

form it constitutes the basis of the vast family of the aluminous silicates, of which so large a portion of the crystalline and fragmental rocks consists. Exposed to the atmosphere, these silicates lose some of their more soluble ingredients, and the remainder forms an earth or clay consisting chiefly of silicate of aluminium.

Carbon is the fundamental element of organic life. In combination with hydrogen, as well as with oxygen, nitrogen and sulphur, it forms the various kinds of coal, and thus takes rank as an important rock-forming element. As carbon-dioxide, CO_2 , it is present in the air, in rain, in the sea and in ordinary terrestrial waters. This oxide is soluble in water,⁴ giving rise then to a dibasic acid termed Carbonic Acid (Kohlensäure), $\text{CO}(\text{OH})_2$ or H_2CO_3 , which forms carbonates, its combination with calcium having been instrumental in the formation of vast masses of solid rock. Carbon-dioxide constitutes a fifth part of the weight of ordinary limestone.

Sulphur (Soufre, Schwefel) occurs uncombined in occasional deposits like those of Sicily and Naples, to be afterward described, also in union with iron and other metals as sulphides; but its principal condition as a rock-builder is in combination with oxygen as sulphuric acid (Schwefelsäure), H_2SO_4 , which forms sulphates of lime, magnesia, etc.

Calcium enters into the composition of many crystalline rocks in combination with silica and with other silicates. But its most abundant form is in union with carbon-dioxide, when it appears as the mineral, calcite (CaCO_3), or the rock, limestone. Calcium-carbonate, being soluble in water containing carbonic acid, is one of the most universally diffused

⁴ One volume of water at 0° C. dissolves 1.7967 volumes of carbon-dioxide; at 15° C. the amount is reduced to 1.0020 volumes.