

feel secure that in the new Tay Bridge of Mr. Barlow, as well as in all recent structures, ample allowance of strength is provided for against the effect of wind.

The book is copiously illustrated with excellent diagrams of real practice in the construction of bridges, based on the theories of the text, and should prove not only an indispensable hand-book of the practical engineer, but also a stimulating treatise to the student of mathematical mechanics and elasticity.

A. G. GREENHILL.

TWO FRENCH BOOKS.

Les Pygmées. Par A. de Quatrefages.

Les Ancêtres de nos Animaux, dans les Temps Géologiques.

Par Albert Gaudry. (Paris: J. B. Baillière et Fils, 1887-88.)

THESE two works form two volumes of Baillière et Fils' "Bibliothèque Scientifique Contemporaine." The first, by the eminent Professor of Anthropology at the Jardin des Plantes at Paris, treats of the Pygmies, a diminutive race of mankind known to the ancients, alluded to by Homer, insisted upon as really existing by Aristotle, next believed to be but myths, and now established as a veritable race of the human kind. The author accepts for them the terms, suggested by Hamy, of Negritos and Negrilles, the latter being confined to the African Pygmies, and the former to those of the Asiatic Isles.

Avowedly a compilation, this little volume has all the peculiar charm that distinguishes Prof. Quatrefages' writings, and abounds with much curious and interesting details. The first chapter treats of the Pygmies from an historic point of view; the second, third, and fourth, of the Negritos, they being exclusively insular. The Negritos are to be found in New Guinea, and all over the Melanesian Archipelago, as far as Fiji; but, while the typical Negrito is confined to this area, conquest, emigration, and slavery have spread the race to Timor, Ceram, Bourou, Gilolo, to the western shores of Borneo, and so to other islands of the Pacific Ocean. Northwards they can be traced to the Carolines, and southwards to New Zealand where they preceded the Maoris. Mr. Ten Kate reports a Melanesian skull found in the little Isle of Santo Spiritu, off the coast of California. To the northwards they can be traced to the Loochoo Isles, Formosa, &c., while their western limits seem to be the Nicobar and Andaman Isles.

The question of the mixing of races on the borders of their distribution is discussed, and a good deal of recent information on this subject is given. The various modifications dependent on the wide range of distribution are also investigated, and the manners and habits of the several groups are described at some length. Good copies of photographs of native heads and figures are appended.

Chapter VI. treats of the Negrilles, or African Pygmies, the details of the Akkas, Tobbo and Chairallah, reared in Italy by Count Miniscalchi Erizzo being full of interest. The last chapter is devoted to the Bushmen of the Cape, and in connection with them there is an account of the Hottentots. The volume has thirty-one figures intercalated with the text.

The second work is by an equally well-known writer, —though of a very different school from that of Prof. Quatrefages—Prof. Albert Gaudry, also a Member of the Institute, and the Professor of Palæontology at the Museum. Well known for his able writings, and for his liberal and modern views on science, he has in this little volume given us a most delightful account of his ideas on the origin and development of the Mammalia during geological time. The volume begins with a chapter on the history of the progress of palæontology, followed by one on evolution and Darwinism. Though a disciple of D'Archiac, who was a strong opponent of Darwin's views, Prof. Gaudry read "The Origin of Species" with the most passionate admiration, and his labours since then have very materially helped to complete the palæontological record. The third chapter is devoted to the subject of the evolution of the Mammalia in geologic time; the fourth introduces us to the author's researches at Pikermi, where, as he tells us, he spent some of the most pleasurable moments of his life, engaged in excavating the remains of the quadrupeds which in times long ago roamed at liberty over the plains of Greece. Here were found an assemblage of animals of large size, such as has never been found before within so limited an area. Beautiful figures of many of these are given, and their relations to existing forms are explained. In another chapter we find an account of similar researches carried on at Léberon, near Cucuron (Vaucluse), where the remains were chiefly those of Herbivores, and an interesting table is added of the succession of the terrestrial Mammalia in France during the Tertiary period. In a concluding chapter there are some short sketches of the well-known palæontologists of the Museum: Alcide D'Orbigny, D'Archiac, Edouard Lartet, followed by a description of the fine new gallery for fossil forms at the Museum.

OUR BOOK SHELF.

The Elements of Graphical Arithmetic and Graphical Statics. By John Y. Gray and George Lowson, M.A. (London and Glasgow: W. Collins, Sons, and Co., 1888.)

IN the year 1871, Prof. Crofton, F.R.S., explained before the London Mathematical Society his diagrams illustrative of the stresses in Warren and lattice girders, and in the course of his remarks said that he had not found anything to help him in English text-books, and referred to papers by Profs. Rankine and Clerk-Maxwell. It was at this meeting (April 13) that Prof. Henrici drew attention to a work then little known in this country, viz. Culmann's "Graphische Statik"—"l'excellente 'Graphische Statik' de M. Culmann" (Prof. Cremona)—and showed that Prof. Crofton's constructions had been anticipated and the methods applied to a very wide range of subjects. On this occasion also Prof. Henrici illustrated the subject by a simple and ingenious notation. He subsequently drew up an abstract of Culmann's work (1866), which was printed in the Appendix to vol. iii. of the above-named Society's Proceedings (pp. 320-22). The work is now well known, and its methods are very generally employed by engineers, and are the subject of lectures in more than one of our Colleges.

The object of the book before us is to give an elementary account of the fundamental principles of the subject