certainly want a package that is able to up-load and down-load ASCII files. Make sure the package supports whatever storage device you use. BASIC programs can be transmitted in ASCII form — as we've already shown (see page 921) — but if you want to transmit binary files (for example, CP/M .COM files), you'll need some kind of binary transmission protocol. Of these, the most widely supported is XModem.

It's also convenient to be able to create *auto-log on* files for different systems. Then, when you log on to a system, all you have to do is load the appropriate file, containing your ID, password and so on. Some auto-dial systems will link this type of file to a database of phone numbers so that all you need do is enter the name of the service you want; the software will look up the phone number, dial it and automatically log on.

Once you've decided on the features you require, you need to find a modem and software package that supports these facilities. You can buy the modem and software separately, but we strongly recommend that you give a dealer a list of the features you require, and details of the micro you will be using, and leave it to him to find a complete package of modem, cable and software. That way, if the system doesn't do what you want it to, you and the dealer both know whose responsibility it is to put it right.

Protek 1200
Type: Acoustic modem
Baud Rate: 1200/75 and 1200/1200
Price: £99.95

Prism 1000
Type: Hard-wired Viewdata modem
Baud Rate: 1200/75
Price: Modem only, £69.95; Full machine-specific package £129.95

Commodore Communications Modem
Type: Hard-wired Viewdata modem for Compunet
Baud Rate: 1200/75 and 1200/1200
Price: £99.99

IAN MCKINNELL

Epson CX-21
Type: Acoustic modem
Baud Rate: 300
Price: £185

CHOOSING A SUITABLE TERMINAL

If you already have a micro you'll probably want to use it as your terminal. This should be possible whatever machine you have — even a ZX81 can be used if you're determined enough — although some micros are better suited to communications applications than others. Here is a brief summary of the suitability of four of the most popular micros

By far the easiest machine to convert to a terminal is the BBC Micro. In fact, you can write a simple dumb terminal program for it in a few lines of BASIC:

```
100 REM BBC Dumb Terminal Program
110 *FX2,2
120 *FX3,1
130 REPEAT: GET A$: IF$=CHR$(13) THEN PRINT
140 PRINT A$;:UNTIL FALSE
```

Several good communications packages are available for the BBC Micro, some of which are supplied on ROM, but they tend to be expensive. Most offer all the features you need, because the BBC Micro's operating system does most of the work — all the programmer has to do is add finishing touches.

The Spectrum is more difficult to adapt. Firstly, you won't be able to achieve any communications breakthrough in BASIC. With a BASIC program it's just about possible to push the Spectrum up to about 10 baud, and then it won't be able to perform such tasks as storing the characters in RAM. You can also disregard your Interface 1: it's not an RS232 interface and is little use for communications. Virtually no communications software is available for the Spectrum yet.

The Commodore 64 also has a non-standard serial interface, and most modems for the machine plug into the user port. Again, you can't do anything very useful in BASIC. The 64 also has a non-standard ASCII character set, so the communications software needs to translate between standard ASCII and Commodore ASCII — something that can be done easily using a look-up table. There are no Commodore-approved communications software packages. UK users can obtain Termulator from Chris Townsend Computers; US users should check with local dealers. Compunet users can use the official Commodore Compunet modem with resident software, but this modem can be used only for Compunet.

Tandy supplies dumb terminal software for its disk-based TRS-80 machines running under most operating systems. Most of it is intended primarily for direct machine-to-machine transfer but can also be used with modems. Tandy machines were the first micros used to run and access bulletin boards, so there is normally a good selection of both disk- and cassette-based public-domain communications software to be found. TRS-80s are not suitable for viewdata (1200/75 baud) operation.

Almost any business micro can be used for communications, but there are several important points to check. Firstly, there's a growing tendency towards built-in modems; these — particularly the ones with ROM-based communications software — are obviously the easiest to use. They simply need to be plugged into the telephone socket.

Failing a built-in modem, the next best option is a micro with at least two RS232 ports, allowing you to use a modem and serial printer simultaneously. Some micros have separate, non-standard modem ports: these will serve, assuming you can get a suitable cable, for your chosen modem.

In terms of software, you shouldn't have problems with a CP/M, MS-DOS or PC-DOS machine. Non-standard operating systems, however, are just as much a liability with communications packages as with any other software.

If communications is your main reason for buying a micro, the so-called 'lap-held' machines such as the Tandy Model 100, the NEC PC8201A and the Olivetti M10 are well worth considering. With one of these and a battery-operated modem you have a conveniently portable briefcase terminal. All three machines have built-in text editors and terminal software and give about 20 hours use from four AA battery cells. These machines retail at between £300 and £500, and a portable acoustic modem will cost you from £180 to £250.