An infrared image of the Earth, obtained by the European geostationary meteorological satellite, Meteosat, on 1978 February 12 at 18·25 UT. The eastern Mediterranean, Red Sea and Iberian peninsula can be readily distinguished, while most of Europe lies beneath broken cloud cover.

The generalized atmospheric structure is shown in Fig. 5·3, together with temperature and pressure distributions. The lowest layer, or troposphere, contains 75 per cent of the total mass and is the zone where turbulence and weather systems are the most marked.

Ultraviolet and X-ray radiations from the Sun cause increasing ionization above 100 km, resulting in the various regions known as **ionospheric layers**, which are so important because they reflect radio waves of various wavelengths, particularly those used in radio communication.

Temperature rises rapidly with height due to absorption of solar radiation until in the exosphere, which mainly consists of oxygen, hydrogen and helium, the atoms are able to acquire sufficient velocity to escape into space.

Geomagnetism

The metallic core is responsible for the Earth's magnetic field. The exact method by which this takes place is unknown, but it seems that the liquid outer core is largely responsible, rather than the solid inner region. The shape of the MAGNETIC LINES OF FORCE is very similar to that of a common bar magnet, but the axis of the lines does not pass through the centre of the Earth; it is tilted by 11·5° to the Earth's rotational axis.

The geomagnetic lines of force extend out into space and define the region of the Earth's magnetic influence which is known as the **magnetosphere**. In an undisturbed situation the field would extend to a distance of at least 100 Earth radii, but the outer lines of force are strongly affected by interaction with the