fusion round even the largest bosses of granite; carbonate of lime is not deprived of its carbonic acid. But the injections of intermediate and basic rocks give proofs of far more elevated temperatures. Dikes of andesite or basalt may often be observed to have baked argillaceous rocks into porcellanite, and to have actually fused the rocks in contact with them. But in these instances the alteration is confined within limits of a few inches or feet. The metamorphism induced round a boss of granite, on the other hand, may extend for a breadth of a mile or more. Much of the change in the latter case may be ascribed to the influence of the mineralizing agents with which the granite was impregnated (see p. 523).

With respect to the influence of the nature and structure of the altered rock upon the metamorphism, it is obvious that such different materials as shale, sandstone, coal, and limestone will give very different results even if exposed to the same amount and kind of metamorphic energy. And much will depend also upon the relation between the position of the intrusive mass and the stratification of the rocks affected. As stated on p. 98, heat is conducted four times faster along the planes of stratification than across the bedding.

The following examples of the nature of the metamorphism of contact are arranged in progressive order of intensity, beginning with the feeblest change, and ending with results that are quite comparable with the great changes involved in regional metamorphism.

Bleaching is well seen at the surface, where heated volcanic vapors rise through tuffs or lavas and convert them into white clays (p. 398). Decoloration, however, has proceeded also, underneath, along the sides of dikes. Thus in