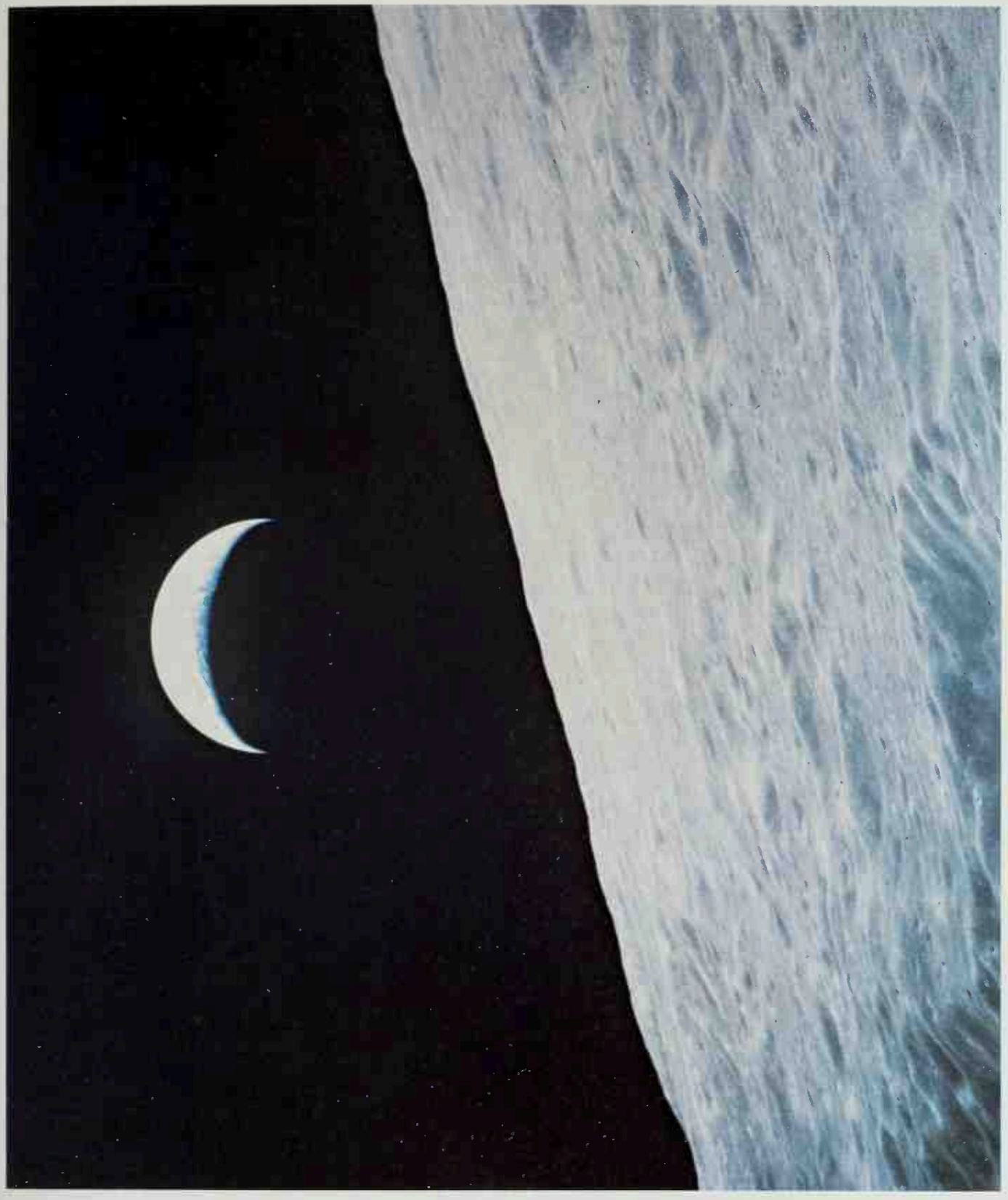

*The Earth-Moon system. The reversal of phases means that as seen from the Moon, the Earth is 'new' (as here) when the Moon appears nearly full from Earth.*

ionized particles from the Sun, which are collectively known as the solar wind (page 78).

The boundary of the Earth's magnetic field where this interacts with the solar wind is termed the **magnetopause**, and the pressure exerted by the particles is so great that the field lines are compressed down to a distance of about 10 Earth radii on the sunward side (Fig. 5·4), although it may be even less at times of intense solar activity. On the opposite side the outer lines of force are not closed and stretch out into space to form the **magnetotail**. The full extent of this has yet to be determined by space probes, but it is certainly present far outside the orbit of the Moon (60 Earth radii) and probably beyond 1 000 Earth radii.

The solar wind particles have a very high velocity (250 to 400 km per s) and have an effect upon the number of cosmic-ray particles which are detected on Earth. At times of high solar activity, the cosmic-ray count drops and this is due to the solar wind sweeping the particles away from the Earth. Furthermore, low-energy cosmic ray particles cannot approach the Earth's middle latitudes due to the effects of the geomagnetic field.

The majority of particles within the magnetosphere are trapped by the field in a region which, beginning about 3 000 km above the Earth, extends out to 4 Earth radii.

At one time it was thought that this **Van Allen radiation belt** was formed of two separate regions with differing particle populations, but it is now known that high-energy protons are concentrated close to the Earth, with electrons and lower-energy protons at greater distances.