

Coal deposits and the Carboniferous Limestone; the Greywacke group included for the most part Werner's "Transitional Series," but a Lower "fossiliferous group" of shales was differentiated to comprise the oldest shales and greywackes in Wales and Brittany. At the base of this fossiliferous formation, De la Beche described the lower unfossiliferous series of strata (schists, gneiss, granulite, etc.), and finally the unfossiliferous eruptive varieties of rock. This text-book by De la Beche had a wide circulation; it was translated by H. von Dechen (1835) into German, and by Brochant de Villiers (1833), in somewhat altered form, into French.

In the year 1833 the third volume of Lyell's *Principles of Geology* appeared, the volume which was afterwards published as an independent work, entitled *The Elements of Geology*. This volume is especially memorable in stratigraphy for its skilful solution of the difficult task of establishing a chronological sub-division of the Tertiary strata, that should apply equally to the occurrences of this series in all the isolated basins of deposition. With the help of P. Deshayes, Lyell proposed the classification that has become permanent in the science.

Several years earlier, in 1829, Desnoyers, in an important treatise, had proved that the different Tertiary basins had not been filled with quite contemporaneous deposits, but that in some of the basins deposition only commenced after others had been partially or wholly silted up with sediments. The Tertiary series could, he said, be naturally sub-divided into an older and a younger group of sediments.

In the following year, 1830, P. Deshayes<sup>1</sup> published the results of his investigations on the resemblances and genetic relations of the Tertiary Molluscs to the existing fauna. No fewer than 2,902 species of Tertiary Conchylia, all derived from known localities and horizons of deposit, were compared with one another and with 4,639 living species. The results

<sup>1</sup> Paul Ger. Deshayes, born 1796 at Nancy, studied medicine in Strasbourg and Paris, but never entered into professional practice. He taught privately, and devoted his leisure to zoological and conchological studies. From 1839 to 1842 he lived in Algeria, in order to make special researches on the molluscan fauna of that neighbourhood. After his return, he held private courses of lectures on geology and palæontology, and in 1869 he was appointed Professor of Conchology at the Museum in Paris; died on the 24th May 1896. His splendid collection was acquired by the State, and is exhibited in the School of Mines in Paris.