BEST OPTION

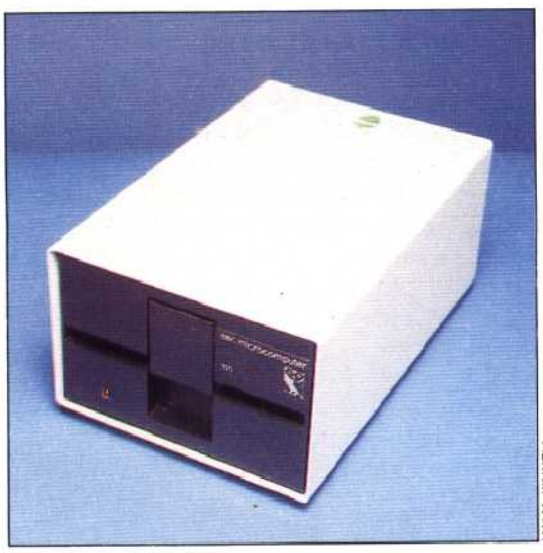
Until recently, floppy disk drives and so-called stringy floppies were beyond the budget of most home users, but advances in disk technology have reduced the relative cost of purchase, while the advent of the Sinclair Microdrive has bridged the gap. In view of the power of such devices it is worth looking at them in some detail.

DANGEROUS CONTACT

Remember not to put floppy disks close to anything that contains a magnet. Even something as seemingly innocuous as the telephone contains electromagnets (they are used to ring the bell), and a domestic hi-fi speaker has very powerful ones indeed

Microcomputers are highly versatile tools for manipulating data. However, data manipulation is of little use without a means of storing information when a particular set of data is not required for the moment or when the computer is switched off. This can be achieved in a number of ways. Anyone aware of the real potential of home computing will have acknowledged the limitations of the ROM cartridge and ordinary cassette tape as methods of permanent storage and will wish to investigate the more sophisticated facilities of magnetic disks.

But before discussing the merits of disks we will consider the alternative systems.



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BBC Disk Drive
Before disk drives of this type can be used with the BBC Model B, the DOS (Disk Operating System) ROM must be installed in the machine itself. 'Intelligent' disk drives, on the other hand, come equipped with a DOS chip already on-board

CARTRIDGE

This method of storage is of little use to the programmer. Most cartridges contain a type of PROM (Programmable Read Only Memory) that provides only a means of inputting data to the computer, usually in the form of games written in complex and lengthy machine code, or extra facilities such as extensions to BASIC. It is possible, however, for cartridges to contain Electrically Erasable PROMs (EEPROMs) that can be written to and read from in a similar manner to internal RAM but which are 'non-volatile' in that the information is retained when they are removed from the computer or the computer is switched off. Similarly, cartridges are available for some computers containing low-power CMOS (Complementary Metal Oxide Semiconductor) RAM chips that retain stored information via a battery contained within the cartridge.

The main argument against EEPROM and CMOS RAM storage is that they are expensive — collecting a modest library of such cartridges would cost at least as much as an appropriate floppy disk drive.

CASSETTE TAPE

Originally provided because disk drives were very expensive, cassette tapes are still by far the most popular storage media, mainly because they are cheap, freely available and portable audio cassette players and tape cassettes are familiar to most people. Usually any cassette player of reasonable quality will suffice, although some manufacturers — notably Commodore and Atari — only allow you to use their own specially designed units.

Programs and data are stored in binary form as sequential files via the cassette unit's normal record facility, using different tones to represent 0s and 1s. Normally, identified information such as the file name (and possibly the internal memory address from which the file is copied) is recorded first, followed by the file itself, one bit at a time in one-byte blocks that are further formatted into 256-byte segments. Many computers incorporate an error-checking facility in each segment known as a 'checksum', which can be compared with calculations made within the computer during verification to ensure that there have been no recording errors.

Typical commands are SAVE to record files and LOAD to play back and retrieve them. Some systems provide additional cassette commands for various special functions, including a facility to read a tape and produce a catalogue of the file names stored, and command formats for storing and retrieving different types of data.

The low cost and easily understood command format of tape cassette storage is offset by a number of major inconveniences:

1. In the majority of cases the user is required to operate the cassette unit controls manually for storage and retrieval and this often demands careful timing of button pressing and accurate volume setting.

2. As information is stored sequentially, retrieval of a specific file (except in the case of the software-controlled Hobbit cassette recorder and the Epson HX-20's built-in micro cassette) involves either careful monitoring of an accurate tape counter (if one is supplied!) to enable fast