Slate System, or Clay-slate and Grauwacke System.

Composition.—The type of this system is upon the whole eminently argillaceous, as that of the older systems is arenaceous: but between these two terms the difference is not always very clear. Some proportion of alumina must, indeed, be present in argillaceous rocks, but it is seldom absent from arenaceous compounds: such a substance as felspar, reduced to fine particles in water, might make a good substitute for clay; if left in a state of granulation it might constitute an arenaceous rock, and be even called sandstone. The former is, perhaps, almost really true with respect to clay slate; for this substance is not very distinct, chemically speaking, from decomposed felspar which has lost or changed the condition of its potash by the operation of water: hence it happens under particular circumstances (which permit the access of alkali and the agency of great heat), that powdered blue slate is actually transformed to white and glassy crystalline grains of felspar. This is one of the results of the yet uncompleted experiments on the effects of long continued heat, instituted by Mr. W. V. Harcourt in Yorkshire.

Clay slate, the simplest form of argillaceous fissile rock, is so uniform in its appearance, fineness of grain, colour, hardness and chemical composition, that mineralogists have often included it in their arrangements as a peculiar mineral species. Imbedded in it we sometimes find certain crystallised minerals, as chiastolite or hornblende (in Skiddaw), cubic pyrites (Dunolly, near Oban, Ingleton, in Yorkshire); its colour is black (Skiddaw), purple (Snowdon), green (Langdale), yellow (Charnwood Forest), mottled (near Ambleside): some varieties (Westmoreland) are translucent at the edges: others (N. Wales) opaque: there are variations of hardness, from the soft perishing slate of Skiddaw to the hard durable rocks of Langdale.

If we imagine the substance of clay slate diffused amongst and around grains of quartz, felspar, mica, bits