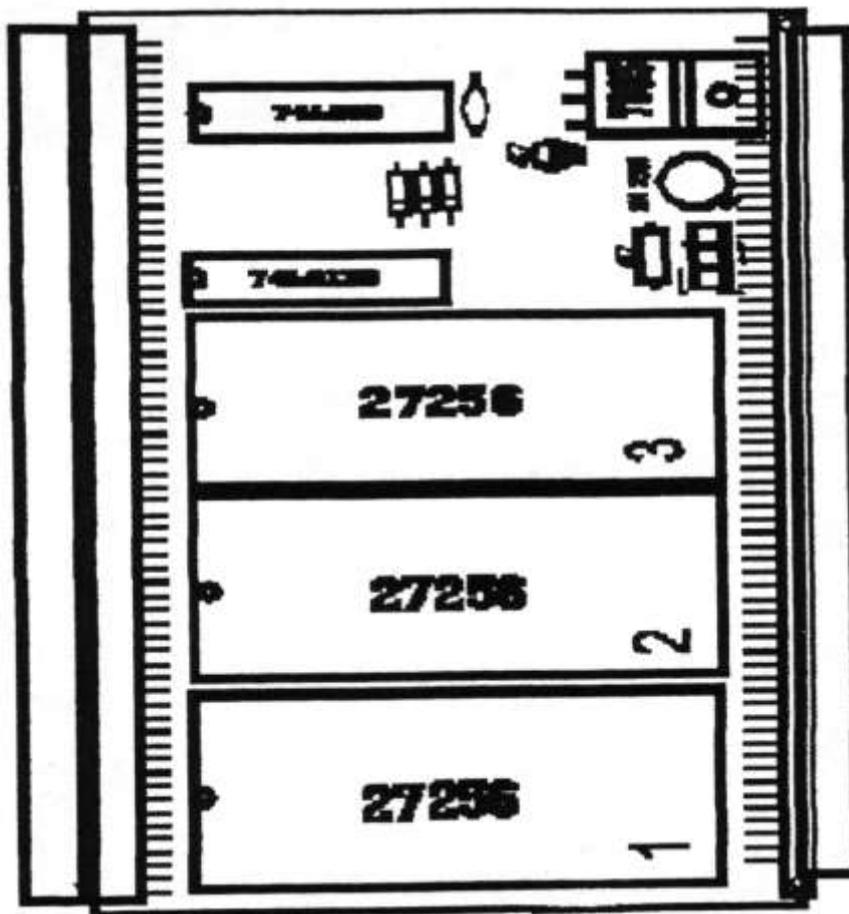
TERRY HARMAN with the help of others produced a similar board of slightly larger dimensions. This made extraction easier but there are problems in using ROMs other than JS or later. The easy hardware solution is to use fast logic chips. The essential access to the SP lines involves cutting tracks and soldering in wires.
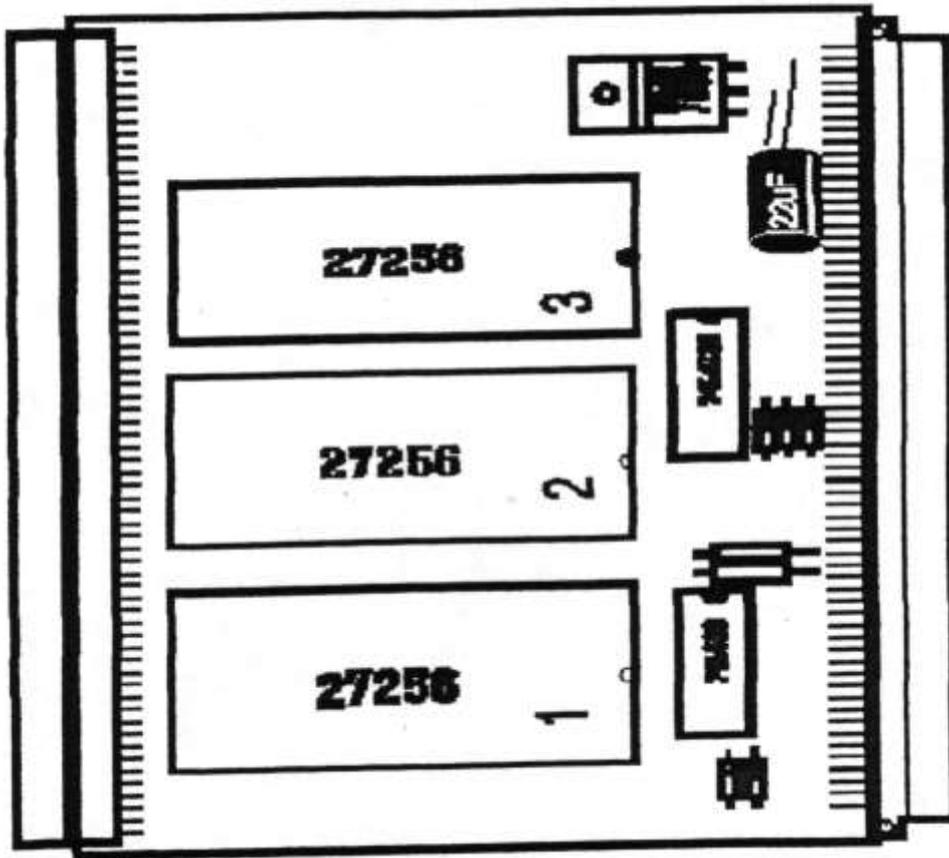
MIRACLE - The Expanderam was one of their early products to allow large programs to be run on the QL. It was notable at the time as it avoided the use of the now obsolete TMS 4500 chip.
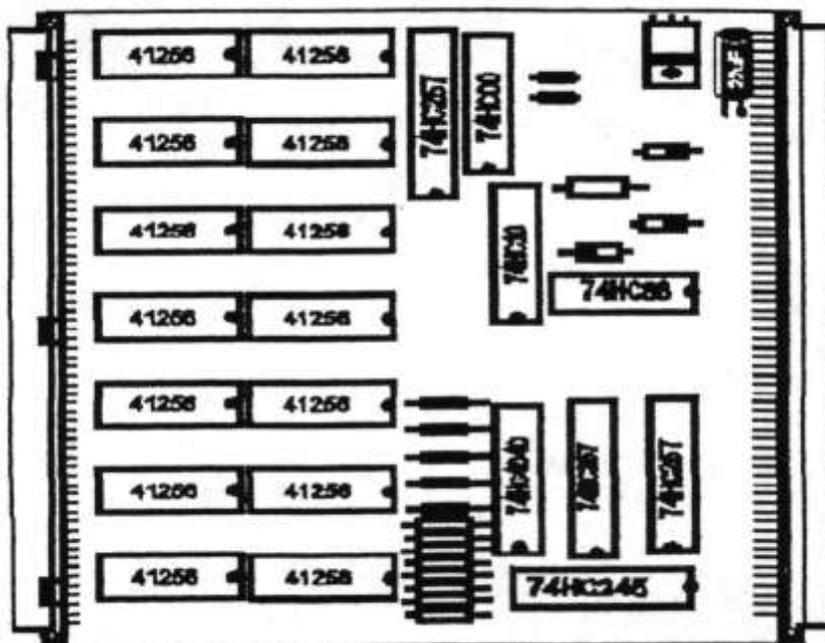

TRUMP CARD - The MIRACLE Trump Card is a disk interface combined with the provision for larger amounts of memory up to 768K. PALs are used to address the extra memory . A tiny extra board is needed if more than two disk drives are daisey chained. The Trey card was a Trump Card without the memory. Just sticking the extra memory chips in will not work as different PALs are needed. trump_pic

TRUMP CARD
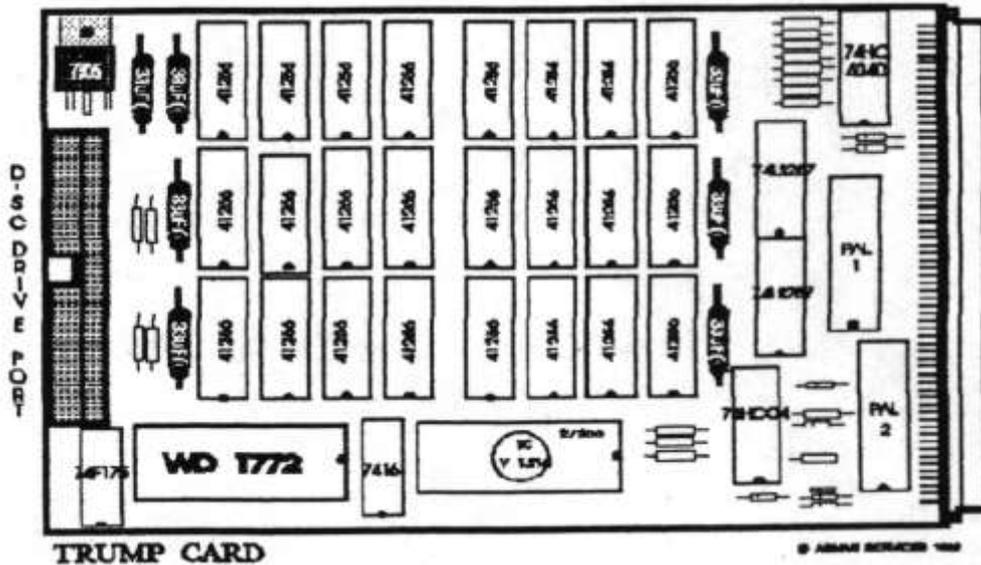
**MIRACLE MODEM** - A tiny modem which is not BABT approved.
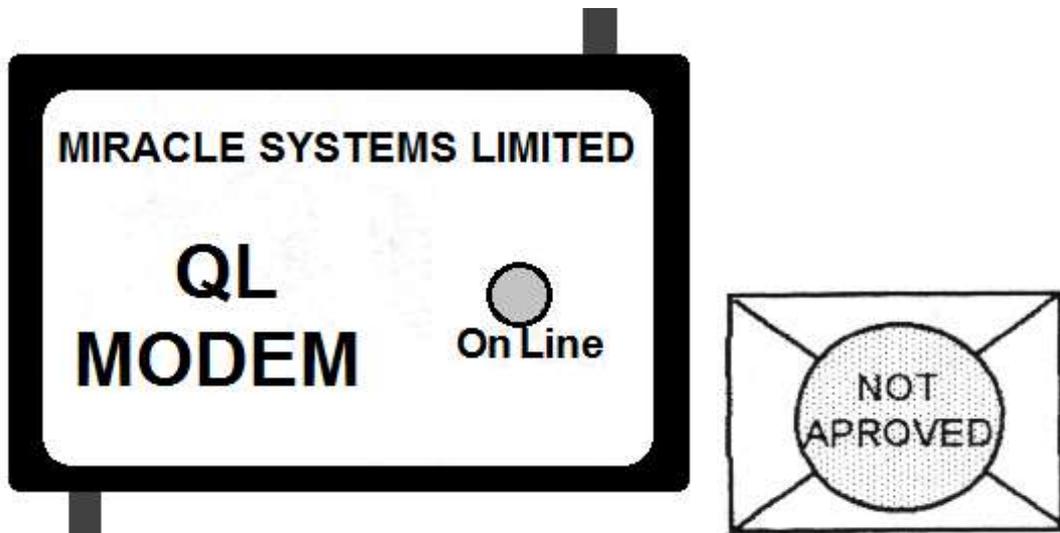
MIDI - A MIDI interface. This had great promise but never materialised into a useful unit. The problem appears to be in relation to synchronising the QL signals with the MIDI clock signals.
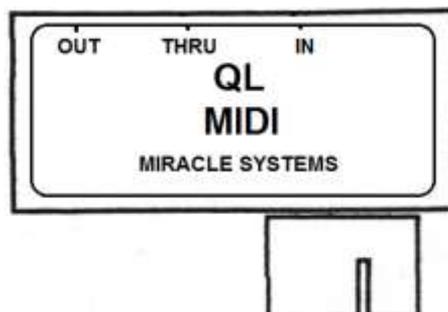
MIRACLE - SERIAL to PARALLEL converter to drive printers with a Centronics input. Later on it was reduced in size with SMD components. *Note: at least 3 different cased versions were made, one in a white box, one in a black box and a later one where the electronics were built into the centronics plug itself [DJ]*
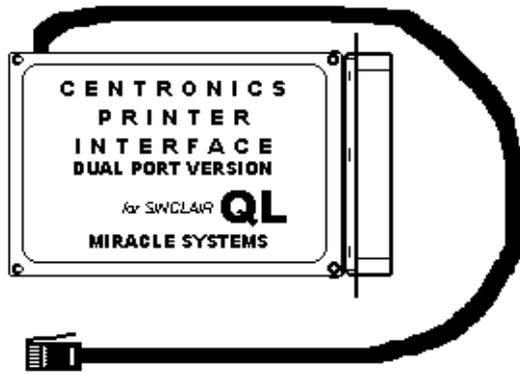
MIRACLE GOLD CARD - To overcome the snails pace and memory restrictions of the standard QL an expansion card was built using a faster CPU. It also has 2 megs of memory and can accommodate DD, HD and ED disk drives.
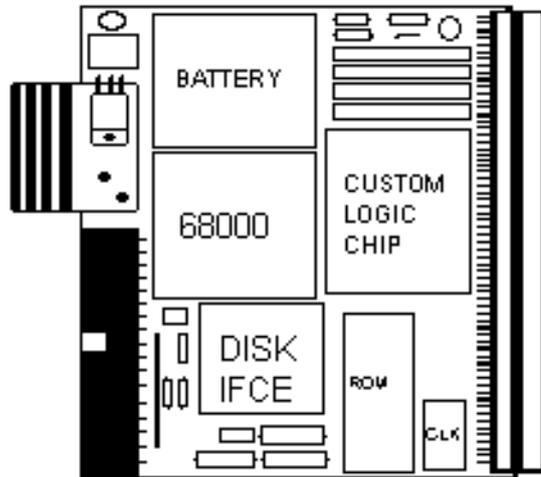
QUEST - Several items brought out at enormous expense in the very early days.

1 . Disk interface with a large problem in that the code to make it work had to be loaded from a microdrive cartridge whenever the machine was reset. If you are a glutton for punishment the code could be transfered to EPROM then popped in the EPROM slot.

2. A hugh lump of metal, appearing to be bullet proof, on which the QL sat. Hidden away in this desk defying enclosure was a full 128K of memory. Yowee!

3. A paddle board to buffer all the lines that didn't need buffering along with those that were already buffered.

4. A 1 to 3 way horizontal expansion board needing another power supply. I have never found a use for this one except as an aerial for my TV . Great reception.
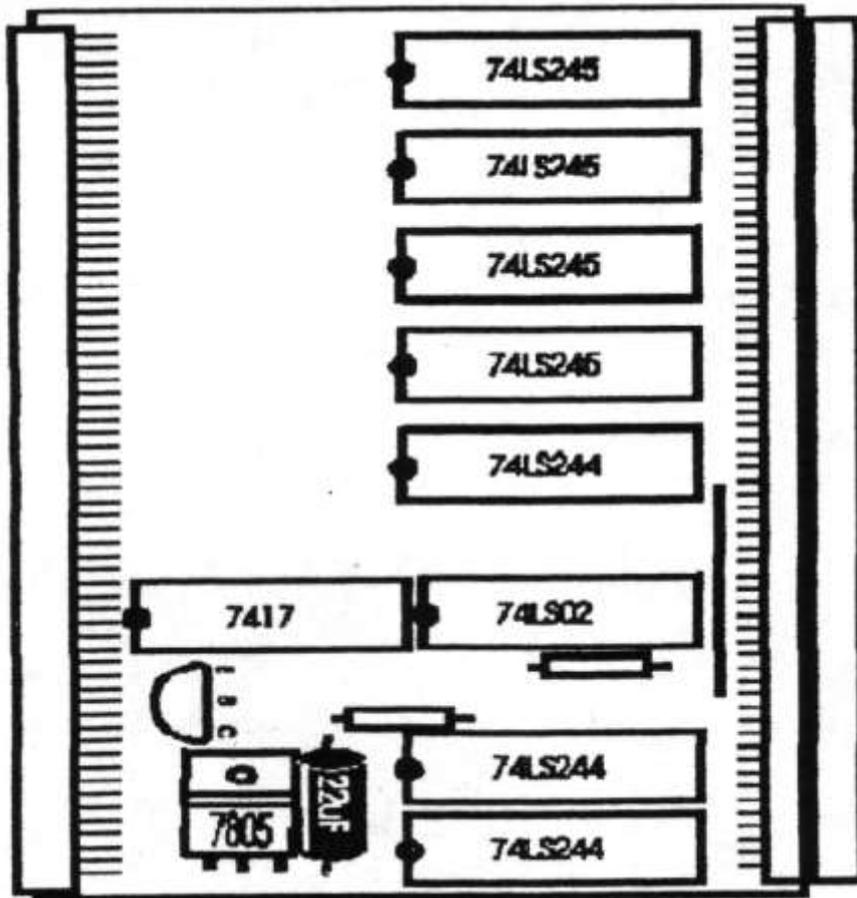
DS ENTERPRISES - Dave Stornton imported a French DATEL interface to be mated up with some dodgy salvaged Olivetti disk drives . The code on the interface operated in a similar way to the QJUMP code but had different key words. No info.

QJUMP - Tony Tebby' s foray into the hardware field was in manufacturing a mouse interface board as an essential part of his QPointer software environment. Next came the QEP 3 EPROM programmer , it is a classic of design for the QL with the little used feature that the code will multitask.

SMILING MOUSE - This consisted of a narrow pcb on the end of an ATARI mouse cable to enable it to be plugged into the ROM port. Movement of the mouse flexed the cable causing the board to drop out. A certain amount of games slanted software enabled the mouse but it clashed with other software.