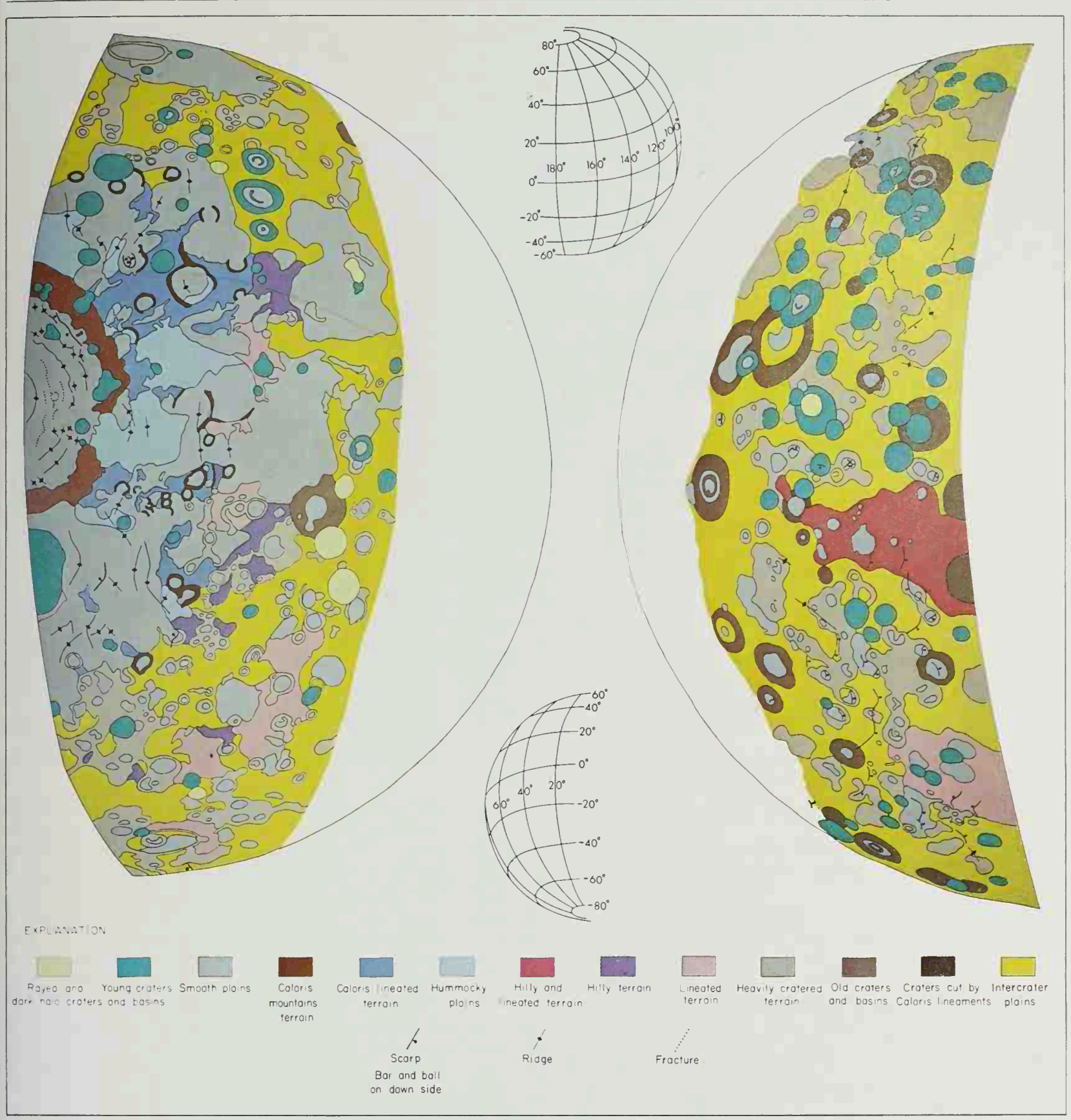

Geological map of part of the surface of Mercury prepared from Mariner 10 photographs. The most striking feature is a portion of the Great Caloris basin (left edge) which is shown in greater detail on page 120.

general data relating to the planet and its orbit are given in Table 5·7.

Interior and magnetism

One of the most remarkable facts about Mercury is its very high density, greater than any of the other planets except the Earth. This is surprising in such a small body (Fig. 5·9, page 120) and suggests the presence of a relatively large metallic iron-nickel (Fe–Ni) core, which contains about 80 per cent of the planet's mass (as compared with the Earth's 32 per cent). This was unexpectedly confirmed by the Mariner 10 observations which showed that Mercury has a magnetic field, a fact which presumably indicates that the planet has a fluid core. The field strength is much weaker than that of the Earth (just over 1 per cent) and the closed field lines are compressed to about 2 000 km from the surface by the effect of the solar wind (Fig. 5·10). The exact position of the magnetic axis is unknown, but it is thought to coincide with the rotational axis, which is probably at right-angles to the orbital plane.

The very high density of the planet remains a mystery, but although some doubts have been expressed about past measurements, the results obtained from the Mariner 10 tracking showed that the density is correct.