ALFRED RUSSEL WALLACE

THE MALAY ARCHIPELAGO, VOLUME 1

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Содержание

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CHAPTER I. PHYSICAL GEOGRAPHY

From a look at a globe or a map of the Eastern hemisphere, we shall perceive between Asia and Australia a number of large and small islands forming a connected group distinct from those great masses of land, and having little connection with either of them. Situated upon the Equator, and bathed by the tepid water of the great tropical oceans, this region enjoys a climate more uniformly hot and moist than almost any other part of the globe, and teems with natural productions which are elsewhere unknown. The richest of fruits and the most precious of spices are Indigenous here. It produces the giant flowers of the Rafflesia, the great green-winged Ornithoptera (princes among the butterfly tribes), the man-like Orangutan, and the gorgeous Birds of Paradise. It is inhabited by a peculiar and interesting race of mankind—the Malay, found nowhere beyond the limits of this insular tract, which has hence been named the Malay Archipelago.

To the ordinary Englishman this is perhaps the least known part of the globe. Our possessions in it are few and scanty; scarcely any of our travellers go to explore it; and in many collections of maps it is almost ignored, being divided between Asia and the Pacific Islands. It thus happens that few persons realize that, as a whole, it is comparable with the primary divisions of the globe, and that some of its separate islands are larger than France or the Austrian Empire. The traveller, however, soon acquires different ideas. He sails for days or even weeks along the shores of one of these great islands, often so great that its inhabitants believe it to be a vast continent. He finds that voyages among these islands are commonly reckoned by weeks and months, and that their several inhabitants are often as little known to each other as are the native races of the northern to those of the southern continent of America. He soon comes to look upon this region as one apart from the rest of the world, with its own races of men and its own aspects of nature; with its own ideas, feelings, customs, and modes of speech, and with a climate, vegetation, and animated life altogether peculiar to itself.

From many points of view these islands form one compact geographical whole, and as such they have always been treated by travellers and men of science; but, a more careful and detailed study of them under various aspects reveals the unexpected fact that they are divisible into two portions nearly equal in extent which differ widely in their natural products, and really form

two parts of the primary divisions of the earth. I have been able to prove this in considerable detail by my observations on the natural history of the various parts of the Archipelago; and, as in the description of my travels and residence in the several islands I shall have to refer continually to this view, and adduce facts in support of it, I have thought it advisable to commence with a general sketch of the main features of the Malayan region as will render the facts hereafter brought forward more interesting, and their bearing upon the general question more easily understood. I proceed, therefore, to sketch the limits and extent of the Archipelago, and to point out the more striking features of its geology, physical geography, vegetation, and animal life.

Definition and Boundaries.—For reasons which depend mainly on the distribution of animal life, I consider the Malay Archipelago to include the Malay Peninsula as far as Tenasserim and the Nicobar Islands on the west, the Philippines on the north, and the Solomon Islands, beyond New Guinea, on the east. All the great islands included within these limits are connected together by innumerable smaller ones, so that no one of them seems to be distinctly separated from the rest. With but few exceptions all enjoy an uniform and very similar climate, and are covered with a luxuriant forest vegetation. Whether we study their form and distribution on maps, or actually travel from island to island, our first impression will be that they form a connected whole, all the parts of which are intimately related to each other.

Extent of the Archipelago and Islands.—The Malay

Archipelago extends for more than 4,000 miles in length from east to west, and is about 1,300 in breadth from north to south. It would stretch over an expanse equal to that of all Europe from the extreme west far into Central Asia, or would cover the widest parts of South America, and extend far beyond the land into the Pacific and Atlantic oceans. It includes three islands larger than Great Britain; and in one of them, Borneo, the whole of the British Isles might be set down, and would be surrounded by a sea of forests. New Guinea, though less compact in shape, is probably larger than Borneo. Sumatra is about equal in extent to Great Britain; Java, Luzon, and Celebes are each about the size of Ireland. Eighteen more islands are, on the average, as large as Jamaica; more than a hundred are as large as the Isle of Wight; while the isles and islets of smaller size are innumerable.

The absolute extent of land in the Archipelago is not greater than that contained by Western Europe from Hungary to Spain; but, owing to the manner in which the land is broken up and divided, the variety of its productions is rather in proportion to the immense surface over which the islands are spread, than to the quantity of land which they contain.

Geological Contrasts.—One of the chief volcanic belts upon the globe passes through the Archipelago, and produces a striking contrast in the scenery of the volcanic and non-volcanic islands. A curving line, marked out by scores of active, and hundreds of extinct, volcanoes may be traced through the whole length of Sumatra and Java, and thence by the islands of

Bali, Lombock, Sumbawa, Flores, the Serwatty Islands, Banda, Amboyna, Batchian, Makian, Tidore, Ternate, and Gilolo, to Morty Island. Here there is a slight but well-marked break, or shift, of about 200 miles to the westward, where the volcanic belt begins again in North Celebes, and passes by Siau and Sanguir to the Philippine Islands along the eastern side of which it continues, in a curving line, to their northern extremity. From the extreme eastern bend of this belt at Banda, we pass onwards for 1,000 miles over a non-volcanic district to the volcanoes observed by Dampier, in 1699, on the north-eastern coast of New Guinea, and can there trace another volcanic belt through New Britain, New Ireland, and the Solomon Islands, to the eastern limits of the Archipelago.

In the whole region occupied by this vast line of volcanoes, and for a considerable breadth on each side of it, earthquakes are of continual recurrence, slight shocks being felt at intervals of every few weeks or months, while more severe ones, shaking down whole villages, and doing more or less injury to life and property, are sure to happen, in one part or another of this district, almost every year. On many of the islands the years of the great earthquakes form the chronological epochs of the native inhabitants, by the aid of which the ages of their children are remembered, and the dates of many important events are determined.

I can only briefly allude to the many fearful eruptions that have taken place in this region. In the amount of injury to life

and property, and in the magnitude of their effects, they have not been surpassed by any upon record. Forty villages were destroyed by the eruption of Papandayang in Java, in 1772, when the whole mountain was blown up by repeated explosions, and a large lake left in its place. By the great eruption of Tomboro in Sumbawa, in 1815, 12,000 people were destroyed, and the ashes darkened the air and fell thickly upon the earth and sea for 300 miles around. Even quite recently, since I left the country, a mountain which had been quiescent for more than 200 years suddenly burst into activity. The island of Makian, one of the Moluccas, was rent open in 1646 by a violent eruption which left a huge chasm on one side, extending into the heart of the mountain. It was, when I last visited it in 1860, clothed with vegetation to the summit, and contained twelve populous Malay villages. On the 29th of December, 1862, after 215 years of perfect inaction, it again suddenly burst forth, blowing up and completely altering the appearance of the mountain, destroying the greater part of the inhabitants, and sending forth such volumes of ashes as to darken the air at Ternate, forty miles off, and to almost entirely destroy the growing crops on that and the surrounding islands.

The island of Java contains more volcanoes, active and extinct, than any other known district of equal extent. They are about forty-five in number, and many of them exhibit most beautiful examples of the volcanic cone on a large scale, single or double, with entire or truncated summits, and averaging 10,000 feet high.

It is now well ascertained that almost all volcanoes have been

slowly built up by the accumulation of matter—mud, ashes, and lava—ejected by themselves. The openings or craters, however, frequently shift their position, so that a country may be covered with a more or less irregular series of hills in chains and masses, only here and there rising into lofty cones, and yet the whole may be produced by true volcanic action. In this manner the greater part of Java has been formed. There has been some elevation, especially on the south coast, where extensive cliffs of coral limestone are found; and there may be a substratum of older stratified rocks; but still essentially Java is volcanic, and that noble and fertile island—the very garden of the East, and perhaps upon the whole the richest, the best cultivated, and the best governed tropical island in the world—owes its very existence to the same intense volcanic activity which still occasionally devastates its surface.

The great island of Sumatra exhibits, in proportion to its extent, a much smaller number of volcanoes, and a considerable portion of it has probably a non-volcanic origin.

To the eastward, the long string of islands from Java, passing by the north of Timor and away to Banda, are probably all due to volcanic action. Timor itself consists of ancient stratified rocks, but is said to have one volcano near its centre.

Going northward, Amboyna, a part of Bouru, and the west end of Ceram, the north part of Gilolo, and all the small islands around it, the northern extremity of Celebes, and the islands of Siau and Sanguir, are wholly volcanic. The Philippine

Archipelago contains many active and extinct volcanoes, and has probably been reduced to its present fragmentary condition by subsidences attending on volcanic action.

All along this great line of volcanoes are to be found more or less palpable signs of upheaval and depression of land. The range of islands south of Sumatra, a part of the south coast of Java and of the islands east of it, the west and east end of Timor, portions of all the Moluccas, the Ke and Aru Islands, Waigiou, and the whole south and east of Gilolo, consist in a great measure of upraised coral-rock, exactly corresponding to that now forming in the adjacent seas. In many places I have observed the unaltered surfaces of the elevated reefs, with great masses of coral standing up in their natural position, and hundreds of shells so fresh-looking that it was hard to believe that they had been more than a few years out of the water; and, in fact, it is very probable that such changes have occurred within a few centuries.

The united lengths of these volcanic belts is about ninety degrees, or one-fourth of the entire circumference of the globe. Their width is about fifty miles; but, for a space of two hundred miles on each side of them, evidences of subterranean action are to be found in recently elevated coral-rock, or in barrier coral-reefs, indicating recent submergence. In the very centre or focus of the great curve of volcanoes is placed the large island of Borneo, in which no sign of recent volcanic action has yet been observed, and where earthquakes, so characteristic of the surrounding regions, are entirely unknown. The equally large

island of New Guinea occupies another quiescent area, on which no sign of volcanic action has yet been discovered. With the exception of the eastern end of its northern peninsula, the large and curiously-shaped island of Celebes is also entirely free from volcanoes; and there is some reason to believe that the volcanic portion has once formed a separate island. The Malay Peninsula is also non-volcanic.

The first and most obvious division of the Archipelago would therefore be into quiescent and volcanic regions, and it might, perhaps, be expected that such a division would correspond to some differences in the character of the vegetation and the forms of life. This is the case, however, to a very limited extent; and we shall presently see that, although this development of subterranean fires is on so vast a scale—has piled up chains of mountains ten or twelve thousand feet high—has broken up continents and raised up islands from the ocean—yet it has all the character of a recent action which has not yet succeeded in obliterating the traces of a more ancient distribution of land and water.

Contrasts of Vegetation.—Placed immediately upon the Equator and surrounded by extensive oceans, it is not surprising that the various islands of the Archipelago should be almost always clothed with a forest vegetation from the level of the sea to the summits of the loftiest mountains. This is the general rule. Sumatra, New Guinea, Borneo, the Philippines and the Moluccas, and the uncultivated parts of Java and Celebes, are

all forest countries, except a few small and unimportant tracts, due perhaps, in some cases, to ancient cultivation or accidental fires. To this, however, there is one important exception in the island of Timor and all the smaller islands around it, in which there is absolutely no forest such as exists in the other islands, and this character extends in a lesser degree to Flores, Sumbawa, Lombock, and Bali.

In Timor the most common trees are Eucalypti of several species, also characteristic of Australia, with sandalwood, acacia, and other sorts in less abundance. These are scattered over the country more or less thickly, but, never so as to deserve the name of a forest. Coarse and scanty grasses grow beneath them on the more barren hills, and a luxuriant herbage in the moister localities. In the islands between Timor and Java there is often a more thickly wooded country abounding in thorny and prickly trees. These seldom reach any great height, and during the force of the dry season they almost completely lose their leaves, allowing the ground beneath them to be parched up, and contrasting strongly with the damp, gloomy, ever-verdant forests of the other islands. This peculiar character, which extends in a less degree to the southern peninsula of Celebes and the east end of Java, is most probably owing to the proximity of Australia. The south-east monsoon, which lasts for about two-thirds of the year (from March to November), blowing over the northern parts of that country, produces a degree of heat and dryness which assimilates the vegetation and physical aspect of the adjacent

islands to its own. A little further eastward in Timor and the Ke Islands, a moister climate prevails; the southeast winds blowing from the Pacific through Torres Straits and over the damp forests of New Guinea, and as a consequence, every rocky islet is clothed with verdure to its very summit. Further west again, as the same dry winds blow over a wider and wider extent of ocean, they have time to absorb fresh moisture, and we accordingly find the island of Java possessing a less and less arid climate, until in the extreme west near Batavia, rain occurs more or less all the year round, and the mountains are everywhere clothed with forests of unexampled luxuriance.

Contrasts in Depth of Sea.—It was first pointed out by Mr. George Windsor Earl, in a paper read before the Royal Geographical Society in 1845, and subsequently in a pamphlet "On the Physical Geography of South-Eastern Asia and Australia", dated 1855, that a shallow sea connected the great islands of Sumatra, Java, and Borneo with the Asiatic continent, with which their natural productions generally agreed; while a similar shallow sea connected New Guinea and some of the adjacent islands to Australia, all being characterised by the presence of marsupials.

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.

On referring to pages 12, 13, and 36 of Mr. Earl's pamphlet, it will be seen that he maintains the former connection of Asia and Australia as an important part of his view; whereas, I dwell mainly on their long continued separation. Notwithstanding this and other important differences between us, to him undoubtedly belongs the merit of first indicating the division of the Archipelago into an Australian and an Asiatic region, which it has been my good fortune to establish by more detailed observations.

Contrasts in Natural Productions.—To understand the importance of this class of facts, and its bearing upon the former distribution of land and sea, it is necessary to consider the results arrived at by geologists and naturalists in other parts of the world.

It is now generally admitted that the present distribution of living things on the surface of the earth is mainly the result of the last series of changes that it has undergone. Geology teaches us that the surface of the land, and the distribution of land and water, is everywhere slowly changing. It further teaches us that the forms of life which inhabit that surface have, during every period of which we possess any record, been also slowly changing.

It is not now necessary to say anything about how either of those changes took place; as to that, opinions may differ; but as to the fact that the changes themselves have occurred, from

the earliest geological ages down to the present day, and are still going on, there is no difference of opinion. Every successive stratum of sedimentary rock, sand, or gravel, is a proof that changes of level have taken place; and the different species of animals and plants, whose remains are found in these deposits, prove that corresponding changes did occur in the organic world.

Taking, therefore, these two series of changes for granted, most of the present peculiarities and anomalies in the distribution of species may be directly traced to them. In our own islands, with a very few trifling exceptions, every quadruped, bird, reptile, insect, and plant, is found also on the adjacent continent. In the small islands of Sardinia and Corsica, there are some quadrupeds and insects, and many plants, quite peculiar. In Ceylon, more closely connected to India than Britain is to Europe, many animals and plants are different from those found in India, and peculiar to the island. In the Galapagos Islands, almost every indigenous living thing is peculiar to them, though closely resembling other kinds found in the nearest parts of the American continent.

Most naturalists now admit that these facts can only be explained by the greater or less lapse of time since the islands were upraised from beneath the ocean, or were separated from the nearest land; and this will be generally (though not always) indicated by the depth of the intervening sea. The enormous thickness of many marine deposits through wide areas shows that subsidence has often continued (with intermitting periods

of repose) during epochs of immense duration. The depth of sea produced by such subsidence will therefore generally be a measure of time; and in like manner, the change which organic forms have undergone is a measure of time. When we make proper allowance for the continued introduction of new animals and plants from surrounding countries by those natural means of dispersal which have been so well explained by Sir Charles Lyell and Mr. Darwin, it is remarkable how closely these two measures correspond. Britain is separated from the continent by a very shallow sea, and only in a very few cases have our animals or plants begun to show a difference from the corresponding continental species. Corsica and Sardinia, divided from Italy by a much deeper sea, present a much greater difference in their organic forms. Cuba, separated from Yucatan by a wider and deeper strait, differs more markedly, so that most of its productions are of distinct and peculiar species; while Madagascar, divided from Africa by a deep channel three hundred miles wide, possesses so many peculiar features as to indicate separation at a very remote antiquity, or even to render it doubtful whether the two countries have ever been absolutely united.

Returning now to the Malay Archipelago, we find that all the wide expanse of sea which divides Java, Sumatra, and Borneo from each other, and from Malacca and Siam, is so shallow that ships can anchor in any part of it, since it rarely exceeds forty fathoms in depth; and if we go as far as the line of a hundred

fathoms, we shall include the Philippine Islands and Bali, east of Java. If, therefore, these islands have been separated from each other and the continent by subsidence of the intervening tracts of land, we should conclude that the separation has been comparatively recent, since the depth to which the land has subsided is so small. It is also to be remarked that the great chain of active volcanoes in Sumatra and Java furnishes us with a sufficient cause for such subsidence, since the enormous masses of matter they have thrown out would take away the foundations of the surrounding district; and this may be the true explanation of the often-noticed fact that volcanoes and volcanic chains are always near the sea. The subsidence they produce around them will, in time, make a sea, if one does not already exist.

But, it is when we examine the zoology of these countries that we find what we most require—evidence of a very striking character that these great islands must have once formed a part of the continent, and could only have been separated at a very recent geological epoch. The elephant and tapir of Sumatra and Borneo, the rhinoceros of Sumatra and the allied species of Java, the wild cattle of Borneo and the kind long supposed to be peculiar to Java, are now all known to inhabit some part or other of Southern Asia. None of these large animals could possibly have passed over the arms of the sea which now separate these countries, and their presence plainly indicates that a land communication must have existed since the origin of the species. Among the smaller mammals, a considerable portion are common to each

island and the continent; but the vast physical changes that must have occurred during the breaking up and subsidence of such extensive regions have led to the extinction of some in one or more of the islands, and in some cases there seems also to have been time for a change of species to have taken place. Birds and insects illustrate the same view, for every family and almost every genus of these groups found in any of the islands occurs also on the Asiatic continent, and in a great number of cases the species are exactly identical. Birds offer us one of the best means of determining the law of distribution; for though at first sight it would appear that the watery boundaries which keep out the land quadrupeds could be easily passed over by birds, yet practically it is not so; for if we leave out the aquatic tribes which are pre-eminently wanderers, it is found that the others (and especially the Passeres, or true perching-birds, which form the vast majority) are generally as strictly limited by straits and arms of the sea as are quadrupeds themselves. As an instance, among the islands of which I am now speaking, it is a remarkable fact that Java possesses numerous birds which never pass over to Sumatra, though they are separated by a strait only fifteen miles wide, and with islands in mid-channel. Java, in fact, possesses more birds and insects peculiar to itself than either Sumatra or Borneo, and this would indicate that it was earliest separated from the continent; next in organic individuality is Borneo, while Sumatra is so nearly identical in all its animal forms with the peninsula of Malacca, that we may safely conclude it to have been

the most recently dismembered island.

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.

The Philippine Islands agree in many respects with Asia and the other islands, but present some anomalies, which seem to indicate that they were separated at an earlier period, and have since been subject to many revolutions in their physical geography.

Turning our attention now to the remaining portion of the Archipelago, we shall find that all the islands from Celebes and Lombock eastward exhibit almost as close a resemblance to Australia and New Guinea as the Western Islands do to Asia.

It is well known that the natural productions of Australia differ from those of Asia more than those of any of the four ancient quarters of the world differ from each other. Australia, in fact, stands alone: it possesses no apes or monkeys, no cats or tigers, wolves, bears, or hyenas; no deer or antelopes, sheep or oxen; no elephant, horse, squirrel, or rabbit; none, in short, of those familiar types of quadruped which are met with in every other part of the world. Instead of these, it has Marsupials only: kangaroos and opossums; wombats and the duckbilled Platypus. In birds it is almost as peculiar. It has no woodpeckers and no pheasants—families which exist in every other part of the world; but instead of them it has the mound-making brush-turkeys, the honeysuckers, the cockatoos, and the brush-tongued lories, which are found nowhere else upon the globe. All these striking peculiarities are found also in those islands which form the Austro-Malayan division of the Archipelago.

The great contrast between the two divisions of the Archipelago is nowhere so abruptly exhibited as on passing from the island of Bali to that of Lombock, where the two regions are in closest proximity. In Bali we have barbets, fruit-thrushes, and woodpeckers; on passing over to Lombock these are seen no more, but we have abundance of cockatoos, honeysuckers, and brush-turkeys, which are equally unknown in Bali, or any island further west. [I was informed, however, that there were a few cockatoos at one spot on the west of Bali, showing that the intermingling of the productions of these islands is now going

on.] The strait is here fifteen miles wide, so that we may pass in two hours from one great division of the earth to another, differing as essentially in their animal life as Europe does from America. If we travel from Java or Borneo to Celebes or the Moluccas, the difference is still more striking. In the first, the forests abound in monkeys of many kinds, wild cats, deer, civets, and otters, and numerous varieties of squirrels are constantly met with. In the latter none of these occur; but the prehensile-tailed Cuscus is almost the only terrestrial mammal seen, except wild pigs, which are found in all the islands, and deer (which have probably been recently introduced) in Celebes and the Moluccas. The birds which are most abundant in the Western Islands are woodpeckers, barbets, trogons, fruit-thrushes, and leaf-thrushes; they are seen daily, and form the great ornithological features of the country. In the Eastern Islands these are absolutely unknown, honeysuckers and small lories being the most common birds, so that the naturalist feels himself in a new world, and can hardly realize that he has passed from the one region to the other in a few days, without ever being out of sight of land.

The inference that we must draw from these facts is, undoubtedly, that the whole of the islands eastwards 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 southeastern 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.

It is interesting to observe among the islands themselves how a shallow sea always intimates a recent land connexion. The Aru Islands, Mysol, and Waigiou, as well as Jobie, agree with New Guinea in their species of mammalia and birds much more closely than they do with the Moluccas, and we find that they are all united to New Guinea by a shallow sea. In fact, the 100-fathom line round New Guinea marks out accurately the range of the true Paradise birds.

It is further to be noted—and this is a very interesting point in connection with theories of the dependence of special forms of life on external conditions—that this division of the Archipelago into two regions characterised by a striking diversity in their natural productions does not in any way correspond to the main physical or climatal divisions of the surface. The great volcanic chain runs through both parts, and appears to produce no effect in assimilating their productions. Borneo closely resembles New Guinea not only in its vast size and its freedom from volcanoes, but in its variety of geological structure, its uniformity of climate, and the general aspect of the forest vegetation that clothes its

surface. The Moluccas are the counterpart of the Philippines in their volcanic structure, their extreme fertility, their luxuriant forests, and their frequent earthquakes; and Bali with the east end of Java has a climate almost as dry and a soil almost as arid as that of Timor. Yet between these corresponding groups of islands, constructed as it were after the same pattern, subjected to the same climate, and bathed by the same oceans, there exists the greatest possible contrast when we compare their animal productions. Nowhere does the ancient doctrine—that differences or similarities in the various forms of life that inhabit different countries are due to corresponding physical differences or similarities in the countries themselves—meet with so direct and palpable a contradiction. Borneo and New Guinea, as alike physically as two distinct countries can be, are zoologically wide as the poles asunder; while Australia, with its dry winds, its open plains, its stony deserts, and its temperate climate, yet produces birds and quadrupeds which are closely related to those inhabiting the hot damp luxuriant forests, which everywhere clothe the plains and mountains of New Guinea.

In order to illustrate more clearly the means by which I suppose this great contrast has been brought about, let us consider what would occur if two strongly contrasted divisions of the earth were, by natural means, brought into proximity. No two parts of the world differ so radically in their productions as Asia and Australia, but the difference between Africa and South America is also very great, and these two regions will well serve

to illustrate the question we are considering. On the one side we have baboons, lions, elephants, buffaloes, and giraffes; on the other spider-monkeys, pumas, tapirs, anteaters, and sloths; while among birds, the hornbills, turacos, orioles, and honeysuckers of Africa contrast strongly with the toucans, macaws, chatterers, and hummingbirds of America.

Now let us endeavour to imagine (what it is very probable may occur in future ages) that a slow upheaval of the bed of the Atlantic should take place, while at the same time earthquake-shocks and volcanic action on the land should cause increased volumes of sediment to be poured down by the rivers, so that the two continents should gradually spread out by the addition of newly-formed lands, and thus reduce the Atlantic which now separates them, to an arm of the sea a few hundred miles wide. At the same time we may suppose islands to be upheaved in mid-channel; and, as the subterranean forces varied in intensity, and shifted their points of greatest action, these islands would sometimes become connected with the land on one side or other of the strait, and at other times again be separated from it. Several islands would at one time be joined together, at another would be broken up again, until at last, after many long ages of such intermittent action, we might have an irregular archipelago of islands filling up the ocean channel of the Atlantic, in whose appearance and arrangement we could discover nothing to tell us which had been connected with Africa and which with America. The animals and plants

inhabiting these islands would, however, certainly reveal this portion of their former history. On those islands which had ever formed a part of the South American continent, we should be sure to find such common birds as chatterers and toucans and hummingbirds, and some of the peculiar American quadrupeds; while on those which had been separated from Africa, hornbills, orioles, and honeysuckers would as certainly be found. Some portion of the upraised land might at different times have had a temporary connection with both continents, and would then contain a certain amount of mixture in its living inhabitants. Such seems to have been the case with the islands of Celebes and the Philippines. Other islands, again, though in such close proximity as Bali and Lombock, might each exhibit an almost unmixed sample of the productions of the continents of which they had directly or indirectly once formed a part.

In the Malay Archipelago we have, I believe, a case exactly parallel to that which I have here supposed. We have indications of a vast continent, with a peculiar fauna and flora having been gradually and irregularly broken up; the island of Celebes probably marking its furthest westward extension, beyond which was a wide ocean. At the same time Asia appears to have been extending its limits in a southeast direction, first in an unbroken mass, then separated into islands as we now see it, and almost coming into actual contact with the scattered fragments of the great southern land.

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.

One of the chief objects of my travels was to obtain evidence of this nature; and my search after such evidence has been rewarded by great success, so that I have been able to trace out with some probability the past changes which one of the most interesting parts of the earth has undergone. It may be thought that the facts and generalizations here given would have been more appropriately placed at the end rather than at the beginning of a narrative of the travels which supplied the facts. In some cases this might be so, but I have found it impossible to give such an account as I desire of the natural history of the numerous islands and groups of islands in the Archipelago, without constant reference to these generalizations which add so much to their

interest. Having given this general sketch of the subject, I shall be able to show how the same principles can be applied to the individual islands of a group, as to the whole Archipelago; and thereby make my account of the many new and curious animals which inhabit them both, more interesting and more instructive than if treated as mere isolated facts.

Contrasts of Races.—Before I had arrived at the conviction that the eastern and western halves of the Archipelago belonged to distinct primary regions of the earth, I had been led to group the natives of the Archipelago under two radically distinct races. In this I differed from most ethnologists who had before written on the subject; for it had been the almost universal custom to follow William von Humboldt and Pritchard, in classing all the Oceanic races as modifications of one type. Observation soon showed me, however, that Malays and Papuans differed radically in every physical, mental, and moral character; and more detailed research, continued for eight years, satisfied me that under these two forms, as types, the whole of the peoples of the Malay Archipelago and Polynesia could be classified. On drawing the line which separates these races, it is found to come near to that which divides the zoological regions, but somewhat eastward of it; a circumstance which appears to me very significant of the same causes having influenced the distribution of mankind that have determined the range of other animal forms.

The reason why exactly the same line does not limit both is sufficiently intelligible. Man has means of traversing the sea

which animals do not possess; and a superior race has power to press out or assimilate an inferior one. The maritime enterprise and higher civilization of the Malay races have enabled them to overrun a portion of the adjacent region, in which they have entirely supplanted the indigenous inhabitants if it ever possessed any; and to spread much of their language, their domestic animals, and their customs far over the Pacific, into islands where they have but slightly, or not at all, modified the physical or moral characteristics of the people.

I believe, therefore, that all the peoples of the various islands can be grouped either with the Malays or the Papuans; and that these two have no traceable affinity to each other. I believe, further, that all the races east of the line I have drawn have more affinity for each other than they have for any of the races west of that line; that, in fact, the Asiatic races include the Malays, and all have a continental origin, while the Pacific races, including all to the east of the former (except perhaps some in the Northern Pacific), are derived, not from any existing continent, but from lands which now exist or have recently existed in the Pacific Ocean. These preliminary observations will enable the reader better to apprehend the importance I attach to the details of physical form or moral character, which I shall give in describing the inhabitants of many of the islands.

CHAPTER II. SINGAPORE

(A SKETCH OF THE TOWN AND ISLAND AS SEEN DURING SEVERAL VISITS FROM 1854 TO 1862.)

FEW places are more interesting to a traveller from Europe than the town and island of Singapore, furnishing, as it does, examples of a variety of Eastern races, and of many different religions and modes of life. The government, the garrison, and the chief merchants are English; but the great mass of the population is Chinese, including some of the wealthiest merchants, the agriculturists of the interior, and most of the mechanics and labourers. The native Malays are usually fishermen and boatmen, and they form the main body of the police. The Portuguese of Malacca supply a large number of the clerks and smaller merchants. The Klings of Western India are a numerous body of Mahometans, and, with many Arabs, are petty merchants and shopkeepers. The grooms and washermen are all Bengalees, and there is a small but highly respectable class of Parsee merchants. Besides these, there are numbers of Javanese sailors and domestic servants, as well as traders from Celebes, Bali, and many other islands of the Archipelago. The

harbour is crowded with men-of-war and trading vessels of many European nations, and hundreds of Malay praus and Chinese junks, from vessels of several hundred tons burthen down to little fishing boats and passenger sampans; and the town comprises handsome public buildings and churches, Mahometan mosques, Hindu temples, Chinese joss-houses, good European houses, massive warehouses, queer old Kling and China bazaars, and long suburbs of Chinese and Malay cottages.

By far the most conspicuous of the various kinds of people in Singapore, and those which most attract the stranger's attention, are the Chinese, whose numbers and incessant activity give the place very much the appearance of a town in China. The Chinese merchant is generally a fat round-faced man with an important and business-like look. He wears the same style of clothing (loose white smock, and blue or black trousers) as the meanest coolie, but of finer materials, and is always clean and neat; and his long tail tipped with red silk hangs down to his heels. He has a handsome warehouse or shop in town and a good house in the country. He keeps a fine horse and gig, and every evening may be seen taking a drive bareheaded to enjoy the cool breeze. He is rich—he owns several retail shops and trading schooners, he lends money at high interest and on good security, he makes hard bargains, and gets fatter and richer every year.

In the Chinese bazaar are hundreds of small shops in which a miscellaneous collection of hardware and dry goods are to be found, and where many things are sold wonderfully cheap. You

may buy gimlets at a penny each, white cotton thread at four balls for a halfpenny, and penknives, corkscrews, gunpowder, writing-paper, and many other articles as cheap or cheaper than you can purchase them in England. The shopkeeper is very good-natured; he will show you everything he has, and does not seem to mind if you buy nothing. He bates a little, but not so much as the Klings, who almost always ask twice what they are willing to take. If you buy a few things from him, he will speak to you afterwards every time you pass his shop, asking you to walk in and sit down, or take a cup of tea; and you wonder how he can get a living where so many sell the same trifling articles.

The tailors sit at a table, not on one; and both they and the shoemakers work well and cheaply. The barbers have plenty to do, shaving heads and cleaning ears; for which latter operation they have a great array of little tweezers, picks, and brushes. In the outskirts of the town are scores of carpenters and blacksmiths. The former seem chiefly to make coffins and highly painted and decorated clothes-boxes. The latter are mostly gun-makers, and bore the barrels of guns by hand out of solid bars of iron. At this tedious operation they may be seen every day, and they manage to finish off a gun with a flintlock very handsomely. All about the streets are sellers of water, vegetables, fruit, soup, and agar-agar (a jelly made of seaweed), who have many cries as unintelligible as those of London. Others carry a portable cooking-apparatus on a pole balanced by a table at the other end, and serve up a meal of shellfish, rice, and vegetables for two or

three halfpence—while coolies and boatmen waiting to be hired are everywhere to be met with.

In the interior of the island the Chinese cut down forest trees in the jungle, and saw them up into planks; they cultivate vegetables, which they bring to market; and they grow pepper and gambir, which form important articles of export. The French Jesuits have established missions among these inland Chinese, which seem very successful. I lived for several weeks at a time with the missionary at Bukit-tima, about the centre of the island, where a pretty church has been built and there are about 300 converts. While there, I met a missionary who had just arrived from Tonquin, where he had been living for many years. The Jesuits still do their work thoroughly as of old. In Cochin China, Tonquin, and China, where all Christian teachers are obliged to live in secret, and are liable to persecution, expulsion, and sometimes death, every province —even those farthest in the interior—has a permanent Jesuit mission establishment constantly kept up by fresh aspirants, who are taught the languages of the countries they are going to at Penang or Singapore. In China there are said to be near a million converts; in Tonquin and Cochin China, more than half a million. One secret of the success of these missions is the rigid economy practised in the expenditure of the funds. A missionary is allowed about £30. a year, on which he lives in whatever country he may be. This renders it possible to support a large number of missionaries with very limited means; and the natives, seeing

their teachers living in poverty and with none of the luxuries of life, are convinced that they are sincere in what they teach, and have really given up home and friends and ease and safety, for the good of others. No wonder they make converts, for it must be a great blessing to the poor people among whom they labour to have a man among them to whom they can go in any trouble or distress, who will comfort and advise them, who visits them in sickness, who relieves them in want, and who they see living from day-to-day in danger of persecution and death—entirely for their sakes.

My friend at Bukit-tima was truly a father to his flock. He preached to them in Chinese every Sunday, and had evenings for discussion and conversation on religion during the week. He had a school to teach their children. His house was open to them day and night. If a man came to him and said, "I have no rice for my family to eat today," he would give him half of what he had in the house, however little that might be. If another said, "I have no money to pay my debt," he would give him half the contents of his purse, were it his last dollar. So, when he was himself in want, he would send to some of the wealthiest among his flock, and say, "I have no rice in the house," or "I have given away my money, and am in want of such and such articles." The result was that his flock trusted and loved him, for they felt sure that he was their true friend, and had no ulterior designs in living among them.

The island of Singapore consists of a multitude of small hills,

three or four hundred feet high, the summits of many of which are still covered with virgin forest. The mission-house at Bukit-tima was surrounded by several of these wood-topped hills, which were much frequented by woodcutters and sawyers, and offered me an excellent collecting ground for insects. Here and there, too, were tiger pits, carefully covered over with sticks and leaves, and so well concealed, that in several cases I had a narrow escape from falling into them. They are shaped like an iron furnace, wider at the bottom than the top, and are perhaps fifteen or twenty feet deep so that it would be almost impossible for a person unassisted to get out of one. Formerly a sharp stake was stuck erect in the bottom; but after an unfortunate traveller had been killed by falling on one, its use was forbidden. There are always a few tigers roaming about Singapore, and they kill on an average a Chinaman every day, principally those who work in the gambir plantations, which are always made in newly-cleared jungle. We heard a tiger roar once or twice in the evening, and it was rather nervous work hunting for insects among the fallen trunks and old sawpits when one of these savage animals might be lurking close by, awaiting an opportunity to spring upon us.

Several hours in the middle of every fine day were spent in these patches of forest, which were delightfully cool and shady by contrast with the bare open country we had to walk over to reach them. The vegetation was most luxuriant, comprising enormous forest trees, as well as a variety of ferns, caladiums, and other undergrowth, and abundance of climbing rattan palms. Insects

were exceedingly abundant and very interesting, and every day furnished scores of new and curious forms.

In about two months I obtained no less than 700 species of beetles, a large proportion of which were quite new, and among them were 130 distinct kinds of the elegant Longicorns (Cerambycidae), so much esteemed by collectors. Almost all these were collected in one patch of jungle, not more than a square mile in extent, and in all my subsequent travels in the East I rarely if ever met with so productive a spot. This exceeding productiveness was due in part no doubt to some favourable conditions in the soil, climate, and vegetation, and to the season being very bright and sunny, with sufficient showers to keep everything fresh. But it was also in a great measure dependent, I feel sure, on the labours of the Chinese wood-cutters. They had been at work here for several years, and during all that time had furnished a continual supply of dry and dead and decaying leaves and bark, together with abundance of wood and sawdust, for the nourishment of insects and their larvae. This had led to the assemblage of a great variety of species in a limited space, and I was the first naturalist who had come to reap the harvest they had prepared. In the same place, and during my walks in other directions, I obtained a fair collection of butterflies and of other orders of insects, so that on the whole I was quite satisfied with these—my first attempts to gain a knowledge of the Natural History of the Malay Archipelago.

CHAPTER III. MALACCA AND MOUNT OPHIR

(JULY TO SEPTEMBER, 1854.)

BIRDS and most other kinds of animals being scarce at Singapore, I left it in July for Malacca, where I spent more than two months in the interior, and made an excursion to Mount Ophir. The old and picturesque town of Malacca is crowded along the banks of the small river, and consists of narrow streets of shops and dwelling houses, occupied by the descendants of the Portuguese, and by Chinamen. In the suburbs are the houses of the English officials and of a few Portuguese merchants, embedded in groves of palms and fruit-trees, whose varied and beautiful foliage furnishes a pleasing relief to the eye, as well as most grateful shade.

The old fort, the large Government House, and the ruins of a cathedral attest the former wealth and importance of this place, which was once as much the centre of Eastern trade as Singapore is now. The following description of it by Linschott, who wrote two hundred and seventy years ago, strikingly exhibits the change it has undergone:

"Malacca is inhabited by the Portuguese and by natives of the

country, called Malays. The Portuguese have here a fortress, as at Mozambique, and there is no fortress in all the Indies, after those of Mozambique and Ormuz, where the captains perform their duty better than in this one. This place is the market of all India, of China, of the Moluccas, and of other islands around about—from all which places, as well as from Banda, Java, Sumatra, Siam, Pegu, Bengal, Coromandel, and India—arrive ships which come and go incessantly, charged with an infinity of merchandises. There would be in this place a much greater number of Portuguese if it were not for the inconvenience, and unhealthiness of the air, which is hurtful not only to strangers, but also to natives of the country. Thence it is that all who live in the country pay tribute of their health, suffering from a certain disease, which makes them lose either their skin or their hair. And those who escape consider it a miracle, which occasions many to leave the country, while the ardent desire of gain induces others to risk their health, and endeavour to endure such an atmosphere. The origin of this town, as the natives say, was very small, only having at the beginning, by reason of the unhealthiness of the air, but six or seven fishermen who inhabited it. But the number was increased by the meeting of fishermen from Siam, Pegu, and Bengal, who came and built a city, and established a peculiar language, drawn from the most elegant modes of speaking of other nations, so that in fact the language of the Malays is at present the most refined, exact, and celebrated of all the East. The name of Malacca was given to this town,

which, by the convenience of its situation, in a short time grew to such wealth, that it does not yield to the most powerful towns and regions around about. The natives, both men and women, are very courteous and are reckoned the most skillful in the world in compliments, and study much to compose and repeat verses and love-songs. Their language is in vogue through the Indies, as the French is here."

At present, a vessel over a hundred tons hardly ever enters its port, and the trade is entirely confined to a few petty products of the forests, and to the fruit, which the trees, planted by the old Portuguese, now produce for the enjoyment of the inhabitants of Singapore. Although rather subject to fevers, it is not at present considered very unhealthy.

The population of Malacca consists of several races. The ubiquitous Chinese are perhaps the most numerous, keeping up their manners, customs, and language; the indigenous Malays are next in point of numbers, and their language is the Lingua-franca of the place. Next come the descendants of the Portuguese —a mixed, degraded, and degenerate race, but who still keep up the use of their mother tongue, though ruefully mutilated in grammar; and then there are the English rulers, and the descendants of the Dutch, who all speak English. The Portuguese spoken at Malacca is a useful philological phenomenon. The verbs have mostly lost their inflections, and one form does for all moods, tenses, numbers, and persons. Eu vai, serves for "I go," "I went," or, "I will go." Adjectives, too, have been deprived

of their feminine and plural terminations, so that the language is reduced to a marvellous simplicity, and, with the admixture of a few Malay words, becomes rather puzzling to one who has heard only the pure Lusitanian.

In costume these several peoples are as varied as in their speech. The English preserve the tight-fitting coat, waistcoat, and trousers, and the abominable hat and cravat; the Portuguese patronise a light jacket, or, more frequently, shirt and trousers only; the Malays wear their national jacket and sarong (a kind of kilt), with loose drawers; while the Chinese never depart in the least from their national dress, which, indeed, it is impossible to improve for a tropical climate, whether as regards comfort or appearance. The loosely-hanging trousers, and neat white half-shirt half-jacket, are exactly what a dress should be in this low latitude.

I engaged two Portuguese to accompany me into the interior; one as a cook, the other to shoot and skin birds, which is quite a trade in Malacca. I first stayed a fortnight at a village called Gading, where I was accommodated in the house of some Chinese converts, to whom I was recommended by the Jesuit missionaries. The house was a mere shed, but it was kept clean, and I made myself sufficiently comfortable. My hosts were forming a pepper and gambir plantation, and in the immediate neighbourhood were extensive tin-washings, employing over a thousand Chinese. The tin is obtained in the form of black grains from beds of quartzose sand, and is melted into ingots in rude

clay furnaces. The soil seemed poor, and the forest was very dense with undergrowth, and not at all productive of insects; but, on the other hand, birds were abundant, and I was at once introduced to the rich ornithological treasures of the Malayan region.

The very first time I fired my gun I brought down one of the most curious and beautiful of the Malacca birds, the blue-billed gaper (Cymbirhynchus macrorhynchus), called by the Malays the "Rainbird." It is about the size of a starling, black and rich claret colour with white shoulder stripes, and a very large and broad bill of the most pure cobalt blue above and orange below, while the iris is emerald green. As the skins dry the bill turns dull black, but even then the bird is handsome. When fresh killed, the contrast of the vivid blue with the rich colours of the plumage is remarkably striking and beautiful. The lovely Eastern trogons, with their rich-brown backs, beautifully pencilled wings, and crimson breasts, were also soon obtained, as well as the large green barbets (Megalaema versicolor)—fruit-eating birds, something like small toucans, with a short, straight bristly bill, and whose head and neck are variegated with patches of the most vivid blue and crimson. A day or two after, my hunter brought me a specimen of the green gaper (Calyptomena viridis), which is like a small cock-of-the-rock, but entirely of the most vivid green, delicately marked on the wings with black bars. Handsome woodpeckers and gay kingfishers, green and brown cuckoos with velvety red faces and green beaks, red-breasted

doves and metallic honeysuckers, were brought in day after day, and kept me in a continual state of pleasurable excitement. After a fortnight one of my servants was seized with fever, and on returning to Malacca, the same disease, attacked the other as well as myself. By a liberal use of quinine, I soon recovered, and obtaining other men, went to stay at the Government bungalow of Ayer-panas, accompanied by a young gentleman, a native of the place, who had a taste for natural history.

At Ayer-panas we had a comfortable house to stay in, and plenty of room to dry and preserve our specimens; but, owing to there being no industrious Chinese to cut down timber, insects were comparatively scarce, with the exception of butterflies, of which I formed a very fine collection. The manner in which I obtained one fine insect was curious, and indicates how fragmentary and imperfect a traveller's collection must necessarily be. I was one afternoon walking along a favourite road through the forest, with my gun, when I saw a butterfly on the ground. It was large, handsome, and quite new to me, and I got close to it before it flew away. I then observed that it had been settling on the dung of some carnivorous animal. Thinking it might return to the same spot, I next day after breakfast took my net, and as I approached the place was delighted to see the same butterfly sitting on the same piece of dung, and succeeded in capturing it. It was an entirely new species of great beauty, and has been named by Mr. Hewitson—Nymphalis calydona. I never saw another specimen of it, and it was only after twelve

years had elapsed that a second individual reached this country from the northwestern part of Borneo.

Having determined to visit Mount Ophir, which is situated in the middle of the peninsula about fifty miles east of Malacca, we engaged six Malays to accompany us and carry our baggage. As we meant to stay at least a week at the mountain, we took with us a good supply of rice, a little biscuit, butter and coffee, some dried fish and a little brandy, with blankets, a change of clothes, insect and bird boxes, nets, guns and ammunition. The distance from Ayer-panas was supposed to be about thirty miles.

Our first day's march lay through patches of forest, clearings, and Malay villages, and was pleasant enough. At night we slept at the house of a Malay chief, who lent us a verandah, and gave us a fowl and some eggs. The next day the country got wilder and more hilly. We passed through extensive forests, along paths often up to our knees in mud, and were much annoyed by the leeches for which this district is famous. These little creatures infest the leaves and herbage by the side of the paths, and when a passenger comes along they stretch themselves out at full length, and if they touch any part of his dress or body, quit their leaf and adhere to it. They then creep on to his feet, legs, or other part of his body and suck their fill, the first puncture being rarely felt during the excitement of walking. On bathing in the evening we generally found half a dozen or a dozen on each of us, most frequently on our legs, but sometimes on our bodies, and I had one who sucked his fill from the side of my neck, but who luckily

missed the jugular vein. There are many species of these forest leeches. All are small, but some are beautifully marked with stripes of bright yellow. They probably attach themselves to deer or other animals which frequent the forest paths, and have thus acquired the singular habit of stretching themselves out at the sound of a footstep or of rustling foliage. Early in the afternoon we reached the foot of the mountain, and encamped by the side of a fine stream, whose rocky banks were overgrown with ferns. Our oldest Malay had been accustomed to shoot birds in this neighbourhood for the Malacca dealers, and had been to the top of the mountain, and while we amused ourselves shooting and insect hunting, he went with two others to clear the path for our ascent the next day.

Early next morning we started after breakfast, carrying blankets and provisions, as we intended to sleep upon the mountain. After passing a little tangled jungle and swampy thickets through which our men had cleared a path, we emerged into a fine lofty forest pretty clear of undergrowth, and in which we could walk freely. We ascended steadily up a moderate slope for several miles, having a deep ravine on our left. We then had a level plateau or shoulder to cross, after which the ascent was steeper and the forest denser until we came out upon the "Padang-batu," or stone field, a place of which we had heard much, but could never get anyone to describe intelligibly. We found it to be a steep slope of even rock, extending along the mountain side farther than we could see. Parts of it were quite

bare, but where it was cracked and fissured there grew a most luxuriant vegetation, among which the pitcher plants were the most remarkable. These wonderful plants never seem to succeed well in our hot-houses, and are there seen to little advantage. Here they grew up into half climbing shrubs, their curious pitchers of various sizes and forms hanging abundantly from their leaves, and continually exciting our admiration by their size and beauty. A few coniferae of the genus Dacrydium here first appeared, and in the thickets just above the rocky surface we walked through groves of those splendid ferns Dipteris Horsfieldii and Matonia pectinata, which bear large spreading palmate fronds on slender stems six or eight feet high. The Matonia is the tallest and most elegant, and is known only from this mountain, and neither of them is yet introduced into our hot-houses.

It was very striking to come out from the dark, cool, and shady forest in which we had been ascending since we started, on to this hot, open rocky slope where we seemed to have entered at one step from a lowland to an alpine vegetation. The height, as measured by a sympiesometer, was about 2,800 feet. We had been told we should find water at Padang-batu as we were exceedingly thirsty; but we looked about for it in vain. At last we turned to the pitcher-plants, but the water contained in the pitchers (about half a pint in each) was full of insects, and otherwise uninviting. On tasting it, however, we found it very palatable though rather warm, and we all quenched our thirst from these natural jugs. Farther on we came to forest again, but

of a more dwarf and stunted character than below; and alternately passing along ridges and descending into valleys, we reached a peak separated from the true summit of the mountain by a considerable chasm. Here our porters gave in, and declared they could carry their loads no further; and certainly the ascent to the highest peak was very precipitous. But on the spot where we were there was no water, whereas it was well known that there was a spring close to the summit, so we determined to go on without them, and carry with us only what was absolutely necessary. We accordingly took a blanket each, and divided our food and other articles among us, and went on with only the old Malay and his son.

After descending into the saddle between the two peaks we found the ascent very laborious, the slope being so steep, as often to necessitate hand-climbing. Besides a bushy vegetation the ground was covered knee-deep with mosses on a foundation of decaying leaves and rugged rock, and it was a hard hour's climb to the small ledge just below the summit, where an overhanging rock forms a convenient shelter, and a little basin collects the trickling water. Here we put down our loads, and in a few minutes more stood on the summit of Mount Ophir, 4,000 feet above the sea. The top is a small rocky platform covered with rhododendrons and other shrubs. The afternoon was clear, and the view fine in its way—ranges of hill and valley everywhere covered with interminable forest, with glistening rivers winding among them.

In a distant view a forest country is very monotonous, and no mountain I have ever ascended in the tropics presents a panorama equal to that from Snowdon, while the views in Switzerland are immeasurably superior. When boiling our coffee I took observations with a good boiling-point thermometer, as well as with the sympiesometer, and we then enjoyed our evening meal and the noble prospect that lay before us. The night was calm and very mild, and having made a bed of twigs and branches over which we laid our blankets, we passed a very comfortable night. Our porters had followed us after a rest, bringing only their rice to cook, and luckily we did not require the baggage they left behind them. In the morning I caught a few butterflies and beetles, and my friend got a few land-shells; and we then descended, bringing with us some specimens of the ferns and pitcher-plants of Padang-batu.

The place where we had first encamped at the foot of the mountain being very gloomy, we chose another in a kind of swamp near a stream overgrown with Zingiberaceous plants, in which a clearing was easily made. Here our men built two little huts without sides that would just shelter us from the rain; we lived in them for a week, shooting and insect-hunting, and roaming about the forests at the foot of the mountain. This was the country of the great Argus pheasant, and we continually heard its cry. On asking the old Malay to try and shoot one for me, he told me that although he had been for twenty years shooting birds in these forests he had never yet shot one, and had

never even seen one except after it had been caught. The bird is so exceedingly shy and wary, and runs along the ground in the densest parts of the forest so quickly, that it is impossible to get near it; and its sober colours and rich eye-like spots, which are so ornamental when seen in a museum, must harmonize well with the dead leaves among which it dwells, and render it very inconspicuous. All the specimens sold in Malacca are caught in snares, and my informant, though he had shot none, had snared plenty.

The tiger and rhinoceros are still found here, and a few years ago elephants abounded, but they have lately all disappeared. We found some heaps of dung, which seemed to be that of elephants, and some tracks of the rhinoceros, but saw none of the animals. However, we kept a fire up all night in case any of these creatures should visit us, and two of our men declared that they did one day see a rhinoceros. When our rice was finished, and our boxes full of specimens, we returned to Ayer-Panas, and a few days afterwards went on to Malacca, and thence to Singapore. Mount Ophir has quite a reputation for fever, and all our friends were astonished at our recklessness in staying so long at its foot; but none of us suffered in the least, and I shall ever look back with pleasure to my trip as being my first introduction to mountain scenery in the Eastern tropics.

The meagreness and brevity of the sketch I have here given of my visit to Singapore and the Malay Peninsula is due to my having trusted chiefly to some private letters and a notebook,

which were lost; and to a paper on Malacca and Mount Ophir which was sent to the Royal Geographical Society, but which was neither read nor printed owing to press of matter at the end of a session, and the MSS. of which cannot now be found. I the less regret this, however, as so many works have been written on these parts; and I always intended to pass lightly over my travels in the western and better known portions of the Archipelago, in order to devote more space to the remoter districts, about which hardly anything has been written in the English language.

CHAPTER IV. BORNEO —THE ORANGUTAN

I ARRIVED at Sarawak on November 1st, 1854, and left it on January 25th, 1856. In the interval I resided at many different localities, and saw a good deal of the Dyak tribes as well as of the Bornean Malays. I was hospitably entertained by Sir James Brooke, and lived in his house whenever I was at the town of Sarawak in the intervals of my journeys. But so many books have been written about this part of Borneo since I was there, that I shall avoid going into details of what I saw and heard and thought of Sarawak and its ruler, confining myself chiefly to my experiences as a naturalist in search of shells, insects, birds and the Orangutan, and to an account of a journey through a part of the interior seldom visited by Europeans.

The first four months of my visit were spent in various parts of the Sarawak River, from Santubong at its mouth up to the picturesque limestone mountains and Chinese gold-fields of Bow and Bede. This part of the country has been so frequently described that I shall pass it over, especially as, owing to its being the height of the wet season, my collections were comparatively poor and insignificant.

In March 1865 I determined to go to the coalworks which were being opened near the Simunjon River, a small branch

of the Sadong, a river east of Sarawak and between it and the Batang-Lupar. The Simunjon enters the Sadong River about twenty miles up. It is very narrow and very winding, and much overshadowed by the lofty forest, which sometimes almost meets over it. The whole country between it and the sea is a perfectly level forest-covered swamp, out of which rise a few isolated hills, at the foot of one of which the works are situated. From the landing-place to the hill a Dyak road had been formed, which consisted solely of tree-trunks laid end to end. Along these the barefooted natives walk and carry heavy burdens with the greatest ease, but to a booted European it is very slippery work, and when one's attention is constantly attracted by the various objects of interest around, a few tumbles into the bog are almost inevitable. During my first walk along this road I saw few insects or birds, but noticed some very handsome orchids in flower, of the genus Coelogyne, a group which I afterwards found to be very abundant, and characteristic of the district. On the slope of the hill near its foot a patch of forest had been cleared away, and several rude houses erected, in which were residing Mr. Coulson the engineer, and a number of Chinese workmen. I was at first kindly accommodated in Mr. Coulson's house, but finding the spot very suitable for me and offering great facilities for collecting, I had a small house of two rooms and a verandah built for myself. Here I remained nearly nine months, and made an immense collection of insects, to which class of animals I devoted my chief attention, owing to the circumstances being

especially favourable.

In the tropics a large proportion of the insects of all orders, and especially of the large and favourite group of beetles, are more or less dependent on vegetation, and particularly on timber, bark, and leaves in various stages of decay. In the untouched virgin forest, the insects which frequent such situations are scattered over an immense extent of country, at spots where trees have fallen through decay and old age, or have succumbed to the fury of the tempest; and twenty square miles of country may not contain so many fallen and decayed trees as are to be found in any small clearing. The quantity and the variety of beetles and of many other insects that can be collected at a given time in any tropical locality, will depend, first upon the immediate vicinity of a great extent of virgin forest, and secondly upon the quantity of trees that for some months past have been, and which are still being cut down, and left to dry and decay upon the ground.

Now, during my whole twelve years' collecting in the western and eastern tropics, I never enjoyed such advantages in this respect as at the Simunjon coalworks. For several months from twenty to fifty Chinamen and Dyaks were employed almost exclusively in clearing a large space in the forest, and in making a wide opening for a railroad to the Sadong River, two miles distant. Besides this, sawpits were established at various points in the jungle, and large trees were felled to be cut up into beams and planks. For hundreds of miles in every direction a magnificent forest extended over plain and mountain, rock and morass, and

I arrived at the spot just as the rains began to diminish and the daily sunshine to increase; a time which I have always found the most favourable season for collecting. The number of openings, sunny places, and pathways were also an attraction to wasps and butterflies; and by paying a cent each for all insects that were brought me, I obtained from the Dyaks and the Chinamen many fine locusts and Phasmidae, as well as numbers of handsome beetles.

When I arrived at the mines, on the 14th of March, I had collected in the four preceding months, 320 different kinds of beetles. In less than a fortnight I had doubled this number, an average of about 24 new species every day. On one day I collected 76 different kinds, of which 34 were new to me. By the end of April I had more than a thousand species, and they then went on increasing at a slower rate, so that I obtained altogether in Borneo about two thousand distinct kinds, of which all but about a hundred were collected at this place, and on scarcely more than a square mile of ground. The most numerous and most interesting groups of beetles were the Longicorns and Rhynchophora, both pre-eminently wood-feeders. The former, characterised by their graceful forms and long antenna, were especially numerous, amounting to nearly three hundred species, nine-tenths of which were entirely new, and many of them remarkable for their large size, strange forms, and beautiful colouring. The latter correspond to our weevils and allied groups, and in the tropics are exceedingly numerous and varied, often

swarming upon dead timber, so that I sometimes obtained fifty or sixty different kinds in a day. My Bornean collections of this group exceeded five hundred species.

My collection of butterflies was not large; but I obtained some rare and very handsome insects, the most remarkable being the Ornithoptera Brookeana, one of the most elegant species known. This beautiful creature has very long and pointed wings, almost resembling a sphinx moth in shape. It is deep velvety black, with a curved band of spots of a brilliant metallic-green colour extending across the wings from tip to tip, each spot being shaped exactly like a small triangular feather, and having very much the effect of a row of the wing coverts of the Mexican trogon, laid upon black velvet. The only other marks are a broad neck-collar of vivid crimson, and a few delicate white touches on the outer margins of the hind wings. This species, which was then quite new and which I named after Sir James Brooke, was very rare. It was seen occasionally flying swiftly in the clearings, and now and then settling for an instant at puddles and muddy places, so that I only succeeded in capturing two or three specimens. In some other parts of the country I was assured it was abundant, and a good many specimens have been sent to England; but as yet all have been males, and we are quite unable to conjecture what the female may be like, owing to the extreme isolation of the species, and its want of close affinity to any other known insect.

One of the most curious and interesting reptiles which I met with in Borneo was a large tree-frog, which was brought me

by one of the Chinese workmen. He assured me that he had seen it come down in a slanting direction from a high tree, as if it flew. On examining it, I found the toes very long and fully webbed to their very extremity, so that when expanded they offered a surface much larger than the body. The forelegs were also bordered by a membrane, and the body was capable of considerable inflation. The back and limbs were of a very deep shining green colour, the undersurface and the inner toes yellow, while the webs were black, rayed with yellow. The body was about four inches long, while the webs of each hind foot, when fully expanded, covered a surface of four square inches, and the webs of all the feet together about twelve square inches. As the extremities of the toes have dilated discs for adhesion, showing the creature to be a true tree frog, it is difficult to imagine that this immense membrane of the toes can be for the purpose of swimming only, and the account of the Chinaman, that it flew down from the tree, becomes more credible. This is, I believe, the first instance known of a "flying frog," and it is very interesting to Darwinians as showing that the variability of the toes which have been already modified for purposes of swimming and adhesive climbing, have been taken advantage of to enable an allied species to pass through the air like the flying lizard. It would appear to be a new species of the genus Rhacophorus, which consists of several frogs of a much smaller size than this, and having the webs of the toes less developed.

During my stay in Borneo I had no hunter to shoot for me

regularly, and, being myself fully occupied with insects, I did not succeed in obtaining a very good collection of the birds or Mammalia, many of which, however, are well known, being identical with species found in Malacca. Among the Mammalia were five squirrels,and two tigercats—the Gymnurus Rafflesii, which looks like a cross between a pig and a polecat, and the Cynogale Bennetti—a rare, otter-like animal, with very broad muzzle clothed with long bristles.

One of my chief objects in coming to stay at Simunjon was to see the Orangutan (or great man-like ape of Borneo) in his native haunts, to study his habits, and obtain good specimens of the different varieties and species of both sexes, and of the adult and young animals. In all these objects I succeeded beyond my expectations, and will now give some account of my experience in hunting the Orangutan, or "Mias," as it is called by the natives; and as this name is short, and easily pronounced, I shall generally use it in preference to Simia satyrus, or Orangutan.

Just a week after my arrival at the mines, I first saw a Mias. I was out collecting insects, not more than a quarter of a mile from the house, when I heard a rustling in a tree near, and, looking up, saw a large red-haired animal moving slowly along, hanging from the branches by its arms. It passed on from tree to tree until it was lost in the jungle, which was so swampy that I could not follow it. This mode of progression was, however, very unusual, and is more characteristic of the Hylobates than of the Orang. I suppose there was some individual peculiarity in this animal, or

the nature of the trees just in this place rendered it the most easy mode of progression.

About a fortnight afterwards I heard that one was feeding in a tree in the swamp just below the house, and, taking my gun, was fortunate enough to find it in the same place. As soon as I approached, it tried to conceal itself among the foliage; but, I got a shot at it, and the second barrel caused it to fall down almost dead, the two balls having entered the body. This was a male, about half-grown, being scarcely three feet high. On April 26th, I was out shooting with two Dyaks, when we found another about the same size. It fell at the first shot, but did not seem much hurt, and immediately climbed up the nearest tree, when I fired, and it again fell, with a broken arm and a wound in the body. The two Dyaks now ran up to it, and each seized hold of a hand, telling me to cut a pole, and they would secure it. But although one arm was broken and it was only a half-grown animal, it was too strong for these young savages, drawing them up towards its mouth notwithstanding all their efforts, so that they were again obliged to leave go, or they would have been seriously bitten. It now began climbing up the tree again; and, to avoid trouble, I shot it through the heart.

On May 2nd, I again found one on a very high tree, when I had only a small 80-bore gun with me. However, I fired at it, and on seeing me it began howling in a strange voice like a cough, and seemed in a great rage, breaking off branches with its hands and throwing them down, and then soon made off over the tree-

tops. I did not care to follow it, as it was swampy, and in parts dangerous, and I might easily have lost myself in the eagerness of pursuit.

On the 12th of May I found another, which behaved in a very similar manner, howling and hooting with rage, and throwing down branches. I shot at it five times, and it remained dead on the top of the tree, supported in a fork in such a manner that it would evidently not fall. I therefore returned home, and luckily found some Dyaks, who came back with me, and climbed up the tree for the animal. This was the first full-grown specimen I had obtained; but it was a female, and not nearly so large or remarkable as the full-grown males. It was, however, 3 ft. 6 in. high, and its arms stretched out to a width of 6 ft. 6 in. I preserved the skin of this specimen in a cask of arrack, and prepared a perfect skeleton, which was afterwards purchased for the Derby Museum.

Only four days afterwards some Dyaks saw another Mias near the same place, and came to tell me. We found it to be a rather large one, very high up on a tall tree. At the second shot it fell rolling over, but almost immediately got up again and began to climb. At a third shot it fell dead. This was also a full-grown female, and while preparing to carry it home, we found a young one face downwards in the bog. This little creature was only about a foot long, and had evidently been hanging to its mother when she first fell. Luckily it did not appear to have been wounded, and after we had cleaned the mud out of its mouth it began to

cry out, and seemed quite strong and active. While carrying it home it got its hands in my beard, and grasped so tightly that I had great difficulty in getting free, for the fingers are habitually bent inwards at the last joint so as to form complete hooks. At this time it had not a single tooth, but a few days afterwards it cut its two lower front teeth. Unfortunately, I had no milk to give it, as neither Malays, Chinese nor Dyaks ever use the article, and I in vain inquired for any female animal that could suckle my little infant. I was therefore obliged to give it rice-water from a bottle with a quill in the cork, which after a few trials it learned to suck very well. This was very meagre diet, and the little creature did not thrive well on it, although I added sugar and cocoa-nut milk occasionally, to make it more nourishing. When I put my finger in its mouth it sucked with great vigour, drawing in its cheeks with all its might in the vain effort to extract some milk, and only after persevering a long time would it give up in disgust, and set up a scream very like that of a baby in similar circumstances.

When handled or nursed, it was very quiet and contented, but when laid down by itself would invariably cry; and for the first few nights was very restless and noisy. I fitted up a little box for a cradle, with a soft mat for it to lie upon, which was changed and washed every day; and I soon found it necessary to wash the little Mias as well. After I had done so a few times, it came to like the operation, and as soon as it was dirty would begin crying and not leave off until I took it out and carried it to the spout, when it immediately became quiet, although it would wince a

little at the first rush of the cold water and make ridiculously wry faces while the stream was running over its head. It enjoyed the wiping and rubbing dry amazingly, and when I brushed its hair seemed to be perfectly happy, lying quite still with its arms and legs stretched out while I thoroughly brushed the long hair of its back and arms. For the first few days it clung desperately with all four hands to whatever it could lay hold of, and I had to be careful to keep my beard out of its way, as its fingers clutched hold of hair more tenaciously than anything else, and it was impossible to free myself without assistance. When restless, it would struggle about with its hands up in the air trying to find something to take hold of, and, when it had got a bit of stick or rag in two or three of its hands, seemed quite happy. For want of something else, it would often seize its own feet, and after a time it would constantly cross its arms and grasp with each hand the long hair that grew just below the opposite shoulder. The great tenacity of its grasp soon diminished, and I was obliged to invent some means to give it exercise and strengthen its limbs. For this purpose I made a short ladder of three or four rounds, on which I put it to hang for a quarter of an hour at a time. At first it seemed much pleased, but it could not get all four hands in a comfortable position, and, after changing about several times, would leave hold of one hand after the other, and drop onto the floor. Sometimes when hanging only by two hands, it would loose one, and cross it to the opposite shoulder, grasping its own hair; and, as this seemed much more agreeable than the stick, it would

then loose the other and tumble down, when it would cross both and lie on its back quite contentedly, never seeming to be hurt by its numerous tumbles. Finding it so fond of hair, I endeavoured to make an artificial mother, by wrapping up a piece of buffalo-skin into a bundle, and suspending it about a foot from the floor. At first this seemed to suit it admirably, as it could sprawl its legs about and always find some hair, which it grasped with the greatest tenacity. I was now in hopes that I had made the little orphan quite happy; and so it seemed for some time, until it began to remember its lost parent, and try to suck. It would pull itself up close to the skin, and try about everywhere for a likely place; but, as it only succeeded in getting mouthfuls of hair and wool, it would be greatly disgusted, and scream violently, and, after two or three attempts, let go altogether. One day it got some wool into its throat, and I thought it would have choked, but after much gasping it recovered, and I was obliged to take the imitation mother to pieces again, and give up this last attempt to exercise the little creature.

After the first week I found I could feed it better with a spoon, and give it a little more varied and more solid food. Well-soaked biscuit mixed with a little egg and sugar, and sometimes sweet potatoes, were readily eaten; and it was a never-failing amusement to observe the curious changes of countenance by which it would express its approval or dislike of what was given to it. The poor little thing would lick its lips, draw in its cheeks, and turn up its eyes with an expression of the most supreme

satisfaction when it had a mouthful particularly to its taste. On the other hand, when its food was not sufficiently sweet or palatable, it would turn the mouthful about with its tongue for a moment as if trying to extract what flavour there was, and then push it all out between its lips. If the same food was continued, it would set up a scream and kick about violently, exactly like a baby in a passion.

After I had had the little Mias about three weeks, I fortunately obtained a young hare-lip monkey (Macacus cynomolgus), which, though small, was very active, and could feed itself. I placed it in the same box with the Mias, and they immediately became excellent friends, neither exhibiting the least fear of the other. The little monkey would sit upon the other's stomach, or even on its face, without the least regard to its feelings. While I was feeding the Mias, the monkey would sit by, picking up all that was spilt, and occasionally putting out its hands to intercept the spoon; and as soon as I had finished would pick off what was left sticking to the Mias' lips, and then pull open its mouth and see if any still remained inside; afterwards lying down on the poor creature's stomach as on a comfortable cushion. The little helpless Mias would submit to all these insults with the most exemplary patience, only too glad to have something warm near it, which it could clasp affectionately in its arms. It sometimes, however, had its revenge; for when the monkey wanted to go away, the Mias would hold on as long as it could by the loose skin of its back or head, or by its tail, and it was only after many vigorous jumps that the monkey could make his escape.

It was curious to observe the different actions of these two animals, which could not have differed much in age. The Mias, like a very young baby, lying on its back quite helpless, rolling lazily from side to side, stretching out all four hands into the air, wishing to grasp something, but hardly able to guide its fingers to any definite object; and when dissatisfied, opening wide its almost toothless mouth, and expressing its wants by a most infantine scream. The little monkey, on the other hand, in constant motion, running and jumping about wherever it pleased, examining everything around it, seizing hold of the smallest object with the greatest precision, balancing itself on the edge of the box or running up a post, and helping itself to anything eatable that came in its way. There could hardly be a greater contrast, and the baby Mias looked more baby-like by the comparison.

When I had had it about a month, it began to exhibit some signs of learning to run alone. When laid upon the floor it would push itself along by its legs, or roll itself over, and thus make an unwieldy progression. When lying in the box it would lift itself up to the edge into almost an erect position, and once or twice succeeded in tumbling out. When left dirty, or hungry, or otherwise neglected, it would scream violently until attended to, varied by a kind of coughing or pumping noise very similar to that which is made by the adult animal. If no one was in the house, or its cries were not attended to, it would be quiet after a little while, but the moment it heard a footstep would begin again

harder than ever.

After five weeks it cut its two upper front teeth, but in all this time it had not grown the least bit, remaining both in size and weight the same as when I first procured it. This was no doubt owing to the want of milk or other equally nourishing food. Rice-water, rice, and biscuits were but a poor substitute, and the expressed milk of the cocoa-nut which I sometimes gave it did not quite agree with its stomach. To this I imputed an attack of diarrhoea from which the poor little creature suffered greatly, but a small dose of castor-oil operated well, and cured it. A week or two afterwards it was again taken ill, and this time more seriously. The symptoms were exactly those of intermittent fever, accompanied by watery swellings on the feet and head. It lost all appetite for its food, and, after lingering for a week a most pitiable object, died, after being in my possession nearly three months. I much regretted the loss of my little pet, which I had at one time looked forward to bringing up to years of maturity, and taking home to England. For several months it had afforded me daily amusement by its curious ways and the inimitably ludicrous expression of its little countenance. Its weight was three pounds nine ounces, its height fourteen inches, and the spread of its arms twenty-three inches. I preserved its skin and skeleton, and in doing so found that when it fell from the tree it must have broken an arm and a leg, which had, however, united so rapidly that I had only noticed the hard swellings on the limbs where the irregular junction of the bones had taken place.

Exactly a week after I had caught this interesting little animal, I succeeded in shooting a full-grown male Orangutan. I had just come home from an entomologising excursion when Charles [Charles Allen, an English lad of sixteen, accompanied me as an assistant] rushed in out of breath with running and excitement, and exclaimed, interrupted by gasps, "Get the gun, sir,—be quick,—such a large Mias!" "Where is it?" I asked, taking hold of my gun as I spoke, which happened luckily to have one barrel loaded with ball. "Close by, sir—on the path to the mines—he can't get away." Two Dyaks chanced to be in the house at the time, so I called them to accompany me, and started off, telling Charley to bring all the ammunition after me as soon as possible. The path from our clearing to the mines led along the side of the hill a little way up its slope, and parallel with it at the foot a wide opening had been made for a road, in which several Chinamen were working, so that the animal could not escape into the swampy forest below without descending to cross the road or ascending to get round the clearings. We walked cautiously along, not making the least noise, and listening attentively for any sound which might betray the presence of the Mias, stopping at intervals to gaze upwards. Charley soon joined us at the place where he had seen the creature, and having taken the ammunition and put a bullet in the other barrel, we dispersed a little, feeling sure that it must be somewhere near, as it had probably descended the hill, and would not be likely to return again.

After a short time I heard a very slight rustling sound

overhead, but on gazing up could see nothing. I moved about in every direction to get a full view into every part of the tree under which I had been standing, when I again heard the same noise but louder, and saw the leaves shaking as if caused by the motion of some heavy animal which moved off to an adjoining tree. I immediately shouted for all of them to come up and try and get a view, so as to allow me to have a shot. This was not an easy matter, as the Mias had a knack of selecting places with dense foliage beneath. Very soon, however, one of the Dyaks called me and pointed upwards, and on looking I saw a great red hairy body and a huge black face gazing down from a great height, as if wanting to know what was making such a disturbance below. I instantly fired, and he made off at once, so that I could not then tell whether I had hit him.

He now moved very rapidly and very noiselessly for so large an animal, so I told the Dyaks to follow and keep him in sight while I loaded. The jungle was here full of large angular fragments of rock from the mountain above, and thick with hanging and twisted creepers. Running, climbing, and creeping among these, we came up with the creature on the top of a high tree near the road, where the Chinamen had discovered him, and were shouting their astonishment with open mouths: "Ya Ya, Tuan; Orangutan, Tuan." Seeing that he could not pass here without descending, he turned up again towards the hill, and I got two shots, and following quickly, had two more by the time he had again reached the path, but he was always more or less concealed

by foliage, and protected by the large branch on which he was walking. Once while loading I had a splendid view of him, moving along a large limb of a tree in a semi-erect posture, and showing it to be an animal of the largest size. At the path he got on to one of the loftiest trees in the forest, and we could see one leg hanging down useless, having been broken by a ball. He now fixed himself in a fork, where he was hidden by thick foliage, and seemed disinclined to move. I was afraid he would remain and die in this position, and as it was nearly evening. I could not have got the tree cut down that day. I therefore fired again, and he then moved off, and going up the hill was obliged to get on to some lower trees, on the branches of one of which he fixed himself in such a position that he could not fall, and lay all in a heap as if dead, or dying.

I now wanted the Dyaks to go up and cut off the branch he was resting on, but they were afraid, saying he was not dead, and would come and attack them. We then shook the adjoining tree, pulled the hanging creepers, and did all we could to disturb him, but without effect, so I thought it best to send for two Chinamen with axes to cut down the tree. While the messenger was gone, however, one of the Dyaks took courage and climbed towards him, but the Mias did not wait for him to get near, moving off to another tree, where he got on to a dense mass of branches and creepers which almost completely hid him from our view. The tree was luckily a small one, so when the axes came we soon had it cut through; but it was so held up by jungle ropes and climbers

to adjoining trees that it only fell into a sloping position. The Mias did not move, and I began to fear that after all we should not get him, as it was near evening, and half a dozen more trees would have to be cut down before the one he was on would fall. As a last resource we all began pulling at the creepers, which shook the tree very much, and, after a few minutes, when we had almost given up all hope, down he came with a crash and a thud like the fall of a giant. And he was a giant, his head and body being fully as large as a man's. He was of the kind called by the Dyaks "Mias Chappan," or "Mias Pappan," which has the skin of the face broadened out to a ridge or fold at each side. His outstretched arms measured seven feet three inches across, and his height, measuring fairly from the top of the head to the heel was four feet two inches. The body just below the arms was three feet two inches round, and was quite as long as a man's, the legs being exceedingly short in proportion. On examination we found he had been dreadfully wounded. Both legs were broken, one hip-joint and the root of the spine completely shattered, and two bullets were found flattened in his neck and jaws. Yet he was still alive when he fell. The two Chinamen carried him home tied to a pole, and I was occupied with Charley the whole of the next day preparing the skin and boiling the bones to make a perfect skeleton, which are now preserved in the Museum at Derby.

About ten days after this, on June 4th, some Dyaks came to tell us that the day before a Mias had nearly killed one of their companions. A few miles down the river there is a Dyak house,

and the inhabitants saw a large Orang feeding on the young shoots of a palm by the riverside. On being alarmed he retreated towards the jungle which was close by, and a number of the men, armed with spears and choppers, ran out to intercept him. The man who was in front tried to run his spear through the animal's body, but the Mias seized it in his hands, and in an instant got hold of the man's arm, which he seized in his mouth, making his teeth meet in the flesh above the elbow, which he tore and lacerated in a dreadful manner. Had not the others been close behind, the man would have been more seriously injured, if not killed, as he was quite powerless; but they soon destroyed the creature with their spears and choppers. The man remained ill for a long time, and never fully recovered the use of his arm.

They told me the dead Mias was still lying where it had been killed, so I offered them a reward to bring it up to our landing-place immediately, which they promised to do. They did not come, however, until the next day, and then decomposition had commenced, and great patches of the hair came off, so that it was useless to skin it. This I regretted much, as it was a very fine full-grown male. I cut off the head and took it home to clean, while I got my men to make a closed fence about five feet high around the rest of the body, which would soon be devoured by maggots, small lizards, and ants, leaving me the skeleton. There was a great gash in his face, which had cut deep into the bone, but the skull was a very fine one, and the teeth were remarkably large and perfect.

On June 18th I had another great success, and obtained a fine adult male. A Chinaman told me he had seen him feeding by the side of the path to the river, and I found him at the same place as the first individual I had shot. He was feeding on an oval green fruit having a fine red arillus, like the mace which surrounds the nutmeg, and which alone he seemed to eat, biting off the thick outer rind and dropping it in a continual shower. I had found the same fruit in the stomach of some others which I had killed. Two shots caused this animal to loose his hold, but he hung for a considerable time by one hand, and then fell flat on his face and was half buried in the swamp. For several minutes he lay groaning and panting, while we stood close around, expecting every breath to be his last. Suddenly, however, by a violent effort he raised himself up, causing us all to step back a yard or two, when, standing nearly erect, he caught hold of a small tree, and began to ascend it. Another shot through the back caused him to fall down dead. A flattened bullet was found in his tongue, having entered the lower part of the abdomen and completely traversed the body, fracturing the first cervical vertebra. Yet it was after this fearful wound that he had risen, and begun climbing with considerable facility. This also was a full-grown male of almost exactly the same dimensions as the other two I had measured.

On June 21st I shot another adult female, which was eating fruit in a low tree, and was the only one which I ever killed by a single ball.

On June 24th I was called by a Chinaman to shoot a Mias,

which, he said, was on a tree close by his house, at the coal-mines. Arriving at the place, we had some difficulty in finding the animal, as he had gone off into the jungle, which was very rocky and difficult to traverse. At last we found him up a very high tree, and could see that he was a male of the largest size. As soon as I had fired, he moved higher up the tree, and while he was doing so I fired again; and we then saw that one arm was broken. He had now reached the very highest part of an immense tree, and immediately began breaking off boughs all around, and laying them across and across to make a nest. It was very interesting to see how well he had chosen his place, and how rapidly he stretched out his unwounded arm in every direction, breaking off good-sized boughs with the greatest ease, and laying them back across each other, so that in a few minutes he had formed a compact mass of foliage, which entirely concealed him from our sight. He was evidently going to pass the night here, and would probably get away early the next morning, if not wounded too severely. I therefore fired again several times, in hopes of making him leave his nest; but, though I felt sure I had hit him, as at each shot he moved a little, he would not go away. At length he raised himself up, so that half his body was visible, and then gradually sank down, his head alone remaining on the edge of the nest. I now felt sure he was dead, and tried to persuade the Chinaman and his companion to cut down the tree; but it was a very large one, and they had been at work all day, and nothing would induce them to attempt it. The next morning, at daybreak, I came to

the place, and found that the Mias was evidently dead, as his head was visible in exactly the same position as before. I now offered four Chinamen a day's wages each to cut the tree down at once, as a few hours of sunshine would cause decomposition on the surface of the skin; but, after looking at it and trying it, they determined that it was very big and very hard, and would not attempt it. Had I doubled my offer, they would probably have accepted it, as it would not have been more than two or three hours' work; and had I been on a short visit only, I would have done so; but as I was a resident, and intended remaining several months longer, it would not have answered to begin paying too exorbitantly, or I should have got nothing done in the future at a lower rate.

For some weeks after, a cloud of flies could be seen all day, hovering over the body of the dead Mias; but in about a month all was quiet, and the body was evidently drying up under the influence of a vertical sun alternating with tropical rains. Two or three months later two Malays, on the offer of a dollar, climbed the tree and let down the dried remains. The skin was almost entirely enclosing the skeleton, and inside were millions of the pupa-cases of flies and other insects, with thousands of two or three species of small necrophagous beetles. The skull had been much shattered by balls, but the skeleton was perfect, except one small wristbone, which had probably dropped out and been carried away by a lizard.

Three days after I had shot this one and lost it, Charles found

three small Orangs feeding together. We had a long chase after them, and had a good opportunity of seeing how they make their way from tree to tree by always choosing those limbs whose branches are intermingled with those of some other tree, and then grasping several of the small twigs together before they venture to swing themselves across. Yet they do this so quickly and certainly, that they make way among the trees at the rate of full five or six miles an hour, as we had continually to run to keep up with them. One of these we shot and killed, but it remained high up in the fork of a tree; and, as young animals are of comparatively little interest, I did not have the tree cut down to get it.

At this time I had the misfortune to slip among some fallen trees, and hurt my ankle; and, not being careful enough at first, it became a severe inflamed ulcer, which would not heal, and kept me a prisoner in the house the whole of July and part of August. When I could get out again, I determined to take a trip up a branch of the Simunjon River to Semabang, where there was said to be a large Dyak house, a mountain with abundance of fruit, and plenty of Orangs and fine birds. As the river was very narrow, and I was obliged to go in a very small boat with little luggage, I only took with me a Chinese boy as a servant. I carried a cask of medicated arrack to put Mias skins in, and stores and ammunition for a fortnight. After a few miles, the stream became very narrow and winding, and the whole country on each side was flooded. On the banks were an abundance of monkeys—the

common Macacus cynomolgus, a black Semnopithecus, and the extraordinary long-nosed monkey (Nasalis larvatus), which is as large as a three-year old child, has a very long tail, and a fleshy nose longer than that of the biggest-nosed man. The further we went on the narrower and more winding the stream became; fallen trees sometimes blocked up our passage, and sometimes tangled branches and creepers met completely across it, and had to be cut away before we could get on. It took us two days to reach Semabang, and we hardly saw a bit of dry land all the way. In the latter part of the journey I could touch the bushes on each side for miles; and we were often delayed by the screw-pines (Pandanus), which grow abundantly in the water, falling across the stream. In other places dense rafts of floating grass completely filled up the channel, making our journey a constant succession of difficulties.

Near the landing-place we found a fine house, 250 feet long, raised high above the ground on posts, with a wide verandah and still wider platform of bamboo in front of it. Almost all the people, however, were away on some excursion after edible birds'-nests or bees'-wax, and there only remained in the house two or three old men and women with a lot of children. The mountain or hill was close by, covered with a complete forest of fruit-trees, among which the Durian and Mangosteen were very abundant; but the fruit was not yet quite ripe, except a little here and there. I spent a week at this place, going out everyday in various directions about the mountain, accompanied by a Malay, who had stayed with me while the other boatmen returned. For

three days we found no Orangs, but shot a deer and several monkeys. On the fourth day, however, we found a Mias feeding on a very lofty Durian tree, and succeeded in killing it, after eight shots. Unfortunately it remained in the tree, hanging by its hands, and we were obliged to leave it and return home, as it was several miles off. As I felt pretty sure it would fall during the night, I returned to the place early the next morning, and found it on the ground beneath the tree. To my astonishment and pleasure, it appeared to be a different kind from any I had yet seen; for although a full-grown male, by its fully developed teeth and very large canines, it had no sign of the lateral protuberance on the face, and was about one-tenth smaller in all its dimensions than the other adult males. The upper incisors, however, appeared to be broader than in the larger species, a character distinguishing the Simia morio of Professor Owen, which he had described from the cranium of a female specimen. As it was too far to carry the animal home, I set to work and skinned the body on the spot, leaving the head, hands, and feet attached, to be finished at home. This specimen is now in the British Museum.

At the end of a week, finding no more Orangs, I returned home; and, taking in a few fresh stores, and this time accompanied by Charles, went up another branch of the river, very similar in character, to a place called Menyille, where there were several small Dyak houses and one large one. Here the landing place was a bridge of rickety poles, over a considerable distance of water; and I thought it safer to leave my cask of

arrack securely placed in the fork of a tree. To prevent the natives from drinking it, I let several of them see me put in a number of snakes and lizards; but I rather think this did not prevent them from tasting it. We were accommodated here in the verandah of the large house, in which were several great baskets of dried human heads, the trophies of past generations of head-hunters. Here also there was a little mountain covered with fruit-trees, and there were some magnificent Durian trees close by the house, the fruit of which was ripe; and as the Dyaks looked upon me as a benefactor in killing the Mias, which destroys a great deal of their fruit, they let us eat as much as we liked; we revelled in this emperor of fruits in its greatest perfection.

The very day after my arrival in this place, I was so fortunate as to shoot another adult male of the small Orang, the Mias-kassir of the Dyaks. It fell when dead, but caught in a fork of the tree and remained fixed. As I was very anxious to get it, I tried to persuade two young Dyaks who were with me to cut down the tree, which was tall, perfectly straight and smooth-barked, and without a branch for fifty or sixty feet. To my surprise, they said they would prefer climbing up it, but it would be a good deal of trouble, and, after a little talking together, they said they would try. They first went to a clump of bamboo that stood near, and cut down one of the largest stems. From this they chopped off a short piece, and splitting it, made a couple of stout pegs, about a foot long and sharp at one end. Then cutting a thick piece of wood for a mallet, they drove one of the pegs into the tree and hung their

weight upon it. It held, and this seemed to satisfy them, for they immediately began making a quantity of pegs of the same kind, while I looked on with great interest, wondering how they could possibly ascend such a lofty tree by merely driving pegs in it, the failure of any one of which at a good height would certainly cause their death. When about two dozen pegs were made, one of them began cutting some very long and slender bamboo from another clump, and also prepared some cord from the bark of a small tree. They now drove in a peg very firmly at about three feet from the ground, and bringing one of the long bamboos, stood it upright close to the tree, and bound it firmly to the two first pegs, by means of the bark cord and small notches near the head of each peg. One of the Dyaks now stood on the first peg and drove in a third, about level with his face, to which he tied the bamboo in the same way, and then mounted another step, standing on one foot, and holding by the bamboo at the peg immediately above him, while he drove in the next one. In this manner he ascended about twenty feet; when the upright bamboo was becoming thin, another was handed up by his companion, and this was joined by tying both bamboos to three or four of the pegs. When this was also nearly ended, a third was added, and shortly after, the lowest branches of the tree were reached, along which the young Dyak scrambled, and soon sent the Mias tumbling down headlong. I was exceedingly struck by the ingenuity of this mode of climbing, and the admirable manner in which the peculiar properties of the bamboo were made available. The ladder itself was perfectly

safe, since if any one peg were loose or faulty, and gave way, the strain would be thrown on several others above and below it. I now understood the use of the line of bamboo pegs sticking in trees, which I had often seen, and wondered for what purpose they could have been put there. This animal was almost identical in size and appearance with the one I had obtained at Semabang, and was the only other male specimen of the Simia morio which I obtained. It is now in the Derby Museum.

I afterwards shot two adult females and two young ones of different ages, all of which I preserved. One of the females, with several young ones, was feeding on a Durian tree with unripe fruit; and as soon as she saw us she began breaking off branches and the great spiny fruits with every appearance of rage, causing such a shower of missiles as effectually kept us from approaching too near the tree. This habit of throwing down branches when irritated has been doubted, but I have, as here narrated, observed it myself on at least three separate occasions. It was however always the female Mias who behaved in this way, and it may be that the male, trusting more to his great strength and his powerful canine teeth, is not afraid of any other animal, and does not want to drive them away, while the parental instinct of the female leads her to adopt this mode of defending herself and her young ones.

In preparing the skins and skeletons of these animals, I was much troubled by the Dyak dogs, which, being always kept in a state of semi-starvation, are ravenous for animal food. I had a great iron pan, in which I boiled the bones to make skeletons,

and at night I covered this over with boards, and put heavy stones upon it; but the dogs managed to remove these and carried away the greater part of one of my specimens. On another occasion they gnawed away a good deal of the upper leather of my strong boots, and even ate a piece of my mosquito-curtain, where some lamp-oil had been spilt over it some weeks before.

On our return down the stream, we had the fortune to fall in with a very old male Mias, feeding on some low trees growing in the water. The country was flooded for a long distance, but so full of trees and stumps that the laden boat could not be got in among them, and if it could have been we should only have frightened the Mias away. I therefore got into the water, which was nearly up to my waist, and waded on until I was near enough for a shot. The difficulty then was to load my gun again, for I was so deep in the water that I could not hold the gun sloping enough to pour the powder in. I therefore had to search for a shallow place, and after several shots under these trying circumstances, I was delighted to see the monstrous animal roll over into the water. I now towed him after me to the stream, but the Malays objected to having the animal put into the boat, and he was so heavy that I could not do it without their help. I looked about for a place to skin him, but not a bit of dry ground was to be seen, until at last I found a clump of two or three old trees and stumps, between which a few feet of soil had collected just above the water, which was just large enough for us to drag the animal upon it. I first measured him, and found him to be by far the largest I had yet seen, for, though

the standing height was the same as the others (4 feet 2 inches), the outstretched arms were 7 feet 9 inches, which was six inches more than the previous one, and the immense broad face was 13 1/2 inches wide, whereas the widest I had hitherto seen was only 11 1/2 inches. The girth of the body was 3 feet 7 1/2 inches. I am inclined to believe, therefore, that the length and strength of the arms, and the width of the face continues increasing to a very great age, while the standing height, from the sole of the foot to the crown of the head, rarely if ever exceeds 4 feet 2 inches.

As this was the last Mias I shot, and the last time I saw an adult living animal, I will give a sketch of its general habits, and any other facts connected with it. The Orangutan is known to inhabit Sumatra and Borneo, and there is every reason to believe that it is confined to these two great islands, in the former of which, however, it seems to be much more rare. In Borneo it has a wide range, inhabiting many districts on the southwest, southeast, northeast, and northwest coasts, but appears to be chiefly confined to the low and swampy forests. It seems, at first sight, very inexplicable that the Mias should be quite unknown in the Sarawak valley, while it is abundant in Sambas, on the west, and Sadong, on the east. But when we know the habits and mode of life of the animal, we see a sufficient reason for this apparent anomaly in the physical features of the Sarawak district. In the Sadong, where I observed it, the Mias is only found when the country is low level and swampy, and at the same time covered with a lofty virgin forest. From these swamps rise many isolated

mountains, on some of which the Dyaks have settled and covered with plantations of fruit trees. These are a great attraction to the Mias, which comes to feed on the unripe fruits, but always retires to the swamp at night. Where the country becomes slightly elevated, and the soil dry, the Mias is no longer to be found. For example, in all the lower part of the Sadong valley it abounds, but as soon as we ascend above the limits of the tides, where the country, though still flat, is high enough to be dry, it disappears. Now the Sarawak valley has this peculiarity—the lower portion though swampy, is not covered with a continuous lofty forest, but is principally occupied by the Nipa palm; and near the town of Sarawak where the country becomes dry, it is greatly undulated in many parts, and covered with small patches of virgin forest, and much second-growth jungle on the ground, which has once been cultivated by the Malays or Dyaks.

Now it seems probable to me that a wide extent of unbroken and equally lofty virgin forest is necessary to the comfortable existence of these animals. Such forests form their open country, where they can roam in every direction with as much facility as the Indian on the prairie, or the Arab on the desert, passing from tree-top to tree-top without ever being obliged to descend upon the earth. The elevated and the drier districts are more frequented by man, more cut up by clearings and low second-growth jungle —not adapted to its peculiar mode of progression, and where it would therefore be more exposed to danger, and more frequently obliged to descend upon the earth. There is probably also a

greater variety of fruit in the Mias district, the small mountains which rise like islands out of it serving as gardens or plantations of a sort, where the trees of the uplands are to be found in the very midst of the swampy plains.

It is a singular and very interesting sight to watch a Mias making his way leisurely through the forest. He walks deliberately along some of the larger branches in the semi-erect attitude which the great length of his arms and the shortness of his legs cause him naturally to assume; and the disproportion between these limbs is increased by his walking on his knuckles, not on the palm of the hand, as we should do. He seems always to choose those branches which intermingle with an adjoining tree, on approaching which he stretches out his long arms, and seizing the opposing boughs, grasps them together with both hands, seems to try their strength, and then deliberately swings himself across to the next branch, on which he walks along as before. He never jumps or springs, or even appears to hurry himself, and yet manages to get along almost as quickly as a person can run through the forest beneath. The long and powerful arms are of the greatest use to the animal, enabling it to climb easily up the loftiest trees, to seize fruits and young leaves from slender boughs which will not bear its weight, and to gather leaves and branches with which to form its nest. I have already described how it forms a nest when wounded, but it uses a similar one to sleep on almost every night. This is placed low down, however, on a small tree not more than from twenty to fifty feet from the ground, probably

because it is warmer and less exposed to wind than higher up. Each Mias is said to make a fresh one for himself every night; but I should think that is hardly probable, or their remains would be much more abundant; for though I saw several about the coal-mines, there must have been many Orangs about every day, and in a year their deserted nests would become very numerous. The Dyaks say that, when it is very wet, the Mias covers himself over with leaves of pandanus, or large ferns, which has perhaps led to the story of his making a hut in the trees.

The Orang does not leave his bed until the sun has well risen and has dried up the dew upon the leaves. He feeds all through the middle of the day, but seldom returns to the same tree two days running. They do not seem much alarmed at man, as they often stared down upon me for several minutes, and then only moved away slowly to an adjacent tree. After seeing one, I have often had to go half a mile or more to fetch my gun, and in nearly every case have found it on the same tree, or within a hundred yards, when I returned. I never saw two full-grown animals together, but both males and females are sometimes accompanied by half-grown young ones, while, at other times, three or four young ones were seen in company. Their food consists almost exclusively of fruit, with occasionally leaves, buds, and young shoots. They seem to prefer unripe fruits, some of which were very sour, others intensely bitter, particularly the large red, fleshy arillus of one which seemed an especial favourite. In other cases they eat only the small seed of a large fruit, and they almost always waste and

destroy more than they eat, so that there is a continual rain of rejected portions below the tree they are feeding on. The Durian is an especial favourite, and quantities of this delicious fruit are destroyed wherever it grows surrounded by forest, but they will not cross clearings to get at them. It seems wonderful how the animal can tear open this fruit, the outer covering of which is so thick and tough, and closely covered with strong conical spines. It probably bites off a few of these first, and then, making a small hole, tears open the fruit with its powerful fingers.

The Mias rarely descends to the ground, except when pressed by hunger, it seeks succulent shoots by the riverside; or, in very dry weather, has to search after water, of which it generally finds sufficient in the hollows of leaves. Only once I saw two half-grown Orangs on the ground in a dry hollow at the foot of the Simunjon hill. They were playing together, standing erect, and grasping each other by the arms. It may be safely stated, however, that the Orang never walks erect, unless when using its hands to support itself by branches overhead or when attacked. Representations of its walking with a stick are entirely imaginary.

The Dyaks all declare that the Mias is never attacked by any animal in the forest, with two rare exceptions; and the accounts I received of these are so curious that I give them nearly in the words of my informants, old Dyak chiefs, who had lived all their lives in the places where the animal is most abundant. The first of whom I inquired said: "No animal is strong enough to hurt the Mias, and the only creature he ever fights with is the crocodile.

When there is no fruit in the jungle, he goes to seek food on the banks of the river where there are plenty of young shoots that he likes, and fruits that grow close to the water. Then the crocodile sometimes tries to seize him, but the Mias gets upon him, and beats him with his hands and feet, and tears him and kills him." He added that he had once seen such a fight, and that he believes that the Mias is always the victor.

My next informant was the Orang Kaya, or chief of the Balow Dyaks, on the Simunjon River. He said: "The Mias has no enemies; no animals dare attack it but the crocodile and the python. He always kills the crocodile by main strength, standing upon it, pulling open its jaws, and ripping up its throat. If a python attacks a Mias, he seizes it with his hands, and then bites it, and soon kills it. The Mias is very strong; there is no animal in the jungle so strong as he."

It is very remarkable that an animal so large, so peculiar, and of such a high type of form as the Orangutan, should be confined to so limited a district—to two islands, and those almost the last inhabited by the higher Mammalia; for, east of Borneo and Java, the Quadrumania, Ruminants, Carnivora, and many other groups of Mammalia diminish rapidly, and soon entirely disappear. When we consider, further, that almost all other animals have in earlier ages been represented by allied yet distinct forms—that, in the latter part of the tertiary period, Europe was inhabited by bears, deer, wolves, and cats; Australia by kangaroos and other marsupials; South America by gigantic

sloths and ant-eaters; all different from any now existing, though intimately allied to them—we have every reason to believe that the Orangutan, the Chimpanzee, and the Gorilla have also had their forerunners. With what interest must every naturalist look forward to the time when the caves and tertiary deposits of the tropics may be thoroughly examined, and the past history and earliest appearance of the great man-like apes be made known at length.

I will now say a few words as to the supposed existence of a Bornean Orang as large as the Gorilla. I have myself examined the bodies of seventeen freshly-killed Orangs, all of which were carefully measured; and of seven of them, I preserved the skeleton. I also obtained two skeletons killed by other persons. Of this extensive series, sixteen were fully adult, nine being males, and seven females. The adult males of the large Orangs only varied from 4 feet 1 inch to 4 feet 2 inches in height, measured fairly to the heel, so as to give the height of the animal if it stood perfectly erect; the extent of the outstretched arms, from 7 feet 2 inches to 7 feet 8 inches; and the width of the face, from 10 inches to 13 1/2 inches. The dimensions given by other naturalists closely agree with mine. The largest Orang measured by Temminck was 4 feet high. Of twenty-five specimens collected by Schlegel and Muller, the largest old male was 4 feet 1 inch; and the largest skeleton in the Calcutta Museum was, according to Mr. Blyth, 4 feet 1 1/2 inch. My specimens were all from the northwest coast of Borneo; those of the Dutch

from the west and south coasts; and no specimen has yet reached Europe exceeding these dimensions, although the total number of skins and skeletons must amount to over a hundred.

Strange to say, however, several persons declare that they have measured Orangs of a much larger size. Temminck, in his Monograph of the Orang, says that he has just received news of the capture of a specimen 5 feet 3 inches high. Unfortunately, it never seems to have a reached Holland, for nothing has since been heard of any such animal. Mr. St. John, in his "Life in the Forests of the Far East," vol. ii. p. 237, tells us of an Orang shot by a friend of his, which was 5 feet 2 inches from the heel to the top of the head, the arm 17 inches in girth, and the wrist 12 inches! The head alone was brought to Sarawak, and Mr. St. John tells us that he assisted to measure this, and that it was 15 inches broad by 14 long. Unfortunately, even this skull appears not to have been preserved, for no specimen corresponding to these dimensions has yet reached England.

In a letter from Sir James Brooke, dated October 1857 in which he acknowledges the receipt of my Papers on the Orang, published in the "Annals and Magazine of Natural History," he sends me the measurements of a specimen killed by his nephew, which I will give exactly as I received it: "September 3rd, 1867, killed female Orangutan. Height, from head to heel, 4 feet 6 inches. Stretch from fingers to fingers across body, 6 feet 1 inch. Breadth of face, including callosities, 11 inches." Now, in these dimensions, there is palpably one error; for in every Orang yet

measured by any naturalist, an expanse of arms of 6 feet 1 inch corresponds to a height of about 3 feet 6 inches, while the largest specimens of 4 feet to 4 feet 2 inches high, always have the extended arms as much as 7 feet 3 inches to 7 feet 8 inches. It is, in fact, one of the characters of the genus to have the arms so long that an animal standing nearly erect can rest its fingers on the ground. A height of 4 feet 6 inches would therefore require a stretch of arms of at least 8 feet! If it were only 6 feet to that height, as given in the dimensions quoted, the animal would not be an Orang at all, but a new genus of apes, differing materially in habits and mode of progression. But Mr. Johnson, who shot this animal, and who knows Orangs well, evidently considered it to be one; and we have therefore to judge whether it is more probable that he made a mistake of two feet in the stretch of the arms, or of one foot in the height. The latter error is certainly the easiest to make, and it will bring his animal into agreement, as to proportions and size, with all those which exist in Europe. How easy it is to be deceived as to the height of these animals is well shown in the case of the Sumatran Orang, the skin of which was described by Dr. Clarke Abel. The captain and crew who killed this animal declared that when alive he exceeded the tallest man, and looked so gigantic that they thought he was 7 feet high; but that, when he was killed and lay upon the ground, they found he was only about 6 feet. Now it will hardly be credited that the skin of this identical animal exists in the Calcutta Museum, and Mr. Blyth, the late curator, states "that it is by no means one of the

largest size"; which means that it is about 4 feet high!

Having these undoubted examples of error in the dimensions of Orangs, it is not too much to conclude that Mr. St. John's friend made a similar error of measurement, or rather, perhaps, of memory; for we are not told that the dimensions were noted down at the time they were made. The only figures given by Mr. St. John on his own authority are that "the head was 15 inches broad by 14 inches long." As my largest male was 13 1/2 broad across the face, measured as soon as the animal was killed, I can quite understand that when the head arrived at Sarawak from the Batang-Lupar, after two or three days' voyage, it was so swollen by decomposition as to measure an inch more than when it was fresh. On the whole, therefore, I think it will be allowed, that up to this time we have not the least reliable evidence of the existence of Orangs in Borneo more than 4 feet 2 inches high.

CHAPTER V. BORNEO— JOURNEY INTO THE INTERIOR

(NOVEMBER 1855 TO JANUARY 1856.)

As the wet season was approaching, I determined to return to Sarawak, sending all my collections with Charles Allen around by sea, while I myself proposed to go up to the sources of the Sadong River and descend by the Sarawak valley. As the route was somewhat difficult, I took the smallest quantity of baggage, and only one servant, a Malay lad named Bujon, who knew the language of the Sadong Dyaks, with whom he had traded. We left the mines on the 27th of November, and the next day reached the Malay village of Gúdong, where I stayed a short time to buy fruit and eggs, and called upon the Datu Bandar, or Malay governor of the place. He lived in a large, and well-built house, very dirty outside and in, and was very inquisitive about my business, and particularly about the coal-mines. These puzzle the natives exceedingly, as they cannot understand the extensive and costly preparations for working coal, and cannot believe it is to be used only as fuel when wood is so abundant and so easily obtained. It was evident that Europeans seldom came here, for numbers of women skeltered away as I walked through the village

and one girl about ten or twelve years old, who had just brought a bamboo full of water from the river, threw it down with a cry of horror and alarm the moment she caught sight of me, turned around and jumped into the stream. She swam beautifully, and kept looking back as if expecting I would follow her, screaming violently all the time; while a number of men and boys were laughing at her ignorant terror.

At Jahi, the next village, the stream became so swift in consequence of a flood, that my heavy boat could make no way, and I was obliged to send it back and go on in a very small open one. So far the river had been very monotonous, the banks being cultivated as rice-fields, and little thatched huts alone breaking the unpicturesque line of muddy bank crowned with tall grasses, and backed by the top of the forest behind the cultivated ground. A few hours beyond Jahi we passed the limits of cultivation, and had the beautiful virgin forest coming down to the water's edge, with its palms and creepers, its noble trees, its ferns, and epiphytes. The banks of the river were, however, still generally flooded, and we had some difficulty in finding a dry spot to sleep on. Early in the morning we reached Empugnan, a small Malay village, situated at the foot of an isolated mountain which had been visible from the mouth of the Simunjon River. Beyond here the tides are not felt, and we now entered upon a district of elevated forest, with a finer vegetation. Large trees stretch out their arms across the stream, and the steep, earthy banks are clothed with ferns and zingiberaceous plants.

Early in the afternoon we arrived at Tabókan, the first village of the Hill Dyaks. On an open space near the river, about twenty boys were playing at a game something like what we call "prisoner's base;" their ornaments of beads and brass wire and their gay-coloured kerchiefs and waist-cloths showing to much advantage, and forming a very pleasing sight. On being called by Bujon, they immediately left their game to carry my things up to the "headhouse,"—a circular building attached to most Dyak villages, and serving as a lodging for strangers, the place for trade, the sleeping-room of the unmarried youths, and the general council-chamber. It is elevated on lofty posts, has a large fireplace in the middle and windows in the roof all round, and forms a very pleasant and comfortable abode. In the evening it was crowded with young men and boys, who came to look at me. They were mostly fine young fellows, and I could not help admiring the simplicity and elegance of their costume. Their only dress is the long "chawat," or waist-cloth, which hangs down before and behind. It is generally of blue cotton, ending in three broad bands of red, blue, and white. Those who can afford it wear a handkerchief on the head, which is either red, with a narrow border of gold lace, or of three colours, like the "chawat." The large flat moon-shaped brass earrings, the heavy necklace of white or black beads, rows of brass rings on the arms and legs, and armlets of white shell, all serve to relieve and set off the pure reddish brown skin and jet-black hair. Add to this the little pouch containing materials for betel-chewing, and a long slender knife,

both invariably worn at the side, and you have the everyday dress of the young Dyak gentleman.

The "Orang Kaya," or rich man, as the chief of the tribe is called, now came in with several of the older men; and the "bitchara" or talk commenced, about getting a boat and men to take me on the next morning. As I could not understand a word of their language, which is very different from Malay, I took no part in the proceedings, but was represented by my boy Bujon, who translated to me most of what was said. A Chinese trader was in the house, and he, too, wanted men the next day; but on his hinting this to the Orang Kaya, he was sternly told that a white man's business was now being discussed, and he must wait another day before his could be thought about.

After the "bitchara" was over and the old chiefs gone, I asked the young men to play or dance, or amuse themselves in their accustomed way; and after some little hesitation they agreed to do so. They first had a trial of strength, two boys sitting opposite each other, foot being placed against foot, and a stout stick grasped by both their hands. Each then tried to throw himself back, so as to raise his adversary up from the ground, either by main strength or by a sudden effort. Then one of the men would try his strength against two or three of the boys; and afterwards they each grasped their own ankle with a hand, and while one stood as firm as he could, the other swung himself around on one leg, so as to strike the other's free leg, and try to overthrow him. When these games had been played all around with varying

success, we had a novel kind of concert. Some placed a leg across the knee, and struck the fingers sharply on the ankle, others beat their arms against their sides like a cock when he is going to crow, this making a great variety of clapping sounds, while another with his hand under his armpit produced a deep trumpet note; and, as they all kept time very well, the effect was by no means unpleasing. This seemed quite a favourite amusement with them, and they kept it up with much spirit.

The next morning we started in a boat about thirty feet long, and only twenty-eight inches wide. The stream here suddenly changes its character. Hitherto, though swift, it had been deep and smooth, and confined by steep banks. Now it rushed and rippled over a pebbly, sandy, or rocky bed, occasionally forming miniature cascades and rapids, and throwing up on one side or the other broad banks of finely coloured pebbles. No paddling could make way here, but the Dyaks with bamboo poles propelled us along with great dexterity and swiftness, never losing their balance in such a narrow and unsteady vessel, though standing up and exerting all their force. It was a brilliant day, and the cheerful exertions of the men, the rushing of the sparkling waters, with the bright and varied foliage, which from either bank stretched over our heads, produced an exhilarating sensation which recalled my canoe voyages on the grander waters of South America.

Early in the afternoon we reached the village of Borotói, and, though it would have been easy to reach the next one before night, I was obliged to stay, as my men wanted to return and

others could not possibly go on with me without the preliminary talking. Besides, a white man was too great a rarity to be allowed to escape them, and their wives would never have forgiven them if, when they returned from the fields, they found that such a curiosity had not been kept for them to see. On entering the house to which I was invited, a crowd of sixty or seventy men, women, and children gathered around me, and I sat for half an hour like some strange animal submitted for the first time to the gaze of an inquiring public. Brass rings were here in the greatest profusion, many of the women having their arms completely covered with them, as well as their legs from the ankle to the knee. Round the waist they wear a dozen or more coils of fine rattan stained red, to which the petticoat is attached. Below this are generally a number of coils of brass wire, a girdle of small silver coins, and sometimes a broad belt of brass ring armour. On their heads they wear a conical hat without a crown, formed of variously coloured beads, kept in shape by rings of rattan, and forming a fantastic but not unpicturesque headdress.

Walking out to a small hill near the village, cultivated as a rice-field, I had a fine view of the country, which was becoming quite hilly, and towards the south, mountainous. I took bearings and sketches of all that was visible, an operation which caused much astonishment to the Dyaks who accompanied me, and produced a request to exhibit the compass when I returned. I was then surrounded by a larger crowd than before, and when I took my evening meal in the midst of a circle of about a hundred

spectators anxiously observing every movement and criticising every mouthful, my thoughts involuntarily recurred to the lion at feeding time. Like those noble animals, I too was used to it, and it did not affect my appetite. The children here were more shy than at Tabókan, and I could not persuade them to play. I therefore turned showman myself, and exhibited the shadow of a dog's head eating, which pleased them so much that all the village in succession came out to see it. The "rabbit on the wall" does not do in Borneo, as there is no animal it resembles. The boys had tops shaped something like whipping-tops, but spun with a string.

The next morning we proceeded as before, but the river had become so rapid and shallow and the boats were all so small, that though I had nothing with me but a change of clothes, a gun, and a few cooking utensils, two were required to take me on. The rock which appeared here and there on the riverbank was an indurated clay-slate, sometimes crystalline, and thrown up almost vertically. Right and left of us rose isolated limestone mountains, their white precipices glistening in the sun and contrasting beautifully with the luxuriant vegetation that elsewhere clothed them. The river bed was a mass of pebbles, mostly pure white quartz, but with abundance of jasper and agate, presenting a beautifully variegated appearance. It was only ten in the morning when we arrived at Budw, and, though there were plenty of people about, I could not induce them to allow me to go on to the next village. The Orang Kaya said that if I insisted

on having men, of course he would get them, but when I took him at his word and said I must have them, there came a fresh remonstrance; and the idea of my going on that day seemed so painful that I was obliged to submit. I therefore walked out over the rice-fields, which are here very extensive, covering a number of the little hills and valleys into which the whole country seems broken up, and obtained a fine view of hills and mountains in every direction.

In the evening the Orang Kaya came in full dress (a spangled velvet jacket, but no trousers), and invited me over to his house, where he gave me a seat of honour under a canopy of white calico and coloured handkerchiefs. The great verandah was crowded with people, and large plates of rice with cooked and fresh eggs were placed on the ground as presents for me. A very old man then dressed himself in bright-coloured cloths and many ornaments, and sitting at the door, murmured a long prayer or invocation, sprinkling rice from a basin he held in his hand, while several large gongs were loudly beaten and a salute of muskets fired off. A large jar of rice wine, very sour but with an agreeable flavour, was then handed around, and I asked to see some of their dances. These were, like most savage performances, very dull and ungraceful affairs; the men dressing themselves absurdly like women, and the girls making themselves as stiff and ridiculous as possible. All the time six or eight large Chinese gongs were being beaten by the vigorous arms of as many young men, producing such a deafening discord that I was glad to escape to the round

house, where I slept very comfortably with half a dozen smoke-dried human skulls suspended over my head.

The river was now so shallow that boats could hardly get along. I therefore preferred walking to the next village, expecting to see something of the country, but was much disappointed, as the path lay almost entirely through dense bamboo thickets. The Dyaks get two crops off the ground in succession; one of rice, and the other of sugar-cane, maize, and vegetables. The ground then lies fallow eight or ten years, and becomes covered with bamboos and shrubs, which often completely arch over the path and shut out everything from the view. Three hours' walking brought us to the village of Senankan, where I was again obliged to remain the whole day, which I agreed to do on the promise of the Orang Kaya that his men should next day take me through two other villages across to Senna, at the head of the Sarawak River. I amused myself as I best could till evening, by walking about the high ground near, to get views of the country and bearings of the chief mountains. There was then another public audience, with gifts of rice and eggs, and drinking of rice wine. These Dyaks cultivate a great extent of ground, and supply a good deal of rice to Sarawak. They are rich in gongs, brass trays, wire, silver coins, and other articles in which a Dyak's wealth consists; and their women and children are all highly ornamented with bead necklaces, shells, and brass wire.

In the morning I waited some time, but the men that were to accompany me did not make their appearance. On sending to

the Orang Kaya I found that both he and another head-man had gone out for the day, and on inquiring the reason was told that they could not persuade any of their men to go with me because the journey was a long and fatiguing one. As I was determined to get on, I told the few men that remained that the chiefs had behaved very badly, and that I should acquaint the Rajah with their conduct, and I wanted to start immediately. Every man present made some excuse, but others were sent for, and by dint of threats and promises, and the exertion of all Bujon's eloquence, we succeeded in getting off after two hours' delay.

For the first few miles our path lay over a country cleared for rice-fields, consisting entirely of small but deep and sharply-cut ridges and valleys without a yard of level ground. After crossing the Kayan river, a main branch of the Sadong, we got on to the lower slopes of the Seboran Mountain, and the path lay along a sharp and moderately steep ridge, affording an excellent view of the country. Its features were exactly those of the Himalayas in miniature, as they are described by Dr. Hooker and other travellers, and looked like a natural model of some parts of those vast mountains on a scale of about a tenth—thousands of feet being here represented by hundreds. I now discovered the source of the beautiful pebbles which had so pleased me in the riverbed. The slatey rocks had ceased, and these mountains seemed to consist of a sandstone conglomerate, which was in some places a mere mass of pebbles cemented together. I might have known that such small streams could not produce such vast

quantities of well-rounded pebbles of the very hardest materials. They had evidently been formed in past ages, by the action of some continental stream or seabeach, before the great island of Borneo had risen from the ocean. The existence of such a system of hills and valleys reproducing in miniature all the features of a great mountain region, has an important bearing on the modern theory that the form of the ground is mainly due to atmospheric rather than to subterranean action. When we have a number of branching valleys and ravines running in many different directions within a square mile, it seems hardly possible to impute their formation, or even their origination, to rents and fissures produced by earthquakes. On the other hand, the nature of the rock, so easily decomposed and removed by water, and the known action of the abundant tropical rains, are in this case, at least, quite sufficient causes for the production of such valleys. But the resemblance between their forms and outlines, their mode of divergence, and the slopes and ridges that divide them, and those of the grand mountain scenery of the Himalayas, is so remarkable, that we are forcibly led to the conclusion that the forces at work in the two cases have been the same, differing only in the time they have been in action, and the nature of the material they have had to work upon.

About noon we reached the village of Menyerry, beautifully situated on a spur of the mountain about 600 feet above the valley, and affording a delightful view of the mountains of this part of Borneo. I here got a sight of Penrissen Mountain, at the

head of the Sarawak River, and one of the highest in the district, rising to about 6,000 feet above the sea. To the south the Rowan, and further off the Untowan Mountains in the Dutch territory appeared equally lofty. Descending from Menyerry we again crossed the Kayan, which bends round the spur, and ascended to the pass which divides the Sadong and Sarawak valleys, and which is about 2,000 feet high. The descent from this point was very fine. A stream, deep in a rocky gorge, rushed on each side of us, to one of which we gradually descended, passing over many lateral gullys and along the faces of some precipices by means of native bamboo bridges. Some of these were several hundred feet long and fifty or sixty high, a single smooth bamboo four inches diameter forming the only pathway, while a slender handrail of the same material was often so shaky that it could only be used as a guide rather than a support.

Конец ознакомительного фрагмента.