# SHARP SIGHTED

**Two Japanese companies, Casio and Sharp, produce computers small enough to fit into a pocket. Despite the size of these machines, they are true computers, although their specification is limited. We have already taken a close look at Casio's range of pocket computers (see page 541); now we scrutinise Sharp's machines.**

**Pocket Power**
With CMOS RAM and 8-bit CPU, QWERTY keyboard, BASIC and a range of optional peripherals, these Sharp 'calculators' can reasonably claim to be small-scale and truly portable microcomputers

Sharp's marketing strategy is in marked contrast to Casio's. To begin with, it produces two quite different pocket computers, while Casio markets three relatively similar machines. Sharp's two machines are designed not to compete with each other: the PC-1251 is the smallest pocket computer currently available, and costs £80; the PC-1500A is considerably larger and more powerful, and is the most expensive pocket computer (£170) offered by either company.

The Sharp PC-1251 weighs a mere 115 grams (four oz) and measures 135 by 70 by 10 mm ($5\frac{1}{2}$ by $2\frac{3}{4}$ by $\frac{1}{2}$ in). The keyboard is well under half the size of a standard keyboard and the keys are only four mm ($\frac{1}{8}$ in) wide. They are big enough to ensure that a finger pressing one key does not press the four around it, provided care is taken. At the side of the alphabetic keyboard is a number pad with larger keys, which allows the computer to be used as an ordinary pocket calculator.

The PC-1251 has a 24-character wide liquid crystal display. This can be adjusted for different viewing angles and lighting conditions by a small wheel on the side of the computer. To the right of the display is a Mode Selector switch. There are three operational modes: one allows the functions of certain keys to be defined (RSV); a second facilitates programming (PRO); and the last allows a BASIC program to be run or the machine to be used as a calculator (RUN). This switch is also used to turn the machine off.

Although not quite up to the standard of ordinary home micros, the version of BASIC used is good for a machine so small. It has commands that some of the Casio pocket computers lack, such as ASC and CHR$, but like them it does not have the ELSE option for the IF. . . THEN instruction. Like the smaller Casio computers, the PC-1251's BASIC uses the same single letter names for strings and variables. This means that if the variable A was used to hold a number, then the string variable A$ could not be used. In the same way, some arrays could overwrite the same areas of memory.

Only nine error messages are produced by this version of BASIC and these are all single letters, which is extremely unhelpful for isolating bugs in programs. As an additional option, the command PASS allows programs to be protected with a password. Line numbers in the PC-1251's BASIC are limited to the range 1 to 999. When in the mode for entering programs, two cursor keys allow the programmer to scroll up and down over the program lines. A further two cursors allow sideways scrolling in all modes.

As there is very little software available for the machine, most users will have to write their own programs. The machine's manual helps here in two ways. First of all, it gives a good and easily understood guide to the BASIC, although it does not include a tutorial for the beginner. Secondly, it contains listings for nine short programs, not all of which are mathematical applications (finding roots, standard deviation, etc.) — a 'typing practice' program and a 'soft landing' game are among others included. Furthermore, Sharp offers three tapes with a selection of programs on them for £14 each.

Whereas the Casio computers can have up to 10 programs in memory at once, the PC-1251 is restricted to one at a time. However, it is possible to use one program made up from several sub-programs, each separated by END statements. A sub-program could then be run by using GOTO with the appropriate line number. It is useful to have several programs in memory at once, since there is