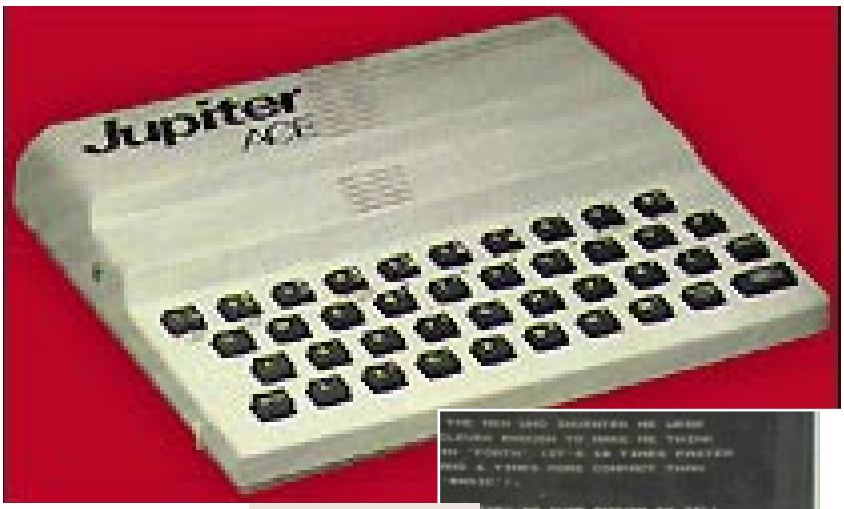
Go Forth and program

The Jupiter Ace boasted a radical choice of programming language. Simon Collin pays homage.

Thanks to the Y2K (Year 2000) problems, there seems to be a shortage of programmers who can update ancient legacy software written in languages like Fortran, Cobol and Forth. If you are keen to join this select band, you had better learn one of these idiosyncratic languages.

The first two are easy: just buy and install one of the many development tools. Forth is the tricky one, but you can breath a sigh of relief as I tell you that there are a couple of ways of getting to grips with it. The best route is to use a neat little home computer that was produced by the Jupiter Cantab company and developed by Richard Altwasser and Steven Vickers, two ex-Sinclair designers who had worked on the original ZX80 and ZX81 ground-breaking products. Although aimed squarely at the home enthusiast market, with a low entry-level price of just £89.95, Jupiter's computer had one feature that set it apart from the crowd: every other home computer of the time provided a Basic interpreter to get users started on programming; but Jupiter threw out Basic and provided Forth.

In June 1983 this tiny home computer sneaked onto the market. The Ace looked similar to the ZX80 but included a keyboard with 40 raised rubber keys — rather better than the touch-sensitive pad used on the early Sinclair machines. The heart of the Ace was a standard Z80A processor, one of the most popular microprocessors of the time and used in many computers including the early Sinclair range and the Sharp MZ-80K of the same period. The Z80A chip was driven at 3.25MHz (one hundredth of today's clock speeds) and needed only a few ancillary support components to provide a working computer. Hardwired onto the motherboard was 3Kb of main memory and an 8Kb ROM which contained the operating system and development language. Customers were able to add an extra 16 or 32Kb of RAM, giving the machine the rather odd specification of 3, 19 or 35Kb fitted RAM. The usual cassette interface (only a modified serial port working at 300/1500bps) provided a convenient way of storing your programs. The display system supported 32x24 characters on-screen but, to provide "high-resolution" images, each of the 128 characters could be redefined to produce a pseudo bitmap image for graphs (or space-invader characters!). Multimedia functions were limited, with just a simple buzzer providing the only feedback in the system.



▲ THE FORTH INTERPRETER WAS FASTER THAN BASIC, GIVING ACE AN EDGE OVER ITS COMPETITORS
▶ £89.95-WORTH OF WEDGY WONDER

Although the Ace was a neat design, it sadly never achieved the mega-sales of its Sinclair rivals. Perhaps there was a resistance to Forth, an almost impenetrable language to first-time programmers brought up on Basic. Whatever the reason, production of the Ace lasted just a few months and apparently stopped in November 1983. What is rather unusual these days is that although the original computer is long gone, if you hanker after your very own Ace you can build one yourself. Thanks to Grant Searle at www.babytalk.demon.co.uk you can download full and simple instructions which show you how to construct your own Ace and program the main ROM — brilliant! The component list is straightforward, and everything can be bought relatively cheaply from any electronics supplier. If this doesn't prompt you to dig out your soldering iron, then you've a tough heart. Once you've built your repro-Ace, you can download the ROM image which includes the original Forth interpreter and polish up your programming skills.

If you hanker after your very own Ace, you can build one yourself

Although far less fun, I ought really to mention the simpler and less time-consuming alternative: download the ACE-32 emulator for MS-DOS www.alcavia.net/atalaska/emula/ace.htm which provides every quirk and feature of the early original Ace operating system and Forth interpreter. It's the perfect way to turn your Pentium box into a super-charged retro home computer from the early eighties!