

In the midland counties and on the borders of Wales, the Permian section is different from that of Nottinghamshire and the North of England. The Magnesian Limestones are absent, and the rocks consist principally of dark-red marl, brown and red sandstones, and calcareous conglomerates and breccias, which are almost entirely unfossiliferous. In Warwickshire, where they rest conformably on the Coal-measures, they occupy a very considerable tract of country, and are of very great thickness, being estimated by Mr. Howell to be 2,000 feet thick.

In the east of England the Magnesian Limestone contains a numerous marine fauna, but much restricted when compared with that of the Carboniferous period. The shells of the former are all small and dwarfed in size when compared with their congeners of Carboniferous times, when such there are, and in this respect, and the small number of genera, they resemble the living mollusca of the still less numerous fauna of the Caspian Sea.

Besides the poverty and small size of the mollusca, the later strata of the true Magnesian Limestone seem to afford strong indications that they may have been deposited in a great inland salt-lake subject to evaporation.

The absence of fossils in much of the formation may be partly accounted for by its deposition in great measure from solution, and the uncongenial nature of the waters of a salt-lake may account for the poverty-stricken character of the whole molluscan fauna.

The red colouring-matter of the Permian sandstones and marls is considered, by Professor Ramsay, to be due to carbonate of iron introduced into the waters, and afterwards precipitated as peroxide through the oxidising action of the air and the escape of the carbonic acid which held it in solution. This circumstance of the red colour of the Permian beds affords an indication that the red Permian strata were deposited in inland waters unconnected with the main ocean, which waters may have been salt or fresh as the case may be.

“The Magnesian Limestone series of the east of England may, possibly, have been connected directly with an open sea at the commencement of the deposition of these strata, whatever its subsequent history may have been; for the fish of the marl strata have generically strong affinities with those of Carboniferous age, some of which were truly marine, while others certainly penetrated shallow lagoons bordered by peaty flats.”*

* “On the Red Rocks of England,” by A. C. Ramsay. *Quart. Jour. Geol. Soc.*, vol. xxvii., p. 246.