Practical Observing

Celestial objects chosen for observation at any time will depend to some extent upon one's position on the Earth. An observer's latitude has a considerable effect upon the part of the sky which is visible, quite obviously, and also upon the length of the night – especially upon the length of the time when the Sun is 15° or more below the horizon, which is when astronomical twilight is not present. (At latitudes above 51½° astronomical twilight persists all night at some time during the year.) From the equator – at least in theory – all the stars in the sky are visible, and – again in theory – all stars appear to rise and set. (In practice atmospheric absorption and refraction complicate the issue.) Further north and south certain stars will be circumpolar and remain above the horizon all the time, circling the celestial poles. In the north the relatively bright star α Ursae Minoris is close to the true pole, and thus provides a useful marker, but unfortunately in the south there is no corresponding conspicuous 'pole star' to use as a similar guide.

The observer's position on the Earth will also have an effect upon the visibility of various objects, because of their relationship to the ecliptic or to the Sun. Observers in the northern hemisphere will best be able to see planets, for example, when they are north of the ecliptic. However the most favourable oppositions of Mars take place at a time of year when Mars is well south of the ecliptic, so that southern observers have the best conditions for observing.

Naturally, similar considerations also apply to objects other than planets, particularly when they are close to the Sun in the sky, which can markedly affect their visibility at times close to sunrise and sunset. This can mean that at times observers at the highest latitudes stand the best chance of confirming discoveries of some objects such as novae and comets.

Other factors being equal, general planetary observation is best undertaken from low latitudes, where the high altitude which the bodies attain minimizes atmospheric effects, particularly absorption and scintillation. When high magnifications are desirable, as is certainly the case with planetary work, this is an obvious advantage.

Proximity to the Sun is a factor in the observation of objects such as variable stars which need to be followed continuously. They may be so situated that there are periods of the year when they are completely invisible, and such 'seasonal gaps' are quite unavoidable. However, observations shortly after sunset and just before dawn can help to shorten these breaks in coverage (those made by the considerably fewer dedicated observers who work in the early morning being particularly valuable).

The Moon has a somewhat similar effect to that of the Sun and can cause serious interference to some observations, particularly those of nebulae and galaxies, comets, and faint variable stars, especially around the time of Full Moon. Observers of such objects become resigned to these interruptions, but are known to welcome the occurrence of lunar eclipses which enable them to snatch a few valuable observations.

Facing page:
The south polar region. Sigma Octantis is the nearest moderately bright star, but it cannot be used as easily as Polaris in the north for the purposes of alignment of a telescope.

Circumpolar star trails. 2-hour exposure on Kodak High Speed Ektachrome (up-rated to ASA 400), taken using a 50 mm focal length, f/1·4 Zeiss Planar lens, from the dark sky of Arizona. Note the bright star α Ursae Minoris, the Pole Star, which is situated approximately 1° from the true north celestial pole.