grained beds s, which alternate with the coarse beds g g, but in these latter the laminæ of cleavage are often totally absent. j is a joint which varies its angle of dip in the different beds of rock. The line l l, at right angles to the dip of the strata  $\triangle$ , is called the strike of the bed. and is of course level; and it is frequently observed that the horizontal line, or strike, of the cleavage, coincides with the strike of the strata. The planes of cleavage ge-nerally approach toward the perpendicular, whatever may be the amount of the dip of the strata: their course is almost exactly the same over immense spaces of country (in North Wales, in Cumberland, Charnwood Forest, &c.), and it is to them that the valuable substance called slate is owing. It is quite certain, in some instances, that this beautiful structure of the slate rocks was caused since the strata of these rocks were placed in their disturbed directions, and that it is the fruit of a peculiar degree of crystalline action in the mass; for in some cases at Aberystwith and elsewhere, the nearly vertical laminæ of cleavage cross highly contorted beds of slate dipping in various directions.

There are good reasons for thinking that this cleavage of the argillaceous primary strata is an effect due to the pervading agency of heat ; amongst others we may mention the fact that near igneous rocks (as at Coley Hill near Newcastle) something of the same kind is produced in shales of later date; and that among the Alps of Savoy, the lias clays are so altered near the axis of elevation, as to assume much of the aspect of an old slate country.\*

<sup>\*</sup> For suggestions to observers on the subject of cleavage and joints, and a method of calculation to be applied to cases of inclined strata, see Guide to Geology, 3d edition. The Geological Intersector, a small and cheap instrument, which has been constructed by the author, and engraved by Mr. Lowry, may be used to represent the phenomena, and save the trouble of calculation.