

all cases of dykes, except when, as in the Quarrington dyke, in Durham, the igneous rock cutting through one formation (coal) is overlaid by another (magnesian limestone), which it does not divide. Even here the conclusion of the anteriority of the dyke to the overlying rock is somewhat insecure; because the extent of the dykes in the coal formation itself is very irregular and accidental.

Trap rocks are associated with the Irish mountain limestone between Limerick and Tipperary.

*General View of the Circumstances under which the Carboniferous System was deposited.*

If in the early part of the formation of the primary strata the ancient ocean was in a peculiar state, both as to temperature and extent, never since experienced, the effect of partial eruptions of igneous rocks, and perhaps of great displacements of the crust of the globe, was to vary the depths and localise the currents of the original ocean. But the effects of this change, apparent among the sedimentary deposits of the upper "transition" strata, were augmented to a vast degree, after the completion of the whole primary period, and the decided movements to which large parts of the globe were then subjected. The Northern Ocean, at the commencement of the carboniferous era, was certainly divided into basins, varied by islands, bounded by shores, supplied by inundations from extended land. The agitation on its shores is proved by conglomerates; the amount of inundations from the land is demonstrated by abundance of argillaceous and arenaceous sediments, plants, and beds of coal; while in the more tranquil laboratory of the deeper water limestone rocks were generated in great abundance.

The carboniferous formations are extensive, but, as compared with the older primary rocks, very limited in area, broken into many detached parts, and characterised by local conditions. Hence the red conglo-