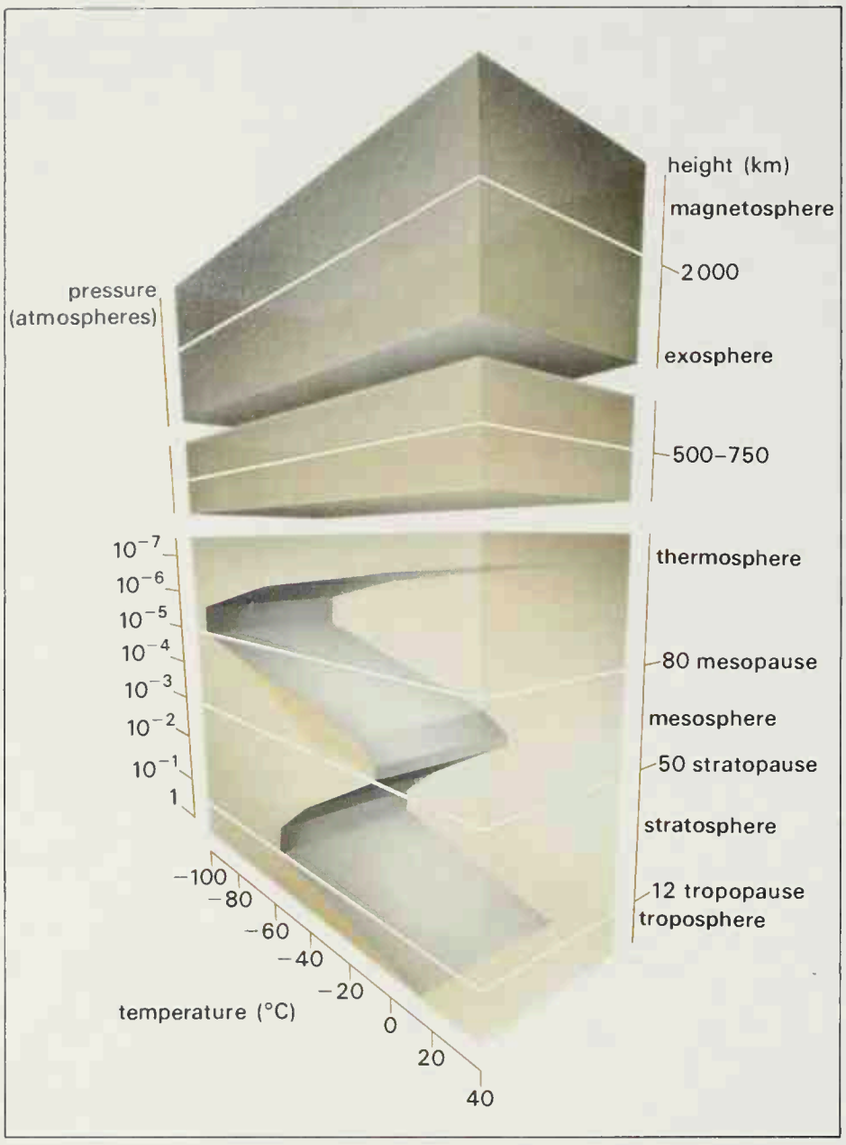

The aurorae

The large quantities of energetic particles ejected by solar flares can reach low levels in the polar regions, where they excite the atoms in the upper atmosphere, resulting in the emission of visible light and producing the polar aurorae. The base of auroral displays is usually at a height of approximately 100 km, although emission has been noted as high as 1 000 km, and they are normally overhead roughly 15^0 to 30^0 from the magnetic poles, although at times of intense solar activity, they have been observed from as far south as the geomagnetic equator. The aurorae can assume various forms, but the most striking are the rayed structures and the curtain-like sheets which can be observed when the bands of light are overhead. These display the alignment of the magnetic lines of force along which the particles are entering the atmosphere. The changes in the numbers of electrons in the upper atmosphere which are associated with auroral activity affect radio communication and are known as **ionospheric storms**. They also produce similar disturbances of the Earth's magnetic field.

The Earth-Moon system

When compared with the other satellites in the Solar System, the Moon is exceptionally large relative to its primary, with the Earth-Moon mass ratio being 81·3 : 1. (This ratio is only exceeded by that of Pluto: Charon, both of which are small bodies of probably similar composition, and where the ratio is of the order of 20:1. The next largest is that of Neptune: Triton which is approximately 500:1.) As a result, both bodies are actually in orbit about the centre of mass of the system, which is about 1 000 km from