

# From the top down

David Kelly talks to Robert Branton and Geoff Boyd of Memotech

Memotech is still little over a year old, but it is growing at a phenomenal rate. Even Robert Branton — one of its founders — says that everything is going so quickly that at times it's a bit worrying.

At the Earls Court Computer Fair, last month, the company launched its own micro — the MTX500 — and joined the vanguard of UK companies challenging the US and Far East electronics giants at their own game.

Memotech was formed in the spring of 1982 by two university researchers — Robert Branton, a mathematician, was the software expert and Geoff Boyd, an engineer, was the hardware specialist.

Initially, the company built a name for itself manufacturing add-on units for the ZX81 computer. In March a 16K add-on was built followed in June by a 32K pack, a high-resolution graphics board and a Centronics interface unit.

Business was fairly quiet in the UK with over 70 percent going overseas — after all, the Spectrum had just been launched in Britain. However, in August Sinclair suffered supply problems with its own 16K Ram pack and many of the high-street chains looked to Memotech to provide an alternative.

All this time Robert and Geoff had been working on their own computer — the SM1. Development was funded by sales of the ZX81 add-ons and, since they intended to undertake their own manufacture of the new computer, they took the opportunity to gain expertise in manufacture from making the printed-circuit boards and carrying out the component insertion for the add-on memory packs.



Memotech's new offices!

In December last year, Memotech moved to its present premises at Witney, just outside Oxford. And, in the true tradition of the new technology companies, Robert and Geoff — waiting for a new factory to be built — are real Portakabin kings, with 22 of the things stacked up on site.

First thoughts for the design of the SM1 machine evolved two years ago. In January this year the design of the SM1 was modified to make it a true personal compu-

ter and thus the MTX500 was born. It has 32K Ram and 16K video Ram, based on the Z80A chip with 16 colours, high-resolution graphics and a professional style keyboard with separate numeric and function pads.

Important features of the MTX500 are its communication possibilities — with Centronics, twin RS232, twin joystick, tv, monitor and hi-fi ports plus cartridge slot, its graphics and screen handling, its built-in programming tools and its price — only £275.

In many ways its nearest competitor — although it doesn't have any machines with which it can be immediately identified — is the Acorn BBC micro.

Geoff is anxious that the machine is seen in its context as a development down from a complete business system, the SM1. He feels the MTX500 has a completely different design philosophy from the BBC machine: whereas the BBC machine was designed from the bottom up, the MTX500 was designed from the top down — to the minimum entry point. That is the only way, he says, that it is possible to know that all the peripherals work from the start. A typical line of expansion from an MTX500, according to Geoff, might be: the basic MTX500 followed by Rom-based additional graphics and sound commands, a single 500K 5 1/4 inch floppy disc system, as an entry into CP/M, a printer, a 256K or 500K silicon disc, a card cage, an 80 column board to make best use of the CP/M and a 10M 5 1/4 Winchester hard-disc unit.

The 16K Rom of the MTX500 incorporates some unique features. The machine uses a Basic variant developed by Memotech — its own MTX-Basic. Single keyboard entry works like BBC Basic with letters and dots — E. for Enter for example. And the Rom also includes sophisticated screen-handling, involving up to eight virtual screens and a built-in Assembler/Editor for machine-code programming.

Using the virtual screen command, it is possible to define a given portion of the display screen to be — as far as the computer is concerned — the whole screen. This means that the computer can operate on one part of the screen — one



Robert Branton (left) and Geoff Boyd

virtual screen — independently of the rest.

Material can be edited on-screen before being committed to the computer's memory. Typing *Edit* defines the virtual screen being accessed as an editor. You can then type in and correct material before pressing the *Enter* key to enter the information.

The virtual screen capability is ideal also for animated graphics, particularly since the computer has a sprite (moveable graphics characters) facility. It is also unusual in that one of the 16 colours is transparent. Not much use you may think but, for example, the transparent colour can be used to make dominant sprites appear to pass behind less dominant ones — whilst in fact they do still pass in front.

The MTX500 uses the TI99/18 graphics chip and has 16K video memory. To make good use of the graphics handling the computer incorporates some Logo-type commands in its Basic — *Move, Advance, Rotate Left, Rotate Right*.

The computer has a text mode of 40 x 24 characters and a high-resolution graphics mode of 256 x 192 pixels. Text can be put on to the high-resolution screen in a 32 x 24 format. It is possible to switch modes from text to graphics and back at will without losing anything.

Perhaps the single most interesting feature of the MTX500 is its front panel display. Accessed from the Basic with the command *Panel* it shows three virtual screens — the machine's built-in machine-code assembler/editor and disassembler. The screens show the CPU registers and their contents, a selected block of assembled machine-code and its assembly-code equivalent.

Having used the front panel to assemble code you can then disassemble it. More than that, you can then execute the code — *one instruction at a time* — and see what is happening. A boon for de-bugging machine-code programs.

Software for the MTX500 is now under way. Already Memotech has five machine-code games written — *Toado, Kilopede, Super Minefield, Chess* and *Draughts*. A word processor, spreadsheet and accounting programs are on the way.

The machine will, at first, only be available through specialist computer shops — starting in September. Memotech expects to sell production, one-third to the UK, one-third to the US and one-third to the rest of the world. ■