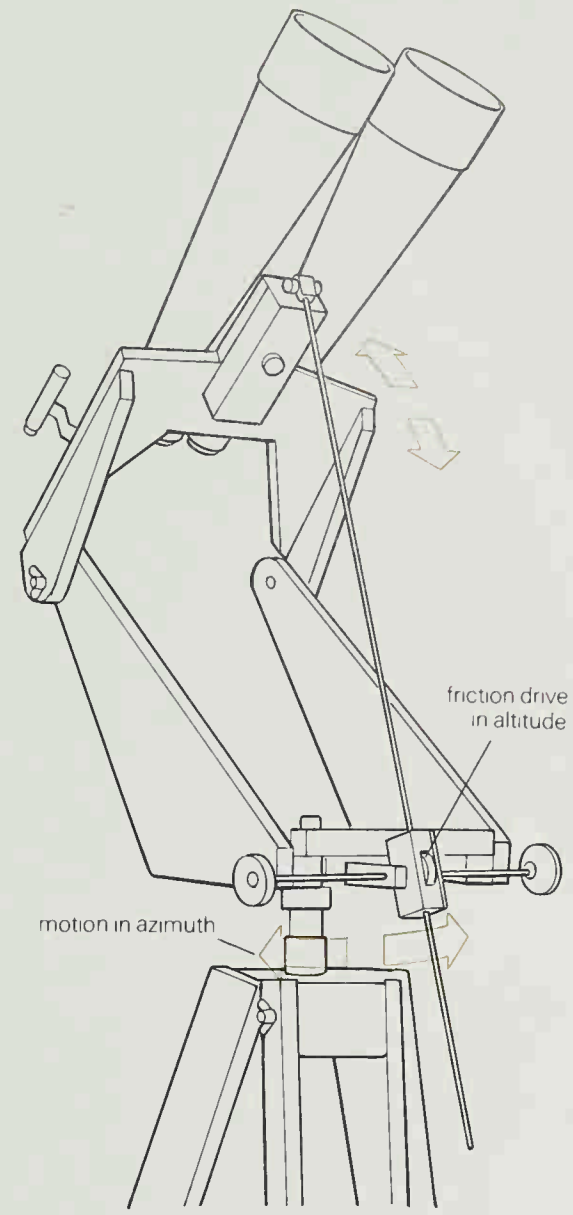
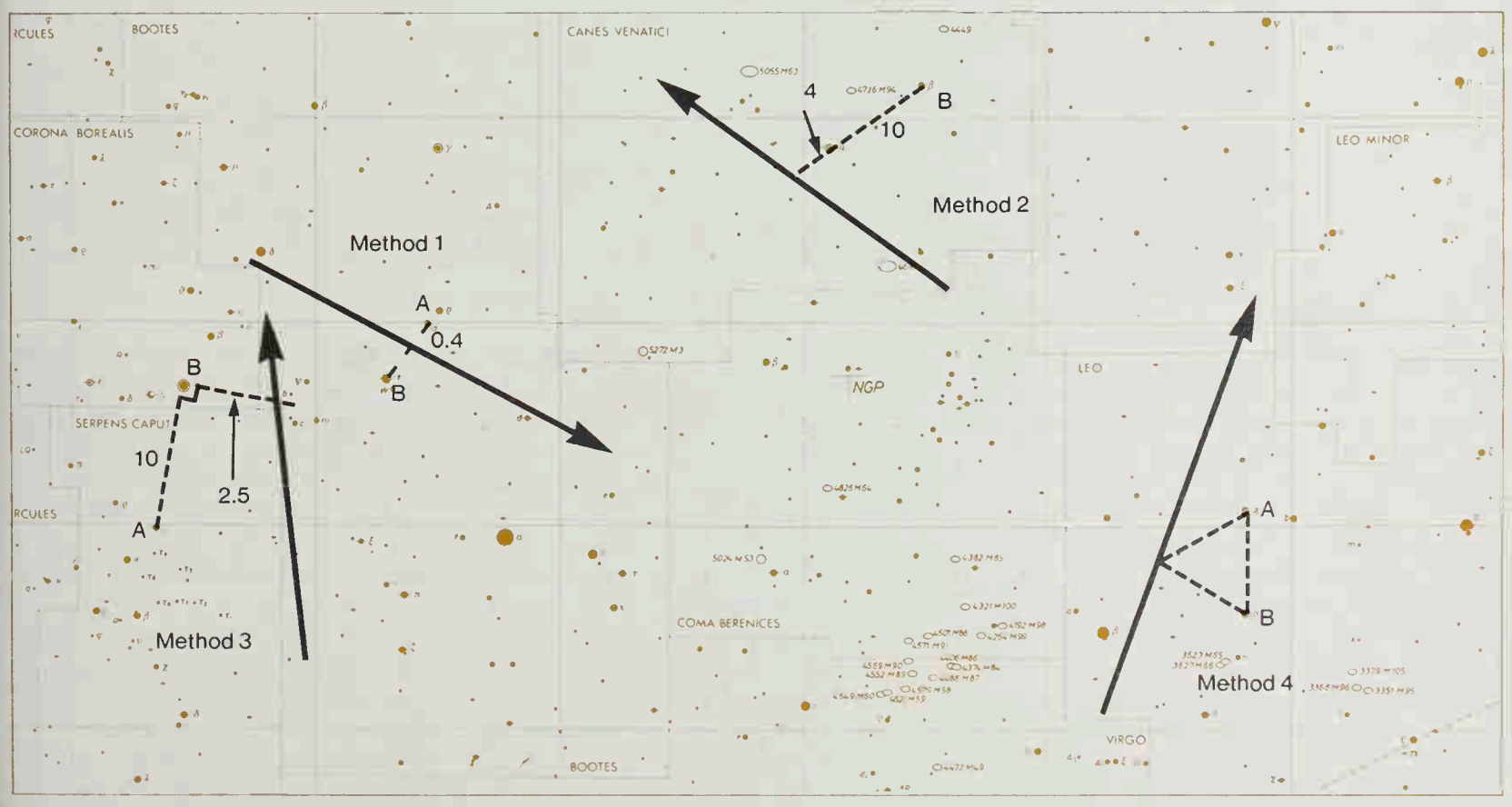
Far right:
Large binoculars, mounted on a specially made but simple stand, are particularly suitable equipment for observation of artificial satellites.

Magnitude observations are also of interest (although less vital scientifically) and may be made by methods similar to those used for variable stars (pages 56–57). As satellites, rockets and debris are of all sizes and reflective properties, as well as being at various distances from the Earth, a whole range of magnitudes is encountered, the brightest being visible to the naked eye. Although satellites move more slowly than meteors (one way in which re-entries can be distinguished from fireballs), they also suffer from the effect that moving objects must be rather brighter than fixed ones for them to be perceived by the eye. This, as well as the aperture of the telescope equipment, must be taken into account when choosing objects to observe. If tumbling accidentally, or having been set spinning deliberately, satellites also show regular magnitude variations, while large reflective surfaces such as solar panels can give rise to bright flashes. All these facts are useful pieces of information which should be recorded. Quite apart from the magnitude variations mentioned, of course, all objects will fade as they pass into the Earth's penumbra, or disappear completely within the umbral cone.

Satellite re-entries give rise to phenomena very similar to fireballs (pages 162–3) and they should be observed and reported in just the same way. They can be very bright, and on occasions can exceed the brightness of the full Moon. As with fireballs, some are thus visible in daylight, when it will usually be necessary to record the track in terms of altitude and azimuth rather than in celestial co-ordinates. If a bright re-entry is expected, it may be possible to photograph it deliberately, as happened when Skylab burnt up over Western Australia. Normally, however, the best chance of securing a photograph must lie with one of the regular fireball patrols.

Although some very experienced observers may use large telescopes and specialized techniques to provide an exceptionally high degree of accuracy, the observation of artificial satellites is yet another example of how amateur observation with comparatively simple techniques and equipment can give results of great scientific value.





Satellite observation consists of estimating the position in terms of the distance between suitable stars (such as those marked A and B on this chart), by one or other of the methods shown here, whichever is most appropriate at the time.