

under the mechanical influence of water, and not aggregated by chemical forces from a state of igneous fusion.

The divisions of the gneiss and mica schist system are, to a considerable degree, based on the mineralogical differences of the ingredients in the predominant rocks. Gneiss, for instance, is principally composed of the same materials as common granite, viz. quartz, felspar, mica (occasionally hornblende, augite, garnets occur in it); mica schist is principally formed of mica and quartz, with garnets, hornblende, &c.): in both, the ingredients are arranged in laminæ; the mica forming generally continuous sheets in mica schist, but interrupted patches in gneiss. Chlorite schist differs from mica schist by the substitution of chlorite for mica. In hornblende schist the mineral associated with quartz is hornblende or actynolite. In quartz rock, only a little felspar or mica is mixed with the granular quartz, and not generally arranged in layers.

In gneiss, mica schist, chlorite schist, and hornblende schist, the magnitude of the grains is indefinite; and it consequently happens that all of them admit of numerous variations, to which it is useless to give names, from largely granular or even conglomerated gneiss (Zetland), to a fine-grained nearly uniform admixture of mica, quartz, and felspar — mica and quartz — felspar and quartz — (with or without chlorite, hornblende, &c.) In this state these siliceous rocks become very similar to certain argillaceous slates, which, in fact, in some cases, seem to bear exactly the same relation to gneiss, mica schist, &c., that common clays do to common sandstones: there is every gradation between them; their origin is undoubtedly similar — it may even be called the same; since one land flood or sea storm will form both stratified sands and laminated clays from the same wasted land or broken cliff, according merely to the difference of circumstances under which the materials are accumulated. Now it is impossible to doubt that clay slates and grauwacke slates have been deposited in water: it is equally certain that the gneiss and other felspathic or quartzose rocks, which are associated with