

points removed from the sienite, the pectines, and other shells which this rock contains, and its position with regard to other secondary rocks above and below, have satisfied not only Dr. Macculloch, but Mr. Murchison and professor Sedgwick, that it is a part of the lias formation, which also occurs in Pabba, &c.

A case of the same kind, on an equally extensive scale, which occurs in connection with the "whin sill," or stratiform basalt of High Teesdale, especially in that portion of the country where the trap rock is very thick, has been made known by Professor Sedgwick. The limestone of this district, both above and below the basalt, is usually of a very dark grey or even blackish colour (some beds are very black); but in contact with that rock it loses its obscure blackness (probably by loss of bitumen), becomes of a clear blue tint, and finally, the change being complete, of a clear or greyish white. The arrangement of the particles is altered in an equal degree. The stone usually is compact, or partially varied by laminar shells, or crystallised plates of calcareous spar, representing the stems of crinoïdea. Near the "whin" these characters change; the stone becomes granular and crystalline (in the sense that statuary marble deserves this term), and in some cases the crystalline grains separate by disintegration of the mass. In these metamorphic limestones small cavities sometimes occur; but the most interesting fact that remains to be noticed, is the occurrence of crinoidal columns in the midst of the granular crystalline mass (our own observation). They are, however, not common. These phenomena may be seen over some square miles of surface in the vicinity of the High Force and Caldron Snout, chiefly, perhaps, in the limestone which overlies the basalt.

In connection with the ancient volcanic rocks of the Kaiserstuhl mountain (in the Rhine valley), limestone of the Jura formation (or oolitic system) is similarly altered to a really crystallised mass of calcareous spar;