



## GEOGRAPHY

(The following abridged account is based on that given by the late H. C. ROBINSON in the first volume of this series.)

THE area with which this work is concerned is the Malay Peninsula in its widest sense, from the Isthmus of Kra and the Pakchan estuary in the north, to Johore in the south. The small islands adjacent to the Peninsula are also included.

The area is a natural but not a political unit, the greater portion forming part of the British Empire, either as the Crown Colony of the Straits Settlements, the Protectorate of the Federated Malay States, or the rather more loosely attached states, the suzerainty over which passed to Great Britain by the Anglo-Siamese Treaty of 1909, and by later treaties entered into with these states individually. These states are collectively known as the Unfederated Malay States.

The northern third of the Malay Peninsula forms part of the kingdom of Siam.

**I. The Crown Colony of the Straits Settlements.**—(a) *Singapore* is an island at the southern extremity of the Malay Peninsula and within a hundred miles of the Equator. It is roughly diamond-shaped, with a length east and west of about twenty-two miles, and a breadth north and south of fourteen. The coastal districts are flat, much of them having once been swamp, and to the north and west there is a good deal of mangrove; to the east and in the south there are short stretches of sand. The interior is undulating land, and there are numerous low hills, rising to a maximum elevation of about 500 ft. A small area of forest still exists on the hill Bukit Timah, but the island has mostly been cleared of its original forest for the purpose of rubber-growing, other agricultural pursuits and military purposes. It is separated from the mainland to the north by a depth of water that does not exceed six fathoms in places. The straits between it and the Rhio Archipelago to the south are deeper. A characteristic of the island fauna is the non-occurrence or comparative rarity of such birds as pheasants, partridges, trogons, barbets, woodpeckers, and the smaller babblers, which are abundant on the adjacent mainland. About three hundred species of birds have been recorded from the island, but many of the old records are open to doubt, specimens having been merely forwarded from Singapore, and credited to the place as resident, whereas their real origin may have been from the adjacent mainland or even

farther afield. At the present day many species have become locally extinct or no longer visit the island, and I doubt if even half the number of recorded species could now be seen on the island even over a period of years.

(b) *Penang*, situated on the west coast of the Peninsula, in lat.  $5^{\circ} 20' N.$ , about three hundred and fifty miles from Singapore, is a mountainous island, in area rather over 100 square miles, or slightly smaller than the Isle of Wight. It is separated from the mainland by a shallow strait about four miles wide and much encumbered by mudbanks. On the south and west there are considerable areas of flat, alluvial land devoted to the cultivation of coconuts and rice, but the core of the island is steep and mountainous, composed of granite, and rising, in several peaks, to an altitude of over 2700 ft. Originally the island was covered with heavy forest, but much has been cleared and devoted to cultivation of various kinds. Some original jungle still remains on the crests of the hills and at the north-west corner of the island.

Although the museums of Europe contain much material from Penang, our knowledge of its fauna is by no means exact, and a number of the birds attributed to the island have, in all probability, never really been found there. A carefully compiled modern list of Penang birds is needed.

(c) *Province Wellesley* is a strip of land from ten to fifteen miles deep, on the mainland facing Penang, with an area of 280 square miles. The country is mainly flat alluvial land, though there are hills on the eastern and southern borders. Little original forest remains. Many of the specimens attributed to Penang in the last century were really from this province.

(d) *Malacca*. The territory of Malacca, the largest of the Straits Settlements, lies between the Protected State of Johore and the Federated Malay State of Negri Sembilan on the west coast of the Peninsula, with a coast-line of somewhat over forty miles. Malacca itself is some hundred and twenty miles by sea from Singapore. The site of an historic Malay sultanate, and then one of the great emporia of trade in the Far East, Malacca was conquered by the Portuguese in 1511. It later passed to the Dutch, and finally became British in 1824. Malacca has given its name to the whole Peninsula, and even now has in many quarters, especially on the Continent, a far wider significance than in strict accuracy the size of the town or settlement justifies.

The settlement is of special interest to the ornithologist as being the country from which nearly all specimens of Malayan birds originally reached Europe, and as being, therefore, the *terra typica* of very many species.

There is still a certain amount of jungle in the settlement, which has an area of some 720 square miles, and a good many plains and low hills, covered, in part, with lalang grass and secondary scrub.

**II. The Federated Malay States.**—(a) *Perak* lies entirely on the western side of the Peninsula. It comprises the whole of the drainage basin of the Perak, and parts of the Krian river to the north, and the Bernam to the south, and has an area of about 8000 square miles. The coast of the state is flat alluvial land fringed with mangrove forest, and fronted by a number of small islands. The fauna of the largest of these islands, Pulau Pangkor, is of special interest as including the argus pheasant and barking deer, while, curiously

enough, squirrels are absent. The Sembilan Islands—all quite small and rocky, though covered with jungle and scrub—are a halting-place for multitudes of birds during the migration season from October to December.

Inland, the state is mountainous, and east of the Perak river the main range rises steeply to a height varying from 2000 ft. to slightly over 7000 ft., being fronted in many places by precipitous limestone crags and hills of lower elevation. The country bordering the Krian river on the north of the state is flat, alluvial land, and is now devoted to the intensive cultivation of rice. The low-lying deltaic land between the mouths of the Perak and Bernam rivers is given over to coconut plantations.

The middle reaches of the Perak river and the drier portions of the coastal zone have been heavily planted with rubber. There are many large tin-fields in the state, notably in Kinta and the district of Larut. Along the course of the Perak river, too, a large proportion of the Malay population lives, and there is much orchard- and garden-land and a little rice cultivation.

Above about 2000 ft., however, both on the main and subsidiary hill ranges, the country is covered with the original primeval forest. The low-country forests, where they have not been destroyed for planting purposes, have been heavily cut over, and the policy of forest conservation and regulation now in force was instituted none too soon.

The ornithology of Perak is of greater interest than that of the Straits Settlements in that the Malayan mountains possess a fauna of their own, distinct from that of the lowlands, and closely allied to that of the higher mountains of Sumatra, Borneo and the distant Himalayas.

(b) *Selangor* is the state south of Perak and, like it, is bordered to the east by the main dividing ranges of mountains. The area is about 3100 square miles. It is watered by four principal rivers—the Bernam, the Selangor, the Klang and the Langat. The surface conditions are very similar to those of Perak. Most of the sea-coast is deeply fringed with mangrove, but south of the Langat conditions are somewhat different. The mangrove and mud-flats disappear and their place is taken by sandy beaches, with groves of she-oaks (*Casuarina*). At two localities, Kuala Selangor and Bukit Jugra, there are rounded granite hills, a few hundred feet in elevation, standing up like islands from a surrounding sea of swamp.

Behind the mangrove zone on the coast there is, in many parts of the state, a belt of fresh-water swamp, overgrown with thorny palms and many other plants peculiar to the zone, which is also the habitat of many birds that are rare in other types of country, as, for instance, the finfoot, one or two of the bulbuls, and certain of the babblers.

The low hill-country behind the swamps and the higher mountains, which reach an altitude of about 5500 ft., have a fauna like that of Perak. It is doubtful if any species can be said to be actually peculiar to the state, with the exception of a whistling thrush (*Arrenga robinsoni*).

(c) *Negri Sembilan* is the name given to a group of small states south of Selangor on the west coast.

The main ranges of the Peninsula terminate towards the south and dwindle in height, no summit within the states attaining 4000 ft. Few, therefore, of the indigenous endemic species of the Malay Peninsula are found in Negri Sembilan. The terrain is mainly undulating, and there are many winding valleys of great beauty, given over to the cultivation of rice, surrounded by low hills, the upper slopes of which are still covered with forest. Near the coast, which is sandy, there is a good deal of coconut-land; near the Johore border are large areas, originally planted in gambier and tapioca, which are now either rubber or lalang waste.

(d) *Pahang*, with an area of nearly 14,000 square miles, is the largest of the Federated Malay States. It lies entirely on the eastern side of the Peninsula. The Pahang river, the longest in the Peninsula, is entirely within its borders. The coast is low and sandy, with much swampy land behind it, and the lower courses of the rivers run through flat alluvial land, but to the west especially, and on all its borders, the land is hilly or mountainous.

Besides the main range on the west, which has summits of 7000 ft. or slightly over, there are two isolated massifs; one, Gunong Benom, rising to over 6000 ft., is situated in the west central part of the state; the other, the Gunong Tahan range, in the middle of the northern border, includes the tallest summit in the Malay Peninsula, 7184 ft.

The agricultural and mining industries of Pahang are less developed than in the western states, and the population, largely confined to the banks of the bigger rivers, is smaller. There is, therefore, a much greater extent of untouched jungle, and the native fauna has, consequently, been less disturbed than in some other states.

Except for the swampy south-east corner, and the coastal districts, the fauna, especially of the mountains, is well known. The difference between the fauna of the main range and that of Tahan is, however, much less than the varied geological formations would lead one to expect, and exhaustive study of the latter mountain has revealed only two species that are peculiar to it—a handsome woodpecker (*Picus canus robinsoni*) and a long-tailed warbler (*Suya waterstradti*). The big white-crested argus pheasant (*Rheinardius ocellatus nigrescens*) is at present known only from Pahang, where it is found on the lower slopes of several mountains, but it is almost certain to occur in the neighbouring states of Trengganu and Kelantan.

*The Tioman Archipelago* is a group of islands off the coast of Johore and Pahang. The largest and loftiest, Pulau Tioman, belongs to Pahang, while most of the others, including Pulau Tinggi, Pulau Pemanggil, Pulau Aor, Pulau Babi and Pulau Sibul, are Johore territory. There are numerous smaller islands. Many of the islands are within the ten-fathom line, while others, including the larger ones, are in depths exceeding twenty-five fathoms. In none have the birds differentiated into well-marked races. The local races are never more than very slightly distinct from the adjacent mainland forms, though the mammals have varied to a much greater degree.

The avifauna is limited; no barbets, trogons or woodpeckers, and but few of the jungle babblers, occur, but pigeons of several species are numerous.

There are breeding colonies of terns and swiftlets (*Collocalia*), the latter producing the edible nests of commerce.

Though the islands are lofty, only one, Tioman, shows evidence of other than a low-country avifauna, a representative of the wren-babblers (*Corythocichla*) being found at altitudes of 2000 ft. and over.

**III. The Unfederated Malay States.**—(a) *Johore* occupies the southern part of the Peninsula. The area of 7500 square miles is drained by three rivers, the Muar to the north and west; the Endau to the north and east, and the Johore entering the sea not far from Singapore. The state has a larger extent of level country than those mentioned above, and there is much swamp, and a good deal of mangrove in the south and south-west. There are, however, several mountains and hill ranges, including Mount Ophir or Ledang near the Malacca border, 4186 ft., and the Blumut and Pulai ranges farther south.

Rubber, gambier, coconuts, betel-nuts, tapioca and pineapples are largely grown in Johore, and there are also mining industries in tin and iron ore, but there is also much untouched jungle. None of the hills is high enough to harbour a montane fauna, and the state, therefore, contains no peculiar species of bird.

(b) *Trengganu* lies on the east coast north of Pahang, with a long coastline on the China Sea. It has an area of about 6000 square miles and contains the whole of the watersheds of three large rivers, the Trengganu, Dungun and Kemamum.

Along the coast for some distance inland there is a strip of comparatively level country, which is thickly inhabited and planted largely with coconut, areca palms and rice. The inhabitants are mainly occupied in fishing during the south-west or fine monsoon. Considerable quantities of dried fish are exported. There is also a small silk-weaving industry, and a little tin and wolfram is mined in the southern part of the state. The interior of the state is wild and rugged, with mountains rising in places to over 5000 ft., and is very thinly inhabited. It is, of course, heavily forested.

Several collections have been made in the state, but it cannot be said that the ornithology is well known, although it cannot be expected to differ much, if at all, from that of the neighbouring states of Pahang and Kelantan.

(c) *Kelantan* is another east-coast state. Situated north of Trengganu, it has an area of 5900 square miles. It includes the whole basin of the Kelantan river and part of two smaller rivers, the Golok and the Semarak.

The country on the coast for some distance inland is flat and thickly populated. Sufficient rice is grown for the needs of the whole state, and there is also a not inconsiderable cattle-breeding industry. There are large plantations of coconut on the coast, and of rubber in the interior. Towards the Pahang and Perak borders, where the country is mountainous and thinly populated, the original heavy forest remains, though it is, as we approach the north, of a less luxuriant evergreen type. In these regions the fauna is exactly the same as that of the more southern parts of the Peninsula, but on the coast a slight change commences to show itself, and many birds that

are rare or almost non-existent in the Federated Malay States are here abundant, these birds continuing their range northwards into Siam.

(d) *Kedah* lies entirely on the western seaboard of the Malay Peninsula, and to the north and east it is bordered by Siamese provinces. It has an area of about 3800 square miles and is drained by three rivers, the Kedah, the Muda and the Krian.

The type of country is diversified; much of it is flat land which is given over to wet rice, while the rest is "gëlam" (*Melaleuca leucodendron*) swamp. There is a good deal of undulating hill-land, formerly planted with tapioca and pepper, and now with rubber, and there is also much secondary jungle.

On the southern border the Larut range culminates in Gunong Bintang, a granitic peak over 6000 ft. in altitude. Towards the south of the state lies the famous Kedah Peak or Gunong Jerai, a landmark for shipping entering the Straits of Malacca. It is slightly over 4000 ft. in height and entirely surrounded by low land. Rising out of the plain there are also several hills of crystalline limestone, honeycombed with caves such as are characteristic of the whole of the Peninsula south to Selangor.

In Kedah the watershed between the Straits of Malacca and the China Sea is low, not exceeding a few hundred feet, and the seasons are far more marked than to the southward. There are corresponding differences in the fauna, as in the case of Kelantan, and many Malayan species here attain their northern, as do Burmese species their southern, limit.

The avifauna of Kedah Peak is a much impoverished one, quite different from that of the mountains on the main and Larut ranges, to the south of it. The birds of the evergreen forests are similar to those of Perak.

The *Langkawi group* of islands lying off the coasts of Kedah and Siam includes two large islands, *Langkawi*, which belongs to Kedah, and *Terutau*, which is Siamese. The narrow strait between the islands and the mainland seems not to exceed fifteen fathoms in any part, and is mostly a good deal less.

The surface of Langkawi is varied, but there is a good deal of flat land, on which rice and rubber is grown. Gunong Raya, the highest mountain, rises to nearly 3000 ft., and is covered with forest. Terutau is smaller and much more rugged, with little flat land, though it does not attain so great an elevation as Langkawi.

With the exception of a very slightly modified woodpecker no bird is peculiar to the group. Nevertheless, the birds are of considerable interest, as many species, such as trogons, woodpeckers and large hornbills, and a certain number of babblers, are not uncommon, which is unusual on islands of this type, and leads one to suppose that connexion with the mainland has been extremely recent.

The mammals, which are numerous, exhibit a considerable degree of peculiarity.

Farther seaward, and separated from the Langkawi group by depths of water approximating to thirty fathoms, is a group of three small islands, Pulau Butang, Pulau Adang and Pulau Rawi, forming the *Butang Archipelago*.

They are practically uninhabited, very rugged and mountainous, rising to a height of about 3400 ft. on Pulau Adang, and covered with rather sparse forest. The avifauna is a very impoverished one. The birds are all of wide distribution, and show no sign of subspecific differentiation.

(e) *Perlis* is a small state to the north of Kedah, of which it was formerly an appanage, and has an area of a little over 300 square miles. Much of it is alluvial plain, covered with ricefields, but to the north there is a limestone range of about 2000 ft. elevation, and there are isolated limestone hills in other parts of the state. Old jungle, where it occurs, is thin and partly deciduous, and there is a belt of mangrove forest on the coast.

IV. **Siamese Malaya.**—The northern portion of the Malay Peninsula, from the Isthmus of Kra in about  $9^{\circ} 50'$  N. down to the Unfederated Malay States border, forms part of the kingdom of Siam, and covers an area of rather less than 30,000 square miles, or rather more than a third of the whole Peninsula.

*Patani* is situated north of the Malay state of Kelantan on the east coast of the Peninsula. It is the southernmost province of Siam. The population is mainly Malay, or mixed Malay and Siamese. The country comprises the watersheds of two rivers, the Patani and the Telubin. Near the coast it is flat and sandy, but up-stream there are large areas of rice-country and undulating hills, while on the Perak borders the main range of the Peninsula rises to over 5000 ft., and is covered with heavy forest. There are also some isolated granite mountains of considerable height, the most notable being Bukit Besar, north of the Patani river, about twelve miles from the coast, which attains a height of nearly 4000 ft. From the plains rise limestone hills, some much honeycombed with caves.

The country, like Perlis, on the western side of the Peninsula, is a transition area between northern and southern forms, though it is probably correct to say that the fauna of Patani is more akin to that of the states to the south than to the north.

*Senggora* is the province immediately north of Patani, with *Patelung* to the north of it and Kedah to the west. It is a small district, largely sandy plain or secondary scrub, with a little rice-country round the margin of the "Inland Sea"; it is, however, fertile and thickly populated. On the Kedah border the land rises to low rolling hills of a few hundred feet elevation, but there is little old forest in the district.

*Patelung* has much flat land and reed swamps round the "Inland Sea," which, towards the northern end, contracts into a smaller lake, known as the Tale Noi, of which the waters are almost fresh. To the east the lake is cut off from the sea by a long, narrow stretch of sandy land covered with casuarina trees. To the west, apart from a strip of flat land, the country rises steeply into a range of mountains, which are about 2000 ft. in height, and covered with thick jungle, forming the border between Patelung and the west-coast state of Trang.

The "Inland Sea," also known as the Tale Sap, with its northern prolongation, the Tale Noi, is a considerable stretch of water cut off from the China

Sea by a low ridge of land, terminating in a hill of considerable height opposite Senggora town. At its southern end, where the town is situated, it communicates with the sea by a narrow channel with a dangerous bar at its mouth. North of the town the lake broadens, and towards its northern end is studded with beautiful, lofty, craggy islands of limestone, which are used as cave temples, and in which species of *Collocalia* breed.

At its entrance the lake is entirely salt and teems with marine fish, but travelling north it becomes less saline, and at its northern end is only slightly brackish. It is everywhere very shallow, nowhere with a depth of more than twelve feet, and in many places of less than four.

*Nakon Sri Tammarat* is the next province on the east coast, still travelling north. It is marked on old maps as Ligor. Near the coast and for some distance inland the country is level and sandy, and produces much cattle and, towards the north, large quantities of rice. On its western border the mountains rise to a considerable height and there is one peak, Kao Luang, of over 5500 ft. It has yielded several birds of considerable interest—in part allied to those of the southern Peninsular mountains, and in part to those of Tenasserim.

*Bandon* lies north of Nakon. In its lower levels it resembles the other east-coast states, but the shore is mostly very flat and muddy. Inland there are the usual low hills and plains. The Nakon range is continued into the state, the maximum elevation being on Kao Nawng, about 4800 ft.

*Koh Samui* and *Koh Pennan* are two large islands in the Bandon Bight. They are the largest of the Malayan east-coast islands. Both lie well within the ten-fathom line and their nearest point is about ten miles from the mainland. The hills rise to an altitude of 2200 ft., and the interior of both islands is very broken, though on the east of Samui there are large areas of quite flat land planted in rice and what are said to be the finest coconuts in the world. On this island there is a considerable Siamese population. The two islands are separated by a narrow strait carrying about nine fathoms.

Birds are plentiful on both islands but present no special features. Inshore is a chain of small limestone islands, little more than crags, standing in very shallow water. Two species of *Collocalia*, producing the edible birds' nests of commerce, occur on them.

*Chaiya*, *Langsuen* and *Kuwi*, three small and narrow districts north of Bandon, bring us to the northern termination of the Malay Peninsula. In all the coast is flat and fertile, but the interiors are rugged, although the hills are a good deal lower than in Nakon and Bandon.

Turning now to the west coast of Peninsular Siam, and starting from the southern border, we have the small district of *Setul* marching with the Unfederated Malay State of Perlis, which it closely resembles in its heath-like plains and rocky hills covered with dry and partially deciduous vegetation. Farther north we come to *Palean*, and then to the larger and more important district of *Trang*, with a considerable agricultural and fishing population of Chinese, Malays, Siamese, and a mixed breed known as Sam-sams, as well

as a few of the primitive sea-gipsies, Selungs or Orang Laut, who frequent this coast as far north as the Mergui Archipelago.

Off the coast, which is indented and has a good deal of mangrove, are numerous limestone islands, many of curious outline. Inland, the country is flat, in part devoted to grazing and to the cultivation of wet rice. On the eastern border the country, where it runs with Patelung and Nakon, is mountainous, with numerous summits rising to 3000 ft. and higher. This part of Siam has been very thoroughly worked from a zoological point of view. It is noted for the number of water and swamp birds that frequent it. The mountains have produced a few geographical subspecies, including a couple of sunbirds and a thrush, but nothing strikingly distinct.

*Junk Zeylon* is also known as Salanga, Junk Seylon, Tongkah, Puket or Thalang. It is a long island, about twenty-five miles in maximum length, north and south, by about ten miles in maximum breadth, east and west, separated from the mainland to the north by a very narrow and shallow channel, not more than three fathoms in depth. Between it and the mainland to the east is a shallow bay with numerous high islands of very varied size.

The surface of the island is diversified with many alluvial flats, which are rich in tin, and with steep hills rising to a maximum elevation of nearly 2000 ft. The western side of the island is steep and rugged, with a rocky shore, but the east is much indented, and in many places faced with mangrove swamp. The island is thickly populated, mainly with Chinese miners, and the principal town, Puket, near the south-east extremity, is a large and flourishing place.

The zoology is well known. As might be expected from its vicinity to the mainland, and the shallowness of the adjacent seas, the birds are not distinct, though two or three nominal species have been founded on specimens from the island.