

*The Malay Archipelago.* By A. R. Wallace. 2 vols. 8vo, Cuts. London: Macmillan. 1869.

It is well known to the scientific world that Mr. Wallace, almost simultaneously with Mr. Darwin, arrived at similar conclusions respecting the origin of species, and that from the distant shores of the Malay Archipelago he communicated these conclusions to Mr. Darwin, at the very time when the latter was about to give to the world what is now known as the Darwinian theory.

Wandering amongst semi-civilised nations, closely noting their types, manners, and languages, making large collections of the hitherto almost unknown birds and insects of these regions, and recording their habits and geographical distribution, he accumulated during the space of eight years a vast number of observations bearing especially on the latter question, and, as such, of enormous value towards the elucidation of the difficult question of the former distribution of land and water over the surface of the globe. To obtain evidence bearing on this point, and on that of the origin of species, was Mr. Wallace's great aim, to which even the collecting of birds and insects was secondary; and while the "125,660 specimens of natural history," recorded in his preface, show his energy and industry in the latter department, the almost as numerous facts and observations gathered by him on physical subjects, and the clearness and accuracy with which he has arranged and utilised them, equally testify to a mind capable not only of seizing and accumulating the various points which bear upon his subject, but of so placing them before his readers as to bring irresistible conviction to their minds.

Knowing Mr. Wallace's high standing as a scientific collector and observer, and occasionally receiving instalments of his results in the shape of short papers in various periodicals, naturalists waited impatiently for a fuller account of his expedition; but unlike those travellers who rush into print immediately on their return home, simply publishing their journals as written, and consequently issuing bulky and but partially interesting volumes, Mr. Wallace waited six years before giving us, in two small volumes, the desired book of travels. The consequence is that he has digested and arranged his materials in such a way as to produce, not only a highly interesting, but a most valuable addition to our knowledge of that portion of the world in which he lived and worked so long.

He has followed a somewhat peculiar plan in his book; the best idea of which may perhaps be given by calling it a physico-geographical arrangement. Each group of islands, closely connected by its fauna and human inhabitants, is taken separately; his differen

journeys and collections in each island are first described, and a chapter is then devoted to the natural history of the group in general. The book thus naturally divides itself into five portions. Of course Mr. Wallace's various expeditions did not correspond with this division; but he has wisely thought that it is less instructive to his readers to ascertain the precise order in which he visited the different islands, than to obtain a clear and connected idea of each.

The first chapter is devoted to the physical geography of the entire region, which Mr. Wallace divides into two portions, easily traceable on his physical map by the shallow sea which on the one hand connects Sumatra, Java, and Borneo with the Asiatic continent, and a similar shallow sea which connects New Guinea and some of the adjacent islands with Australia. "We have here a clue to the most radical contrast in the Archipelago, and by following it out in detail I have arrived at the conclusion that we can draw a line among the islands, which shall so divide them that one-half shall truly belong to Asia, while the other shall no less certainly be allied to Australia. I term these respectively the Indo-Malayan and the Austro-Malayan divisions of the Archipelago." (I., 13.)

This division is completely supported by an examination of the animal productions of the various islands (though not to the same extent by the plants), and

"The general result therefore at which we arrive is, that the great islands of Java, Sumatra, and Borneo resemble in their natural productions the adjacent parts of the continent, almost as much as such widely separated districts could be expected to do even if they still formed a part of Asia; and this close resemblance, joined with the fact of the wide extent of sea which separates them being so uniformly and remarkably shallow, and lastly, the existence of the extensive range of volcanoes in Sumatra and Java, which have poured out vast quantities of subterranean matter and have built up extensive plateaux and lofty mountain ranges, thus furnishing a *vera causa* for a parallel line of subsidence, all lead irresistibly to the conclusion that at a very recent geological epoch the continent of Asia extended far beyond its present limits in a south-easterly direction, including the islands of Java, Sumatra, and Borneo, and probably reaching as far as the present 100-fathom line of soundings." (I., 19.)

And further:—

"The whole of the islands eastward beyond Java and Borneo do essentially form a part of a former Australian or Pacific continent, although some of them may never have been actually joined to it. This continent must have been broken up not only before the Western Islands were separated from Asia, but probably before the extreme south-eastern portion of Asia was raised above the waters of the ocean; for a great part of the land of Borneo and Java is known to be geologically of quite recent formation, while the very great difference of species, and in many cases of genera also, between the productions of the Eastern Malay Islands and Australia, as well as the great depth of the sea now separating them, all point to a comparatively long period of isolation." (I., 22.)

These two main divisions are then subdivided into the five districts already mentioned; comprising the Indo-Malay, Timor, Celebes, Moluccan and Papuan groups; and in his account of each, Mr. Wallace not only gives a vivid picture of the ways and customs of its inhabitants, and describes the glorious birds and butterflies he was fortunate enough to discover, but, keeping his main object in view, he shows throughout how the differences in the various natives, the mammalia, the birds and the insects, all bear evidence in favour of his theory, and in short, how the singular and unexpected facts of their distribution can be accounted for in no other way. Well may he conclude his sketch of the physical geography by saying—

"From this outline of the subject it will be evident how important an adjunct natural history is to geology, not only in interpreting the fragments of extinct animals found in the earth's crust, but in determining past changes in the surface, which have left no geological record. It is certainly a wonderful and unexpected fact, that an accurate knowledge of the distribution of birds and insects should enable us to map out lands and continents which disappeared beneath the ocean long before the earliest traditions of the human race. Wherever the geologist can explore the earth's surface, he can read much of its past history, and can determine approximately its latest movements above and below the sea level; but wherever oceans and seas now extend, he can do nothing but speculate on the very limited data afforded by the depth of the waters. Here the naturalist steps in, and enables him to fill up this great gap in the past history of the earth." (I., 27.)

In forming his collection, Mr. Wallace mainly devoted himself to birds and insects; he did not, however, neglect the curious mammalia, &c., which came in his way, but preserved skins and skeletons whenever it was practicable. For instance, while in Borneo he took some pains to procure specimens of the large Orang-Utan, or Mias, as it is called by the natives, and also as much information as possible respecting its habits. He also obtained a young one, which he kept for three months; and the account of this little creature forms an amusing episode, which is, however, too long to extract. Altogether he killed 16 of these animals, for which he was looked upon by the Dyaks as a benefactor, these animals being great nuisances from the havoc they commit on the Durion trees, especially as they waste and destroy a great deal more of the fruit than they eat.

Of the difficulties to be encountered we have many graphic instances, and it seems perfectly marvellous how well he succeeded, considering the means at his disposal. His plan on arriving at a fresh locality was to search for a place where insects were likely to abound, namely, a clearing in a forest, and to establish himself for some weeks as near to this as he could; hiring a house when one was to be had, and building one when there was none. And what houses they were! Here is the description of one:—

"Immediately above was a large newly-made plantation of Yams and Plantains, and a small hut, which the chief said we might have the use of, if it would suit me. It was quite a dwarf's house, just 8 feet square, raised on posts, so that the floor was 4 feet above the ground, and the highest part of the ridge only 5 feet above the floor. As I am 6 feet and an inch high in my stockings, I looked at this with some dismay; but finding that the other houses were much further from water, were dreadfully dirty, and were crowded with people, I at

once accepted the little one, and determined to make the best of it. At first I thought of taking out the floor, which would leave it high enough to walk in and out without stooping; but then there would not be room enough, so I left it just as it was, had it thoroughly cleaned out, and brought up my baggage. The upper storey I used for sleeping in and for a store-room; in the lower part (which was quite open all round) I fixed up a small table, arranged my boxes, put up hanging-shelves, laid a mat on the ground, with my wicker chair upon it, hung up another mat on the windward side, and then found that, by bending double and carefully creeping in, I could sit on my chair with my head just clear of the ceiling. Here I lived pretty comfortably for six weeks, taking all my meals and doing all my work at my little table, to and from which I had to creep in a semi-horizontal position a dozen times a day, and after a few severe knocks on the head by suddenly rising from my chair, I learnt to accommodate myself to circumstances. We put up a little sloping cooking hut outside, a bench on which my lads could skin their birds. At night I went up to my little loft; they spread their mats on the floor below, and we none of us grumbled at our lodgings." (II., 359.)

Amongst the miseries incident to collecting in a tropical country, insect plagues must certainly stand foremost. More than once Mr. Wallace was confined to his house for weeks by ulcerated feet, brought on by the attacks of mosquitos, sandflies, &c., and he speaks very piteously of the interruption thus caused to his work:—

"The stings and bites and ceaseless irritation caused by these pests of the tropical forests, would be borne uncomplainingly; but to be kept prisoner by them in so rich and unexplored a country, where rare and beautiful creatures are to be met with in every forest ramble—a country reached by such a long and tedious voyage, and which might not in the present century be again visited for the same purpose—is a punishment too severe for a naturalist to pass over in silence." (II., 251.)

Moreover, his birds and insects, when once caught, prepared, and added to his collection, still required the utmost watchfulness and care to prevent their being destroyed by ravenous creatures:—

"The lean and hungry dogs before mentioned were my greatest enemies, and kept me constantly on the watch. If my boys left the bird they were skinning for an instant, it was sure to be carried off. Everything eatable had to be hung up to the roof, to be out of their reach. Ali had just finished skinning a fine King Bird of Paradise one day, when he dropped the skin. Before he could stoop to pick it up, one of this famished race had seized upon it, and he only succeeded in rescuing it from its fangs after it was torn to tatters. Two skins of the large Paradise, which were quite dry and ready to pack away, were incautiously left on my table for the night, wrapped up in paper. The next morning they were gone, and only a few scattered feathers indicated their fate. My hanging shelf was out of their reach; but having stupidly left a box which served as a step, a full-plumaged Paradise bird was next morning missing, and a dog below the house was to be seen still mumbering over the fragments, with the fine golden plumes all trampled in the mud. Every night, as soon as I was in bed, I could hear them searching about for what they could devour under my table, and all about my boxes and baskets, keeping me in a state of suspense till morning, lest something of value might incautiously have been left within their reach. They would drink the oil of my floating lamp and eat the wick, and upset and break my crockery if my lazy boys had neglected to wash away even the smell of anything eatable. Bad, however, as they are here, they were worse in a Dyak's house in Borneo where I was once staying, for they gnawed off the tops of my waterproof boots, ate a large piece out of an old leather game-bag, besides devouring a portion of my mosquito curtain." (II., 259.)

Ants, of course, were ubiquitous, and it must have been a work of no small difficulty to circumvent them:—"They swarmed on my table as I was at work, setting out my insects, carrying them off from under my very nose, and even tearing them from the very cards on which they were gummed, if I left them for an instant." (II., 323.)

In spite of all these troubles, in spite of occasional fevers, bad food, voyages in native boats against contrary winds, when he seems to have been invariably sea-sick—difficulties thrown in his way by the indolence or suspicion of the natives, Mr. Wallace worked steadily on, collecting, observing, and noting, and apparently on the whole thoroughly enjoying his nomadic existence.

"It sometimes amuses me to observe how, a few days after I have taken possession of it, a native hut seems quite a comfortable home. My house at Waypoti was a bare shed, with a large bamboo platform at one side. At one end of this platform, which was elevated about 3 feet, I fixed up my mosquito curtain, and partly enclosed it with a large Scotch plaid, making a comfortable little sleeping apartment. I put up a rude table on legs buried in the earthen floor, and had my comfortable rattan-chair for a seat. A line across one corner carried my daily-washed cotton clothing, and on a bamboo shelf was arranged my small stock of crockery and hardware. Boxes were ranged against the thatch walls, and hanging shelves, to preserve my collection from ants while drying, were suspended both without and within the house. On my table lay books, penknives, scissors, pliers, and pins, with insect and bird labels, all of which were unsolved mysteries to the native mind." (II., 133.)

"Then what delightful hours I passed wandering up and down the dry river-courses, full of water-holes and rocks and fallen trees, and overshadowed by magnificent vegetation. I soon got to know every hole and rock and stump, and came up to each with cautious step and bated breath to see what treasures it would produce. At one place I would find a little crowd of the rare butterfly *Tachyris zarinda*, which would rise up at my approach, and display their vivid orange and cinnamon-red wings, while among them would flutter a few of the fine blue-banded *Papilio*s. Where leafy branches hung over the gully, I might expect to find a grand *Ornithoptera* at rest and an easy prey. At certain rotten trunks I was sure to get the curious little tiger beetle, *Therates flavilabris*. In the denser thickets I would capture the small metallic blue butterflies (*Amblypodia*) sitting on the leaves, as well as some rare and beautiful leaf-beetles of the families *Hispidae* and *Chrysomelidae*." (I., 365.)

Occasionally Mr. Wallace notices a beautiful flower, but it is not often. The reason for this is not, however, that he was so engrossed by his own special pursuits as to overlook them, but that in tropical forests bright coloured flowers really play a subordinate part in the aspect of Nature. The following extract may serve to dispel illusions on this subject, which may be entertained by those who have never visited the tropics:—

"The reader, who is familiar with tropical nature only through the medium of books and botanical gardens, will

picture to himself in such a spot many other natural beauties. He will think that I have unaccountably forgotten to mention the brilliant flowers, which, in gorgeous masses of crimson, gold, or azure, must spangle these verdant precipices, hang over the cascade, and adorn the margin of the mountain stream. But what is the reality? In vain did I gaze over these vast walls of verdure, among the pendent creepers and bushy shrubs, all around the cascade, on the river's bank, or in the deep caverns and gloomy fissures—not one single spot of bright colour could be seen, not one single tree, or bush, or creeper bore a flower sufficiently conspicuous to form an object in the landscape. In every direction the eye rested on green foliage and mottled rock. There was infinite variety in the colour and aspect of the foliage, there was grandeur in the rocky masses, and in the exuberant luxuriance of the vegetation, but there was no brilliancy of colour, none of those bright flowers and gorgeous masses of blossom, so generally considered to be everywhere present in the tropics. . . . During 12 years spent amid the grandest tropical vegetation, I have seen nothing comparable to the effect produced on our landscapes by Gorse, Broom, Heather, and wild Hyacinths, Hawthorn, purple Orchises, and Buttercups." (I., 371.)

The number and variety of the topics discussed in these two volumes cannot be even touched on within the limits of a review; all bears evidence of careful observation and thought, and deserve study and consideration. Mr. Wallace's work is by no means to be classed merely as an interesting book of travels; it will take its place on our library shelves, and will be referred to, as a standard authority regarding the countries he has so carefully studied, and so ably described.