

the thickness, composition, and structure of the coal-seam, and probably other causes. In some cases, the coal has been fused and has acquired a blistered or vesicular texture, the gas cavities being either empty or filled with some infiltrated mineral, especially calcite (east of Fife). In other examples, the coal has become a hard and brittle kind of anthracite or "blind coal," owing to the loss of its more volatile portions (west of Fife). This change may be observed in a coal-seam 6 or 8 feet thick, even at a distance of 50 yards from a large dike. Traced nearer to the eruptive mass, the coal passes into a kind of pyritous cinder, scarcely half the original thickness of the seam. At the actual contact with the dike, it becomes by degrees a kind of caked soot, not more perhaps than a few inches thick (South Staffordshire, Ayrshire). Coal altered into a prismatic substance has been above (p. 994) referred to; it has even been changed into graphite (New Cumnock, Ayrshire, see Fig. 301).

Striking as is the change produced by the intrusion of basalt into coals and bituminous shales, it is hardly more conspicuous than the alteration effected on the invading rock. A compact crystalline black heavy basalt or diabase, when it sends sheets and veins into a coal or highly carbonaceous shale, becomes yellow or white, earthy, and friable, loses weight, ceases to have any apparent crystalline texture, and, in short, passes into what would at first unhesitatingly be pronounced to be mere clay. It is only when the distinctly intrusive character of this substance is recognized in the veins and fingers which it sends out, and in its own irregular course in the altered coal, that its true nature is made evident. Microscopical examination shows that this "white-rock" or "white-trap" is merely an altered