

**FIGURE 9.26** Sunlight travels through a longer distance in the atmosphere at sunset and sunrise.

At sunset or sunrise, the sun's rays have to pass through a larger distance in the atmosphere (Fig. 9.26). Most of the blue and other shorter wavelengths are removed by scattering. The least scattered light reaching our eyes, therefore, the sun looks reddish. This explains the reddish appearance of the sun and full moon near the horizon.

## 9.8 OPTICAL INSTRUMENTS

A number of optical devices and instruments have been designed utilising reflecting and refracting properties of mirrors, lenses and prisms. Periscope, kaleidoscope, binoculars, telescopes, microscopes are some examples of optical devices and instruments that are in common use. Our eye is, of course, one of the most important optical device the nature has endowed us with. We have already studied about the human eye in Class X. We now go on to describe the principles of working of the microscope and the telescope.

## 9.8.1 The microscope

A simple magnifier or microscope is a converging lens of small focal length (Fig. 9.27). In order to use such a lens as a microscope, the lens is held

