

granites, or other igneous rocks ; a circumstance which combines with many other facts to demonstrate the dependence of mineral veins on some peculiar agency of subterranean heat. Quartz, the most frequent matrix or vein stuff of these mineral veins, is very often found ramifying into the fissures and cracks of the slate rocks, without any metallic admixtures.

Judging from personal observation, as well as recorded phenomena, we should say the effects of locally developed igneous agency are much more frequent among the rocks of the slate system, than in those of earlier date, and that dykes, veins, and interspersed beds of porphyry and greenstone, are more abundant and varied. The circumstance observed in Cumbria and North Wales of the porphyry beds being subject to the same flexures and inclinations as the slates, leads to the inference that they were effused as lava sometimes is on the bed of the sea, at intervals during the deposition of the slates ; the dykes of course are of later origin, and the same is generally (we think) true of the mineral and quartz veins, but some metallic and quartzose masses are probably contemporaneous with the rocks which enclose them. Circumstances known concerning the arrangement and contents of the veins in slate in the "killas" of Cornwall, induce many of the intelligent mining gentlemen and geologists of that interesting county to deny, generally, any distinction of age between the veins and the rocks. We shall probably examine this subject in a future section.

Besides these local effects of subterranean heat, the whole structure of the slaty rocks appears to be the result of a general pervading heat, operating on the argillaceous sediments so as to overcome their natural horizontal lamination, and induce a new, almost crystalline, fissility in vertical or highly inclined planes, having one constant direction. We may consistently view this remarkable *polarity* of the cleavage as a characteristic effect of some very general agency, directing the results of molecular attraction : it is certain that this