

bilities of flight to winged animals. If man were able to exist without an atmosphere, he would exist without a knowledge of pleasure, and the expenditure of muscular strength would be so much increased as greatly to augment the burden of the curse under which he labours.

COMPOSITION OF AIR.

The body of gaseous matter by which the earth is surrounded is composed of two elastic fluids, called oxygen and nitrogen, in the proportions of one part of the former to four of the latter. But the atmosphere contains other substances, which must be rather considered as impurities than as absolutely necessary for its composition, and these are consequently in variable proportions. Carbonic acid gas is a principle commonly found in atmospheric air; Saussure found it in that which he brought from the top of Mont Blanc; and Humboldt, in that from near the summit of the Andes. It is however now certain that the proportion of carbonic acid in air not only varies in different places, but also at different seasons of the year; and it is possible that it may be sometimes absent, as the companions of La Perouse failed to detect its presence on the top of the peak of Teneriffe.

A most interesting series of experiments has been made by M. Saussure the younger, at Chambeisy, near Geneva, from which it appears that meteorological changes and seasons have a tendency to alter the proportions of carbonic acid in the air. A long-continued frost increases, and a thaw decreases, the proportion; heavy rains were also found to diminish its quantity, probably by dissolving it; and on the same principle we may account for the circumstance, that there was less of this gas in the air over the Lake of Geneva than at Chambeisy. The philosopher ascertained that there is more in the three winter than in the three summer months, and at night than in the day; and he estimates the average proportion of carbonic acid at 4.15 volumes in 10,000 of atmospheric air.

Aqueous vapour is also present in the atmosphere in variable quantities between one and one and a half per cent.; and many gaseous bodies may be detected; for all the substances that can become aerial fluids at common temperatures must be occasionally found. But these are locally distributed, as well as variable in amount.