

coming gradually consolidated under the pressure of water, partially dried by the superposition of other strata, and further subject to the influence of molecular aggregation (aided, perhaps, by subterraneous heat), we shall clearly perceive that the induration of the rock must be accompanied by such a degree of shrinking in a horizontal direction, as well as compression vertically, that numerous fissures and cracks must be formed. According to some peculiar circumstances in the different *sorts* of rocks, the cracks and fissures assume *different* appearances in them; there are distinct though not easily defined characters for these divisional planes in arenaceous, argillaceous, and calcareous rocks; and in each of these the fineness, or coarseness of grain, and the thickness of the beds make important difference.

Considering further, that rocks have been, according to difference of age, proximity to the surface of the sea, and other causes, unequally subject to the modifying influences alluded to, we must be prepared to find some characteristic differences of the cracks, joints and fissures, according to the *antiquity* of the strata.

In the rocks of the gneiss and mica schist system, we find these general results perfectly exemplified — the coarse grained gneiss and mica schists show very little of either cracks or fissures across the beds; fine grained examples of these rocks are, however, crossed by many regular divisional planes. The thick beds of crystallised primary limestones (Inverary, Glen Tilt) are less perfectly and regularly jointed than the thin bedded limestones of Loch Earn and the Crinan canal. Argillaceous schists, included among the gneiss or mica schist rocks, are always much more completely or symmetrically fissured than any others of the series, apparently because they are of finer grain. It might appear from these observations that divisional planes were, upon the whole, less common in the oldest systems of strata than in those of more recent date; but it would be a more correct inference, that the rocks are generally not of a nature to admit these structures.