

before you these facts as impartially as possible by means of photographic views, leaving it principally to you to draw your own conclusions.

As the time is too far advanced for any discussion, it only remains for me to thank you for the very kind reception you have given to my paper and to my illustrations.

CAPT. WHARTON (who occupied the chair): It only remains for me to thank Dr. Grossman for the very pleasant evening he has given us, transporting us by means of his photographs to Iceland, and enabling us to realize the country in that way better than in any other.

The Map of Iceland.—This map is a reduction of Gunnlaugsson's survey of Iceland.

JOHORE.*

By HARRY LAKE, Engineer in the Service of the Sultan.

JOHORE territory occupies the most southerly portion of the Malay peninsula; it extends from Cape or Tangong Bulus in latitude $1^{\circ} 16' 12''$ north to about $3^{\circ} 1'$ north.

On the north it is bounded by the protected native states of Pahang and the Negri Sembilan, and on the north-west by Malacca. A narrow strait, the "Selat Tebrau" of the Malays, separates the territory from the Island of Singapore. In former times all merchantmen engaged in the China trade passed through this strait, as the present route to the south of Singapore was extremely unsafe owing to the hordes of pirates which infested these seas; even in the Tebrau Straits ships were often attacked and destroyed by Malay piratical phraus. In common with the rest of Malaya, the coast-line is bold and rocky on the east, where it is washed by the China Sea, and low and swampy on the west, where it borders on the Straits of Malacca. The formation is chiefly granitic, traversed in places by veins of quartz and dykes of intrusive masses of diorite, quartz felsite, trachyte, etc. This granite is overlaid by a series of clays and clay shales, with here and there beds of laterite. These clays are non-fossiliferous, and are probably of Paleozoic origin. In the north-east a little sandstone is found, whilst in the extreme north-west there are signs of a limestone formation. On the east coast the clay shales show distinct evidences of metamorphism, in some places, notably near Kuala, Indau merging into a highly stratified clay slate. Amongst these shales and slates are masses and deposits of brown ironstone.

Before proceeding further, it may be interesting to give a short *résumé* of the history of this state. The Sultans of Malacca, before they were driven out of that place by the Portuguese, who were succeeded by the Dutch, may be said to have been the dominant power over the Malay

* Paper read at the Royal Geographical Society, February 12, 1894. Map, p. 356.

peninsula, the Archipelago, and the eastern parts of Sumatra, although each of the states and territories beyond the immediate neighbourhood of Malacca was occupied and governed by its own chiefs under different titles; independent within their own provinces, but feudatory or tributary to the sovereignty of the Sultan of Malacca. The state of Johore is a case in point. Although the first authentic records date only from the days of the Portuguese conquest, yet we get occasional historical glimpses of the Sultanate of Malacca as far back as the earlier part of the thirteenth century, when the then reigning Sultan, Mahmud Shah, adopted the faith of Islam. In 1511 Sultan Ahmed, being driven out of Malacca by the Portuguese, removed to Muar, then to Johore; subsequently his successors retreated still further southwards to the island of Rhio, and finally to Lingga. As the sultanic power gradually declined, the most northerly states of the peninsula first, and finally those to the south, one by one naturally grew really independent, became tributary to one another, or formed treaties with the European powers of the time. Thus the hereditary Temenggong, or chief of Johore, virtually became an independent ruler. We find Johore taking an important part in the one hundred and forty years' struggle for Malacca between the Portuguese and the Dutch. At that time the seat of Malay Government was established at Johore Lama, on the Johore river. Up to 1773 the Negri Sembilan or Nine States were feudatory to Johore, but afterwards they petitioned for and obtained a chief of their own from Menangkabau. When, in 1795, the Dutch in their turn were driven out of Malacca, they forcibly took possession of the Carimons and several other islands then under Johore. At the restoration of the Dutch possessions at the peace, they were still allowed to retain these islands; and when, in 1819, the grandfather of the present Sultan, and the then and last titular Sultan of Johore, ceded Singapore to the British, Johore rule became virtually confined to the mainland. By the treaty of 1855 the British acknowledged the *de facto* administrative right of the Temenggong, and the capital was again removed to Johore Bahru, or New Johore. In 1868 the title of Maharaja was assumed by the present ruler, and this was again changed to that of Sultan by the Treaty of 1885, thus restoring the old Malacca title.

Very little literature exists relative to the geography of Johore. Hervey of Malacca in 1879 made a journey towards the source of the Indau Sembrong, and published an article in the Journal of the Straits Branch of the Asiatic Society. In 1878 the same traveller made a short trip to the Blumut region. Mikluho Maclay in 1875 made an ethnological excursion through portions of Johore; but, as he was occupied chiefly in observations on the Jakuns, his articles published in the *Asiatic Journal* contribute very little to the geography of the territory. Up to 1890 very little was known of the interior beyond the Sembrong rivers. Dato Luar, chief surveyor of the Johore Government, had

mapped the Muar river, and more or less accurate surveys had been made of the Batu Pahat, the Johore, and the big Sedili river of the Blumut region; of the Upper Indau little or nothing was known. In 1891 the Straits Branch of the Asiatic Society published a fresh edition of their map of the Malay peninsula. As regards Johore, beyond Hervey's survey of the Indau Sembrong, and Dato Luar's work on the Muar Batu Pabat and Johore rivers, it contained little new data of value, and naturally many errors in the position of hills and rivers occurred. Hervey's survey of the Sembrong, considering that it was only time and compass work, was very fairly accurate, except at the source, where it required considerable revision.

Owing to the dense jungle, survey work in Malaya is a most tedious and trying affair. It is impossible to do much traversing with the theodolite, and a systematic triangulation in such a wild country is at present out of the question. I therefore contented myself by fixing a number of prominent peaks and hill-tops by a series of astronomical observations, and then filling in the small tracts of surrounding country by prismatic compass; where the country was moderately open, the plane table was used. By these means the whole of the territory was mapped within two years. This work, while it does not pretend to the accuracy of a regular triangulation, is, I think, sufficiently reliable to serve all practical purposes for some years to come. The heights were in most cases determined by aneroid barometer, and may be regarded as approximate only. Mounts Ophir, Janing, Pulau, and a few others, were, however, determined by a careful series of boiling-point observations.

To those accustomed to read and speak of the huge distances traversed by African explorers, the small area covered by travellers in Malaya will appear very unimportant and trivial. It must seem an easy affair to get across 100 miles of jungle country within the week, but I would like you to consider the drawbacks to rapid and easy locomotion in this country. The interior consists of one dense mass of jungle. Swamps, undulating ground, and mountains alike covered with rankly luxuriant tropical vegetation, so thick and so closely interlaced with thorny creepers and rattans that it becomes almost impossible to move a yard in any direction without previously cutting a path. Even on the smaller rivers the foliage and creepers will stretch entirely across from bank to bank, and a way must be cut for the canoes to pass under; whilst the river-bed is full of snags and fallen timber, which have to be hacked through or moved before a passage can be effected. Although there is no regular rainy season, scarcely a day passes without a downpour, occasionally as much as 25 inches falling in one week. This quickly converts the low-lying ground into a series of almost impassable swamps.

The unexplored country is in most cases trackless and uninhabited ;

it therefore becomes impossible to obtain supplies of any kind *en route*. I have found that only the natives of the interior are of any value as carriers and guides, but the far up-country villages are so few and so sparsely inhabited that it is extremely difficult to obtain sufficient carriers for any one expedition. Of these men, however, I cannot speak too highly. Plucky and patient, they will carry their load of from 35 to 40 lbs. day after day across the most difficult and dangerous country; the few rags they possess as clothing drenched night and day; sleeping without shelter in the reeking undergrowth, and living on rather less than a pound and a half of what was often mouldy rice a day, together with a morsel of dry fish and a little tobacco. A few weeks of this work put half your men *hors de combat*, with fever and ulcerated feet and legs; yet they struggle on, and one seldom hears a word of complaint. As supplies of food cannot be depended on *en route*, nearly every available man is employed in carrying that oriental staff of life—rice. Personal outfit is cut down to the smallest possible amount; tents, camp furniture, and European stores must be dispensed with; and the traveller must practically live in the same manner as the natives.

To an ordinary traveller in the interior, the Indau river and the Tenang hills, amongst which it takes its rise, will present the most interesting features. The Indau proper, which is only about 75 miles long, rises between the mountains, Besar and Chabang-tiga, pursues a southerly course, and empties itself into the China Sea in latitude $2^{\circ} 40' 0''$ and longitude $103^{\circ} 36' 10''$. As is usual with nearly all the rivers of the peninsula, the amount of detritus brought down during the rains is enormous, when we consider what a short course these rivers run; the natural result of this is the formation of a bar at the "kwala," or river mouth, which effectually prevents the entrance of ocean-going steamers, except a few of comparatively light tonnage. The Indau is no exception to this rule, and during the north-east monsoon the estuary is completely closed to craft of every description.

For a distance of 30 miles the Indau is a broad tidal stream easily navigable by small steamers; at this distance the junction with the Sembrong river is made, beyond which point the stream narrows rapidly and becomes shallow and sandy. Dykes of felsite, diorite, and granite porphyry, which run in well-defined courses from west to east, have occasioned a most picturesque series of small waterfalls and rapids, which, however, render navigation extremely slow and somewhat dangerous. The banks are high and covered with splendid timber. In the neighbourhood of Mount Janing are two or three small Jakun (*i.e.* aboriginal) settlements; but the upper reaches are trackless and uninhabited, save by the tiger and elephant, the crowds of monkeys, and the brilliantly plumaged birds, among which the hornbill (*Buceros rhinoceros*), the Argus pheasant, called by the Malays "kuau," and the "pergam," or grey pigeon, predominate. During my journey to the source of this river

in 1891, I met with thirty-two of these rapids in the course of 20 miles; this short distance was only accomplished after six days of extremely hard work, or rather less than $3\frac{1}{2}$ miles a day. Many of the canoes were swamped, and others stove in, and the source was eventually reached by wading and scrambling along the bed of the stream.

The canoes, or "jalors," as the natives term them, used on all rivers of the interior, are constructed from a single tree cut longitudinally, hollowed out by fire, and finished with the "bliong," or Malay adze. Some of these canoes will carry twenty to thirty men, but for navigating the rapids they are built very light and small, carrying two or three persons only.

On reaching the source of the Indau, we found ourselves in the midst of an unknown hill-country, the central elevation of which was Gunong Chabang-tiga, or the mount with the three branches. From the summit of this hill, 3100 feet above sea-level, a number of observations for latitude and time were made. On the lower slopes of Chabang-tiga the tapir and rhinoceros are to be found. I managed to shoot one of the former, a full-grown male, and also a fine specimen of the Malayan honey-bear (*Ursus Malayanus*). Notwithstanding the name, this latter is an inoffensive animal, often trapped and tamed by the natives.

Before the survey work in the Tenang hills was complete, we ran short of stores, and I was forced to make a move for the Segamat river. Five days of hard going, during which time we lived on fruits and tapioca root, brought us out at the Jakun village of Penglima Pute, on the Pukin river. Here we got a little rice and Indian corn; but, much to my disgust, I found an aboriginal wedding-feast in progress, and my carriers insisted on remaining two days in order to take part in the festivities, which, as far as I could see, consisted in the people gorging themselves with green corn and sugar obtained from the Cabong palm, thumping tom-toms, and dozing in the intervals. Eventually a start was made, and a tramp of three days brought us to the banks of the Jekati river, where we came across another Jakun village. Here I lost one of my best guides, who was taken from the midst of his sleeping comrades by a tiger. The work in the neighbourhood of the Jekati and Bukit Asoh occupied my party several weeks, during which time I had many opportunities of making observations on the natives of the interior.

From an ethnological point of view, probably the most interesting feature of Johore exists in the survival of these aboriginal inhabitants of the peninsula, whose forefathers roamed the jungle long before the advent of the Malays, who probably were drawn to the peninsula from the islands of the Archipelago. In Johore these aborigines are known as Jakuns, while in Pahang and Selangor they are termed Sakai. The Malays apply various other names to them, such as "Orang benua" (men of the soil), "Orang utan" (forest men), and so on. They are

usually found very thinly scattered in the most inaccessible portions of the jungle.

These semi-wild people are undoubtedly of Negrito origin, but interbreeding with the Malays has in most cases considerably altered and modified the original primitive type, although as a general rule they preserve many of the leading characteristics of the Negrito. Mikluho Maclay, who made an ethnological excursion through portions of the peninsula in 1876, is inclined to think that these aborigines were originally a pure branch of the Melanesian race, but that the Johore Jakuns have now become a mixed Melan-Malay tribe. There seems to be a distinct family relationship between these people and the natives of the Andaman and Philippine Islands. Some authorities are of the opinion that they are of Papuan origin. Wallace, however, while admitting that the Negritos are a distinct race from the Malay, considers those inhabiting the peninsula to be in all probability of Asiatic rather than of Polynesian origin.

The increasing intercourse with the Malays is most strikingly exemplified in the rapid decay of the aboriginal tongue. A few generations ago these aborigines possessed a distinct language, primitive, it is true, but utterly unlike Malay; of late years this has degenerated into a mere dialect, largely composed of Malay words. For the preservation of a number of true Jakun words we are indebted to a superstitious usage largely practised by the jungle Malays and Jakuns, and known as the "Pantang Kapor;" translated liberally, this means the "Observance of the camphor ceremony," of which the following is an explanation.

The camphor tree (*Dryobalanops camphora*) grows abundantly in certain parts of the peninsula, but only occasionally contains camphor crystals. Now, the camphor in question is not at all similar to that obtained from the camphor laurel; it is known in commerce as Borneo camphor, or Borneol, and is in great demand by the Chinese, who use it in embalming their dead, as an incense, and in medicine; being rare, it always commands a high price. As it by no means follows that each camphor tree contains this valuable product—in fact, it being rather the exception than the rule—recourse must be had to the species of witchcraft known as "Pantang Kapor." Therefore, to ensure good luck, the hunters while on their expedition must speak the camphor language, and observe certain practices, in order to propitiate the spirit of the camphor tree, which is known by the Jakun name of Bisan (lit. a woman). Her resting-place is near the trees, and at night when a peculiar noise, much resembling that of a variety of cicada, is heard in the forests, the Bisan is abroad, and camphor will surely be found in the neighbourhood. The language of the camphor spirit consists of a mixture of Jakun and Malay words, with a large proportion of words of Malay origin, but curiously altered or reversed.

The following are a few examples of the Pantang Kapur language:—

A. Words of Malay derivation—

1. Sword = *manchong*, from *Panchang*, to cut or to sever.
2. Tail = *p'nurun*, that which causes to descend; that which hangs down or droops.
3. Chest = *hadap*, the front part.
4. Wrong = *salek*, from *Salah*.
5. A long time = *Awal*, the first, therefore the time that first passed away.
6. Pineapple = *s'jambol*, the thing with a long tuft of hair or a tassel.
7. Dammar (resin) = *sokoh* = *suloh*, a torch.
8. Sail = *sayap*, a wing.
9. Sand = *p'nabu*, the thing that resembles ashes, from *Abu*, ashes, or *abok*, dust.
10. Shore = *kring*, dry, meaning the dry land.
11. Spark = *bunga p'hangat*, the flower of the heater, or fire.

B. Words of aboriginal origin—

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| <ol style="list-style-type: none"> 1. Rich = <i>kon</i>. 2. Poor = <i>pyeng</i>. 3. To sink = <i>m'pior</i>. | <ol style="list-style-type: none"> 4. Wide or stout = <i>bagin</i>. 5. Open = <i>rayat</i>. 6. The sky = <i>tongkat</i>. |
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The Jakuns live in small communities on the banks of jungle streams; those of the Jekati, Palong, and Segamat rivers are the most primitive. They subsist miserably on fruits, tapioca, roots, and small fish and reptiles. They seldom remain many weeks in the same spot, but wander from place to place, living under scanty leaf shelters built on rickety poles at a considerable height from the ground. It is not at all uncommon to find a dozen men, women, and children in company with a tame monkey or two, a few dogs and cats, innumerable fowls, and perhaps a tame hornbill, living in perfect harmony under the same miserable shelter. These aborigines are all very expert fishermen, using chiefly the three-pronged spear or trident; no less skilful are they with the sumpitan or blowpipe, which, with its darts tipped with the deadly Upas or Ipoh poison, constitute their chief weapon. On the Seriting river these sumpitans are manufactured from a very long-jointed, straight variety of bamboo, which is generally carved and traced with many rude devices. The darts consist of thin splinters of wood about a foot long, having a plug of pith at the butt end. The point is as sharp as a needle, and is covered with a black resinous substance; in many cases this is extremely poisonous—so much so, in fact, that monkeys and other small animals die from its effects almost immediately; on man and the larger animals its effect is far less rapid, but quite as deadly. This poison is known to the Malays as Ipoh, and is popularly supposed to be obtained from the Upas tree; but I am inclined to think that in most cases death results from the action of an alkaloid which is either strychnine or else

closely allied to it, which is obtained from quite a different species of tree. The juice of the Upas is very rarely obtainable in Johore. Probably each tribe or even each family of aborigines possesses a different and secret method of preparing the dart poison, which varies within very wide limits in its toxicological effects.

The Jakuns of the Indau and Sembrong rivers are, owing to their intercourse with Malay and Chinese traders, much more civilized than their brothers of the Palong and Jekati; they plant a little rice and Indian corn, wear a certain amount of clothing, and live three or four families together, in thatched bamboo huts. The true Jakun is of short stature; 5 feet 2 inches is a fair average height. They are much darker in colour than the Malays, and as a rule not at all well set up. The hair, which in the pure Negrito curls closely, is here in most cases simply wavy, or even straight. They appear to possess no particular form of worship, but are great believers in the existence of evil spirits. When a man dies he becomes transformed into a spirit that roams the jungle; thus on the grave of a newly buried body they place various kinds of food, a torch, cooking utensils, the sleeping-mat, and weapons of the deceased, for his use and protection in the shadowy land.

Late in September, the Jakati having risen sufficiently to make canoeing practicable, I broke up camp at Bukit Aso, and proceeded down stream to the confluence of the Keratong river. In travelling in canoes one sees far more of the bird and insect life of the country than when actually tramping through the jungle. Birds of every size and colour, from the tiny bronze green sun-bird, and the blue and orange kingfisher, to the big crimson-beaked black hornbill, rise from the trees. Insect-life swarms in myriads; dragon-flies of bronze blue, purple, and vermillion, and butterflies in every shade of yellow, from pale primrose to orange, delicate rose-pink and bright crimson, are in endless variety. Now and then a lizard or snake will glide away in the dense undergrowth, while troops of monkeys chatter and scurry off, crashing through the trees, and taking breakneck leaps from branch to branch in their haste to escape the intruders. On each side is primeval forest, huge trees loaded with creepers drooping in a thousand fantastic shapes, dark green foliage, yellow sand and clear water, overhead a blue sky and blazing sunshine. But let a cloud obscure the sun, and the whole aspect changes; the trees and water look sombre, the birds and butterflies vanish, and one comes down from the clouds and begins to speculate on the chance of getting the camp built without a wetting, and whether Ibrahim the cook will burn the rice as he did yesterday.

We duly reached the little settlement of Keratong after three days' canoeing. Here we found the natives had trapped a fine tiger alive in a pit, and I thus had an opportunity of examining the big cat at close quarters. The Malayan tiger does not seem to attain such a large size as its Indian congener, but is apparently quite as powerfully built and

extremely well marked. One of the headmen showed me a leopard's skin; this animal, the "H'rimau bintang," or starry tiger, as he termed it, is, I believe, exceedingly rare in the peninsula.

From Keratong we made our way overland through dense bamboo-jungle to the Palong river at Jeram Badok (the rhinoceros rapids). For miles around this place the country had been overrun by herds of elephants, who had levelled acres of jungle, and broken into and destroyed many of the corn and padi fields of the villagers. However, with the exception of hearing their trumpeting at night, we never came across any further signs of them. At Jeram Badok my Jakun guides brought in many specimens of monkeys, generally shot with the poisoned darts of the sumpitan. Amongst these were two white-handed gibbons or wau-wau's (Malay "Ungka")—this monkey is extremely shy, frequenting the densest forest and keeping in the tops of the highest trees; also a pig-tailed monkey, the "Broh" of the Malays, and several of the black "lotang" variety (*Semnopithecus obscurus*).

The Palong river rises in a big swamp on the northern frontier. The stream is sluggish, and, strange to say, much deeper and broader near the source than at the mouth. Here, as on the Indau, we found numerous diorite dykes. Eventually we reached the source only to find that Tasek Bera, which had been laid down in the existing maps as a big lake, was in reality a huge dismal swamp traversed by a few muddy streams. Our experiences whilst trying to penetrate into this region were anything but pleasant, and when, after three days' hard work, we reached what the Jakuns assured us was the boundary between Johore and Pahang, nobody was more heartily glad to commence the homeward journey than myself. The return was not commenced a day too soon, for the rains set in heavily, and the swamp became hourly more difficult to traverse. However, by pitching away nearly all our stores and kit, we reached the canoes again, made a rapid journey down the Palong to its confluence with the big Muar river, and eventually arrived at Bandar Maharani, where we obtained a steamer to Singapore.

The two Sembrong rivers are, I think, worthy of a short description, from the fact that they both rise in a swamp in the centre of Johore; from thence, one, the Indau Sembrong, flows east to the China Sea, while the other, the Batu Pahut Sembrong, pursues an exactly opposite course, and empties itself into the Straits of Malacca. Hervey, of Malacca, who in 1876 explored a portion of the Indau branch, came to the conclusion that at the source a running stream actually rose and flowed in opposite directions. This, however, is not quite the case, as the two rivers have their common origin in a swamp. Nevertheless, theoretically speaking, the southern portion of Johore is an island. In the course of my work on the Sembrongs in 1892, I was able to cross in small canoes from the east to the west coasts, with the exception of five miles of swamp, which

had to be waded through. A little deepening of the streams of the source, and a cutting through the swamp, would enable canoes to pursue an uninterrupted journey completely across the Peninsula, at a time when the North-East Monsoon closes all ports on the China seaboard. Both these rivers have very little fall to the sea, and in places spread out into big swamps and lagoons, overgrown with *rasau*, a species of *Pandanus*. The Kahang and the Selai are the two chief tributaries of the Indau-Sembrong, the former rising in the Blumut Hills, and the latter in the Tenang Range; the banks of both are very thinly inhabited by Jakuns. The forests at the source of the Kahang are noted for the camphor and "gahru," or eagle-wood (*Lignum aloes*), which they contain. On the Batu-Pahat Sembrong, and its more important tributaries, the Chinese agriculturists have settled in large numbers, planting chiefly pepper and gambier; as this latter product is not commonly known in England, it may be well to describe it.

Gambier is a product obtained from the leaves of a climbing shrub (*Uncaria gambir*). It is largely produced in Johore and the Archipelago by the Chinese. The leaves and twigs of the shrub are boiled in huge cauldrons and well stirred for some hours. The liquor is then strained, concentrated, allowed to cool, and made to set by frequent stirring, when it presents the appearance of a bright yellow clay-like mass, which is cut into cubes, allowed to dry, and in this state exported. The chief use of gambier is as a tanning material, in which it is only second to oak bark. It is also employed as a brown dye, and for strengthening canvas. Its composition is similar to cutch, consisting mainly of catechin.

Each group of plantations possesses what is known as a "kangka," or village. Here resides the "kangchu," or Chinese headman, also the representatives of the various syndicates, or "kongsees" of Chinese speculators. The gambling-house, with the opium store, is also here. Around the central buildings, which are often of a substantial character, are grouped the shops and stores, the eating-houses and innumerable pig-pens,—everything built on the ground, of bamboo and round poles thatched with palm leaf. Scores of such "kangkas" exist on the banks of the Johore, Batu Pahat, Muar, and Sedili rivers. The Chinese are principally Tinchus or Taichus, who come down from the province of Swatow; other clans or provinces are represented in the following order: Hokkiens, Kehs, and Macaos. These coolies are mostly brought from China to Singapore by Chinese labour agents, who defray their preliminary expenses, such as passage, food, clothing, etc. At Singapore they are placed in depôts, until engaged by planters from various parts of the peninsula, when their names are registered in the office of the Chinese Protectorate, the registration fee and the commission of the agent being paid by the engaging planter or trader. New coolies are known as "Singkehhs," signifying "new men;" while "Laukehhs," or "old men," distinguish those that have been at least three years in Malaya.

Needless to say, these latter command higher wages than the "Singkehs." These Chinese immigrants, naturally indifferent to their ruler, provided their personal independence is secure, generally make very contented and peaceful subjects, and notwithstanding the fact that they are in a very large majority—in the Territory numbering some 200,000, as compared with less than 100,000 Malays—disturbances are of very infrequent occurrence, and of an unimportant character; possibly the efficient police force maintained by the Government has something to do with this.

Johore, unlike the northern portions of the peninsula, is not a mountainous country; the main central ranges of Malaya here break up into small isolated groups of hills, rising as islands from a sea of flat jungle. The most important of these will be the Blumut group, situated almost in the centre of the Territory. In 1890 I made the second ascent of Mount Blumut. The journey is, however, an extremely toilsome one. The low-lying ground at the base is simply a big swamp, and at times we were forced to erect rough platforms in the trees to enable us to pass the night, there being no ground solid enough even to build a fire on. The myriads of leeches in these swamps did not tend to increase our comfort, and in a few days we were covered with ulcerating little sores, from their incessant biting. The following extracts from my journal describe the actual ascent.

On December 26, after eight hours' very hard work, descending one hill, only to find we had to clamber over others, the Jakun guides slowly hacking a path through the dense undergrowth, we arrived just at sunset at the foot of Blumut, and camped on the banks of a small spring of excellent water, probably one of the sources of the Kahang river. Towering above us is Blumut, tier after tier of rock terraces all thickly covered with vegetation, and terminating in one little peak, in shape a truncated cone. It is probable that there is no water much higher than this point. And therein lies the difficulty, for many of my men are helpless with fever; so the stores necessary for a protracted stay on the summit cannot be carried—everything depends on our being able to make the ascent, take the necessary instrumental observations, and descend again to this spot within forty-eight hours, as it will be impossible to take sufficient food and water to last more than half that time.

My next entry is dated December 30. On the morning of the 27th, leaving five sick men in camp and taking a little cooked rice and water with us, together with the necessary survey instruments, we commenced the ascent. Soon our troubles began, as in many places the mountain-side was practically perpendicular, and we were forced to cling to roots and shrubs. Before noon it became a question of abandoning the water and most of the rice, or the instruments. Throwing aside the former, we were enabled at 3 p.m. to reach the summit of Gunong or Mount Bechuak; at least, I presume it was that hill. After getting the small timber cut away, I saw that Blumut still

towered above us, being separated from Bechuak by a steep and narrow ravine.

That night it blew a gale, and the hill-top was enshrouded in driving clouds; entirely without shelter save a few branches, we spent a miserable night, crouched round a small fire, which seemed nothing but smoke. Next morning, after a handful of cold rice apiece, we descended the ravine, clinging to roots and stones. At the bottom we were horribly disappointed to find there was no water. The final ascent of Blumut was commenced at 8 a.m., the vegetation becoming sparser and going more difficult every minute. At last, at noon, the summit was reached. From the top of a pile of granite boulders I got a magnificent view of practically the whole of Johore Territory lying like a huge panorama, one mass of thick dark green jungle, with here and there a patch of bright emerald, marking a clearing of cultivated land; overhead the sun glared down from a cloudless sky, and not a sound broke the stillness of the solitude. To the north-west, Mount Ophir towered upwards with a few fleecy clouds clinging around its summit. Away northwards, beyond the Segamat country, rose the Tenang hills. East of these a stretch of flat land, and then the China Sea, dotted with islands and shining like burnished silver. Following the rugged coast-line southwards, comes the Selat Tebrau or old strait dividing the peninsula from Singapore Island. South-west lay Gunong Pulai, rising from a sea of jungle and having for its background the Straits of Malacca; then miles of mangrove swamp to the Batu-Pahat river, and so along the west coast to Muar and Mount Ophir again.

Four hours were spent on the bare summit, taking observations; and then our thirst, becoming simply insupportable, compelled us to descend the ravine, where we made another fruitless search for water. Evening found us again on the summit of Bechuak, where we spent another wretched night; luckily towards morning a heavy dew fell, enabling us to squeeze a little moisture from the moss which grew abundantly there; it was, however, intensely bitter. On the morning of the 29th the observations were completed, and we managed to make our way back to camp late on the same day. When in sight of water, my men made a rush and literally threw themselves into the shallow stream, where they lay at full length, lapping the water like dogs. On the lower eastern slopes of the Blumut hills rises the Sedili Besar or Big Sedili river. This river is chiefly remarkable for the number of its small tributaries, which form a perfect network, especially toward the north, where numbers of Chinese planters have settled. The Lenggiu rising on the south slopes is a comparatively unimportant stream, which uniting with the Sayong forms the Johore river.

Blumut is a corruption of the Malay word *Berlumut*, meaning mossy; the stunted vegetation on the higher slopes of these hills being so completely covered with moss that it sometimes seems as though one-

were walking through a series of little mossy tunnels. The height, determined by aneroid barometers only, is 3100 feet; at night the temperature sinks to about 65° Fahr.

The Jakuns assert that formerly the aboriginal tribes of Johore and the neighbouring states looked on Blumut as the centre of the universe, being in fact the pivot to which the rest of the earth was attached and held together; consequently these hills are firmly believed to be haunted by all sorts of fearful and wonderful spirits, "hantus," "poyangs," "djins," "kramat tigers," and so. The two hills Bechuak and Chimundong lie on either side of Blumut. Respecting the position of these three hills the Jakuns have a legend that Blumut, the husband, possessed two wives, Chimundong, old and ill-favoured, Bechuak, young and pretty. In a fit of jealousy Chimundong cut off Bechuak's hair, who retaliated with a severe kick (the mark of which is still to be seen half-way down the slopes); at this point Blumut interposed his huge bulk between the two, and has been forced to remain there ever since in order to preserve peace.

The province of Muar occupies the north-western portion of Johore territory. It comprises chiefly the tract of land bordering on the Muar river and extending to the frontiers of Malacca and the Negri Sembilan. The chief town, Bandar Maharani, is at the kwala or mouth of the Muar. Ten years ago this was a mere collection of fishers' huts, but under a judicious administration it has grown into a flourishing little place, possessing a daily steamer service to and from Singapore, and a considerable export trade. The Sultan is represented by a Resident. From the town a light railway runs for a short distance to the village of Padang, the centre of a very fertile agricultural district. The banks of the Muar are thickly settled by Chinese gambier and pepper cultivators, as far as Bukit Kepong, a big village 70 miles up stream. Beyond this point the country is sparsely inhabited by Malays, who plant a little padi, but are chiefly employed in collecting jungle produce, such as damar, a resin obtained from various trees, "minyate kayu," or wood oil, gutta-percha, the true gutta, yielded by one tree only, known to the natives as Gatch Taban Merah. Unfortunately, in order to obtain this easily, they fell the tree. Indiarubber or caoutchouc, the dried juice of various climbing plants, is very plentiful. A large trade is carried on in rattans, of which over 30 varieties are exported.

The Muar river is the longest in the territory; it rises in Berembun in the Negri Sembilan and pursues a south-westerly course to the Straits of Malacca. The upper portion from the village of Jembu Lelan to the mouth of the Geme river, forms the boundary between Batin Gemelas district and the protected state of Johol, which is a portion of the Negri Sembilan. The Batin is the hereditary chief, but the supreme jurisdiction over his district is claimed both by the Sultan of Johore and by the British on behalf of Johol. The Batin's country consists of 500

square miles of trackless jungle and swamp, inhabited by wandering families of Jakuns, save along the bank of the Muar where a number of Malays have settled. The chief village is Jembu Lapan, which is near the confluence of the Jempole and Muar rivers. Here the Jempole is separated from the Serting river by a strip of flat swampy land, only 450 yards wide. It is therefore comparatively easy to haul canoes from one river to the other, and as the Serting is a tributary of the Bera, which joins the big Pahang river, travellers are enabled to make a canoe journey from Kwala Muar to Pahang, and thence out to the China Sea.

By far the most fertile portion of the Muar province is the Segamat district, which includes the plain of Tenang, lying at the foot of the Tenang range, and watered by the rivers Segamat, Juase, Pukin, and Tenang. The Chinese have not yet been admitted to this district, which is admirably suited for the cultivation of rice. As the Straits Settlements and Johore are entirely dependent on Siam and French Cochin China for their rice-supply, the cultivation of this cereal on a large scale in Johore is of the highest importance, and I believe there is already a project on foot to open up Segamat for that purpose.

The chief elevation in the territory is that of Mount Ophir, or Gunong Ledang, as it is called by the Malays, in Muar Province. A reference to the map will show its position. It is in the centre of a small group of hills, which at one period probably formed part of one of the main central ranges of the peninsula. From the sea it forms a very prominent landmark, owing to its abrupt rise and sharply defined peak. The height, carefully calculated by a series of observations with the boiling-point thermometer, is 4150 feet. It was long thought to be the highest mountain in the peninsula, but Gunong Tahan, in Northern Pahang, is probably twice that height. It was in endeavouring to reach this last-named mountain that Mr. H. M. Becher, who was exploring under the auspices of this Society, lost his life. The name Mount Ophir was probably given in the seventeenth century by European traders and adventurers, always on the look-out for the gold-bearing Ophir of Biblical fame. Considerable quantities of gold have been obtained in this neighbourhood, but the alluvial deposits are now practically worked out; of late years a little reef-mining has been attempted, with partial success only. The geology of this district appears to be very simple. The mass of hills of which Ophir forms the centre is of granite, containing the biotite variety of mica. In places this granite passes into gneiss; the lower hills and spurs particularly contain much gneiss, here and there traversed by dykes of quartz felsite. The surrounding country is either flat or undulating, consisting entirely of clay shales of various colours and degrees of hardness.

The ascent is a difficult one; but there is now a fairly well-defined path, and within 50 feet of the top is a spring of excellent water. The summit is a rocky platform, sparsely covered with rhododendrons and a

few other shrubs. There has been some talk of opening a bridle-path, and establishing a small sanatorium near the summit, for the use of residents in Singapore, Johore, and Malacca. It is certainly a good idea, as the nights are cool; there is an abundant supply of water, no mosquitos, and a magnificent view. According to local tradition, there is a beautiful enchanted putri, or princess, living on Ophir, attended by a large cat, to see whom is a sure sign of good luck. On attempting, however, to speak to her, the cat changes into a tiger, with disastrous results to the rash interviewer.

The capital of the territory, "Johore Bahru," was founded by the present ruler some 35 years ago; it is now a flourishing little town of about 15,000 inhabitants, the seat of government, and the residence of the Sultan. It is situated on the Selat, or Straits of Tebrau, and lies about 15 miles north-west of the town of Singapore, separated from the island of that name by the above-mentioned straits, which are only about one mile wide at this point. Viewed from the Singapore side of the straits, the town presents a very picturesque appearance, built as it is along the shore, with the surrounding small hills dotted over with bungalows and well-laid-out gardens, the artistic palm-thatched native houses mingling with the more substantial stone buildings of the Government. Facing the sea is the Istana Laut, the principal residence of the Sultan, a long two-storied building fitted up with every European comfort and luxury, and looking deliciously fresh and cool in the glaring sunlight. Well-laid-out roads, an esplanade over a mile long, large airy hospitals, waterworks, and wharfs all testify to the enlightened and energetic administration of the present ruler.

Like all other Malayan and Oriental states, the usual autocratic form of government theoretically prevails in Johore. Practically, however, this state, a small but proud remnant of the old and powerful Johore-Malacca kingdom, has, since the accession of the present ruler, enjoyed a form of administration which may almost be described as constitutional. The Sultan is assisted by a council of state, the members of which are composed of chiefs and nobles who are mostly heads of Government departments. The working of the different departments is similar to that of a British Crown colony, it having been the anxious desire of Sultan Abu Bakar to make the form of his government as nearly similar to that of the government of the neighbouring Straits Settlements. The Sultan metes out justice with an impartial hand, being in all cases strongly and intelligently assisted by his judicial officers. All the usual courts of justice may be said to exist in Johore; but over and above these dominate the Council of State as a supreme court of appeal, to which no subject of the Sultan is denied access.

The success of the government of the Sultan is demonstrated by the great and increasing influx of Chinese into the territory; these immigrants, who are chiefly gambier and pepper planters, numbering not

less than 210,000. They are an industrious and law-abiding people, and may be said to be the commercial backbone of the state. Besides the Chinese, Johore receives from time to time immigrants from neighbouring Malay states, Java, and Siam.

The revenue of the state is principally derived from the import duties on opium and spirit, and the export duties on gambier, pepper, and forest produce. I may mention that Government has many other legitimate sources of revenue, which, for reasons best known to the ruler and his advisers, are still untouched, there being, for instance, no other taxes or duties on the population besides those named above.

The population of Johore may be taken roughly at the following figures:—

Malays	...	...	...	...	...	50,000
Javanese Bugis, Siamese and other natives of the Malay Archipelago	...	...	...	...	...	30,000
Chinese	...	...	...	...	...	210,000
Natives of India, Arabs, Eurasians, and Europeans	...	...	...	...	...	10,000
Total	...	...	...	...	...	<u>300,000</u>

Although the mineral resources of the territory are of comparatively small importance, so much tin is annually exported from other parts of the peninsula, that I venture to enter into a brief description of the mining as carried on in Johore. The tin deposits in this state are entirely alluvial, the chief district being the tract of flat land lying on either side of the Johore river, and extending to the slopes of the mountains Pantu and Mentahak. In common with the northern portion of the peninsula the hills and mountains of Johore show absolutely no signs of the existence of tin oxide *in situ*—that is, in distinct veins running through the country rock. Various theories have been put forward to account for this remarkable fact, as it is certainly an anomaly that a country so extremely rich in alluvial tin as the Malay Peninsula should show no trace of the pre-existence of that metal in the form of true veins. Personally I am inclined to agree with the late H. M. Becker that the tin oxide occurs within certain zones of the granite country rock so minutely disseminated as to be almost regarded as an integral constituent of the rock itself. In cases where the deposit is very rich and coarse grained, it probably pre-existed in the form of a series of minute and irregular veins, or a “stockwork” as it is termed, in the granite.

On the alluvial plain of the Johore river the following is a typical section through the tin-bearing ground:—An overburden of from 10 to 12 feet of soft yellow clay mixed with sand. Below this the stanniferous stratum from 1 foot 6 inches to 2 feet thick, consisting of gravel, very small waterworn grains of cassiterite and quartz fragments, mixed with yellow clay. Underneath this comes a stiff greyish-white clay containing no tin, and of unknown depth. The yield of tin ore varies, within very wide limits, from a few ounces to 50 or 60 lbs. per cubic

yard. The mining is conducted in a somewhat primitive manner by Chinese, who, however, contrive to obtain a profit in places which worked by European methods could not possibly pay.

For the past 20 years the commercial prosperity of Johore has been steadily increasing. The trade is almost entirely with Singapore, which serves as a port and distributing point for the whole of the Malay peninsula. The exports of Johore are principally gambier and pepper; in 1890, 21,577 tons of the former and 9236 tons of the latter were forwarded to Singapore for shipment. The other exports are copra, coffee, tea, areca nuts, tapioca, sago, wood oil, rattans, resins, timber, gutta-percha, indiarubber, tin. The chief import is rice, about 50,000 tons being brought in annually. The minor imports are salt fish, sugar, tobacco, paraffin oil, hardware, and Manchester goods.

Before the reading of the paper, the President said: We have here to-night a surveyor and explorer who will tell us something of his experiences while executing work connected with the delimitation of the northern frontier of Johore. But before calling upon him I cannot refrain from alluding to the untimely death of another explorer, Mr. Becher, in the Malay Peninsula, from whom we had hoped to receive news of an interesting expedition conducted by him to a successful termination. Our Council had given him its countenance and assistance because he was known to be a good observer, and had already done excellent work. He was attempting to reach a mountain in the interior of the Malay Peninsula called Gunong Tahan, three separate attempts having been made to reach it previously without success. He had ascended a river and reached its upper waters, where there were waterfalls and rapids, causing considerable danger. It is pleasant to hear that he took great pains each day to find his latitude and longitude, and it may be said that owing to his zeal in taking observations his life was lost, for when, on September 15, he had to form his camp, he would not do so on the shores of the river owing to the quantities of trees that would have obscured his view. He encamped on a stony islet in the middle of the river, because there he would have a clearer view for his observations of stars as they passed the meridian. He sat up during the night, sextant in hand, when a sudden and rapid freshet carried off the camp. He managed to get into a canoe, but it capsized and he was swept away, and his body has not been recovered. His assistant, Mr. Quin, had a very narrow escape. It may almost be said that Mr. Becher, like old Baffin on the Island of Kishm, died with his sextant in his hand, a martyr to science. Our Council (and I am sure this meeting will join with it) has resolved to send to his father our expressions of regret and sympathy at the loss of so valuable a life. Mr. Lake has also had to pass through many difficulties and dangers in the course of his survey. Fortunately we have him here with us, and I now have to request him to read his paper.

After the reading of the paper, the following discussion took place:—

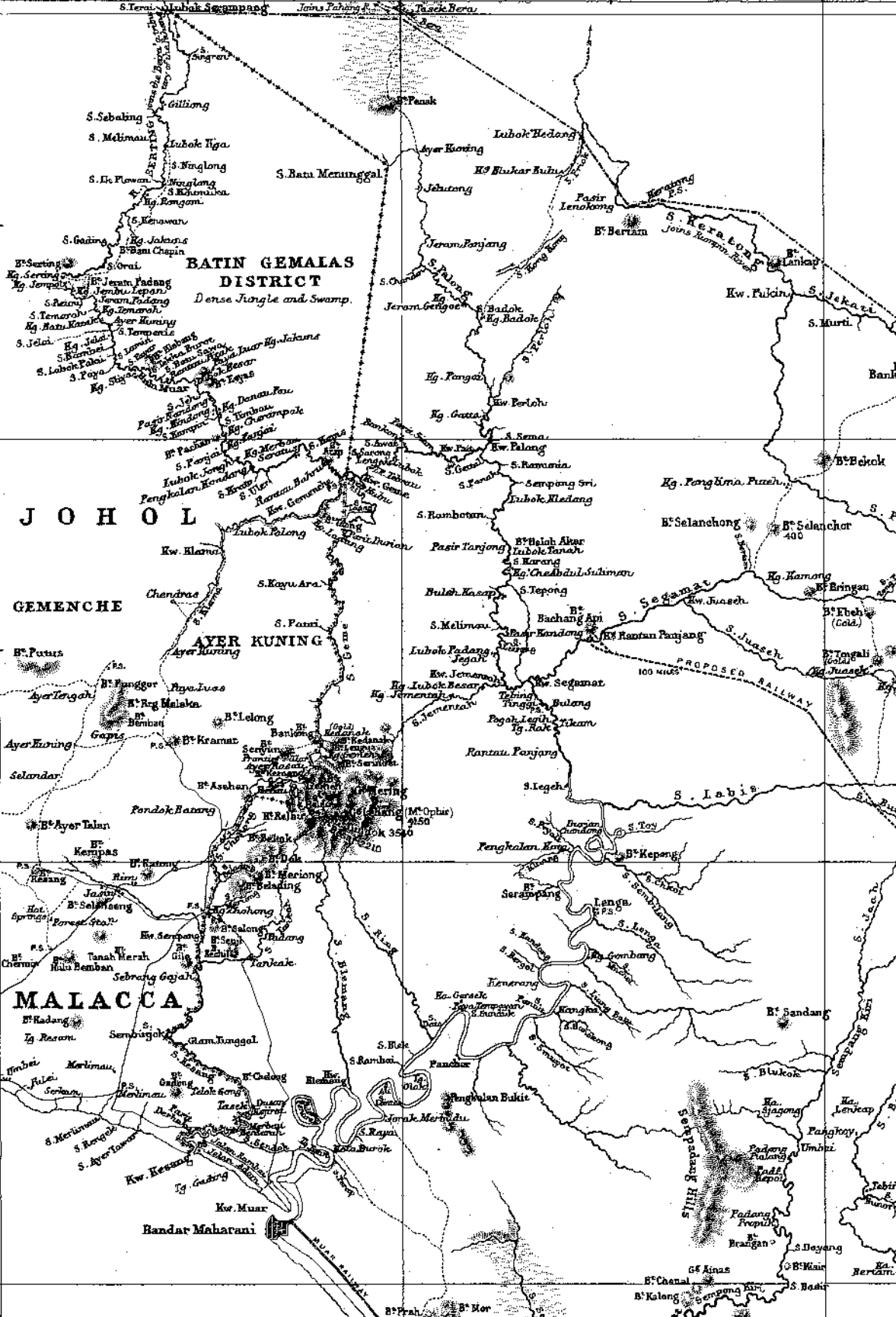
The DATO ABDUL RAHMAN, Secretary to H.H. the Sultan of Johore: Before I came in, the President told me that he would only allow me ten minutes. I do not know how much I can say in ten minutes; I can say a great deal, and at the same time very little. I have much pleasure in congratulating my friend Mr. Lake in your presence on the very interesting lecture he has given about my country. He said it is the privilege of a very few to have any knowledge of Johore at all. The majority of you will confess—you will pardon me for saying so—that you knew very little about the country before this evening. Johore, as you

9°

40'

20'

2°



BATIN GEMALAS DISTRICT
Dense Jungle and Swamp.

JOHOL

GEMENCHE

AYER KUNING
Ayer Kuning

MALACCA

Bandar Maharani

PROPOSED RAILWAY

100 MILES

(M^o Ophic)
2150

3500

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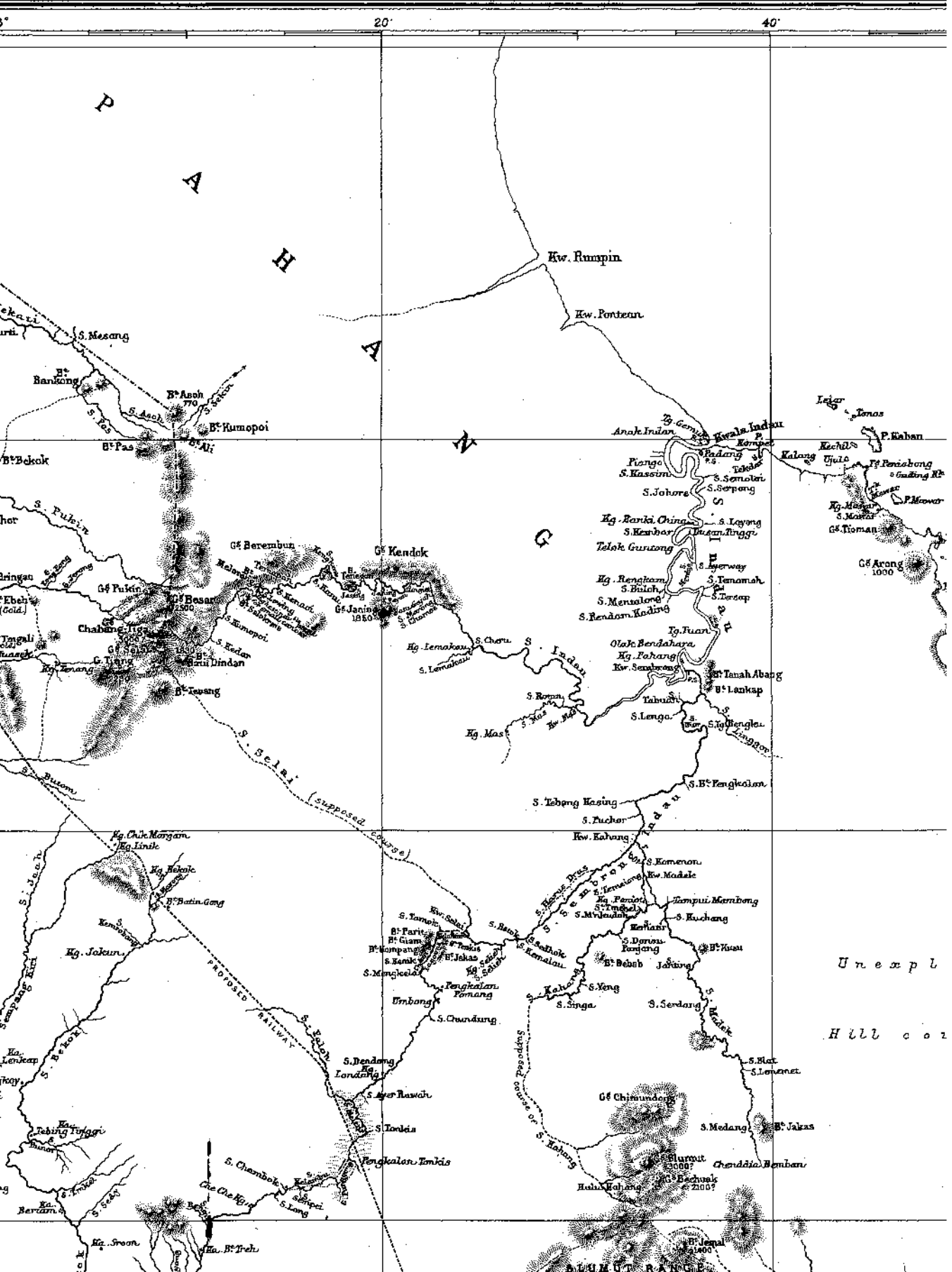
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Kw. Rumpin

Kw. Pontear

S. Mesang

B. Bankong

B. Anoh

B. Humopoi

B. Pas

B. Ali

B. Bekok

Anak Inian

Pianga

S. Kassim

S. Johore

Hg. Rarik Ching

S. Kerdas

Telok Gurung

Hg. Rengam

S. Buloh

S. Menalor

S. Rendam Kading

Leig

Tenas

P. Kaban

Kalang Ujung

P. Perabong

P. Mowar

G. Noman

G. Arang

1000

S. Fulin

G. Berembun

G. Kendok

G. Pukin

G. Rosan

G. Janin

G. Sedar

G. Dindan

B. Teveng

Hg. Lemakan

S. Cheru

S. Lemakan

Hg. Mas

S. Roman

S. Langa

S. B. Tengkolon

S. Tebing Hasing

S. Puchor

Kw. Kalang

S. Komoran

Kw. Madak

S. Kemoran

S. Panti

S. M. Janda

S. Durau Panjang

B. Bebeb

S. Seng

S. Singa

S. Serdang

S. Bukit

S. Bat

S. Lemanet

G. Chirundong

S. Medang

B. Jakas

S. Gurut

S. Bechuak

Hulu Bahang

B. Jenal

1400

S. Susom

Hg. Cik Mangam

Hg. Lank

Hg. Bekak

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PROPOSED RAILWAY

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Unexpl

Hills

SUMATRA

