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Review: African River Vegetation

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been extensive, ranging from Peking to the furthest extremity of Yunnan. His chief specialized interest appears to have lain in religious and educational matters. He illustrates his own chapters with a large number of coloured and sepia drawings.

'China: its Marvel and Mystery.' By T. Hodgson Liddell. (London: Allen. 1909. Pp. xiii., 203. *Illustrations*. 21s.) This is primarily a picture-book, and the author-artist's sketches are beautiful and beautifully reproduced. Not only so; speaking purely from the artist's point of view, he broke a good deal of new ground, and though not a few of his scenes are familiar, he presents them, with both brush and pen, in new lights.

'A Scamper through the Far East.' By Major H. H. Austin. (London: Arnold. 1909. Pp. xvi., 336. *Maps and Illustrations*. 15s.) The general character of this book can be guessed from the title: it deals with a journey by the Trans-Siberian railway to Manchuria, and so to Korea and Japan. But the author has a good deal to say on recent and current affairs in the Far East, and his most interesting work in his topographical study of many of the principal battle-grounds in the Russo-Japanese War.

'My Thirty Years in India.' By Sir Edmund C. Cox. (London: Miles & Boon. 1909. Pp. x., 306. *Illustrations*. 8s.) This book deals mainly with personal experiences, but the author's intimacy with Indian police administration enables him to write with authority on some of its problems.

'Thirty-seven Years of Big Game Shooting in Cooch Behar, the Duars, and Assam.' By the Maharajah of Cooch Behar. (London: Ward. 1908. Pp. xxviii., 461. *Map and Illustrations*. 21s. net.) These records of royal sport make a volume as heavy as the reading is light. They will be read with interest, and perhaps envy, by other sportsmen; but the author has not associated any science with his sport.

'A German Staff Officer in India.' By Count Hans von Königsmarck. (London: Kegan Paul. 1910. Pp. xiv., 340. *Illustrations*. 10s. 6d.) There is little but personal reminiscence in this volume, though it is a pleasure to read appreciation so unstinted from a foreigner. In his free use of colloquialism the translator has no doubt sought equivalents for the original German.

'The Place of India in the Empire.' By Lord Curzon. (London: Murray. 1909. Pp. 46. 1s.) This is an address delivered before the Philosophical Institute of Edinburgh, and contains a brief but suggestive analysis of the geographical position of India in regard to political and strategical considerations.

'Folk-lore of the Santal Parganas.' By C. H. Bompas. (London: Nutt. 1909. Pp. 483. 10s. 6d. net.) This volume consists principally of translations of the original native stories carefully collected and transcribed. They indicate the rich field which awaits investigators in this branch of ethnographical study. Both translations and the brief introduction are admirably done.

'Fryer's East India and Persia.' Vol. 1. Edited by W. Crooke. (London: Hakluyt Society. 1909. Pp. xxxix., 353. *Illustrations*.) John Fryer's narrative of his travels in 1672-1681 is full of interest both in matter and in manner. It is well that it should have been produced with the care which the Society always devotes to its publications. The editor's biographical introduction, moreover, is excellent, and his notes never appear to deserve the charge which he himself offers against them, of unreasonable length.

AFRICA.

AFRICAN RIVER VEGETATION.

'Die Pflanzenbarren der Afrikanischen Flüsse.' (Münchener Geographische Studien, No. 24.) By Oswald Deuerling. München: 1909. 5s. 6d.

In this monograph Dr. Deuerling has brought together a very large amount of information bearing upon the blocking of river channels by vegetation, and, as the

matter is of no small practical importance in the Nile basin, this work is especially welcome. Marno described the sadd blocks of the Bahr-el-Jebel some thirty years ago, and recently several accounts of the operations undertaken for the purpose of removing these obstructions have appeared, but no full account of them has hitherto been published.

The writer first discusses the various ways in which vegetation may encroach upon areas of open water and upon rivers; in the former he includes marshes and moorlands, the mangrove swamps of the seashore, floating grass and floating islands, such as Chinampai of Mexico, and the periodically "floating land" of Waakhusen, north of Bremen. He next deals with the obstructions formed by vegetation in certain rivers of Europe, Asia, and America, and also in those of Africa, which are treated in greater detail since the instances from the Sudan, from the Congo, from South and Central Africa, and from the upper Nile are treated separately. Finally, the "sadd" of the upper Nile are treated fully, and the character of the region in which they principally occur, their composition, their formation and distribution, and their removal, are all investigated and discussed.

He quotes numerous cases in tropical Africa of the dense growth of papyrus and other hydrophilous plants which reduce the open water-surface of many streams to an insignificant width, the "rush drains" of Speke. The further development of a continuous felted layer of grass vegetation is exemplified by the "*obā*" of the upper Aruwimi river, a tributary of the Congo, where the vegetable covering is tough enough to bear man, but not the heavier quadrupeds, such as the antelope, buffalo, or elephant. Floating islands formed of tree-stems, masses of bank with its vegetation, or grass islands, are likewise alluded to, and their distribution is discussed. Following this an account is given of the barriers of vegetation in Europe, Asia, and America, and a fuller one of their occurrence in the rivers of Africa, where they are more common.

After this preliminary discussion of the characters of these special effects of vegetation and of their distribution and occurrence, a full account of the sadd-blocks of the upper Nile occupies more than half the book. The author protests against the loose employment of the term "sadd" outside its strict meaning of a mass of vegetation blocking a water-way, and quotes an extreme case of misuse where fossil reeds in the Sahara are described by this term of very definite and restricted application.

The physical and climatic conditions of the region of the Bahr-el-Jebel and Bahr-el-Ghazal are set forth fully, both recent work and the accounts of early travellers being utilized, and a full account of the vegetation of the marshes is added, which a special appendix amplifies by furnishing a list of the plants which have been determined from them.

The rest of the memoir is devoted to a full and detailed account of the formation of sadd-blocks, their composition, their distribution, the methods of removing them, and other phenomena connected with this form of interference with the water-system by vegetation. All available sources of information have been utilized. References to such sources are numerous and ample, almost a thousand reference notes being given, and some of them contain indications of several authorities. In this way a valuable summary of information relating to an interesting and important geographical phenomenon has been prepared, and has been brought down to the date of the last published information on the subject. But this is about four years ago, and since then much of the Bahr-el-Jebel and the Bahr-el-Zaraf has been surveyed and levelled, new river-gauges have been established, and measurements of the volume discharged have been made at different seasons. None of those who have a knowledge of this recent work have as yet furnished any account of its

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bearing on the interesting geographical problems of this region. There is every prospect of gain from a comparison with regions of similar character, and with increased information the water-logged valleys of these rivers might be profitably contrasted with those of other countries; in such an investigation Dr. Deuerling's work should be most valuable.

The conditions which determine the formation of sadd-blocks and their relative importance are not yet finally determined, and more detailed knowledge gained from accurate surveys may facilitate the solution of this problem. Stormy weather and high water-level, whether from heavy rainfall or from the rise of the Sobat in flood, or both, probably set in motion masses of readily detached vegetation; a winding, narrow river channel affords opportunities for a block being formed; but between this and the gradual closing up a channel by the growth of marsh plants and the drifting in of floating vegetation, there are many stages, and their investigation is a matter of both geographical interest and practical importance, in which full information is essential, and that which has been here collected will be valuable.

H. G. L.

THE OASIS OF AÏR AND ITS INHABITANTS.

'Les Touarag du Sud-Est: L'Aïr. Leur rôle dans la politique Saharienne. Par le Lieut. C. Jean. Paris: Emile Larose. 1909. 12 *fr.*

Lieut. C. Jean's book on the Tuareg of Aïr (or Asbin) is divided into four parts. The first part is a summary of the history of French expansion in the Southern Sahara, and is a useful record of what has been accomplished there since the year 1890. The third part tells of the tentative occupation of Agadez (the capital of the oasis of Aïr) in 1904-5, an occupation rendered definitive in 1906. The fourth part, called an *aperçu* of the rôle of the oasis in Saharan affairs, is in reality a discussion of the whole problem of the economic and political development of the central Sahara, that is the region between Timbuktu and Tibesti. This part is notable for Lieut. Jean's frank declaration that, in his belief, a trans-Saharan railway is not needed on political grounds, and would be detrimental to the commercial interests of the Sahara. He argues that the substitution of the railway for the caravan would deprive the Tuareg of their chief means of honest employment, and turn these nomads into simple brigands. In any case, the commercial future of France in West Africa is in its Sudan provinces, and the author is to be commended for his plain words as to the very limited part that the Sahara can play in the development of the French colonial empire. Nevertheless, Lieut. Jean is anxious that France shall do what she can to preserve the caravan trade, and to that end advocates an all-French route between Tunisia and Zinder. He is full of regret that Kano is British, and foresees the economic results which will follow the completion of the railway from the Niger to that city.

The second part of the book, which fills 189 out of its 394 pages, is the most valuable. It is devoted to a description of the oasis of Aïr. After pointing out the strategic and commercial importance which it owes to its geographical situation, the author traces the history of the country. It once formed part of the Songrai empire, though its inhabitants were Hausa, Aïr marking the northern limit of that enterprising people. The only relic of Songrai dominion to-day is the idiom spoken at Agadez and at Mgal, a small town on the route between Agadez and the Songrai capital, Gao. Then came the Tuareg, represented by the Kel (*i.e.* sons of) Gress and the Kel Oui, who, according to Lieut. Jean, made themselves masters of the oasis in the ninth century. This date is probably incorrect—indeed, it is impossible to follow the author in his reconstruction of the history, though he is to be praised for tackling a very difficult subject. From about the year 1300