

nations, can be learned only by an examination of specimens: they are, however, far from being numerous; and a short description of each is necessary in an introductory treatise.

The most important simple minerals composing rocks are quartz, felspar, mica, talc, chlorite, hornblende, serpentine, limestone, and slate.

*Quartz* is one of the hardest minerals of which mountain masses are composed: it gives plentiful sparks with steel; it breaks with a smart stroke of the hammer; the surface of the fracture in crystallized quartz is conchoidal, in uncrystallized splintery: the lustre is vitreous. Crystals of quartz, or rock crystals, as they are commonly denominated, have different degrees of transparency: the blue varieties are amethysts. The most common forms of the crystals are six-sided prisms terminated by six-sided pyramids; or, two six-sided pyramids united, forming a dodecahedron, whose faces are isosceles triangles. Uncrystallized quartz is seldom transparent, most frequently translucent, but sometimes opaque. Its colours are various shades of white, grey, brown, yellow, red, and green. It yields a phosphorescent light and a peculiar odour when rubbed. Quartz is composed of siliceous earth, combined with a very small portion of alumine. It is infusible when unmixed, but with alkalies it melts easily, and forms the well-known substance called glass. It is not acted upon by any acid except the fluoric. Quartz exists in veins intersecting mountains, and it sometimes forms large beds, and even entire mountains, which are composed of this mineral in grains called granular quartz, united without a cement. Fragments or crystals of quartz are common in compound rocks. Grains of quartz form a principal constituent part of most sandstones. The milkwhite pebbles, in gravel, are composed of quartz. Flint, chert or hornstone, opal, chalcedony, and agate, are different modifications of siliceous earth, which, in their chemical composition, differ little from quartz. Combined with a large portion of alumine and iron, quartz loses its translucency and passes into jasper, which forms beds in primitive mountains, and is said to compose the substance of entire ranges of mountains in Asia.

*Felspar* or *feld-spar* (a name received from the Germans) is a constituent part of numerous rocks. It is hard, in a somewhat less degree than quartz, and is more easily broken. It is laminar, or composed of thin laminæ or plates, by which it may be generally distinguished from quartz. The crystals are, more commonly, four-sided or six-sided prisms, whose length is greater than the breadth. It has a shining lustre. The colours are white, grey, milk-white, yellowish or reddish white, sometimes inclining to green. The red passes through various shades, from a pale to a deep red. Crystallized felspar is translucent. It may be melted without the admixture of alkalies, and forms a glass more or less transparent, which quality it derives from the lime or alkali that composes part of its constituent