spheric water vapour is omitted from the table as it is present in such variable amounts, being about 4 per cent near the surface, but absent above about 12 km. The noble gases argon and helium are predominantly decay products of potassium and uranium respectively.

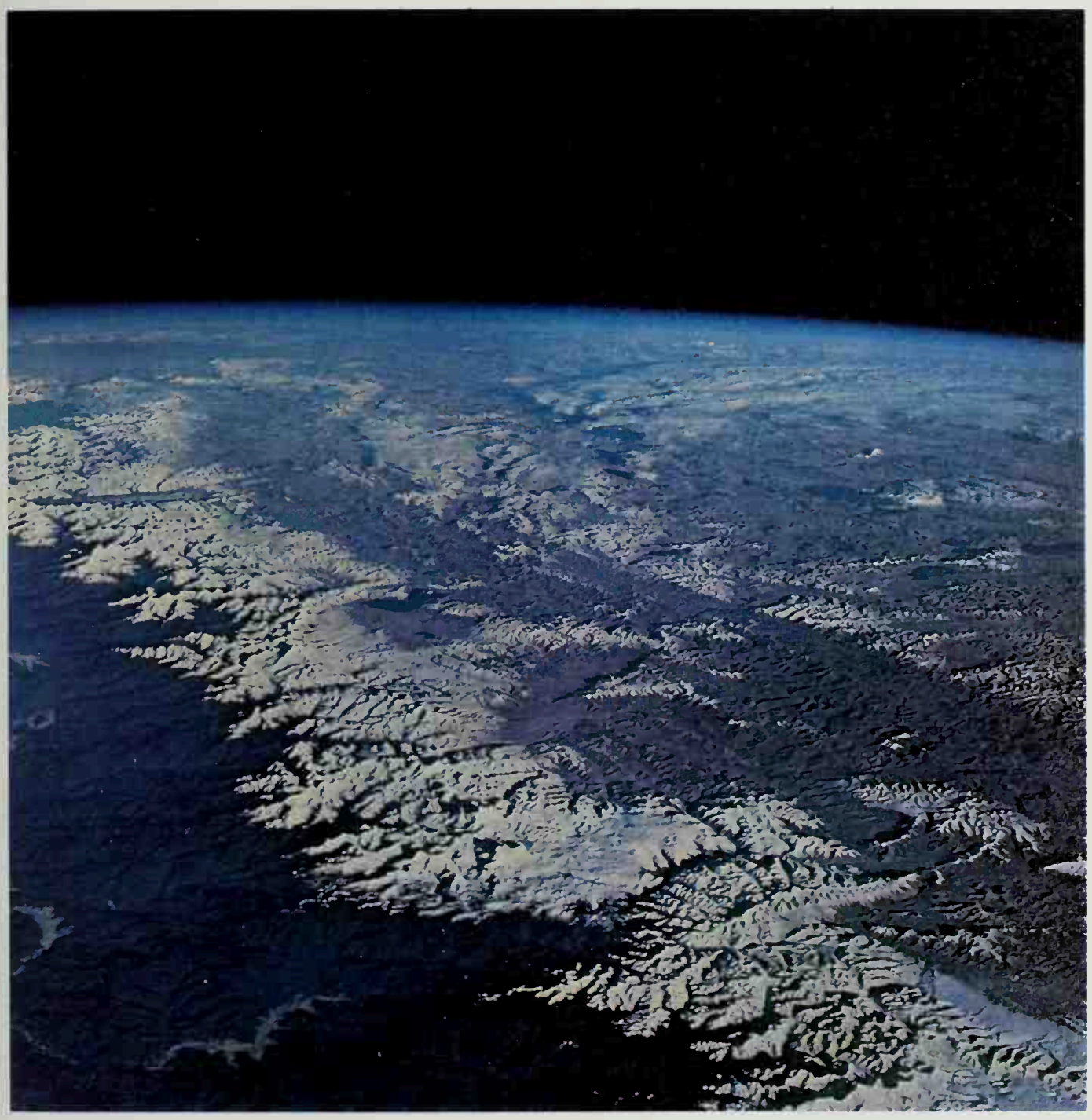
Part of the energy that the Earth receives from the Sun is absorbed by atmospheric molecules, principally of oxygen and water vapour. These filter certain wavelengths of radiation from space and so restrict the wavelengths available to Earth-based astronomers. Another part is reflected back without heating the surface at all, and this portion is termed the **albedo**; it varies greatly according to the type of surface on which the solar energy is falling (Table 5·3). Estimation of albedo is very important in determining the nature of the surface of many of the planetary bodies, and especially minor planets (see p. 154). The Earth's overall albedo is approximately 40 per cent and the fraction absorbed gives rise to the mean temperature of about 283 K for the surface, and 250 K for the atmosphere. Re-radiation to space at infrared wavelengths is also affected by atmospheric absorption, primarily by water and carbon dioxide, which thus trap radiation in the so-called **greenhouse effect**, which causes a warming of the air.

Table 5·2 **Earth atmospheric composition**
(mean dry atmosphere below 25 km)

component	symbol	percentage volume
nitrogen	N_2	78·08
oxygen	O_2	20·94
argon	Ar	0·93
carbon dioxide	CO_2	0·03*
neon	Ne	0·0018
helium	He	0·0005
ozone	O_3	0·00006
hydrogen	H	0·00005
krypton	Kr	trace
xenon	Xe	trace
methane	CH_4	trace

(*very variable)

There is obviously an excess of energy received in the equatorial regions compared with that at the poles, and this is transported poleward partly by ocean currents, but predominantly by horizontal atmospheric motion, thus driving the Earth's vigorous weather systems.



Apollo 7 photograph of part of the Himalyas and Tibet, showing the mountain ranges so characteristic of the Earth. The area covered includes Annapurna in the far distance, and Everest and Makalu (casting large shadows) in the foreground.