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Celebes

Reisen in Celebes ausgeführt in den Jahren 1893-1896 und 1902-1903 by Paul Sarasin; Fritz Sarasin

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distance indicated by a "day's march" in the records of Chinese and Arab geographers. A day's march was just as much or as little to them as would usually take the traveller from one resting-place to the next. It extends (when the march was a day's march for a riding-camel) to 80 miles, or where one desirable resting-place is fairly close to the next, it may diminish to 10 miles.

We wish Dr. Stein all success in his next venture, which will carry him far beyond India.

T. H. HOLDICH.

#### CELEBES.

'Reisen in Celebes ausgeführt in den Jahren 1893-1896 und 1902-1903.' Von Paul und Fritz Sarasin. 2 vols. Wiesbaden: 1905. Price 21s.

Readers of the *Journal* need no introduction to this indefatigable and inseparable pair of explorers, whose wanderings it has followed step by step for nearly two decades, especially as concerned with Celebes, most attractive because least known of all the lands explored by them. From the dates given in the title of this work, it will be seen that an interval of six years lay between their two successive visits to the great Malayan island, from the map of which they have removed so many blank spaces. Here, as elsewhere, their programme was ambitious (I do not use the term in an invidious sense), embracing the various departments of geology, botany, zoology, and ethnology, all of which afforded ample scope for the display of their great experience and greater zeal for the advancement of the natural sciences. As their rich collections, and numerous excursions in every part of the fantastically-shaped island, have already been described (see especially vols. 20, p. 229; 21, p. 454; and 22, p. 458 of the *Journal*), it may here suffice to give the broad conclusions that Drs. Sarasin have arrived at regarding the fascinating problems connected with the geological evolution of Celebes, and the history of its very peculiar flora and fauna.

Despite the views held by Wallace and some other distinguished observers, Celebes is to be regarded as of relatively recent origin. As shown by the extensive limestone strata, it was covered in early Tertiary times by a shallow coral sea, above which the mountain ranges did not begin to rise till about the Miocene age. The sands and marls of this age, the "Celebes Molasse," as they are here named, are largely developed, and their contents, partly brackish water deposits, partly coal, point to the existence of dry land which may at that time have already been occupied by Asiatic species. In all the animal groups there are members of early types which must belong to this first invasion, and are now represented, for instance, by the babirusa and by the molluscs of Lake Posso. The continuous upheaval of Celebes and surrounding islands during Miocene and Pliocene times brought about extensive land connections, as must be inferred from the character of the present insular fauna. Thus North Celebes was joined through Sangi with the Philippines (Mindanao), South Celebes with East Java, Flores, and the other lesser Sunda islands, and East Celebes through the Moluccas with New Guinea and Australia. Along all these routes migratory movements took place both to and from Celebes. Thus Javanese species passed through Celebes and the Moluccas eastwards, Philippine animals through Celebes southwards to Flores, and Australian and New Guinea forms to Celebes and thence northwards to the Philippines, while many wanderers stopped in Celebes without travelling further. In course of time several of the last-mentioned developed new species, and even new genera, whose origin can be inferred only from the spread of the nearest related forms. Others, again, have remained unmodified as living witnesses to former land connections. Of special importance for the reconstruction of these vanished land routes are

those *species* which Celebes *exclusively* possesses in common with one or other of the above-described regions, without ranging further over the archipelago. Such species can have reached Celebes only by a direct route joining it with some particular land, since no other way was available for their spread. Celebes possesses representatives of such exclusive species, which are elsewhere found either in Java alone or in the Lesser Sunda group, or in the Philippines, or in the Moluccas alone. Totally different are the relations with Borneo. Although the two islands have many animal forms in common, these are also found either in Java or the Philippines, whence they may have reached Celebes. There are no species which are exclusively peculiar to Borneo and Celebes, and from which a direct land-route between the two islands might be necessarily inferred. No mammals, birds, reptiles, crabs, snails, chinchis, or ants are limited to both islands; hence the Asiatic-Sundanese forms found in Celebes did not come directly from Borneo, but from Java to South Celebes, or else from Borneo round by the Philippines to North Celebes. Thus the narrow Macassar strait flowing between Borneo and Celebes is seen to be of great importance as a biological divide, and this so far corresponds with the Wallace parting-line which is also drawn through the same strait. But in other respects the views of these eminent naturalists are widely divergent, since Wallace regards Celebes as a land of "remote antiquity," while the Sarasins treat it as of "relatively recent" origin.

Ethnologists will be glad to find here a very full account of the primitive Toala cave-dwellers of south-west Celebes, about whom so many vague reports have for some time been in circulation. They were twice visited by our travellers, who regard them as the true aborigines quite distinct from the present Malayan populations, and perhaps forming a connecting link between the Veddas of Ceylon and the Australians. They may have reached Celebes before the subsidence of the former land-connections, at a time when early man was migrating all over the Australasian lands.

These well-printed volumes are richly equipped with a copious index, 1 general and 10 sectional maps, 12 coloured plates, and 240 inset illustrations.

A. H. KEANE.

## AFRICA.

### NORTHERN SOMALILAND.

'With the Abyssinians in Somaliland.' By Major J. Willes Jennings, D.S.O., R.A.M.C., and Christopher Addison, M.D., F.R.C.S. London: Hodder & Stoughton. 1905.

This interesting book describes a journey from Gumburra made with the Abyssinian Expedition into Somaliland ("a land of thorn trees, of desert, and of prairie") under Colonel Rochfort. This force acted under orders from General Egerton, and its object was to check the Mullah in his wanderings, and by its occupation of Wardair and Gorabai to close against him an important line of retreat. The book contains graphic descriptions of the operations in the field, the difficulties of preparing such an expedition, incidents of the march, and the annoying and unavoidable delays experienced through scarcity of water. The author and Lieut. Ogilvy headed an expedition to locate the scene of Colonel Plunkett's disaster at Gumburra. "No memorial marks the spot in honour of the brave soldiers who fell there, yet they, like many more who die for Britain, have a tomb in the hearts of their comrades, and a memory in the memory of their deeds that is more enduring than stone."

The duties of a medical officer do not appear to have been very severe during the expedition, and Major Jennings spent a good deal of his time satisfying his sporting instincts. That all the officers were keen sportsmen is evident by the