

*Origin and Aggregation of the Materials of the Saliferous System.*

Peculiar in their mineral composition, rocky structure, and the nature and distribution of their imbedded organic remains, the constituent members of the red sandstone and magnesian limestone sometimes offer many points of inquiry to the inductive geologist, and much that seizes on the imagination of those who venture freely into the unsafe regions of speculation. What has caused in the sandstones, clays, and marls of these formations, such various tints of the oxides of iron? If the greenish and bluish tints of the clays and gritstones be due to protoxide of iron, what have been the circumstances which determined in these small portions that particular state, while all around, above, and below them, the masses are tinged, and the particles enveloped by the peroxide?

In particular cases blue centres to yellow rocks occur (oolite, calcareous sandstones), and may be thought to be the *residuary primary* tint, the outward parts having been decolorised. But this does not apply to the red marls and sandstones, among which (except at the weathered surfaces and in the soil), yellow tints are rare; the prevalent tint of red appears rather to be the original, and the rarer and detached tints of white, green, and blue, to be the decolorised portions of the mass. We may imagine chemical processes of change from protoxide to peroxide, but it is very difficult to find data for applying them to the cases before us.

The general extension of these tints appears to imply a very general cause. This can hardly be understood as a mere process of common oxidation; for this gives greater variety of tints, and cannot be supposed so uniform or extensive in its action. May we venture to offer as a question deserving attention, the possibility of explaining the red colour of these rocks by a general influence of volcanic eruptions on the sediments of the ocean?

In the same manner the limestones offer curious topics of remark. Where they degenerate to a sandy state (near Nottingham), they assume a decided red tint; nor is this tinge any where entirely absent from large