

Observations on the Zoology of Borneo.

By A. R. WALLACE, Esq.

A RESIDENCE of fifteen months in Sarawak and its neighbourhood having given me a very good idea of the Natural History of N.W. Borneo, I will briefly note the results, for the information of my friends and the readers of the 'Zoologist.'

With a very few exceptions, the Mammalia and birds are not very interesting or numerous. Of the former I obtained about thirty-five species, among which are two species of orang-utan, five other *Quadrumana*, the rare and curious otter, *Potamophilus barbatus*, the no less interesting *Gymnurus Rafflesii*, and several curious Rodentia and Insectivora. To the great orang-utans I devoted particular attention, and have probably seen more of these animals in a state of Nature than any other European: I resided for eight months in the district they frequent, and in that time succeeded in shooting fifteen specimens, male and female, old and young, and among them two males of the smaller species, hitherto only known by the female skeleton. As an account of my observations on the orangs has been sent to the 'Annals of Natural History,' I shall say no more about them here.

The birds I found remarkably scarce and uninteresting, almost all being common Malacca species. Out of about a hundred I do not think more than ten are peculiar to Borneo, and probably not more than one or two are new. In the northern and eastern parts of the island there are probably many novelties to be found, but the districts nearest to Sumatra and to the peninsula of Malacca possess an ornithological fauna so little peculiar as to furnish strong presumptive evidence of a closer connexion between these countries having existed at no very distant geological epoch. What is known of the whole island, indeed, favours the same view, for out of 107 species of Bornean birds in the Leyden Museum only twenty-five are peculiar to it, the rest being also found in Java, Sumatra or Malacca, and the greater portion common to all those countries. Birds of brilliant plumage are remarkably rare, and the Psittacidæ, so beautiful and numerous further eastward, are here represented only by the four common Malacca species. It is clear, therefore, that, from what is known of it, Borneo does not offer a very tempting field for the researches of the ornithologist.

In Entomology I was much more successful, and became, for that very reason, much more interested in this branch of Natural History. I collected very assiduously, and having, at the commencement of the dry season, been fortunate enough to discover a good locality, I perseveringly worked at it for eight months, and the result has been a collection which for the number of species, I should imagine, has rarely been surpassed by a single collector, in one season and at one station.

I find, on referring to my notes, that I have collected in Borneo about 5000 species of insects and upwards of 25,000 specimens. The species may be approximately divided thus:—

Coleoptera	2000
Lepidoptera (principally moths)	1500
Other orders	1500

The Coleoptera were collected as *thoroughly* as possible, no groups being neglected in favour of others, and the minute as well as the larger species being in every case secured. I am in hopes, therefore, that this collection may give a *true* idea of the Entomology of this country, which can never be done when the small and obscure insects are either little sought after or entirely neglected. This, however, has been generally the case in collections from tropical countries. Numbers of large and brilliant insects have been obtained, perhaps over a large extent of country, and during several successive seasons; and the results, exhibited in our museums, have been too often held to give a correct idea of the Entomology of the Tropics, and have led to hasty generalizations and very erroneous views as to the universal characteristics of the productions of hot and cold climates. But let us suppose that, instead of Western Europe, some tropical country, such as Borneo or the peninsula of India, had been long inhabited by a race of entomologists, while the whole temperate zone was comparatively unexplored: would not the magnificent Carabidæ of Europe, the Cetoniadæ of the Cape and of N. China, and the large and handsome insects of various families culled from all the countries of the temperate zone, have been held to prove that excessive heat was not so prolific of fine forms and brilliant colours as a lower temperature and a more varied climate? When, too, the forms of tropical insects were familiar, those of colder countries would be looked upon with more interest and admiration, and the true Carabi would certainly be pointed to as a group unequalled by anything the Tropics could produce. My Bornean collection shows that brilliant colours are by no means the necessary

accompaniments of a tropical sun, for I doubt if, in that respect, these insects will surpass those even of Britain. In more than 500 species of Curculionidæ I have *not one* that is bright coloured! and the number of small and obscure insects in all the families is very great. As to size, also, I almost doubt whether the *average* of all the species would exceed that of the beetles of our own country, absurd though the idea may seem to persons who have constantly associated great size with their notions of tropical Entomology.

I have made these remarks because some persons who have seen that portion of my collections which has already arrived in England have been much disappointed, and have complained (almost as if I *made* the insects as well as *collected* them) that Mr. Fortune's beetles from the North of China, though from a comparatively cold climate, were much finer. Now, as it is generally allowed that it is easier to overlook small insects than large ones, it is hardly to be supposed that I have perversely neglected the latter for the former, and we must therefore conclude that there is a real want of size and brilliancy in the average of the Bornean Coleoptera; but I think we can show that this is also the case with insects from other tropical countries, compared with those from the sub-tropical or south temperate zone. The extensive collections of Mr. Bates on the Amazon show the same small average size of the Coleoptera compared with those of the Brazilian mountains, the Andes and Mexico. In India, too, it is well known that the finest insects and birds come from the Himalaya, *which are all in the temperate zone*, while the productions of the peninsula of India, though much nearer the equator, are not near so brilliant or remarkable. Again, the insects of Hong Kong in the Tropics are not so fine as those of Shanghai in the temperate region. We may, I think, therefore conclude that tropical heat is not necessary to the great brilliance or great size of insects, but that those of the countries bordering the Tropics are often equal, and sometimes superior, to those of countries situated nearer the equator.

The most striking features of my collection are the numbers of Curculionidæ and of Longicorns, far beyond the usual proportion of those families. The number of minute Elateridæ and Buprestidæ is also very considerable, and will much increase the lists of those groups. The numbers of the principal families are as follows, out of a total of about 2000 species:—

Longicorns	290 species.
Rhyncophora	550 „

Carabidæ and Cicindelidæ	70 species.
Buprestidæ	100 "
Elatерidæ	125 "
Cleridæ	41 "
Cetoniadæ	22 "

Thus it will be seen that the Rhyncophora are more than a fourth, and the Longicorns a seventh, of all the Coleoptera, while the Geodephaga are only a fourteenth, and the Cetoniadæ a nineteenth.

On the whole the Coleoptera may be said to contain a few very large and a few very handsome species, a large number of moderate size and of very varied and elegant forms, while the great mass of them are small and obscure. These remarks will also apply, in a great measure, to the Hymenoptera, Hemiptera and Diptera. The Orthoptera, however, are more truly tropical in appearance, containing many large, singular and beautiful insects.

The diurnal Lepidoptera are comparatively few and uninteresting, most of the species being also found in Java and Malacca: there are, however, a few striking exceptions among the larger species; *Papilio Payeni*, Bois., *P. Neptunus*, Guer., a new species allied to *P. Codrus*, and the magnificent Ornithoptera *Brookiana*, are the most remarkable; and there is also a sufficient sprinkling of the small *Lycænidæ* and *Erycinidæ* to show that many other fine things may be expected when the interior shall be better known.

In the nocturnal species I have been more successful, though I only found one spot where they could be obtained: this was a cottage at an elevation of 1000 feet on a mountain ridge, surrounded by jungle and fruit trees. Here, on dark wet nights, they came to a lamp in the verandah, so plentifully as sometimes to keep me incessantly employed for several hours: I have taken as many as 200 specimens and 120 species in one night! but such occasions were rare, and I would often pass a week or ten days without obtaining a dozen specimens. On dry and fine nights there were none, neither on wet nights, if it was moonlight; but I do not remember one occasion on which it was both dark and wet that I did not obtain a very plentiful harvest. Some of the *Noctuas* and *Geometræ* are very beautiful, and many present singular forms of antennæ, palpi and legs, not observed in European species.

I will now say a few words as to my future plans. The two years which I have now spent in the East I consider as, in a great measure, preliminary or preparatory to the main object of my journey, which is to investigate the less known islands of the Eastern part of the Archi-

pelago—Celebes, the larger Molucca Islands, Timor, and, if possible, New Guinea. I feel myself now far better qualified than if I had gone at once to those countries. I have acquired the Malayan language, and have become acquainted with the manners, customs and prejudices of the people. I have learned much by experience in Eastern collecting, and have obtained such a knowledge of the productions of the western portion of the Archipelago as will add greatly to my pleasure and interest while exploring the Eastern.

I look forward, in fact, with unmixed satisfaction to my visit to the rich and almost unexplored Spice Islands,—the land of the Lories, the cockatoos and the birds of paradise, the country of tortoise-shell and pearls, of beautiful shells and rare insects. I look forward with expectation and awe to visiting lands exposed to destruction from the sleeping volcano and its kindred earthquake; and not less do I anticipate the pleasures of observing the varied races of mankind, and of becoming familiar with the manners, customs and modes of thought of people so far removed from the European races and European civilization.

The physical privations which must be endured during such journeys are of little importance, except as injuring health and incapacitating from active exertion. Intellectual wants are much more trying: the absence of intimate friends, the craving for intellectual and congenial society, make themselves severely felt, and would be unbearable were it not for the constant employment and ever-varying interest of a collector's life, and the pleasures of looking forward to a time when the stores now amassed will furnish inexhaustible food for study and reflection, and call back to memory the strange beautiful scenes among which they have been obtained.

A. R. WALLACE.

Singapore, March 10, 1856.

A List of the Birds of Banffshire, accompanied with Anecdotes.

By THOMAS EDWARD, Collector of and Dealer in Natural-History Specimens at Banff.

BEFORE I begin to enumerate the species, a few words concerning the district, the varied and interesting Ornithology of which I am about to record, may not be without interest, especially to those to whom it is entirely unknown. Banffshire is situate on the South side