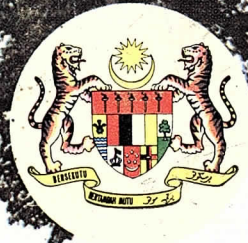


Malaysia



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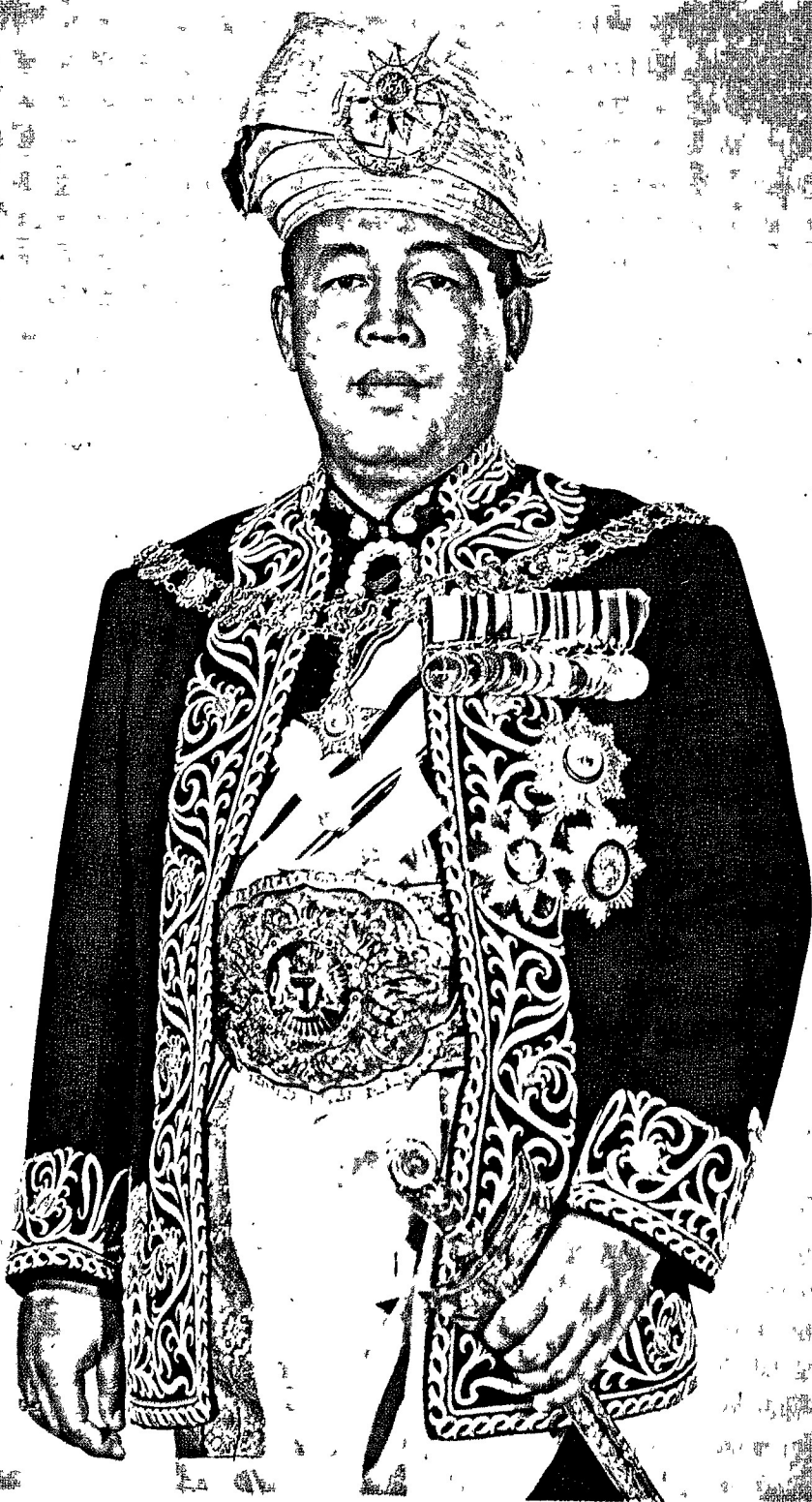
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HIS MAJESTY

Tuanku Syed Putra ibni Al-Marhum Syed Hassan Jamalullail ascended the throne as Raja of Perlis on 4th December, 1945. Elected as Deputy Yang di-Pertuan Agong on 18th April, 1960, and as Yang di-Pertuan Agong on 21st September, 1960. His Majesty was installed on 4th January, 1961.

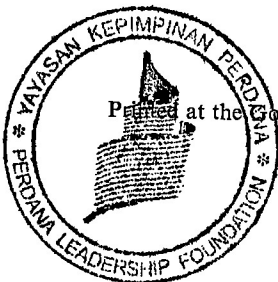
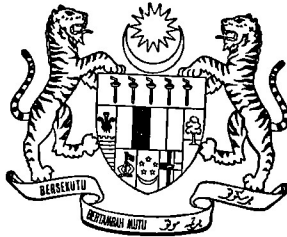
MALAYSIA

OFFICIAL

Year Book

VOLUME FOUR

1964



KUALA LUMPUR

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1966

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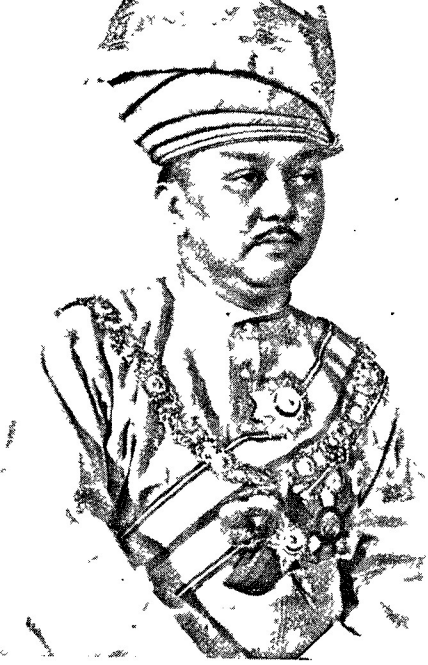
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The Yang di-
Pertua Negara
of Singapore,
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bin Ishak, s.M.N.



CHAPTER I

AN INTRODUCTION TO MALAYSIA

GEOGRAPHICAL BACKGROUND

MALAYSIA covers an area of about 130,000 square miles. It occupies two distinct regions, the Malay peninsula which extends south-south-east from the narrow Kra Isthmus to the island of Singapore, and the north-western coastal area of the island of Borneo. The two regions are separated by about 400 miles of the South China Sea. A number of small islands off the coast of Malaya, adjacent to Singapore, and off the Borneo coast, are also within its borders. It has land frontiers with Thailand on the Asian mainland and with the Republic of Indonesia (about 900 miles) in the island of Borneo. Across the narrow Straits of Malacca lies the Indonesian island of Sumatra, while to the north and north-east of Sabah (formerly known as North Borneo) across the Sulu Sea lie the islands of Palawan and Mindanao which form part of the Republic of the Philippines.

The position of the Malay peninsula, and in particular of the island of Singapore, is focal in the geographical region of Southeast Asia. It lies at the meeting place of the continental and insular parts of the region, at the cross-roads of monsoon Asia where the wind systems of the Indian Ocean converge on those of the South China Sea: facts that contributed to its early commercial importance. Lying close to the shortest sea route between India and China and almost equidistant between those great population and land masses, astride the main sea and air routes to Australia and, across the Pacific, to the United States, Malaya is an area of great strategic importance.

The Borneo territories of Malaysia are not so nodally situated. They lie to the east of the main shipping routes from China and Japan to India and the west and in consequence have not profited to the same degree from the cultural and economic streams which have been close to the Malay peninsula. Their development has nevertheless reflected that of Malaya by virtue of the affinities forged over a considerable period of common influence under British rule.

Climate

Malaysia lies close to the equator between latitudes 1° and 7° north and longitudes 100° and 119° east. Both of its main regions, the Malay peninsula and the Borneo territories, are open to maritime influences and are subject

to the interplay of the wind systems which originate in the Indian Ocean and the South China Sea. The year is commonly divided into the southwest and northeast monsoon seasons which in time correspond roughly with the summer and winter of the northern hemisphere.

In Malaya the northeast monsoon prevails from October to February, the Southwest monsoon from mid-May to September. The beginning and end of the monsoons are usually not well-defined, although the onset of the northeast monsoon is fairly definite. The rainfall and prevailing winds are largely governed by this seasonal division. The average rainfall here is between 120 and 160 inches. The driest part is Jelebu in the State of Negeri Sembilan with an average of 65 inches and the wettest place, Maxwell Hill (near Taiping, in the State of Perak) with an average of 232 inches.

In Sarawak, from the beginning of October until nearly the end of February, the northeast monsoon brings heavy rain, particularly in the coastal belt. From April to July a mild southeast monsoon occurs, and, during this period, rainfall often occurs in the form of afternoon thunderstorms. The annual rainfall here is between 60 and 120 inches.

In Sabah the northeast monsoon lasts from October or November until March or April, and the southwest monsoon from May to August, with interim periods of indeterminate winds between the two monsoons. On the west coast the wettest seasons occur during the southwest monsoon and the interim periods, while on the east coast heaviest rainfall occurs during the northeast monsoon. Rainfall averages about 10 inches throughout the year, though the annual fall varies between 60 and 160 inches. This varies from place to place and from year to year. The highest rainfall is in the southwest (Beaufort and Labuan) and the lowest in the interior, where it is more evenly distributed.

The average daily temperature throughout Malaysia varies from 70°F. to 90°F. though in higher areas temperatures are lower and vary widely. For example, at Cameron Highlands, in the State of Pahang, and Kinabalu in the State of Sabah, the extreme temperatures recorded are 79°F. and 36°F. Relative humidity is everywhere generally high though night temperatures in most places are comparatively cool.

Topography

The Malay peninsula consists essentially of an east and a west coastal plain between which the central mountain ranges run roughly north to south. These ranges reach 7,000 feet in places—the highest peak, Gunong Tahan, is 7,186 feet—and from them run many streams and rivers, the largest being the Perak River, towards the Straits of Malacca and the Pahang River,

towards the South China Sea. At their sources and in their upper reaches the rivers are quick-flowing, often with tortuous rapids and precipitous gorges, in the lower reaches the descent to the coastal plain is more gradual, and the water takes on a muddy colour from contamination with the lowland silts through which the rivers meander before reaching the coast. On the west coast the lower courses of the rivers sometimes lie through swampy land, while on the east coast their entrance into the sea is sometimes impeded by sand and bars created by powerful onshore currents.

The Borneo territories consist in general of an alluvial and often swampy coastal plain, or more hilly rolling country further inland and of mountain ranges in the interior. The rivers rise in the interior ranges and flow down through steep gorges and over rapids. In Sarawak the highest peak is Mount Murud (7,950 feet) and the largest river is the Rejang which is 350 miles long and navigable for 100 miles. In Sabah the central mountain ranges rise more abruptly from the west coast. They are generally about 4,000 feet and 6,000 feet in height, but Mount Kinabalu rises to 13,455 feet and is the highest peak in Malaysia. Many rivers flow northwest and east to the South China and Sulu seas. The largest, the Kinabatangan, is navigable for considerable distances and waters the most extensive plain in the territory.

The greater part of Malaysia is still covered by dense, tropical rain-forest, the proportion of forest land being higher in the Borneo region than in the Malay peninsula, which is more developed. On the plains the tropical forest forms an almost unbroken canopy of a hundred feet or so above the ground, but in the higher mountains it tends to thin out and shows considerable variation in flora. In the swampy areas the high forest is replaced by a swamp flora often terminating in mangroves. The coastal plains have been cleared, but development is altogether much more advanced on the west coast of the Malay peninsula and on the island of Singapore than elsewhere, and here are to be found the major towns and cities and large areas of land given to mining, rubber planting, oil palm, pineapple and rice cultivation.

Malaysia's coastline extends for nearly 3,000 miles, and for many centuries the inhabitants of the country have been drawn to the sea for fishing, transport and commerce. Until recent times the rivers and the sea provided the best means of transport for the inhabitants. In Malaya the west coast is most accessible because the Straits of Malacca is sheltered and has the character of an inland sea. The east coast is more difficult of access, for during the northeast monsoon, high winds and rough seas limit coastal navigation. In Borneo the sea continues to be an extremely important means of communication between the areas of settlement, and there are a number of sheltered ports along the coast.

A more elaborate account on Malaysian topography may be found in the following section under "Geology".



GEOLOGY

Malaya

The Malay Peninsula forms the continuation of a series of mountain ranges extending from Eastern Burma southward through Thailand, and eventually swinging east to link with Borneo. Except for some local variations the dominant regional trend of the fold-axes (i.e. mountains and valleys) in Malaya is approximately south-southeast.

Almost half the total surface area of the country consists of granite which forms the Main Range and the Trengganu Border Range, as well as lesser ridges. The granite is believed to be of Jurassic age and is therefore, geologically speaking, younger than most of the other rocks of Malaya. During its emplacement the older sedimentary rocks into which it was intruded were folded and buckled into the ranges that make up the present Malayan topography. The granite is fairly uniform in character over most of Malaya, and it is the ultimate source of most of the economic minerals found in the country.

In between and on either side of the granite range lie various sedimentary and volcanic rocks and the coastal alluvium. The table opposite shows the relative ages of these rocks, the geological names assigned to them, their nature and approximate distribution, and the fossils that have been found in them. The table is not intended to be exhaustive: it has been somewhat simplified, and several details, as well as some controversial points, have been left out; moreover, there is a degree of uncertainty attached to the absolute ages (in million years) that are given in the table, and they should only be regarded as an approximation.

When studying the details given in the table it should be borne in mind that, although Malaya is now land, this has not always been so, and that the part of the world now occupied by the Malay Peninsula has during many periods of the geological past been covered by the sea. In fact, the formation of sedimentary rocks, such as limestone, shale, sandstone, and conglomerate normally takes place under water, and is equivalent to the formation of layers of mud and sand on the sea bottom and in the lakes and rivers of today. Therefore, if the table shows that sediments were laid down in Malaya in certain geological periods, we may assume that Malaya was, at that time, covered by the sea, or possibly by freshwater lakes; whereas if the table shows that no sediments are known to occur in Malaya during any geological period, it is likely that Malaya was land during those periods. Again, if the sediments of a certain geological age are confined to a limited area of Malaya only, the explanation may be either that the area where the sediments are found was sea and the area where they cannot be found land (with a shore line occupying the space between the two), or that

THE GEOLOGICAL SUCCESSION IN MALAYA

GEOLOGICAL AGE (world-wide application)			Name of Lithological units	Type of rocks and their chief distribution	Characteristic fossils						
Age	Era	Period									
APPROXIMATE AGE IN MILLIONS OF YEARS (AFTER HOLMES 1960)	0 1	Quaternary	Recent	Younger Alluvium	Clays and sands of the river valleys and coastal plains	Archaeological implements Ancient shell banks Vertebrate remains					
			Pleistocene	Older Alluvium							
	Tertiary		Pliocene	(not known)	Selangor and Enggor Coal-measures, etc.	Shales and sandstones with thin bands of soft coal and lignite. Seen at Batu Arang (Selangor), Enggor (Perak), Bukit Arang (Perlis), and at a few localities in Johore	Gastropods Plants				
			Miocene								
			Oligocene	(not known)							
			Eocene								
			70 135					Cretaceous	Gagau Formation	Quartzites and pebble beds near Gunung Gagau	Plants
								Jurassic			
	180	Mesozoic	Mountain-building period: uprise of the Malayan-Indonesian Archipelago Intrusion of the Malayan granite and heavy folding of the older sedimentary formations								
			Triassic	Lipis Group (including Semanggol Formation)	Conglomerates, sandstones, shales, some limestone and some volcanics, chiefly in Central Pahang and Johore. The Semanggol Formation is found in North Perak and Kedah	Small lamelli-branches Ammonites					
	225	Upper (Younger) Palaeozoic	Permian	Raub Group	Limestones, shales, quartzites and volcanics, chiefly in Pahang, but extending over most of Malaya except Johore	Corals Crinoids Gastropods Brachiopods Protozoans					
	70		Carboniferous	Bentong Group	Quartzites, shales and some chert, chiefly in Pahang, but extending over most of Malaya except Johore						
				Kuantan Group	Shales, with some limestones and quartzites, chiefly in Pahang						
	350 400		Devonian	(not known)							
440	Lower (Older) Palaeozoic	Silurian	Setul Formation	Limestone, with some quartzites and shales, seen in Langkawi; West Perlis; near Mahang, Kedah; in the Kinta Valley near Kanthan; and near Kuala Lumpur	Gastropods Cephalopods Graptolites						
500		Ordovician									
600		Cambrian	Machinchang Formation	Quartzites and shales, seen in Langkawi	Trilobites Brachiopods						

later erosion has removed rocks that were originally there. It is on these principles, stated here in broadest outline only, that a picture of the geological history of Malaya has been built up.

The oldest rocks of the sedimentary succession so far positively identified occur in the extreme northwest of Malaya, in the Langkawi Islands, where they form a thick sequence of quartzites and shales named the Machinchang Formation, and belonging to the geological period known as the Cambrian. They are overlain by a series of predominantly calcareous rocks (limestones) which are named the Setul Formation, and belong to the geological periods known as Ordovician and Silurian. The Setul Formation is chiefly found in the Langkawi Islands and in Perlis, but three isolated occurrences in the Mahang area of Kedah, in the Kinta Valley of Perak (near Kanthan), and near Kuala Lumpur, are also known. We can therefore assume that, while most of Malaya was land during the period from the Cambrian to the Silurian, an arm of the sea extended into northwest Malaya at that time.

The bulk of the Malayan sedimentary rocks however falls within the geological periods ranging from the Carboniferous to the Triassic, and it may be concluded that a greater part of Malaya lay below the sea during that time. The rocks consist of repeated series of quartzites (sandstones) and shales with interbedded limestones and volcanic rocks, which are not always easy to distinguish from one another, and have been sub-divided into a number of groups and formations. The oldest of these is the Kuantan Group, a sequence of predominantly shaly rocks belonging to the early Carboniferous. This is followed in turn by the Bentong Group (consisting predominantly of quartzite and formerly known as the "Older Arenaceous Series"); the Raub Group (consisting chiefly of limestone and formerly known as the "Calcareous Series"); and the Lipis Group (consisting chiefly of quartzites and shales and formerly known as the "Younger Arenaceous Series"). As can be deduced from the names given to these rock groups, their most extensive development is found in Pahang. From Pahang the Bentong and Raub groups continued into Kelantan, Trengganu, Negeri Sembilan, Selangor, Perak, Kedah, and Perlis, while the Lipis Group continues chiefly into Johore. A sub-division of the Lipis Group, known as the Semanggol Formation, occurs in North Perak and Kedah.

One of the most outstanding topographical features of Malaya is formed chiefly by rocks of the Raub Group which has just been described. They are the prominent vertically-sided limestone hills situated in the neighbourhood of Kuala Lumpur (Batu Caves and Bukit Takun) in Selangor; near Ipoh in the Kinta Valley of Perak; and at many places in the States of Pahang, Kelantan, Kedah, and Perlis. Most of these hills are late Carboniferous or Permian in age; they are derived from thick beds of limestone originally laid down in the sea, subsequently raised up above sea-level, and

later exposed and isolated by the rapid action of tropical weathering on the surrounding rock. Their vertical faces usually result from the fact that corrosion by acidic groundwaters is more rapid at the base than near the top, so that the sides are being constantly undercut and collapse as a result. These hills are honey-combed by caves, from which quantities of bat guano are obtained for use as fertilizer.

A certain amount of volcanic activity took place in Malaya during the Permian period (as well as just before and after the Permian). The evidence left by the volcanic eruptions of that age consists of a series of volcanic tuffs and lavas that occur interbedded with the sedimentary rocks of the Raub Group and have been described in the literature as the Pahang Volcanic Rocks. The fact that these rocks are interbedded with sediments suggests that they were deposited in the sea, and that the volcanoes whose eruptions formed these rocks were situated close to the sea-shore or possibly below the surface of the sea. Volcanic rocks often give rise to soil that is more fertile than that found overlying sedimentary rocks or granite, and are therefore of some economic importance to agriculture.

Another series of sedimentary rocks, consisting chiefly of quartzites and pebble beds, is found near the tri-State corner Kelantan-Trengganu-Pahang and has been named the Gagau Formation. Plant remains indicate that the age of these rocks is late Jurassic or early Cretaceous, and their geological setting shows that they were not disturbed by the emplacement of the granite. It is therefore believed that these rocks were formed after the intrusion of the granite, although the time interval between the two events may have been very short.

Tertiary rocks in Malaya are represented by five small outcrops of shales and sandstones associated with thin bands of soft coal and lignite. The most famous of these are the deposits of Batu Arang, Selangor, which were worked for coal until 1960. Similar deposits occur at Enggor (Perak), Bukit Arang (Perlis), and at a few localities in Johore. The fossils found in these rocks suggest that these deposits were laid down in fresh water or brackish lakes rather than in the sea, a view which is confirmed by the irregular distribution and small extent of these beds. The scarcity of Tertiary rocks, being the only ones in Malaya known to contain accumulations of organic remains, is one of the main reasons for the view that an occurrence of natural oil in Malaya is unlikely.

The youngest formations encountered in Malaya are extensive tracts of Quaternary sands and clays, found in river valleys and coastal plains. These deposits, known as alluvium, are not consolidated, and are formed by the erosion of the older rocks over long periods of time, and the redeposition of the eroded material by rivers and by the sea. In many parts of Malaya, and particularly in the vicinity of the granite areas, the alluvium

may contain valuable concentrations of tin-ore, and it is in fact the most important source of tin-ore in the country.

For many years Malaya has been the world's leading producer of tin, the ore of which (cassiterite) is mined from alluvium, and occasionally from hard rock, near the margins of the granite where it has been concentrated naturally by geological processes. Recovery is chiefly by dredges and gravel pumps, but underground mining also takes place, and the largest single underground tin-mine in the world is situated at Sungei Lembing in Pahang. By-products of alluvial tin-mining include minerals such as columbite, scheelite, ilmenite, monazite, xenotime, zircon, and rutile, which are of varying commercial interest in accordance with fluctuations in their price and demand.

Iron-ore is mined on a large scale at Dungun in Trengganu, and on a somewhat smaller though increasing scale in the States of Kelantan, Perak, Kedah, Pahang, and Johore. Aluminium-ore (bauxite) is mined in Johore, while gold occurs in economic quantities in Kelantan, Pahang, and Perak. Deposits of other ores, such as those of tungsten, lead, manganese, copper, and silver have been worked in the past in different parts of the country.

Sarawak

Sarawak occupies most of the northwestern coastal area of the island of Borneo. With an area of about 48,250 square miles, the territory covers a little less than one-sixth of the island, which is the third largest in the world and the largest of the 3,000 or more islands comprising the East Indies Archipelago.

The boundary between Sarawak and Indonesian Borneo follows the watershed between the rivers flowing generally northwesterly into the South China Sea and those flowing into the Celebes and Java Seas. Although much of this watershed is not particularly high, the country is generally rugged and topographically complex. In the north, Sarawak adjoins Sabah, and in the northwest the State of Brunei forms a double enclave. The boundaries between Sarawak and these two countries run through much easier country and sections have been surveyed as the need has arisen.

Mount Murud, at 7,950 feet, is Sarawak's highest mountain, dominating an area of practically unexplored ravines, plateaux and involved mountain ranges rising to over 5,000 feet. Knowledge of this area has been gained by visual reconnaissance from Royal Air Force aircraft (aerial photography) and by various expeditions, notably those of the Sarawak Museum, Geological Survey and the Oxford University Expedition to the Usun Apau Plateau region in 1956.

The remainder of the country comprises an alluvial coastal plain and a belt of undulating country separating the coastal plain from the sharply rising mountainous interior. The coastal plain varies in width from less than a mile at Miri to over a hundred miles, and contains large areas of peat swamps of various depths. The beaches are generally of mud and mangrove or nipah palm. The belt of undulating country is broken by a few mountain groups, generally not more than 2,500 feet in height. Shallow coastal waters and the existence of bars at river mouths limit the development of deep sea ports.

The main rivers rise in the interior ranges and flow fast through deep gorges and over numerous rapids until they reach the undulating country and the coastal plains, where they meander towards the sea. In spite of the high rainfall and the steepness of the interior mountains, no spectacular waterfalls have yet been discovered, the rivers descending to the undulating country in a series of rapids rather than by waterfalls. The largest river, the Rejang, has a length of 350 miles and is navigable for small coastal steamers as far as Kapit, 150 miles upriver.

The greater part of Sarawak is still covered by primary rain forest, and large areas are practically uninhabited except for scattered bands of nomadic Punans. Much of the remainder of the land is used for agriculture, largely shifting cultivation or bush fallow farming. One distinctive feature of the country is the large areas of swamp forest. These forests produce the bulk of the timber exported, notably *ramin*, one of the main exports and used extensively in Great Britain and Australia for making furniture. There are a few small areas of natural grassland near the coast on which cattle are raised, but grazing land, either natural or developed, is very limited.

Sabah

Sabah, with an area of 29,388 square miles, forms the apex of the island of Borneo. It is bounded on the west by the South China Sea, below which a continental shelf extends about forty miles to the Sabah Trough, in which depths of 11,000 feet have been recorded; on the northeast a shelf extends out to Kagayan Sulu Island, beyond which is the Sulu Sea Deep; on the southeast the coast falls away sharply into the deep Celebes Sea. The shape of the country has been aptly compared to a dog's head facing east. The coastline of over 800 miles is deeply indented by large bays, such as Marudu Bay in the north and Sandakan Harbour, Darvel Bay, and Cowie Harbour in the east.

One of the chief geographical features of the country is the Crocker Range, a range of mountains stretching parallel with the coast from the Sarawak border in the south-western corner of the country to the Kinabalu massif. The average height of the range is between 2,500 and 3,000 feet and the



