

marls of the Triassic epoch were formed in lakes. In the latter part of this epoch, he is of opinion, that the Keuper marls of the British Isles were deposited in a large lake, or lakes, which were fresh or brackish at first, but afterwards salt and without outlets to the sea; and that the same was occasionally the case with regard to other portions of northern Europe and its adjoining seas.

By the silting up of such lakes with sediment, and the gradual evaporation of their waters under favourable conditions, such as increased heat and diminished rainfall—where the lakes might cease to have an outflow into the sea and the loss of water by evaporation would exceed the amount flowing into them—the salt or salts contained in solution would, by degrees, become concentrated and finally precipitated. In this way the great deposits of rock-salt and gypsum, common in the Keuper formation, may be accounted for.

Subsequently, by increase of rainfall or decrease of heat, and sinking of the district, the waters became comparatively less salt again; and a recurrence of such conditions lasted until the close of the Keuper period, when a partial influx of the sea took place, and the Rhætic beds of England were deposited.

The red colour of the New Red Sandstones and marls is caused by peroxide of iron, which may also have been carried into the lakes in solution, as a carbonate, and afterwards converted into peroxide by contact with air, and precipitated as a thin pellicle upon the sedimentary grains of sandy mud, of which the Triassic beds more or less consist. Professor Ramsay further considers that all the red-coloured strata of England, including the Permian, Old Red Sandstone, and even the Old Cambrian formation, were deposited in lakes or inland waters.\*

There is little to be said of the animals which belong to the Saliferous period. They are nearly the same as those of the Muschelkalk, &c.

Among the most abundant of the shells belonging to the upper Trias, in all the countries where it has been examined, are the *Avicula*, *Cardium*, and *Pecten*, one of which is given in Fig. 85. Foraminifera are numerous in the Keuper marls. The remains of land-plants, and the peculiarities of some of the reptiles of the Keuper period, tend to confirm the opinion of Professor Ramsay, that the strata were deposited in inland salt-lakes.

In the Keuper period the islands and continents presented few

\* A. C. Ramsay, *Quart. Jour. Geol. Soc.*, vol. 27, p. 191.