

dikes of basalt ; a large mass of trap is seen abutting endwise against the sandstone strata at *a* ; from which a thick bed flows horizontally, sending off branches both upwards (*b*) and downwards (*d*), and finally dividing into three small veins (*c*). Sometimes the fracture and displacement of the strata are on so small a scale as to exhibit the relative connexion of the separated portions, as is shown in this sketch of trap intruded between sandstone, in the Isle of Arran (Tab. 151, fig. 4).

At Straithaird, in the Isle of Sky, vertical dikes and veins of trap intersect the horizontal strata of sandstone, as is shown in this sketch (Pl. 8, fig. VII.) ; porphyry, and other ancient lavas, also occur in the same island, in some instances protruding through, and in others spread over clay-slate, red sandstone, and shelly limestone.\*

In some of the slate districts, where the trap has burst through and overflowed the strata, fragments of slate are found imbedded in the basalt, appearing to have been detached from the rock at the intrusion of the lava, and enveloped while the latter was in a state of fusion.

31. STRATA ALTERED BY CONTACT WITH METAMORPHIC ROCKS.—From this subject I pass to the consideration of the changes produced by granite, and other ancient metamorphic mineral masses. The transition from granite to modern porphyritic trachytes, passes through infinite gradations, but

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