

Arran, a zone of decoloration ranging from 5 or 6 to 25 or 30 feet in width, runs in the red sandstone along each side of many of the abundant basalt-dikes. This removal of the coloring peroxide may have been effected by the prolonged escape of hot vapors from the cooling lava of the dikes. Had it been due merely to the reducing effect of organic matter in the meteoric water filtering down each side of the dike, it ought to occur as frequently along joints in which there has been no ascent of igneous matter.

Coloration.—Rocks, particularly shale and sandstone, in contact with intrusive sheets, are sometimes so reddened as to resemble the burned shale from an ironwork. Every case of reddening along a line of junction between an eruptive and non-eruptive rock must not, however, be set down without examination as an effect of the mere heat of the injected mass, for sometimes the coloring may be due to subsequent oxidation of iron in one or both of the rocks by water percolating along the lines of contact.

Induration.—One of the most common changes superinduced upon sedimentary rocks along their contact with intrusive masses, is a hardening of their substance. Sandstone, for example, is converted into a compact rock which breaks with the lustrous fracture of quartzite. Argillaceous strata are altered into flinty slate, Lydian-stone, jasper, or porcelanite. This change may sometimes be produced by mere dry heat, as when clay is baked. But probably, in the majority of cases, induration of subterranean rocks results from the action of heated water. The most obvious examples of this action are those wherein the percentage of silica has been increased by the deposit of a siliceous cement in the interstices of the stone, or by the replacement of some of the mineral substances by silica. This