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Review: Geology and Geography of Nigeria

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the book before us. Hardly a spot on the African continent remains untouched, and of almost every corner are we able to get some idea of the vegetation.

O. V. D.

GEOLOGY AND GEOGRAPHY OF NIGERIA.

'Description Géologique des Régions situées entre le Niger et le Tchad.'

By G. Garde. Paris: A. Hermann et Fils. 1911. 10 fr.

Our knowledge of the geography and geology of the Central Sudan has been rapidly amplified within the last decade. The work begun by Barth and Overweg in the middle of the nineteenth century and thereafter long abandoned, has of recent years been in great part completed by the researches of MM. Foureau, Gautier, and Chudeau in the French Sudan, of M. Hubert in Dahomey, of Captain Freydenberg in the Chad region, and of Dr. Falconer in Northern Nigeria. To M. Garde, who accompanied as geologist the Anglo-French boundary commission of 1907-8 (Mission Tilho), has fallen the part of making a careful and interesting study of the regions situated between the Niger and Lake Chad. His book is a record of minute and painstaking observation, carried out, to say the least, under somewhat more uncomfortable conditions than those under which similar work is done in more favoured lands.

M. Garde's suggestion of an Eocene age for the sandstones of Sokoto and the middle Niger has been already established by Dr. Falconer, and his relegation of the intrusive soda granites of Zinder and Munio to a pre-Cretaceous age is likewise in accordance with Dr. Falconer's results in Northern Nigeria. His suggestion, however, that the desiccation of the ancient watercourses of the Sudan is due to the erosion of the superficial carapace of ironstone and the consequent absorption of the rainfall by the underlying sandstones, is one of which it is difficult to approve. According to him, if the soil were less permeable, there is still sufficient rainfall in the Sudan to give rise to very considerable rivers. In view, however, of the well-established evidence of a recent arid period in the Sudan, subsequent to the formation of the dry watercourses, it is difficult to believe that such a simple cause as the partial removal of the surface ironstones can be responsible for such extensive climatic changes. There is, on the contrary, good reason to believe that the present *régime* represents a gradual return to more humid conditions after a period of regional desiccation.

Of Lake Chad, M. Garde has much that is of interest to relate. He believes, with Dr. Falconer, that the present lake is of comparatively recent origin, and in no sense a remnant of a Tertiary sea, but he refrains from expressing any opinion as to the actual origin of the lake itself. He suggests that the floor of the lake is entirely formed of æolian deposits, and that the clays and marls have been deposited only in the hollows between the ancient dunes. This view, however, is accepted neither by Captain Freydenberg nor by Dr. Falconer, and would appear to be based upon somewhat insufficient evidence. The work as a whole, however, is most suggestive and full of interest, and a valuable addition to our knowledge of the structure of the Central Sudan.

J. D. F.

'The Geology and Geography of Northern Nigeria.' By J. D. Falconer, M.A., D.Sc., F.R.S.E. *Plates and Map*. London: Macmillan. 1911. 10s. net.

In this volume Dr. Falconer records the theoretical results accruing from the work of the Mineral Survey of Northern Nigeria from its inception in 1904 No. II.—AUGUST, 1911.]

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to its termination in 1909. The book, which bears evidence of much careful preparation, is for the geologist, although the economic side of the subject is relegated to an appendix of seven pages, and the lay mind may find too great a mass of detail throughout—misproportions which, though important, by no means alter the fact that the work and the included map will prove of the greatest value to the student of West African geology.

The crystalline rocks are divided into two series: one of schists and gneisses derived from a sedimentary group of grits and phyllites by processes of regional metamorphism and of folding—a far-reaching hypothesis—and an older “hard” series of gneisses, so called from their greater power of resisting erosion.

The Cretaceous rocks of parts of the valleys of the Benue and its tributary the Gongola are well summarized. Unlike what has apparently taken place in Southern Nigeria, the close of the Cretaceous period was followed by a time of disturbance, upheaval, and subsequent erosion; so that the Eocene beds, which cover three or four large areas, are unconformable to the underlying rocks.

The geological story, disjointed like that of other parts of the West Coast, is brought to a close by the formation of later Tertiary deposits—here termed “drift,”—of continental and lacustrine formation, and by two periods of vulcanicity, respectively mid-Eocene and late Pliocene. Study of the drift leads Dr. Falconer to conclude that two cycles of erosion and of deposition can be recognized, from which he deduces corresponding periods of elevation and depression. To the latter period of elevation is ascribed the production of two systems of asymmetrical arches, from which the present drainage system dates, and which have already been described in the pages of this *Journal* (February, 1911).

Amongst the many excellent illustrations, those of the characteristic “Insel-berge” type of hill and those of the “puys” of the eastern part of the Protectorate deserve special mention.

JOHN PARKINSON.

SOUTH AFRICAN ARCHÆOLOGY.

‘The Prehistoric Period in South Africa.’ By J. P. Johnson. London: Longmans. 1910. 10s.

Prehistory in Negro Africa, like prehistory elsewhere, is a term of only relative value. A few portions of Africa are still in the Stone Age, and some may be said to have only entered on history with the commencement of the twentieth century. In the absence of any discovered written records or inscriptions connected with the mysterious stone-built settlements of South-East Africa, Africa south of the Zambezi can only have entered into history with the arrival on its coast of the Portuguese navigators of the fifteenth to sixteenth centuries, unless we should ever discover any more contemporary written information connected with the traditional voyage of the Phœnicians round the southern extremity of Africa at the behest of Pharaoh Necho in about 600 B.C. In such researches of scientific value as those which have been made by Mr. J. P. Johnson, Dr. Shrubbsall, and others, no evidence has yet been collected to prove the existence of man in Negro Africa (or for the matter of that, in any part of Africa) at periods so remote as those now associated with human existence in Europe and Asia. Africa is a vast museum which illustrates human culture at many different stages from almost the earliest to the latest, but it does not follow that any of these stages of culture need be contemporaneous with the same degrees of culture in other parts of the world. For instance, it may be 200,000 years or 300,000 years since man was Eolithic in South Britain