Torch Graduate

Twin-disk, 256k IBM PC compatibility on a BBC Micro for £1000 seems an alluring offer, but is it possible? Jon Vogler tests the Torch Graduate.

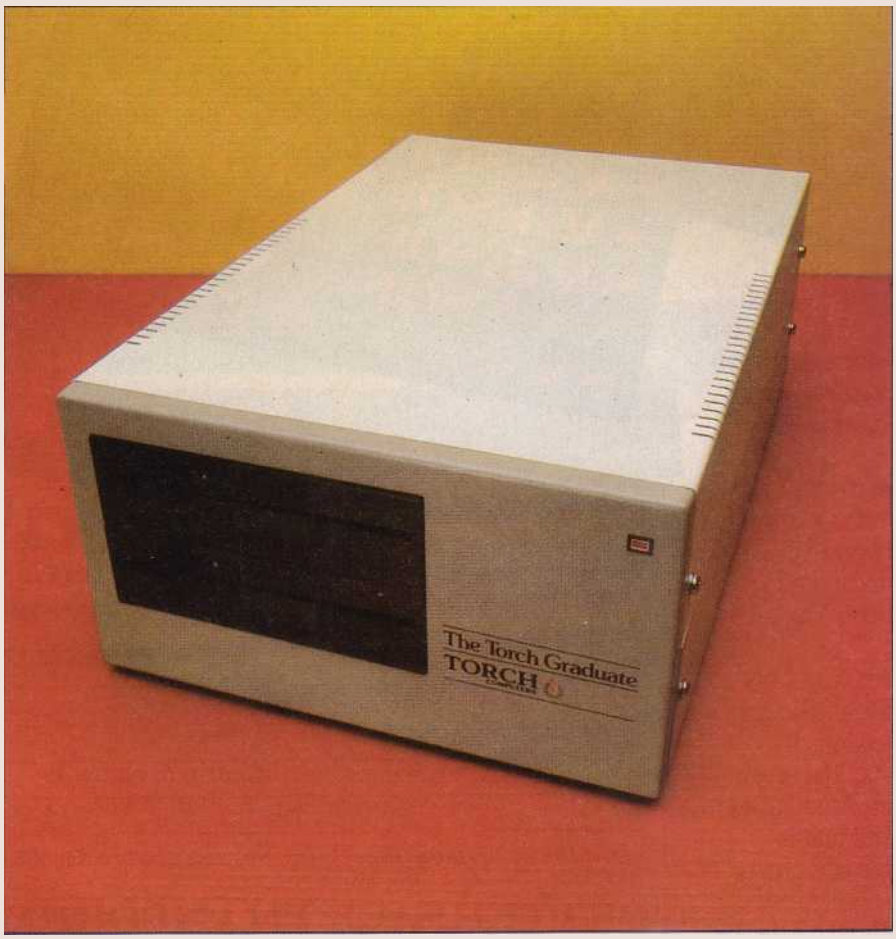
Within the close-knit tribe of Cambridge computer entrepreneurs, the name of Martin Vlieland-Boddy continually occurs. Joint founder of Torch only a few years ago, he fell out with the financiers and left to set up Data Technologies Ltd, a small design and development company, whose first significant product was the Graduate. Data Technologies first advertised it a year ago, then — silence! No product appeared on dealers' shelves.

Delay-shocked users of BBC Micros had already been rescued once by Torch, whose Z80 second processor reached the showrooms long before its ' official' Acorn rival. Once again, Torch played the knight in shining armour.

The Torch range of micros begins with a small Z80 board which fits inside a standard BBC computer, giving CP/M capability and 64k of memory. It ends with a stylish business machine that hides enormous power: a massive 20Mbyte hard disk, coupled with a Motorola 68000 processor capable of running substantial multi-user sys-tems; multi-tasking Unix and other high-power languages; and up to 1Mbyte of RAM.

However,there is still a lack (at least in the UK) of business applications software on Unix. Torch has hitherto deftly avoided challenging the giants in the MS-DOS arena. This policy has kept the company small but healthy. It has also left a noticeable gap in the product range: none of its products could run the 'sexy' executive software that has sprung up around the IBM PC — programs like Lotus, Framework, Symphony and dBaselll. It was into this cavernous hole that the Graduate, with an MS-DOS operating system (so close to IBM's PC-DOS as to be virtually indistinguishable), and with quantities of random memory or memory expan-sion slots, fitted neatly.

Then Torch too misjudged how long it takes to convert a good design into stacks of boxes on dealers' shelves. It allowed advertising to continue and soon had a flood of orders — but no Graduates. It is now available without delay and has 256k of RAM, two 320k (formatted) disk drives, no variations and, bundled with an excellent suite of integrated Psion Xchange software, it sel ls at £999.99 plus VAT.



Hardware

The Graduate is a 6in-high steel box, 10ins wide and 16ins deep, in the front of which are dual Cannon disk drives. It is solidly constructed and pleasantly finished in two-tone hammer grey, and the top cover easily removes to permit service access. Inside are the disk drives. In operation these made a slight clanking sound. On one occasion a disk did not eject, but proved easy to ease out with fingers. Torch tells me that present production machines are using quieter, Epson disk drives. There is also a separate power supply (no more problems with the BBC overheating) and an acceptably silent cooling fan. A single, enormous, motherboard bears the 8088 16-bit processor running at 5MHz, and an array of RAM chips (the 256k can increase, with a standard expansion board, to 640k — adverts quoting 1.2Mbytes were in error); and two welcoming expansion slots. While this is less than the five on the IBM PC itself, Torch points out that, unlike the PC, you do not need to tie them up with colour graphies or printer ports: these are all provided by the BBC.

Access to the motherboard is restricted by the disks above it, but would only be required for repairs. The expansion slots are readily accessible.

A good feature is that the unit will operate as well on its side (with the disk

drives vertical) as on its four rubber feet. For many users this may be the most convenient arrangement. The 32-strand ribbon cable that plugs into the BBC's '1 MHz' bus connector is just too short for the device to sit, on its feet, anywhere except just to the right of the BBC. I found it very convenient, on its side, to the right of the sereen. To work with the Graduate the BBC needs no internal ROM fitting, so connecting up is a matter of a few seconds: insert the ribbon eable into the socket beneath the BBC's keyboard and plug the Graduate into the mains.

In use

Switch on the Graduate and it boots the MS-DOS operating system from disk. If no disk is present it 'looks down' the 1MHz bus, becomes confused, waits and eventually signals an error messsage. Put in the right disk and it boots MS-DOS forthwith. Press the BREAK key and it automatically re-boots. Jerky screen scrolling is due to the screen memory all being held in the Graduate box and having to come across the 1 MHz bus; however, Torch informs me that, in current production machines, this problem has been overcome.

The commands are standard MS-DOS so, although many, such as COPY and DEL, are familiar, others will be a little strange to BBC users. For exa mple, DIR for directory (equivalent to the BBC' s CAT), while DIR/VV spreads the directory across the screen width and stops it scrolling. BBC users will miss the Beeb's twin (text and graphics) cursor, so useful for copying text from higher up the screen. MS-DOS has only one cursor but offers instead soft keys that repeat either all or part of the last command typed in, which I found most inferior.

But what I grieved for most of all was the BBC's 32-line-deep screen. MS-DOS uses the pitiful IBM standard of only 25 lines and, with some software, even all this is not available. Psion's Xchange suite, for example, likes to use the top five lines as a 'control area' and the bottom three as a 'status area', which means you are down to virtually half a screen for text—quite inadequate when rapidly scrolling through a spreadsheet or trying to edit text. Using Perfect Writer's split screen, an invaluable aid to rapid text juggling, I was left with text areas no more than 10 lines deep. Very restrictive.

My other grouse is the lack of speed. It is not just the Graduate: a PC or a Compaq would be the same. MS-DOS on floppy disks is an awfully slow system. First there is the dreadful disk shuffling. Even the simplest command, such as COPY (a file from one disk to another) requires that MS-DOS has been loaded. I have become used to Torch's Z80 second processor, which employs a CP/M lookalike known as CPN. This holds the most vital commands in ROM so they are there at switch-on; even if no disks are in use. It also squeezes 400k from a double-sided floppy so I grieved for the loss of both time and file capacity. In practice, to save 'shuffling time', you would write an MS-DOS batch file to load automatically and also copy the essential file (ealled COMMAND.COM) onto virtually every disk in use, which would immediately absorb 16 or more Kbytes of the (already modest) 360k capacity disks.

Once loaded, disk operations and processing both seemed painfully drawn out. MS-DOS commands are clumsy too: for example, on Torch's Z80 I can change the screen background colour by typing B 2 RETURN whereas in MS-DOS you need COLOUR 0,2 RETURN. BBC users do not always realise that their machine, despite its despised tiny memory, is well-designed and impressively fast. The Graduate is no slower than any IBM PC, but it is nonetheless slow!

So far I have been critical of MS-DOS, but of course it has some capabilities not available in CP/M. There are definite compensations: the facility to 'pipe' output from one program to form the input of another, and the ability to redefine all the keys on the keyboard, are both powerful tools. The file structure is better organised than in CP/M. It grows, like a tree, so that in the main directory (catalogue) you can have sub-directories that can, in turn, themselves contain files or even other sub-directories. This is not of great value on a floppy disk system, where the number of files on a given disk is limited. But on a hard disk, with hundreds of files, it is invaluable. It is possible to hang an IBM-compatible hard disk onto the Graduate.

Limitations

The important question for would-be buyers is: 'If, to save about £1000, I buy a Graduate instead of an IBM PC, will it really do everything just as well?' The main shortfalls aresome modest limitations of the keyboard and larger restrictions on the graphics. The former are easily overeome by simple combinations of keys with SHIFT and CONTROL, and are therefore insignificant. The screen was quite another matter.

The worst loss was of colour for serious applications software. The Graduate inherits the BBC Micro's inability to provide more than black and white in 80-column mode. In the past this was sufficient: serious business users stuck to monochrome because colour screens were too blurred. Although the IBM PC offers 16 colours in 80-column mode, only four of them can be on screen at any time and users have accepted this. Now, with high-resolution screens at modest cost, all has altered.

I ran Thorn-EMI's exciting new version of Perfect software on both a PC and the Graduate. One of Perfect II's best features is that, when working on multiple texts or spreadsheets (up to 15 spreadsheets can reside in memory at the same time), you can paint each one different colours (both letters and background) whieh is an enormous aid to avoiding confusion, especially when using a split screen. On the PC they came out in glorious technicolour; on the Graduate only in black and white. (For more on Perfect II, see *PCW* May.)

The Graduate contains no screen controller; the display is produced by the 6845 video generator ehip inside the BBC Micro. The IBM PC uses an identical chip. Its operation is controlled by an address register and a data register in the computer's main memory. However, with the Graduate system, the memory for the BBC's 6502 processor is quite separate from the memory of the 8088 second processor that makes it ' IBM-ish'. Programs such as Microsoft Flight Simulator, which expect to find a 6845 video generator in the memory of the 8088 chip, cannot be run.

But for serious business use, on a monochrome screen, I found little restriction. As well as Perfect II and Xchange I used the Graduate with Lotus 1-2-3 and WordStar, and it worked satisfactorily on them all.

Conclusion

I envisage two types of buyer: those without and those with a BBC Micro. Are the former likely to go out and buy the BBC and Graduate together? For around the same price they could purchase an IBM clone, such as the Ferranti Advance, which will apparently run anything which runs on the IBM PC, even the screen-related programs such as Flight Simulator. But the Advance comes with Perfect I, which many users find difficult and which has no graphics. A strong reason for buying the Graduate would be to obtain the Xchange suite of software on disk.

I have not discussed Psion'sXchange suite here because it has been fully reviewed in *PCW* before (October 1984) . Let it suffice to say that it is an excellent suite: it's easy to use and very easy to swap data between the different facilities. I know of no other package, at this price, which would combine MS-DOS or equivalent capability with so excellent a suite of applications software.

The existing BBC business user, who wants to expand the power and memory of the BBC and run professional software, is the most likely customer. For him there are three alternatives:

—To buy the Acorn Z80 package, with its rather limited Plan business soft ware, at £400.

—To buy the Torch Z80 with Perfect I software, or with Sage Accounts, for under £300.

—To buy the Graduate, with Xchange, for £1000.

Only those strapped for cash will choose the former options. The latter, offering access to PC software, is much more attractive. END