The Moon

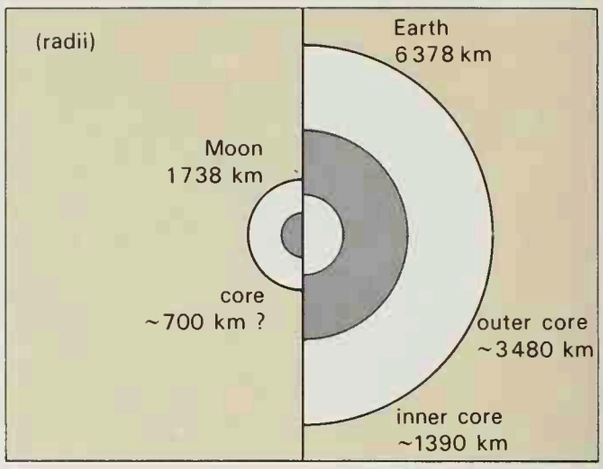


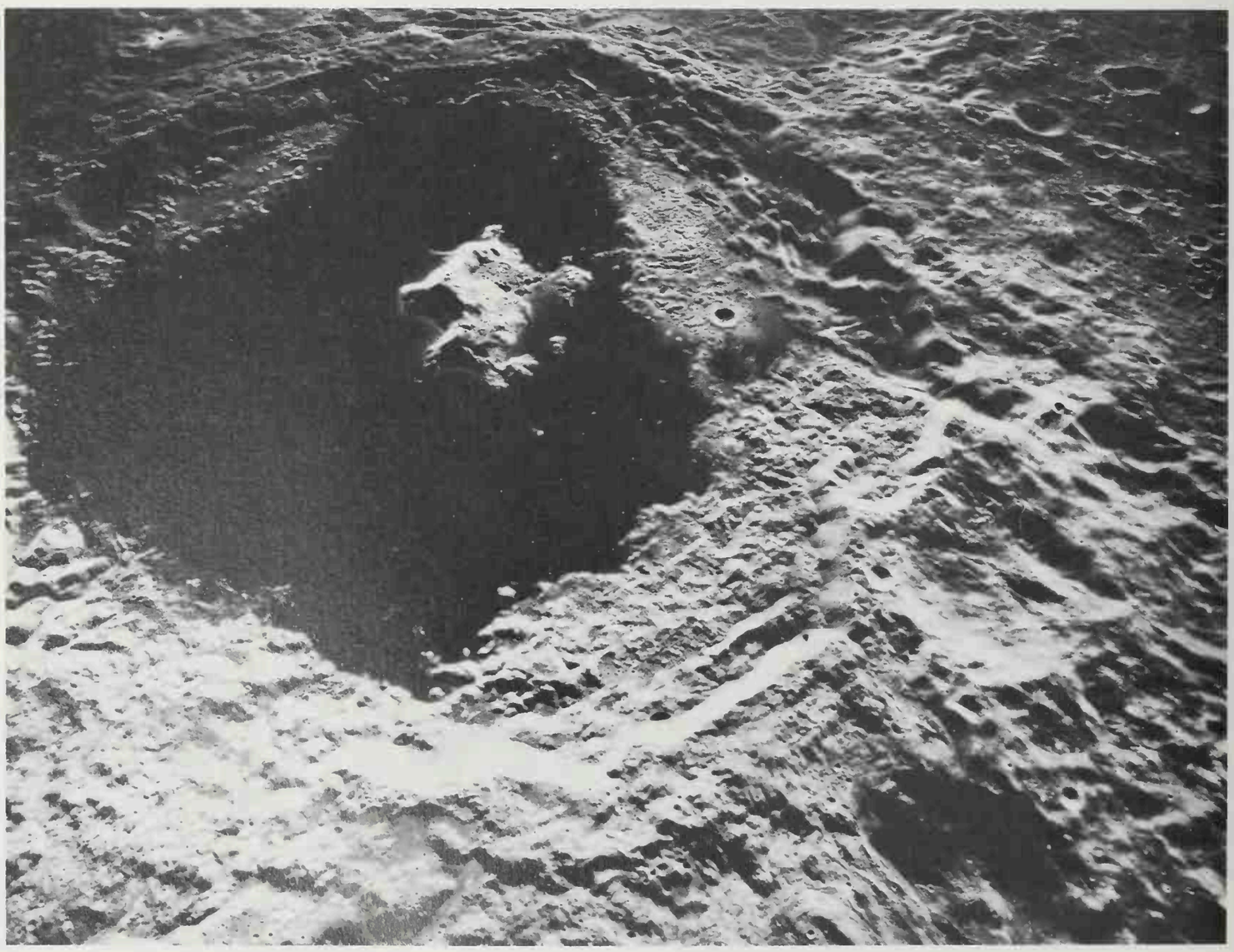
Fig. 5·7 far right: Comparative sizes of the Earth and the Moon. The size of the Moon's core (if any) is uncertain.

Although the Moon was mapped through telescopes before its exploration by manned and unmanned spacecraft, we now have factual evidence to help us interpret its features. Indeed, due to photographic missions in lunar orbit, higher quality maps are available for practically the whole surface than for some parts of the Earth. Moreover, the samples returned from the Apollo and Luna landing sites have completely changed ideas about the origin and early evolution of the Solar System, as well as answering many questions about the Moon itself.

The Moon, which has a diameter of 3 476 km, orbits the Earth at an average distance of 384 402 km. The relative sizes of these two bodies are shown in Fig. 5·7, while Table 5·4 gives additional data.

Tracking orbiting spacecraft has shown that the Moon is not perfectly spherical, but is slightly elongated towards the Earth. The Earth's tidal forces have locked on to this distortion and caused the Moon always to turn the same face towards us. This near side is divided into light and dark coloured areas, called by the early investigators **terrae** and **maria**, from the Latin words for lands and seas respectively, since they mistakenly supposed the surface to be similar to that of the Earth. Use of these terms has persisted despite more accurate knowledge, although the terrae are now more frequently referred to as **highlands**.

Around the edges of the maria these highland areas may form conspicuous mountain chains stretching for hundreds of kilometres, with the Apennines, for example, reaching 7 km above the nearby plains. The maria are either circular or irregular in shape and we now know that they are concentrated on the near side with only a few minor examples elsewhere.



The lunar farside crater Tsiolkovskii, photographed from Apollo 15 in lunar orbit. Its diameter is 180 km and the slump terracing and central peak are typical of craters of this size, but the lava flooding of the floor is unusual.