RELATIVE NEWCOMER

A recently-released British-made microcomputer breaks new ground by being the first home machine to feature a built-in disk drive. The Tatung Einstein offers 80 Kbytes of RAM and has a full range of interfaces for expansion. It also has a comprehensive BASIC, good graphics and sound.

The Einstein's price tag means that it will appeal mainly to the 'serious' home user. It may certainly be used for playing games, but it offers few advantages in this sphere over machines costing a quarter of the price. Its closest rival, in price and performance, is the BBC Micro, but the Einstein's 80 Kbytes of RAM compares favourably with the somewhat meagre 32 Kbytes offered by Acorn.

The disk drive is mounted in a panel just above the keyboard in the Einstein's unusually large casing. This casing is strong enough to take the weight of a monitor or television, so the complete system does not take up too much desk space.

The major advantage of the integral disk drive is likely to be software availability. Although other home machines, such as the Commodore 64, may be fitted with disks, the fact that they are designed with cassette recorders in mind means that most software is produced on cassette and disk owners will therefore be unable to make the most of their superior storage medium. The Einstein's built-in drive ensures that all software will be supplied on disk from the start. The use of disks allows programs and data to be loaded quickly and reliably and enables random access files to be used instead of the serial access files to which cassette-based machines are restricted. 190 Kbytes of data may be stored on each side of the 3in disk, but the Einstein can use only one side at a time. A second drive may be fitted into the casing at a cost of £150, and two further drives (£190 each) can be plugged into an interface at the rear of the machine.

To control disk use, the Einstein has its own disk operating system (DOS). This has many similarities to the CP/M standard used by many business machines, and Tatung hopes that software houses will convert CP/M programs to run on the Einstein. The operating system and Einstein BASIC are not held in ROM, as is usually the case, but must be loaded from disk each time the machine is used. This has two main advantages: as BASIC is loaded only when it is needed, other programming languages or machine code programs can utilise the full RAM space, and both operating system and BASIC can easily be upgraded by simply purchasing a disk containing the new versions. Tatung plans to offer the DR

LOGO language on the free disk supplied with the machine — but this is not quite as generous as it sounds because the LOGO manual will be sold separately for around £25. Once BASIC has been loaded from disk, the Einstein has a healthy 43 Kbytes of RAM available to the user, which is more than is offered by any other home machine. This is possible because the Einstein RAM contains a separate 16 Kbytes of memory that is controlled by the graphics chip and which is used to handle the screen display.

Einstein BASIC appears to be a blend of BBC BASIC and Microsoft Extended BASIC (as used by the Japanese MSX machines). It includes commands to renumber programs and to produce line numbers automatically, thus making the keying-in of programs easier. A full screen editor allows changes to be made anywhere on the screen display. The graphics commands permit lines, circles and ellipses to be drawn and enable outline shapes to be filled with solid colour. Graphics have a maximum resolution of 256×192 pixels and

Serious System
The Einstein computer from Tatung (formerly Decca). The machine is aimed at the serious home user, and comes equipped with a disk drive. It is larger than most home machines, enabling the monitor to rest on the casing