

Bengali the *v* is often degraded into *b*—a linguistic change that runs from Hebrew to Spanish. But Dr. Bonavia might as well maintain there is no *h* in English because a Cockney pine-grower “eats is ouses by ot water.”

Turning lastly to the question how far Dr. Bonavia's book assists the cultivation of the orange in India, we may doubt, with every admission of his horticultural skill and assiduity, whether he is on the right tack. The Khasi Mandarin can be grown almost without labour, and of a quality that is not likely to be approached by any horticultural skill and labour on non-volcanic soil in the plains. These oranges are now picked unripe, and occupy a month (often more) in reaching Calcutta in a native boat. A fruit-steamer would take them down in 2 or 3 days from Chattuck to the rail at Goalundo. Bombay would surely take many more oranges from Nagpore if the railway rates were lowered, and the “perishable fruit” accelerated in transit.

Mr. Medicott made only a hurried march across the Khasi Hills when he laid in his three patches of Sylhet trap, and he only visited a very narrow strip of country. More of this trap certainly exists—perhaps at a low level, suitable for oranges; and the Government Geologist at Shillong might, in the cold weather, possibly discover some more patches. For the present, however, the known area of Sylhet trap is by no means nearly covered with oranges, except in the Chela valley, where the boundary of the orange-groves coincides very closely with the outcrop-line of the trap.

C. B. CLARKE.

A NATURALIST AMONG THE HEAD-HUNTERS.

A Naturalist among the Head-hunters. Being an Account of Three Visits to the Solomon Islands in the years 1886, 1887, and 1888. By Charles Morris Woodford, F.R.G.S., &c. (London: George Philip and Son 1890.)

TILL within the last twenty years the Solomon Islands were almost unknown to Europeans, and their inhabitants were considered to be exceptionally uncivilized and treacherous. Whatever they may have been originally, they were not likely to be improved by their first contact with civilization, in the form of chance visits of whalers and vessels engaged in the “labour trade”—which in its early days meant kidnapping and slavery, often leading to murder or to wholesale massacres. With such experiences of the resources of civilization we are not surprised to hear from Mr. Woodford that they are “suspicious of strangers,” or that they are “treacherous when they see their opportunity”; yet the fact that he lived among them for several months, often quite alone and unprotected, and that Mr. Lars Nielsen, a trader, lived on good terms with them for ten years, leads us to suppose that, under more favourable circumstances, their character might have been found to compare not unfavourably with that of the Fijians. There is now, however, no chance for them, as they are certainly doomed to speedy extinction. The numerous distinct tribes found on each of the islands live in a state of chronic warfare, incited by the ordinary causes of the quarrels of savages, intensified by a general mania for head-hunting and in some cases by the habit

of cannibalism. So long as they fought with native weapons, spears and wooden clubs, the destruction of life was not very great; but the traders have armed them all with Snider rifles and steel tomahawks, the result being that entire villages and tribes are sometimes massacred; and this wholesale destruction, aided by infanticide and other causes, is leading to a steady decrease of the population.

The excellent reproductions of photographs with which the book is illustrated show that the Solomon islanders are typical Papuans, hardly distinguishable physically from those of the western and central portions of New Guinea. Their state of civilization appears to be about the same. They cultivate the ground assiduously, growing chiefly yams, taro, and plantains, and they even terrace whole hill-sides for the taro, a stream of water being admitted at the top, and conducted down from level to level with considerable ingenuity. As domestic animals they keep dogs, pigs, and fowls, and they had all these animals when first visited by the Spaniards in 1568. The dog Mr. Woodford believes to be the dingo of Australia; the pig the *Sus papuensis* of New Guinea; while the fowl was no doubt derived from the Malays. They build excellent canoes, fifty or sixty feet long, of planks hewn out of solid trunks, beautifully fitted together and fastened with rattan. Their houses are fairly built and comfortable; and they construct baskets, shields, wooden bowls, and various weapons and ornaments, with the usual savage ingenuity.

Mr. Woodford's chief occupation in the islands was the collection of specimens of natural history, and his account of the zoology of the group presents several points of interest. It is here we find the eastern limit of the marsupials, which are represented by a species of Phalanger hardly distinguishable from one inhabiting New Guinea. Bats are numerous, seventeen species being described, of which six are peculiar; and there are four species of native rats, one of which is the largest species known. About the two large rats, *Mus imperator* and *Mus rex*, Mr. Oldfield Thomas, who described them, makes the following interesting remarks:—

“It is, however, in their relation to each other that their chief interest lies, for they seem to be clearly the slightly modified descendants of one single species that, once introduced, has been isolated in Guadalcanar for some considerable time, while it has apparently died out elsewhere. Of this original species, some individuals would have adopted a terrestrial and others an arboreal life, and their respective descendants would have been modified accordingly. In this way I would explain the fact that at the present time we have in Guadalcanar two genuine species, agreeing with each other in their essential structure, and yet separated by a considerable number of characters, all having a more or less direct relation to a climbing or non-climbing habit of life. Of these, of course, by far the most striking are the broad foot-pads and the long rasp-like probably semi-prehensile tail of *Mus rex* as compared with the smaller pads and short smooth tail of *Mus imperator*.”

This description well illustrates the fact of the importance of insular faunas as showing us how species may be modified under the least complex and therefore most easily understood conditions. On a continent the modification to an arboreal mode of life would have brought the species into competition with a number of other arboreal organisms, and would have exposed it to the attacks of a distinct

set of enemies, requiring numerous modifications of form, structure, and habits, the exact purpose of which we should have found it difficult to interpret. But here, where both competitors and enemies are at a minimum, we are able distinctly to see the few and simple modifications which have adapted the species to its changed mode of life. We have here, too, a case in which the isolation supposed to be essential in the production of new species has been effected solely by a change of habits within the same limited area, and it is evident that this mode of isolation would be equally effective in the case of a continental as of an insular species.

Lizards, snakes, and frogs are tolerably abundant, and the proportion of species peculiar to the islands is in the order in which they are here named; and this also indicates the increasing difficulty of transmission across an ocean barrier. Birds seem to be fairly abundant, parrots and pigeons forming the most conspicuous groups, while birds of paradise appear to be absent. Although insects decrease in number of species as we go eastward from New Guinea, yet two of the grandest of butterflies—*Ornithoptera Urvilleana* and *O. Victoria*—are found in the Solomon Islands, and were among the greatest treasures of Mr. Woodford's collections. The latter species was only known by a female specimen obtained by Macgillivray, the naturalist in the *Herald*, in 1854, till Mr. Woodford again found it in 1886, and discovered also the beautiful green and black male. Many fine Papilios are also found, among them a splendid blue and black species allied to the well-known *P. Ulysses* of the Moluccas. Here, as elsewhere in the tropics, some striking cases of mimicry occur, three species of *Euplæa* being so closely imitated by three species of *Diadema*, as to be undistinguishable on the wing; and each pair appeared to be confined to a separate island.

The following is an interesting observation on the habits of pigeons:—

"The small islands on the reefs are much frequented by pigeons. They resort to them during the day, but mostly towards sunset, when, at some islands that I know of, the pigeons may be seen arriving by twos and threes, or in flocks of ten or a dozen each, to roost on the islands, until each tree is crowded with birds. The only reason that I can assign for this habit is, that on these small islands the pigeons are freer from the attacks of the large monitor lizards that abound on all the large islands. I do not consider this at all a satisfactory reason, but it is the only one I am able to suggest. Certain it is that this habit of the pigeons plays an important part in the distribution of seeds from island to island. On any of these small islands the large seeds of the *Canarium* nut tree may be found, after being disgorged by the pigeons, while young trees in different stages of growth may often be seen."

Mr. Woodford's explanation of the pigeons' roosting on the small islands appears to be a highly probable one, and quite in accordance with other facts relating to this tribe of birds. They are exceptionally abundant in tropical archipelagoes, and most so in those where, as in the Antilles, the Mascarene group, the Moluccas, and the Pacific islands, arboreal carnivorous mammals are very scarce or altogether wanting. An analogous fact to that noted by Mr. Woodford is, that although the beautiful Nicobar pigeon has an enormous range, from the Nicobar

Islands to New Guinea, it is almost unknown in the larger islands, especially in the western half of its area where mammals abound, but is more especially confined to the smaller islets and reefs, where it is comparatively free from enemies.¹

Although the natives of the Solomon Islands are well supplied with Bryant and May's wax vestas in metal boxes—the only kind of matches that can be kept in the damp atmosphere—they still make fire in the native way, by friction, on certain ceremonial occasions, or at other times when matches are not forthcoming; and their method of proceeding is well described by Mr. Woodford. It consists in rubbing a hard piece of wood in a groove formed on a soft dry piece—the method used in the Moluccas and Australia—and he tells us that, though a native will usually produce fire in less than a minute, he has himself rubbed till his elbows and shoulders have ached without ever producing more than smoke.

The following extract gives a fair idea of the author's style:—

"It is amusing to see a mere child paddle alongside in a crazy trough of a canoe, only just capable of supporting its weight. The water splashes into the canoe at every stroke of the paddle, and at intervals the small child kicks it overboard with its foot—a novel kind of baler. Three or four mouldy-looking yams, ostentatiously displayed, are rolling about in the water at the bottom of the canoe. The unsuspecting stranger takes pity on the tender years, and apparent anxiety of the small native to trade, and gives him probably four times the proper price for his rusty yams. The child eagerly seizes the coveted stick of tobacco, and immediately stows it for safety through a hole in his ear, where at least it will be in no danger of getting wet. He next whisks aside a dirty-looking piece of matting that has apparently got accidentally jammed in one end of the canoe, and displays some more yams, of a slightly better quality than the last. For the sake of consistency you cannot well offer him less than you did before, and another stick of tobacco changes hands, and is transferred to the other ear. You think now that he must have finished, as there is no place in the canoe to hide anything else, but with a dexterous jerk that nearly upsets the canoe he produces a single yam that he has been sitting upon. How it managed to escape notice before is a puzzle. For this he demands a pipe, but is not satisfied with the first or second that is shown him. No; he must have a *piala tinoni* or have his yam back. The *piala tinoni* is a pipe with a man's face upon the bowl. But again the young trader is particular, it must also have a knob at the bottom or he will have none of it."

The book is well got up, well illustrated, and very pleasantly written. It is full of information as regards the natives, the scenery, and the natural history of these little-known but very interesting islands, and can therefore be confidently recommended to all who care for books of travel in little-known countries.

A. R. W.

OUR BOOK SHELF.

Recherches sur les Tremblements de Terre. By Jules Girard. (Paris: Ernest Leroux, 1890.)

The scientific study of earthquake phenomena has of late years made great progress, and we are glad to welcome a book which brings together the new matter

¹ See "The Malay Archipelago," p. 350.