

# Telescopes for the Amateur Astronomer

Although most amateurs do own some form of optical equipment, it is quite possible to enjoy observing with the naked eye alone, and a considerable amount of truly scientific work can be carried out in this way, particularly in the fields of meteors (page 162-3) and variable stars (page 56-7). Nevertheless there are obviously limitations, and anyone interested in observational astronomy will want to evaluate the different types of instruments with a view to purchasing the one most suitable for his or her requirements.

## Binoculars

Binoculars are more versatile than a telescope, and as they are already owned by many beginners in astronomy they are an ideal first instrument. If being chosen primarily for astronomy, then a low magnification combined with a moderate-sized aperture is advisable to give maximum light-grasp and a fairly wide field. A pair of 7 × 50s (magnification 7x, aperture 50mm) enables stars down to at least eighth magnitude to be seen, and covers a field about  $6\frac{1}{2}^\circ$  in diameter. Such a pair may be used very satisfactorily for observations of variable stars (of which many hundreds would become visible) and for the tracking of artificial satellites (page 96-7).

Quite apart from these uses, binoculars are ideal for general sweeping of the sky, and there is a lot to be said for undertaking a systematic survey of the constellations to familiarize oneself with the sky

before concentrating on more specialized work. They are also useful for identifying the brighter double stars, clusters and nebulae. Finally, they are very useful as an auxiliary instrument for finding and identifying the fields to be examined by a larger telescope.

Any binoculars will give even better performance if they are mounted in some manner, and for the largest sizes this is quite essential. Wide-aperture binoculars are used by many workers who concentrate upon searching for comets (page 150-1) and novae (page 56-7). The very largest apertures range up to 125-150mm, but such enormous sizes are only available as ex-military equipment and are very rarely encountered. In any case, very few observers are proficient enough to be able to make proper use of them.

## Telescopes

Some form of telescope is essential for most areas of observation and the general principles upon which the diverse types operate are described on pages 229-232. In amateur work the refractor and Newtonian reflector remain predominant, although the compact and relatively portable Schmidt-Cassegrain and Maksutov types are becoming increasingly popular. The minimum useful aperture is about 75mm for a refractor and 150mm for a reflector; smaller telescopes abound but they should be discarded in favour of a good pair of

