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*Surveys and Explorations in the Native States of the Malayan
Peninsula, 1875-82.*

By D. D. DALY, Superintendent of Public Works and Surveys, Sélángor.

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Maps, p. 456.

THE Native States may be described as provinces in the Malayan Peninsula that are under the immediate rule of native princes; some of whom act under the advice of British officers accredited to their courts, some pay tribute to the King of Siam, and others are quite independent of either British or Siamese control.

The question as to the policy of British interference in the internal government of these States does not come within the scope of this paper; but it may be sufficient to state that it was forced on the Government of the Straits Settlements in 1873-1874, in consequence of internecine wars that threatened the trade, peace and security of the neighbouring British possessions of Singapore, Malacca, Penang and Province Wellesley. Many of the victims of these disturbances were Malays and Chinese who were naturalised British subjects. Piracy was rampant at sea; plunder, murder, and rapine were triumphant on shore.

Since the days of Colonel Low, Lieutenant Newbold, and Mr. J. R. Logan, little or no addition appears to have been made to the exploration of these obscure provinces; and until the last few years a common impression prevailed that one half of this terra incognita was a malarious marsh, and that the other half was a vast jungle inhabited by wild beasts, and that the seaboard was infested by pirates.

The coast-line had been laid down on charts by the Admiralty, when I had the honour of being appointed surveyor for the Native States by His Excellency Sir Andrew Clarke; and in May 1875, I was deputed to commence a rough topographical survey of the State of Sélángor.

Klang was at that time the capital of Sēlangor, and it is situated in lat. $3^{\circ} 3' N.$ and long. $101^{\circ} 29' 30'' E.$ on a river of the same name. It is at the head of the navigation for vessels drawing 13 feet of water, and a fort garrisoned by Malay police commands the river. Leaving Klang, the river winds through rich alluvial deposits, covered with primeval jungle on either side, low lands admirably adapted for sugar, rice, and other low-land products. At a distance of 18 miles up the river, and at the head of the navigation for steam-launches, there is a village called Damarsara, whence there was a jungle track—18 miles in length—through an undulating country to the town of Kwala Lumpur. The soil on the rises consisted of ferruginous red and yellow clays, and the valleys contained black soil mixed with a little sand.

Since the British protectorate was established in Sēlangor, this track has been transformed into a fair country road, fit for carriage traffic. It is overshadowed by magnificent timber, and plantations of tobacco, tapioca, and rice-fields have been opened. At the time when I surveyed this track, it was considered unsafe for wayfarers, as gang robberies were rife, and man-eating tigers infested the jungle. Since the road was made these evils have vanished, and travelling is more secure than in many more civilised countries.

The town of Kwala Lumpur, in 1875, was under the local administration of a Chinaman, Yap Ah Loi, known as the Capitan China, to whose enterprise and energy were due its progress and good order. From its central position in the state, and its proximity to numerous mining properties, Kwala Lumpur has now become the most important mining *entrepôt* in the state; and in 1880 the headquarters of the British Resident and staff were moved from Klang to this town. Situated at the junction of the river Klang and the river Gombah, this is the furthest point that cargo-boats can reach, and these boats, having discharged their loads of rice, salt fish, and other commodities for the tin miners, return laden with slabs of tin, gutta, and other products, to Klang, for shipment to Singapore, Malacca, or Penang.

From Kwala Lumpur my surveys radiated in many directions, fixing the position and jungle tracks thereto of the principal tin mines; and a glance at the map will show the position of various mining settlements which I reached, namely, Kanching, Ulu Sēlangor, Ulu Bernam, Ulu Gombah, Ulu Klang, Ulu Langat, Sungie Puteh, Recko, Kajang, and intermediate places. The position of these places was quite unknown up to this date; and if I now describe one of the tin mines and its geological features I may say that I have described them all, merely intimating that the depth of the alluvial deposit over the thin layer of ore varies in different mines from 8 to 50 feet from the surface.

The large tin mine at Ampagnan, now giving employment to over 1000 Chinese, is situated about seven miles to the eastward of Kwala Lumpur, at the foot of the high ranges that form the backbone of the

Malayan Peninsula. This range rises up to 7000 feet, and is a continuation of the great Asiatic band that, commencing in the Himalayas, loses itself in Johore, the most southerly point of the Asiatic continent. There is no general name given to the ranges by the Malays, but the different ranges are recognised by Malay names which usually denominate the source of different rivers, such as "Ulu Klang," the head of the Klang river, "Ulu Sēlangor," the head of the Sēlangor river. The same mode of naming the hills prevails more or less from Siam to Singapore.

From these ranges the alluvial detritus is washed down, and at Ampagnan it varies from 20 to 35 feet in depth from the surface. Beneath this is deposited the layer of ore or wash, which varies from 4 to 30 inches in thickness. In some mines, the wash has been found to be from 6 to 10 feet in thickness, owing to its having been mixed up in pockets and nests with friable clay, all of which is passed in the sluices.

The layers of ore frequently run in circles, varying from 100 yards to half a mile in diameter at the foot of the ranges, and seem to indicate that when the great volcanic upheaval brought down and shed the ore from the matrix in the ranges, it was carried down in great floods, and wherever an obstacle such as hills or rocky ground opposed the course of the current eddies were formed, which worked round and round until the pent-up waters found an exit, depositing the heavy atoms of tin ore in concentric lines. The waters having surmounted the obstacles then made for the sea-coast—distant about 25 miles—leaving the tin in isolated patches along its course. The direction of this old river course is now eagerly sought by the Chinese, and owing to more recent volcanic disturbances it is frequently covered to a considerable depth and followed with much difficulty.

In the Batang Padang district in Pérak, there is a mine where the Chinese are following the tin on a hill side, and the layer runs up the hill in an undulating stratum, many feet above the surrounding tin deposits on the flats. This was no doubt caused by some extraordinary volcanic upheaval of recent date, which lifted the layer to its present elevation. The tin ore at Ampagnan is found lying in a blue or whitish clay and sand, and it is mixed with quartz, gravel, and blue pebbles; the overlying deposit being a white and yellow sand, with a thin stratum of clay and humus at the surface.

The output of these mines varies very considerably. At Ampagnan, which is a fair average of a successful tin mine, it is calculated that the yearly return comes to 2½ bharas (native measure) of white smelted tin extracted per man. This quantity at the rate of 70 dollars per bhara would be worth 175 dollars, or, in English weight and money, 1000 lbs. weight of tin, at a value of 35*l.* sterling, extracted by each coolie on the mine in the twelvemonth. A small percentage of gold is found in the tin at Kanching and Ulu Klang, in Sēlangor, and also in Pérak.

Pumping machinery from Europe has been introduced with much advantage by the Chinese, and the Government each year devotes a portion of the surplus revenue to road and bridge making, and to improving the jungle communications between the mines and the sea-ports.

This cursory account of a tin mine may be of interest, as the alluvial tin deposits permeate the whole length of the Malayan Peninsula on the western side of the dividing range, and also because until lately the revenues of the Native States depended in a large measure on the duties collected on the exported tin. I say until lately, as rice-growing, coffee-planting, and other sources of agriculture have only commenced to yield a land revenue since British intervention afforded protection to the tillers of the soil.

The low lands that fringe the coast of Sēlangor are partly covered with mangroves, which grow in heavy clays and blue mud. These lands have been found in Province Wellesley to be well adapted, after drainage, for sugar plantations: whilst the mangrove trees that are cleared off are turned to profit to the planter by being cut up into lengths for firewood.

Leaving the mangroves, undulating country is met with, with elevations varying from 100 to 800 feet in height, and extending as far as the high dividing ranges of the peninsula. These rises are composed of red clay, shales, sandstones, granitic and felspathic rocks. Many of these rocks are mistaken for granite, but from their properties they more correctly belong to the order of syenite. Containing large proportions of felspar and hornblende, their decomposition continues with facility and rapidity, more particularly where they are exposed to the action of water lying below the surface. In road-cuttings and in wells, the different shades, according to the age of the syenitic clays, are well displayed, the whole being impregnated with mica. On the surface, extensive deposits of laterite in red clays, similar to those in the tropical parts of Australia, are found, and afford good metal for roads.

Rice-fields extend along the fertile valleys that separate the spurs of undulating hills, and the Malays irrigate their padi-fields in a primitive way. Sago trees grow well in the wet lands. On the rises, the dry padi (*padi omar*), which does not require irrigation, flourishes; and gambier, pepper, and tapioca plantations exist in isolated patches. On one plantation near Kwala Lumpur there are upwards of two thousand acres under tapioca, with the most approved European steam machinery and factory processes for converting the tapioca roots into the marketable article.

As we recede from the sea, the lofty dividing ranges come next. These vary from 800 to 7000 feet in height. Granitic rocks chiefly prevail here, and sandstone and plutonic rocks that have been subject to aqueous and atmospheric changes. The soil is of a light red and yellow

clay, not long decomposed from the rocks in situ, with an incumbent vegetable mould or humus from 8 to 12 inches thick on the surface.

There are no Malay settlements or plantations on the high hills, which are covered with primeval forest; and I briefly allude to them with a hope that the information may be of use to the coffee planters of Ceylon and other countries, some of whom have already opened plantations in Sēlangor at an altitude of 2500 feet, and whose experience in other climes has favoured the belief that these hills are well suited for *Coffea arabica*, chinchona, ipecacuanha, jalap, tea, &c.; and they have hitherto been most successful on the lower lands in rearing young plants of Liberian coffee, cocoa, sago, and other tropical products. The rainfall averages about 130 inches per annum, and due provision is made in the leases to prevent the wholesale felling of timber on the summits of hills, such denudation having very much affected the rainfall in India, Australia, and other countries. Planters need have no fear of droughts, as the rains are general throughout the year.

Land can be purchased on terms of deferred payments at the rate of two dollars per acre. Roads are in course of construction by the Government up to the ranges, and the question of the labour supply in this virgin timbered but sparsely inhabited country has been warmly taken up by the Governor of the Straits Settlements, Sir F. A. Weld, with a view to procuring coolies from the over-populated districts of India. Every facility and assistance are rendered to land selectors by H.B.M. Resident of Sēlangor, Bloomfield Douglas, Esq.

There are isolated hills of limestone varying from 80 to 1000 feet in height in various parts of Sēlangor and in Pérak, but they are much scattered. Further researches in the unexplored mountains on the borders of Pahang, Tringáno, Kēlantán, and Rāhang may yet prove that these insulated rises are connected in a chain more or less broken.

The limestone caves at Batu in Sēlangor are justly famed for their beauty and extent. One cavern has been traced for a distance of a quarter of a mile, whilst the height of the dome of another chamber is 355 feet from floor to roof, and like other limestone caves it is richly adorned with stalactites and stalagmites. Thousands of tons of bats' manure lie imbedded therein, a valuable fertiliser at hand for future planters.

This limestone formation trends in a broken ridge towards the high ranges, when the limestone very perceptibly alters its condition, and it is then found on the surface in a state of broken crystals of a dentiform structure. Beneath this stratum the rock has, through metamorphism, changed itself into a white or variegated architectural marble, much resembling quartz. The soils surrounding this range are correspondingly poor, bearing evidence of the rock destruction that ensued to the period of uplift. On the other hand, the limestone at the Batu caves is rich as an earth-producer and also yields valuable lime; whilst the same band of

rock as above described, which is situated at Ulu Klang, about eight miles distant, is worthless for either purposes.

In July 1875, the Governor, Sir W. F. D. Jervois, deputed me to explore the Moar river; and, after fixing the position of the interior unexplored states, I was to find my way across the peninsula to the mouth of the Pahang river on the China Sea.

Leaving Malacca in a Malay prahu, and equipped with surveying instruments, condensed provisions, and a party of Malays, we ascended the Moar river. His Highness the Maharajah of Johore had been good enough to favour me with letters to the principal Malay rajahs, who afforded me every assistance, but who warned me that the Malays would prove hostile to our entering the Negri Sumbilan or Nine States. These petty states had hitherto held aloof from all control or advice from either British or Siamese Governments, and their relative positions and internal management were unknown.

It was most important to ascertain the position of their boundaries, some of which were conterminous with the British territory of Malacca. These boundaries were vaguely fixed by the Malays, there were few definite points, and in reply to inquiries I received answers such as these, "The boundary of our State extends as far as the meeting of the fresh water with the salt water of the river;" or, "If you wash your head before starting, it will not be dry before you reach the place;" or, "The boundary may be determined on the river, as far as the sound of a gunshot may be heard from this particular hill." The shot might be fired from a smooth-bore, or from a twelve-pounder; or a gale of wind might carry the report much further than was contemplated. These ambiguous phrases were calculated to mislead, but they are essentially Malay in their *laissez-aller* generality.

The latitudes of the south head of the Moar river mouth I made by observations to be $2^{\circ} 0' 43''$ N. The longitude is $102^{\circ} 35'$ E. The width of the river at the mouth was three-quarters of a mile, and I found four feet of water on the bar at low water, spring tides. Mangroves hid the view on either side for a few miles, till we reached a young settlement at Pankalan Bukit. This was founded and tilled by a colony of Javanese, who had planted coffee (*Coffea arabica*), tobacco, Indian corn, and some 30,000 pepper trees. Soil—a light ferruginous red and yellow clay, mixed with sand. Rocks—sandstone and granite.

At another stopping-place on the river, called Bukit Kěpong, there was a hill planted with *Coffea arabica*; but there were very few clearances on this river till the Segámat river was reached, at the head of which are situated some gold mines, worked in the alluvial, only by Malays and Chinese. The gold-dust extracted was of a rough, shotty nature, and, not being much water-worn, had evidently not travelled far from the matrix.

The river Moar now narrowed considerably, and was quite over-

arched in places by tangled brushwood, bamboos, and rattans. All the rivers that I have explored in the Malayan Peninsula become rapidly shallow when the limit of the tidal influence is passed, and the ascent of the remainder of the Moar river was accomplished by driving the boat against the current by means of poles.

Large herds of elephants roam about the Moar river, and we frequently heard them trumpeting on the banks close to our boats.

From a place called Klubi I surveyed a track, all through dense jungle, that led to the Chindrass gold mines, near Mount Ophir. Here the Malays still wash out gold-dust excavated from gravel deposits; and they sink short shafts, out of which they get small blocks of stone, which they rudely crush with pestle and mortar, and wash out at a neighbouring stream. The deepest shaft was only 100 feet, and a lode has not yet been discovered. The gold is only found in detached leaders and saddles.

The highest point of navigation for shallow boats on the Moar river is at Kwala Jumpole; and from this point my surveys radiated as far as safety was practicable, for the Malays frequently hindered my progress, and were much opposed to my entry into the Negri Sumbilan.

Following up the fertile valley of the Moar, I passed through most picturesque country. Large rice-fields, from a quarter to half a mile in width, studded with Malay huts and gardens, and flanked on either side by densely wooded ranges, extended for many miles along the valley. These rice-fields were carefully irrigated by water-mills that were curious in their simplicity. A large wooden wheel revolved with the force of the stream current. Around the wheel hollow bamboos in short lengths were adjusted; these filled as they dipped in the water, and emptied themselves into a trough as the wheel went round. From the raised trough, the water was distributed by bamboo gutters to different plots of padi. These water-mills carried on their simple work of lifting the water without any personal supervision.

On arrival at a place called Gumatie, in this beautiful country, I was suddenly surrounded by about 30 armed Malays, who took me prisoner and threatened my life. I refused to give up my revolver, and after a detention of some hours I was released. My Chinese servants were, however, detained and starved for two days and two nights, and sent back to me without any clothes.

The natives of these states were determined not to allow me to pass through their country. They fancied that there was some occult design in my mission beyond the mere, to them, unmeaning occupation of looking through a telescope and sketching in hills, rivers, villages, and valleys. The Datch of Moar, an influential rajah in that part, said of me, "If we let the needle in, the thread is sure to follow," meaning that, if an Englishman was allowed to enter their country, British annexation would be the natural sequence.

I turned back most unwillingly, though not without having added considerably to our geographical knowledge of this part; and I then directed my course through the unexplored country of Pahang towards the China Sea. On a stream called the Sungie Jumpole I found a strip of land, called Penarri, that separated the eastern and western watersheds of the Malayan Peninsula by a quarter of a mile only; and having with some difficulty procured the assistance of some friendly Malays, my boat was carried overland, and launched in the stream, the Sungie Sureting, which is a tributary of the Pahang river.

The Sungie Sureting is a shallow stream, much obstructed by fallen timber, and necessitated much wading in dragging the boat over obstacles. After a couple of days the river deepened, and we found ourselves in a large lake called Tassek Běrá. This is a shallow lake, with large timber growing in the water. Since our departure from the Sungie Sureting, no Malays had been met with; so that it was a relief here to come across parties of "Orang Jacoon," sometimes called "Orang Sakei," or wild men of the interior. They fled on our approach, but some more venturesome of their number brought us some fish for barter. They placed no value on money, but accepted clothes and tobacco. These wild people lead a gregarious life, seldom remaining long in one place, for fear of their wives and children being kidnapped by the Malays. They had resting-places in the trees, often 20 feet from the ground, so as to be out of reach of tigers and other wild animals. I was informed that they were very numerous in these remote parts,—the "Ulu Pahang" (interior of Pahang). There was little attempt at cultivation on the banks of the rivers, but I saw clearings on the ranges where they grew dry padi and Indian corn. They live on fish and on mammals or birds that they kill with the sumpitan (blow-pipe). In warfare they blow poisoned arrows through the sumpitan with great dexterity.

The lake Tassek Běrá was about two and a half miles wide where we crossed; it is said to trend to the eastward for four days' journey in boats. From this lake we emerged into a larger river, the Sungie Běrá, 130 yards wide and 20 feet deep, which falls into the Pahang river.

The principal rocks in this country are sandstone conglomerates and granite. The soil is a light yellow clay, mixed with sand on the rises, which are covered with dense forest that totally obscured the view.

The river Sungie Běrá falls into the Pahang river at a distance of about 130 miles, by river, from the China Sea. Here the Pahang is about 300 yards wide, and in the narrow channel which serpentine through the sand-banks we found 30 feet of water in places. Numerous well-populated and thriving villages lined the banks on either side, and the people were friendly and willing to give us information about the country.

It would be tedious to recapitulate all the field notes of this expedi-

tion, as the map denotes the position of different places that I fixed; but I may mention the names of some of the more important villages. These were, Kanow, Puchong, Pokoh, Batu Poho, Serei, Kenning, Sumbei, Sintang, Moussay, Nyia, Telok, Kretow, Gnau, Serampai, Kwala Chikoh, Saggie, Teumyong, Limpoy, Kanchei. These nineteen villages contained about 2110 houses, with an approximate population of 4330 Malays. Provisions were cheap and the land very productive. In the gardens and plantations all the ordinary varieties of tropical products were growing luxuriantly, such as coco-nut trees, *Coffea arabica*, padi, Indian corn, plantains, tobacco, clove trees, &c.

Small silver coins of the Straits Settlements or India were unknown, but the dollar obtained currency. The tin extracted in the country is used as coin, the tin being flattened out in square pieces and stamped with the Bandaharah of Pahang's seal; the centre part is raised or bulged, through which a hole is drilled and the pieces of money of the value of one penny or twopence are carried on a string. The change for a dollar is consequently heavy and cumbersome.

Gold is the principal metal, though tin mines similar to those in Sélangor are worked with profit. The gold is found in alluvium, and washed out by Chinese and Malays in a rude manner. No attempt has yet been made to work gold in quartz, nor has any European machinery for either crushing or pumping purposes as yet been introduced. I was informed that there were 6000 Chinese working alluvial gold mines in different parts of the interior. Some Chinamen whom I met said that they had to pay exorbitant royalties to petty rajahs in the far interior, and that they were so "squeezed" by successive rajahs on their way to the coast, that they derived but little profit from their hard-earned and risky labour. At that time all the gold was supposed to be sold to the Bandaharah, who paid a standard value according to his own estimation, or rather inclination.

The Bandaharah of Pahang, whom I have mentioned, is the ruler of the country. The word "bandaharah" signifies "treasurer," but he is virtually the sultan. Well disposed towards the British Government, and anxious to develop the resources of his rich territory, he is notwithstanding much controlled and overruled by the counsels of more powerful rajahs. Every year he sends a rose of solid gold and another of silver to the King of Siam as the tribute of his state. He received me hospitably, stating that I was the first white man who had visited his country from the interior, and after spending four days of a very agreeable visit to him at Pekan, the capital of Pahang, I embarked in a Malay prahu, and after nine days' beating against a south-west monsoon, safely reached Singapore on the 9th of September.

Towards the end of 1875 I was directed to make a rough survey of the principal routes and rivers in the State of Sunjie Ujong, where the late Captain Patrick J. Murray, R.N., had been appointed British Resident,

and whose name will always be associated with the early progress and good government of this protectorate.

The rivers Linghy and Lukut, jungle tracks from the seaboard to the towns of Rassa and Serembang, the tracks between Sungie Ujong and the State of Sêlângor on one side and the Negri Sumbilan on the other, were laid down on the map at various times, though not without some hardships and difficulties. The country was in a disturbed state, and was invaded by the people of the Negri Sumbilan, who were finally driven back with the assistance of British and Goorkha soldiers.

The geological formations are very similar to those described in Sêlângor, the undulating lands receding from the sea till they culminate in the lofty ranges which are a continuation of the main ranges of Sêlângor.

The revenue at that time depended entirely upon the export of tin, always a precarious and fluctuating source. Since the advent of peaceable times under British order, agriculture has made great strides, and the land now yields a revenue formerly unknown. Whilst tapioca, cocoa, and Liberian coffee have been grown with success on the lowlands, the hills at an altitude varying from 2000 to 3000 feet have been planted in a few estates with *Coffea arabica*, tea, jalap, chinchona, and ipecacuanha by the Hon. R. Beauchamp Downall, Hon. Martin Lister, Messrs. Thomas Heslop Hill and W. Kay, whose enterprise as pioneers deserves a continuation of the success which they have hitherto attained.

Taking the order in which the topographical surveys of different states were conducted by me, Pêrak was the most extensive, as it was, in point of revenue, the most important province.

The British troops were in the occupation of Kinta, in 1876, when I was deputed by Sir W. F. D. Jervois to fill in the large blank which represented Pêrak on the map. Hitherto the surveys had been carried on in accordance with the Governor's instructions, namely, to fix approximately and with as little delay as possible the position of rivers, hills, strategic points, forts, and stockades in these disturbed countries. The work was principally accomplished by prismatic compass bearings, and measurements that were carried on from points previously fixed by latitudes taken at night time with the sextant and artificial horizon, and the longitude of which was approximately determined by azimuth bearings to points fixed by the Admiralty surveying vessels on the coast.

Travellers in the East are well aware of the difficulty of surveying in jungle tracts; and it was with a feeling of relief that an open stretch of country presented itself at Kinta, whence a good view of the ranges of Tringãno, Pahang, and of the prominent hills of Pêrak stood in bold relief. A base line, three miles in length, was carefully measured by me near Kinta, and the distances and altitudes of ranges, some of which were upwards of 8000 feet in height, were calculated and recorded in

the map. The Kinta river is one of the longest navigable tributaries of the Pêrak river, enabling the Chinese miners to export their tin to the seaboard, and to bring up their supplies of provisions. The river Kampar, one of its tributaries, traverses a large extent of chocolate-coloured soil in the Kampar district.

The Pêrak river is the great artery of the country. Taking its source in Patani, it follows a main course, north and south, nearly parallel with the sea-coast as far south as Durian Sabatang, whence it takes a westerly direction till it reaches the sea. Bandar Bahru will be remembered as the Residency of the late Mr. J. W. Birch, British Resident at Pêrak, who was treacherously murdered by Malays at Passir Sâlah on 2nd November, 1875.

It was deemed advisable to move the headquarters to Kwala Kangsa, and I made a survey of the Pêrak river, by chaining along the banks from Kwala Kangsa to Durian Sabatang, and, comprising the ranges on either side of the Kinta valley, an area 45 miles in length by 25 miles in width was added to the map.

After fixing the disputed trans-Krian boundary between the British colony of Province Wellesley and the State of Pêrak, I was appointed in May 1877 to determine the boundaries that separate Pêrak from the countries of Kêdah and Patani, the two latter being tributary to the Siamese Government.

Leaving Penang in a coasting steamer, the capital of the Sultan of Kêdah was reached in eight hours; and that ruler, wisely recognising the utility of having his frontier correctly defined, appointed some of the principal rajahs to accompany me to point out his boundaries, and was good enough to lend me seven elephants for transport of myself and baggage during the expedition. The party, with my own survey staff, numbered forty-two in all.

Commencing the survey from the frontier pillar, marked "British and Siamese Territory," on the river Mudah, I ascended this shallow river in flat-bottomed boats, fixing the positions of villages right and left. The banks of the river displayed a poor deposit of sandy alluvium, 8 to 10 inches in thickness on the surface, lying in places on a stratum of red or yellow clay, the whole resting on a substratum of white marl, all newly decomposed granite. At a point below the Kwala Sedin—a junction with the river Sedin, there are some limestone boulders called by the Malays "Batu Beral," or the idol rocks, and higher up the river near Campong Teban the limestone again crops up.

Leaving the main river, we ascended the Sungei Kiti, a narrow, tortuous stream much obstructed by fallen timber; the soil on either bank began to improve in depth and quality, the clays lying on a substratum of gravel and large pebbles, and rich padi-fields showing an improvement in this respect.

The Chinese carry on a timber trade with the British settlements,

the woods called "chungah" and "seraya" being cut up into planks and lengths and exported to Penang.

At Kwala Kupang I left the boats behind, and the elephants and party met me, having travelled overland through Kēdah. This is the halting-place for cattle that are driven from Siamese territory, Rāhang, and Kēlantān. The paddocks about Kwala Kupang contain rich grasses, which revive the tired cattle that have travelled for many days and weeks through marsh and jungle, on their way to be sold in Province Wellesley and Penang. The fineness and closeness of the grasses may be attributable to the soil being impregnated with lime. The cattle are purchased in Rāhang for five to eight dollars a head, and realise twenty-five to thirty dollars a head in Penang. The greater number are again exported, to feed the Dutch troops in the Acheen war—a guerilla warfare that has dragged its slow length along for upwards of nine years, and which has not yet terminated.

In this country and in Kēdah tame elephants were cheap; they were offered to me for sale at prices varying from 150 dollars to 200 dollars a head.

The Malays here spend their time cultivating their rice-fields and tending their herds of buffaloes and short-horn cattle. In 1877, 500 of the young men abandoned their homes and fled to British territory to escape the military conscription that enforced the Malays to enter the Siamese army for the fighting in Tongkah. Similar causes, and the petty oppressions of rajahs, have tended materially to swell the labouring population of the neighbouring British possessions, where the Malay rayat (peasant) knows that he is protected by the law.

At Kwala Kupang I measured a base line of four miles, so as to fix as accurately as possible the position and height of Goonong Inas and the lofty peaks of the Titi Wangsa range, which separates the state of Kēdah from Pērak territory. In the Malayan Peninsula, as in other parts of the world, the division of the watersheds is usually a boundary.

Following up the valley of the river Baling, a remarkable hill, called Goonong Wang, rises into prominence, and from the numerous fissures and caverns it is at once recognised to be limestone. The bare white walls rise perpendicularly out of the plain to a height of many hundred feet, above which are overhanging craggy ledges and stalactites. Shells and fossils are to be found in the rock, proving that at a former period the sea washed against its base. On the eastern side of this hill lies the village called Baling, the nearest station to the frontier of Patani. Here were men of different nationalities—from Kēdah, Patani, Siam, and China—busily trading in rice, tin ingots, gutta, cattle, and poultry.

Baling is shaded the greater part of the afternoon by the steep walls of Goonong Wang. Around this hill there are fertile padi-fields, the

soil being of a rich chocolate colour, which usually appertains to the detrital disintegration of limestone formations.

From Baling I returned to Kwala Kupang, and started for Salamah, so as to fix by cross-bearings the principal points of the Titi Wangsa range. Many small streams and rugged spurs of the western watershed were crossed in this course of 48 miles—nearly all through jungle, no places of any importance; and the geological features of undulating country up to 500 feet in height, previously described, again appeared.

There was one formation that arrested my attention, as I had come across it in the gold-fields of Northern Australia, and it is common in Pérak and Sélángor. After crossing the river Sungei Sedin, a gap in the spur that divided the watersheds of the rivers Mudah and Krian was crossed. On the north side of the spur there are large boulders of granite; whilst on the south side, and a quarter of a mile lower down from the gap, there are regular layers of slate, with quartz veins and micaceous schist, cropping up across the track and running in a W.S.W. and N.N.E. direction.

The appearance of the granite on one side, and slate with intersecting quartz veins on the other side of the spur, would have at once tempted a party of diggers to prospect for gold in Australia; and it is probable that, by sinking a shaft as far as the junction of these strata, a metal of some kind might be uncovered. As tin is the chief product of the Malay Peninsula, and as the geological formations that shed either gold or tin are very similar, there is a likelihood that a tin deposit lies buried in this neighbourhood.

From Sedin our course lay in a S.S.E. direction, crossing numerous spurs and valleys, all in jungle, till the village of Ulu Salamah, in Pérak territory, was reached. This village was founded by Patani men who had fled with their families from the unjust exactions of Siamese rajahs, and who settled and cultivated gardens on the Salamah river. I was well received by the headman, Punghulu Mat Dari, who showed me a letter of authority from the Pérak Government.

At the next village, Kwala Salamah, situated at the junction of the Salamah and Krian rivers, there was a population of a thousand Malays and Chinese, the local magnate being a Malay of much influence, named "Che Karim," who sat alone on the bench to dispense the law. The only tax was the ordinary one collected in most of the native states, namely, a duty of 10 per cent. levied on all produce exported, such as tin, gold, gutta, ebony, ivory, &c. The opium and spirit farms were collected at the mouth of the Krian river.

From Salamah a course was made to cross the high range that separates Province Wellesley from the river Pérak, and we ascended the Bukit Tigapuluh Tiga range. This is a succession of thirty-three spurs, rising in steps till the gap is reached. This was a tiresome day's climbing, as, no sooner than the summit of one spur was reached, a drop of several

hundred feet appeared on the other side till the ascent of the next ridge commenced. On each side of the gap, which was 2300 feet above the sea-level, to the north and to the south, the mountains rose to altitudes varying from 5000 to 6000 feet above sea-level. Large boulders of granite obstructed the path, and on the summits I noticed the mountain bamboos of unusually large dimensions, also wild betel-nut palms and luxuriant ferns.

Descending the eastern watershed, the small village, Batu Birdinding, was reached, in the midst of rice-fields which extended for four miles along a fertile valley, as far as Kota Tampan on the Pérak river.

The contrast between British and Malay rule was exemplified at Batu Birdinding. My elephants during the night broke into a plantation and destroyed some young coco-nut trees. I got some old Malays to value the trees and I paid a fair compensation to the owner. On my arrival at another village, Lunggong, the *punghulu* (chief) told me that he had heard of my having paid compensation for the trees, and turning round to some forty of his followers in the audience chamber he said, "Now, in former times, when a rajah entered our villages his elephants often destroyed our gardens and fruit-trees, and he never paid us for them; but now that the country is governed by white men, you see they do what is fair by us."

In travelling along the eastern side of the Titi Wangsa range, it was strange to find that many of the streams were dried up (June 1877) and the whole country suffering from want of rain. This was quite contrary to our experience of the western side of the range, where, ten days before, the rains had been incessant, and where we had much difficulty in crossing flooded streams.

It would appear that during the south-west monsoon, which was now blowing, the western side of the range arrests the rain-charged clouds before they can reach the eastern watershed. I noticed that the ridges on the western watershed were much more rugged, and that the rocks were more exposed on the surface, than on the eastern side; and this may also be due to the force of the Sumatra squalls beating on the western slopes during the south-west monsoons.

Following a northerly course, the villages were few and unimportant until we arrived at Padang and Kernei, villages in Patani, which pay tribute to Siam. Kernei and the surrounding district is ruled by the Tuan Prang, the brother-in-law of the Rajah of Reman, a district in Patani.

The Tuan Prang, being unwilling to meet me, had left Kernei two days previous to my arrival, on hearing of my approach. I gathered from his people that he and other rajahs who pay tribute to Siam were not sure whether they were right or wrong in receiving me, and so they retired from their villages. Otherwise, in Kédah and Pérak I met with

every civility and assistance in the prosecution of my surveys. The people of Kernei argued that, as they had not received any notice of my visit, they might be blamed for showing me about the country; that they would probably be heavily fined; and that, in non-payment of the fine, their wives and children would be seized as slaves. Here the baneful system of debt-slavery was in full operation, and many sad instances were brought before me. The only advice I could give the people in this distant state was to emigrate to Pérak, Sélângor, or Sungie Ujong—states under the British protectorate—where debt-slavery was not recognised in the law courts.

If, on the other hand, they were not blamed for receiving me, they said that they were afraid lest anything should happen to me; that robbers might attack me, and that they would be held to blame; so that, whether they welcomed me or not, they were in danger of being punished.

This diffidence arises from the oppression of the more powerful rajahs, the fear of annexation of their country by the British or other nation, and the ignorance of the objects which an Englishman may have in visiting their country.

Finding that Siamese now was the language spoken, that my knowledge of Malay was no longer of any use, and that the people were unwilling to meet me, I dismissed the Kēdah chiefs with a letter of thanks to their sultan for his assistance in pointing out his boundaries, built a large bamboo raft, and proceeded to float down the river Sungie Ruih.

The Sungie Ruih is a shallow river, at the head of which is situated a large tin mine, called "Kleian Intan," i.e. the granite mine. Near the Kleian Intan is Tassek, a lake which is the recognised boundary between Patani and Kēdah.

Besides the granite and syenite formations, I noticed in the banks of the Sungie Ruih remarkable stratified deposits of slate. The slate is in large slabs, dipping at an angle of 25° with the horizon; it is not bituminous, as it would not burn on being put into the fire, and it is soft, as the knife made an impression on it. If situated nearer to the coast, these large slabs of slate would be very valuable.

For the benefit of sportsmen, I may mention that there are extensive clearings on the Sungie Ruih, which, in addition to the ordinary big game of elephants, tapir, tiger, and rhinoceros, abound with the large sambur deer and wild peafowl.

Gliding down the Sungie Ruih, taking compass bearings along the reaches, estimating the distances by the current meter—a most valuable instrument for calculating rates in rivers—occasionally landing to take bearings when good sights could be had at the neighbouring ranges, we reached the river Pérak in a few hours.

We floated easily over the rapids of the Sungie Ruih; but having been warned by the Malay boatmen that the rapids of the Pérak river

were more numerous and dangerous, it was considered necessary to build a stronger raft; and this was built at Kwala Kendrong, on the Pêrak river. Constructed of large bamboos lashed with rattans, it was 50 feet long by 5½ feet in width. On the floating bamboos was built a house, covered with a roof made of the leaves of the nipa palm, the whole being quite waterproof, and capable of accommodating with ease two inside passengers, with boxes, surveying instruments, &c. In the front part of the raft two Malays sit with paddles on each side, and the pilot stands with a long pole, with which he pushes against the rocks. Another pilot stands in the stern, and with another long pole wards the raft off the dangers astern. We were altogether ten men on board. Some of the passages in the rapids were from 7 to 12 feet wide only, and we jumped fifty-two rapids in the period of seven days in this fragile kind of raft.

At one rapid, called "Jeram Panjang," it was found necessary to take precautions, as many men have been drowned in the cataract. This place was recognised in 1877 as the boundary between Patani and Pêrak by the few inhabitants of this vast jungle. The boulders in this rapid are a hard sandstone, strongly impregnated with iron. The rocks being high out of water, the action of the air had oxidised the iron and exposed the laterite in honeycombed and laminated sections.

At the entrance of the rapid there is a large boulder, called "Berala Bujok" ("Berala" in Malay means an idol, and "Bujok" to propitiate); and every raft passing this rock is expected to make some offering, and ask its permission to pass. On reaching it, our raft was brought to a standstill, and the pilot made a speech to the rock, asking permission, with prayers to Allah and the prophet, to pass the rapid in safety, as there was a white man who wanted to pass, and if anything happened they would be in great trouble. He then threw on the rock a small parcel of plantains, betel-nuts, and a biscuit (the latter as my offering); and we then dropped down the upper part of the rapid till the intricate part was reached, when everybody got out, and boxes and things were carried over the rocks some 300 yards below the falls. Rattans were then fastened to the raft, to hold her back as she dipped over. As soon as all was ready the passage was entered. This passage was very narrow, with rocks in the way, round which the waters boiled. Unfortunately, immediately after taking its plunge over the cascades the stern rope held from on shore broke, the raft telescoped against a sandstone boulder and floated down stream in pieces, the large bamboos snapping like matches in the rushing waters. We slept out that night under heaven's broad canopy on the bank of the river, and in two days' time another raft was completed, which floated the party in safety to Kwala Kangsa, the capital of Pêrak.

The geology of the lands on either side of the river Pêrak bears a strong similarity to the formations already described in Sêlângor. The flat lands on the banks are a very rich detritus, and as in other

Malay states are sparsely inhabited. The Malays do not cultivate rice in sufficient quantities to meet the demand, the large mining interests of Larut and Lower Pêrak depending upon the supplies of rice imported from Bangkok and Rangoon. The high ranges were totally uncultivated, and were inhabited only by the wild tribes called Orang Semang.

The Orang Semang whom I met in Pêrak, and from whom I compiled a vocabulary of their language, are of the same early aboriginal stock as the Orang Sakei whom I came across in Sêlangor and Pahang. From their personal appearance, habits, and similarity of language, there is no doubt of their belonging to a common race. Near settled districts they are rarely of pure breed, and resemble the Malays in features and in habits, excepting in their food and in their disbelief of Mahomedanism or any other form of religion. The true Orang Semang or Orang Sakei is a Negrito, and reminds one of the Papuans of New Guinea, whom I have seen in Torres Straits. Thick lips, skin nearly black, nose with large nostrils, prominent upper lip, hair short and curly, with a curly top-knot on the top of the head, raiments very scanty, these are the characteristics of the Semang.

The map shows that there is a vast extent—more than half—of the Malayan Peninsula still unexplored, of which we only have the position of the coast-line. Of the internal government, geography, mineral products, and geology of these regions we do not know anything; and as the circles of exploration of other countries are narrowing each year, it may be useful, to those whose taste for geographical research may be for “pleasant fields and pastures new,” to know that, even in this nineteenth century, a country, rich in its resources, and important through its contiguity to our British possessions, is still a closed volume.

The **PRESIDENT**, in introducing Mr. Daly, said the Society would be glad to see before them a traveller from a part of the world which, since he had been President, had not been the subject of discussion at their meetings. The region was one of great interest, with a growing trade, the importance of which was increasing rapidly, and in proportion to its importance was the general state of ignorance with regard to that which constituted the wealth and attractions of the country. Mr. Daly had been in the employment of the Government as a surveyor, and had traversed every part not only of the small British states, but of the surrounding native states.

After the reading of the paper,

The **PRESIDENT** said they were fortunate in having present Sir Andrew Clarke, who was Governor of the Straits Settlements during part of the time Mr. Daly was conducting his explorations, and who had since filled posts of great importance. He was sure that they would listen with very great interest to any observations that he might offer.

Colonel Sir **ANDREW CLARKE, R.E.**, said that the paper to which they had listened had dealt so fully with the subject, that there was little left for him to say. There was one point, however, of especial interest to him, and that was, that he was responsible for nominating to office the author of the paper. The record to which

they had just listened of Mr. Daly's labours for eight years showed that those who advised him (Sir Andrew Clarke) in the appointment of Mr. Daly had acted wisely and well. There was another point, also of interest, connected with Mr. Daly, and also directly connected with the work in which he had been engaged, and that was that after an absence of eight or nine years, exposed as he had been to all the vicissitudes of a climate such as that of the Straits, he came before them that evening showing that he had been able to carry on his labours without in the least impairing his health and strength. He referred especially to the climate, because on it depended much the opening up of the country. There would be no practical benefit in the future if the fact were not recognised that the great neglected Malay Peninsula was a province unequalled in the Tropics for its beneficial influence upon the European constitution. He knew of some families belonging to the Anglo-Saxon and other European races of the fourth, fifth, and sixth generation, who were living and doing well, and some of whom lived to a very great age. He regarded the Malay Peninsula as one of the most promising to which young men with moderate capital could emigrate. There were many young men in this country who constantly failed in their examinations for the various services to which they aspired. Many of them had ample intellect, and most of them had good physical power and great energy, to whom this particular part of our empire opened one of the most successful fields for their energy and enterprise. Great facilities were given for the acquisition of land, and he believed that the Indian Government were co-operating with that of this country in order to give facilities for emigration from Northern India. There was another great advantage in reference to the Malay Peninsula as compared with most of the other settlements. There were great facilities for sending produce to market, especially on the western coast, where nature had provided water-carriage. It was traversed by innumerable streams, many navigable, and many which could be with comparative ease made so. In regard to the exploration of the country, he could well remember in 1873, when he was appointed Governor of the Straits Settlements, going to Savile Row and asking the Curator of the Geographical Society whether he had any maps or any information he could give him in regard to the country to which he was going, and he was sorry to say that, as far as he could ascertain, there was absolutely no such information of the least value in their archives. He hoped that the paper they had heard read that evening would lead to more extended observation and exploration. He would, however, in justice to the Geographical Society, say that when he arrived at the seat of his government and asked if he could get information in regard to places other than the settlements over which he was placed, he found that the office there was equally deficient in such information. It seemed to him strange why for nearly eighty years, indeed since the death of the illustrious Raffles, the Government of India should have neglected that great peninsula; but he hoped from the interest that had been excited in it of late there was a better augury for the future. He would call attention to a few facts in order to justify Englishmen in what they had done and were still doing in prosecuting the further settlement and development of that country. The three little spots of Penang, Malacca, and Singapore, situated at great distances from one another, give a line of some 300 or 400 miles of coast. They were the only spots which were purely British territory. The rest of the country was occupied by Malays and Chinese; and most of the Malays who now occupied the country were both rajahs and ryots who came mostly from Sumatra, and their advent to the Straits was comparatively recent. Though the soil of the peninsula was very rich, there were but five or six Malays to the square mile, and there were about 33,000 square miles, and only one acre in every 300 of the territory was cultivated. In our three little spots, comprising

hardly 1000 square miles, the acres were crowded, and instead of having only four people to a square mile there were some 330. If these were foreigners and aliens there would not be much force in what he said; but in the Malay country itself, occupied by Malays and the Chinese associated with them, there were four Malays to the square mile, whilst under the British flag some 125 Malays to the square mile had taken refuge and sought protection under our laws for their industry; so that there was some justification for our settling in this rich, promising, and fertile land.

Mr. ADAMSON (late Member of the Council of the Straits Settlements) said he certainly did not expect to be called upon to make any observations on the paper, but he was very glad to be able to give his testimony to the great prosperity which was likely to attend the settlement of these provinces—a settlement which was first begun by the distinguished official who had just addressed them. These States were for a great number of years left to themselves, and the consequence was that the country generally was such as to be a trouble to all the surrounding peoples. There were constant riots in the country, and it was necessary for our own preservation at the points of Singapore, Malacca, and Penang, that something should be done. Sir Andrew Clarke initiated a policy which, from the day it was fairly started, had gone on step by step in gradual but sure progress. As a merchant of Singapore, he had great pleasure in bearing his testimony to the successful result of that policy. Slavery had been in a great measure put down, settled government had been given to the people, and there had been, consequently, prosperity. It was hoped and expected that young Englishmen would go out to engage in the cultivation of coffee and other products, and he was sure that the Chinese would flock into these territories, and assist in promoting such cultivation, until the country would become rich and prosperous, and a credit to this country in every way.

The PRESIDENT, in passing a vote of thanks to the author of the paper, said that Mr. Daly had introduced them to a country which was new to most of them. In regard to the products of the country, Mr. Daly had especially referred to the tin mining, which, of all the metal trades, was that which was expanding most rapidly. Our own tin mines in Cornwall had long ceased to supply the portion of tin they used to do, and we had to get it now from distant regions, and he believed some of it had been supplied from the region over which Sir Andrew Clarke was once the governor—that of Tasmania. In regard to the supply of coffee, which one was happy to hear was increasing, but not at such a rate as was hoped, it was well known that the once fertile region of Ceylon was rapidly diminishing in productive power, either from the disease or exhaustion of the plant. Ceylon was not what it once was, and enterprising Englishmen were seeking regions where coffee might be cultivated with advantage, and especially in these Straits Settlements. There was another point of view from which the matter might be regarded. Those who were the fathers of large families knew the difficulty they had in finding employment for their children. A large number of the educated youth of England, as well as of the non-educated, were seeking employment in countries which were inhabited not only by those of the same blood as ourselves, but who were under foreign rule—he meant the United States of America. One was glad to feel that there were fields within the limits of the British Empire which were still opening to them in increasing numbers. Again, many writers upon India had called attention to the fact of the enormous increase of population that had taken place under our peaceful sway. Formerly the increase of population in India had been kept down by incessant wars; but now railways had been opened up, peace had been preserved, and trades of all kinds had sprung up. Probably from want of proper means of distribution the population had increased in such a ratio as to cause considerable alarm as to the future in regard to India. It

seemed, therefore, that such a *début* as was offered for the population by the Straits of Penang, where the climate was suitable, was a matter of great importance. There was another matter they had listened to with great satisfaction, and that was the protection offered to native states immediately adjoining the British possessions. The Malays suffered from the arbitrary conduct of the Siamese rajahs, but they found protection from the English through the Malay Peninsula. He was sure that they would join most heartily with Mr. Daly in hoping that the same careful exploration would be made of the eastern portion of the peninsula as had been made of the west. They would agree with him that they had seldom listened to a paper the author of which gave more evident signs of being an accomplished observer, both as a geographer and a geologist. The paper was not one of mere personal interest, but contained facts which would be referred to hereafter by every one who wished to add for the information of his countrymen facts concerning this partially explored country.

*Dr. Albert Regel's Journey in Karateghin and Darwaz.**

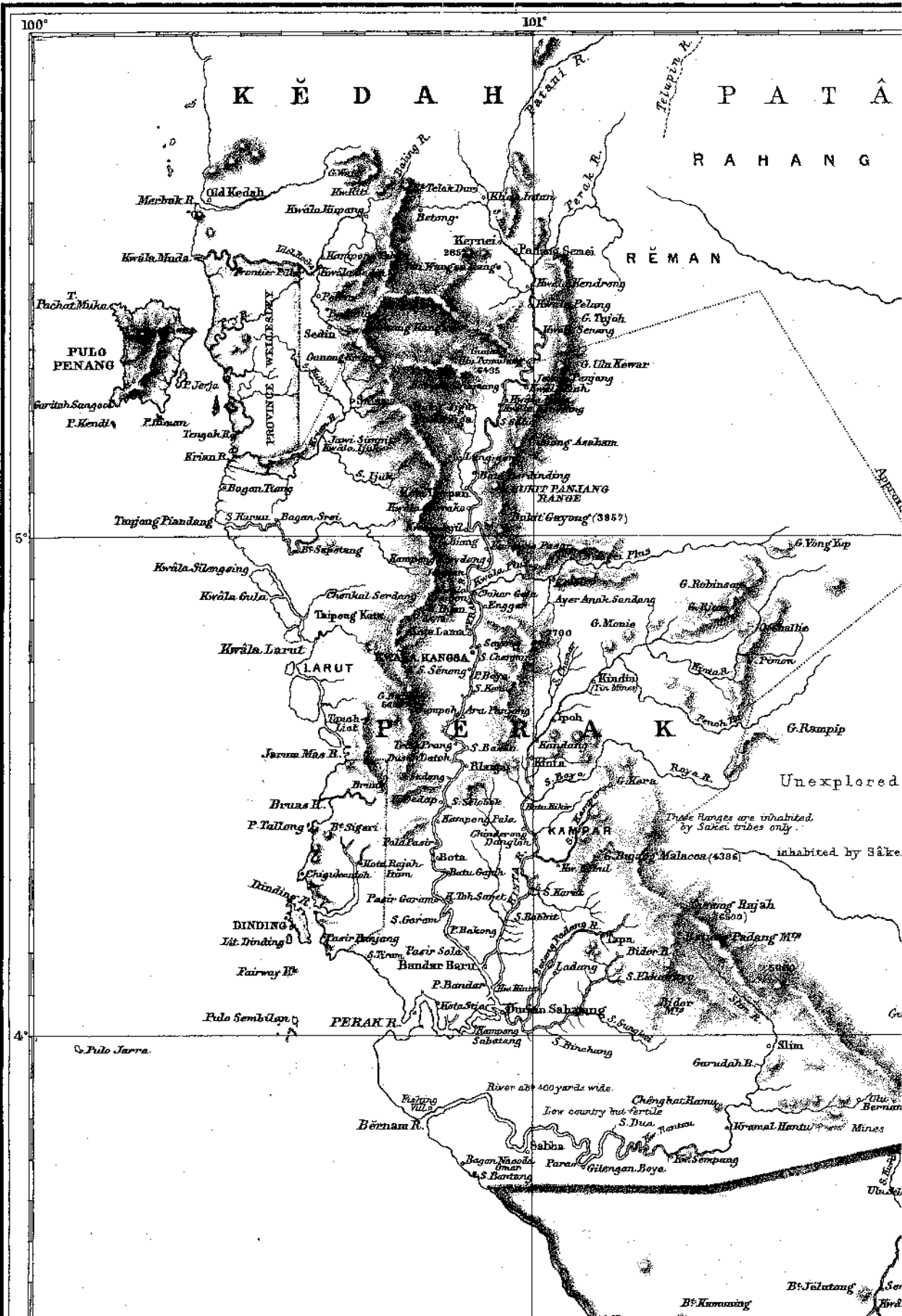
DR. REGEL, to whom we are indebted for the following sketch of a region hitherto left blank on our maps, is the well-known explorer and botanist whose journey to Turfan in 1879-80 was described in the 'Proceedings,' New Monthly Series, vol. iii. p. 340. Our account is nearly a literal translation of his letter published in the last number of the Russian *Isvestiya* which has reached us. Dr. Regel writes as follows:—

"KALA-I-KHUME, 27th September, 1881.

"In fulfilment of the task confided to me by the Imperial Russian Geographical Society to explore the head-waters of the Amu-daria, I devoted the present year to the investigation of the Bokharian province of Darwaz, and attained the farthest limit to which my credentials enabled me to penetrate. My first care was to ascertain the direction of the mountain chains and rivers. Crossing the Zarafshan range, I descended into Karateghin and passed through a mountainous tract occupied by three meridional outlying ridges. On the other side of the Surkhab I found the mountains running diagonally to the meridian, i. e. from north-east to south-west. The first range occupies all that region between the rivers Surkhab in Karateghin and Waksh in Darwaz; the second lies between the Waksh and Panj, while the third in its continuation divides the lower courses of the Panj and Waksh. East of the lower Panj, and in a similar direction, rise the great mountains north of Badakhshan parallel with the Hindu Kush, and these also fill in the region between the Khumbau and Wanj. The last-named river is bounded on the south by another diagonal range forming part of the hill state of Roshan.

"From the western border of Pamir this region is separated by three valleys which have nearly an opposite direction (i. e. almost due west): the northernmost of these is the Muk-su, one of the head rivers of the Surkhab; the next is the Wahia-bal, probably the principal source of the Waksh; the third is the Takhta-korum, entering the Au-pamir (Tadjik

* From the *Isvestiya* of the Russian Geographical Society, vol. xviii. No. 2.



100°

101°

K E D A H

P A T A N G

R A H A N G

R E M A N

PULO PENANG

K A R A U T

K A N G S A

P E R A K

K A M P A R

P E R A K

Unexplored

These Ranges are inhabited by Sakai tribes only. inhabited by Sâke.

River abt 400 yards wide.

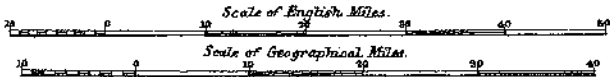
Low country but fertile.

B. Jalatang

MAP OF THE MALAY PENINSULA

To accompany the paper of Mr D.D. Daly, Superintendent of Public Works and Surveys, Selangor, showing his Surveys and Explorations in the Native States.

Natural Scale 1:1,210,000 or 1 inch = 19.2 miles.

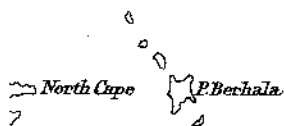


The heights are expressed in feet.

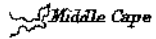
ABBREVIATIONS.

Bukit (B ^t)	Hill	Pulo (P)	Island
Gampong (G.)	Mountain	Sungai (S.)	River
Kampung (K.)	Village	Tanjung (T.)	Point, Cape
Kwala (Kw.)	Mouth of River	Ulu (U)	Head of River

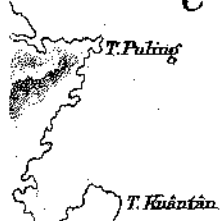
For a more detailed Survey of the Northern Part of Perak see Map in present Number.



Jungle Kiamzin.

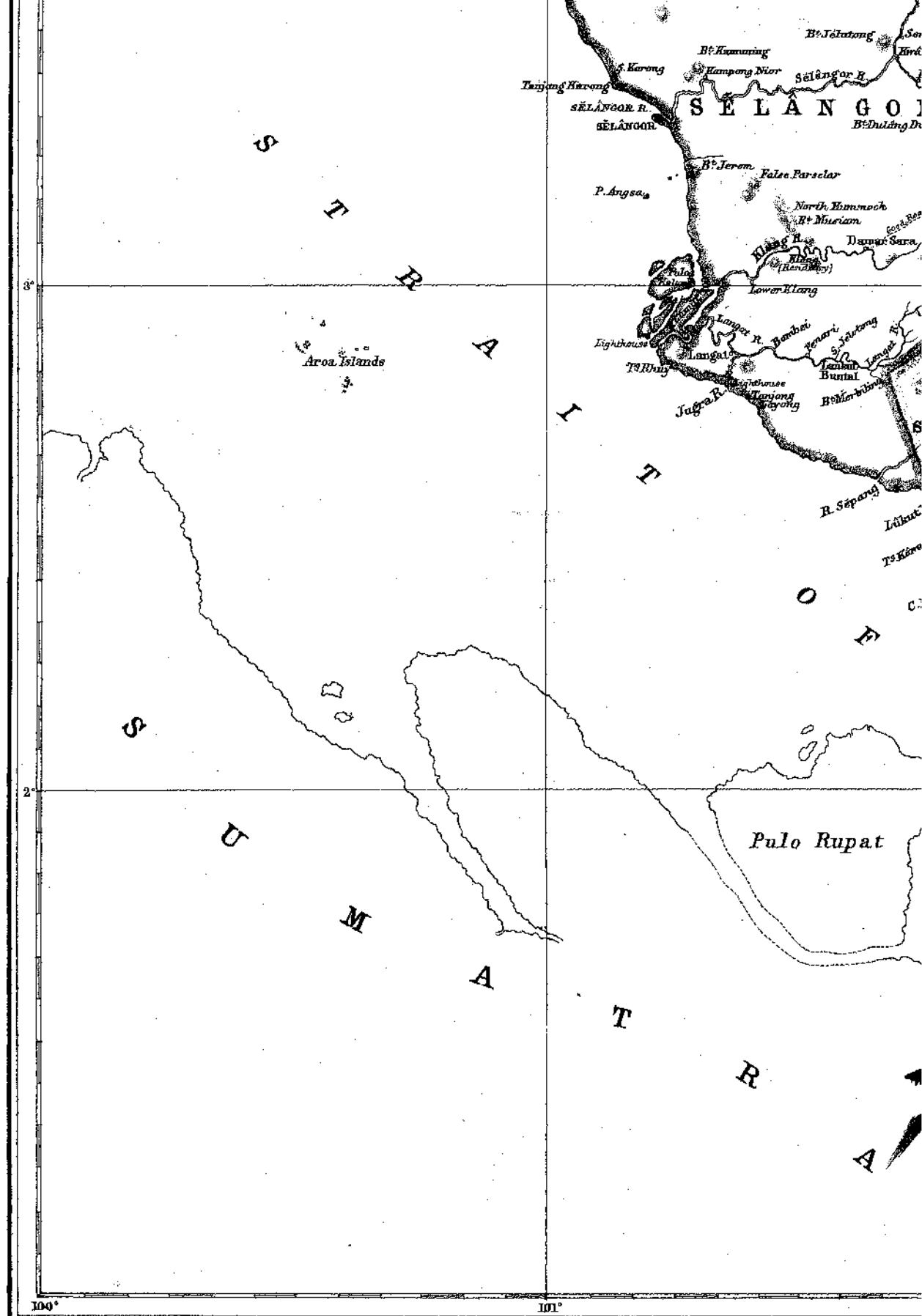


C H I N A



S. Pahang River.

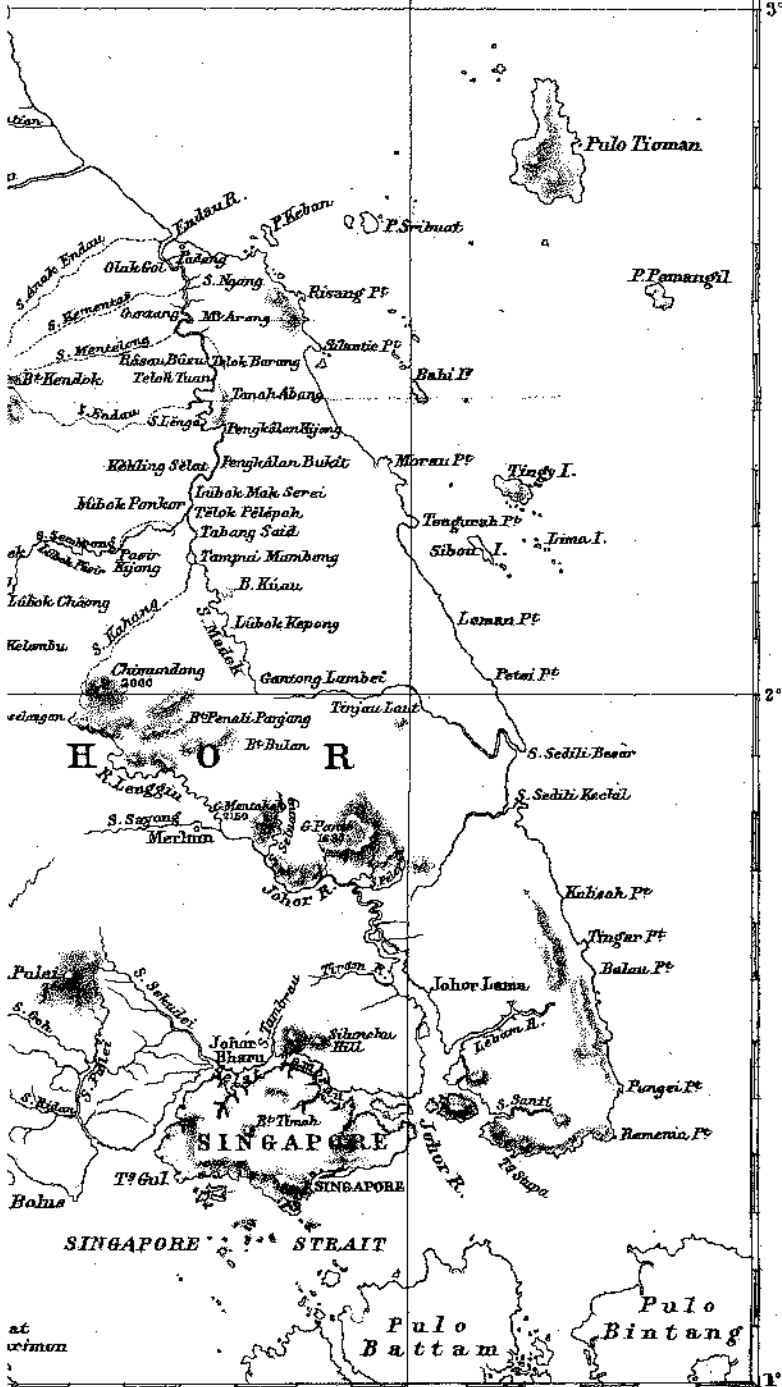


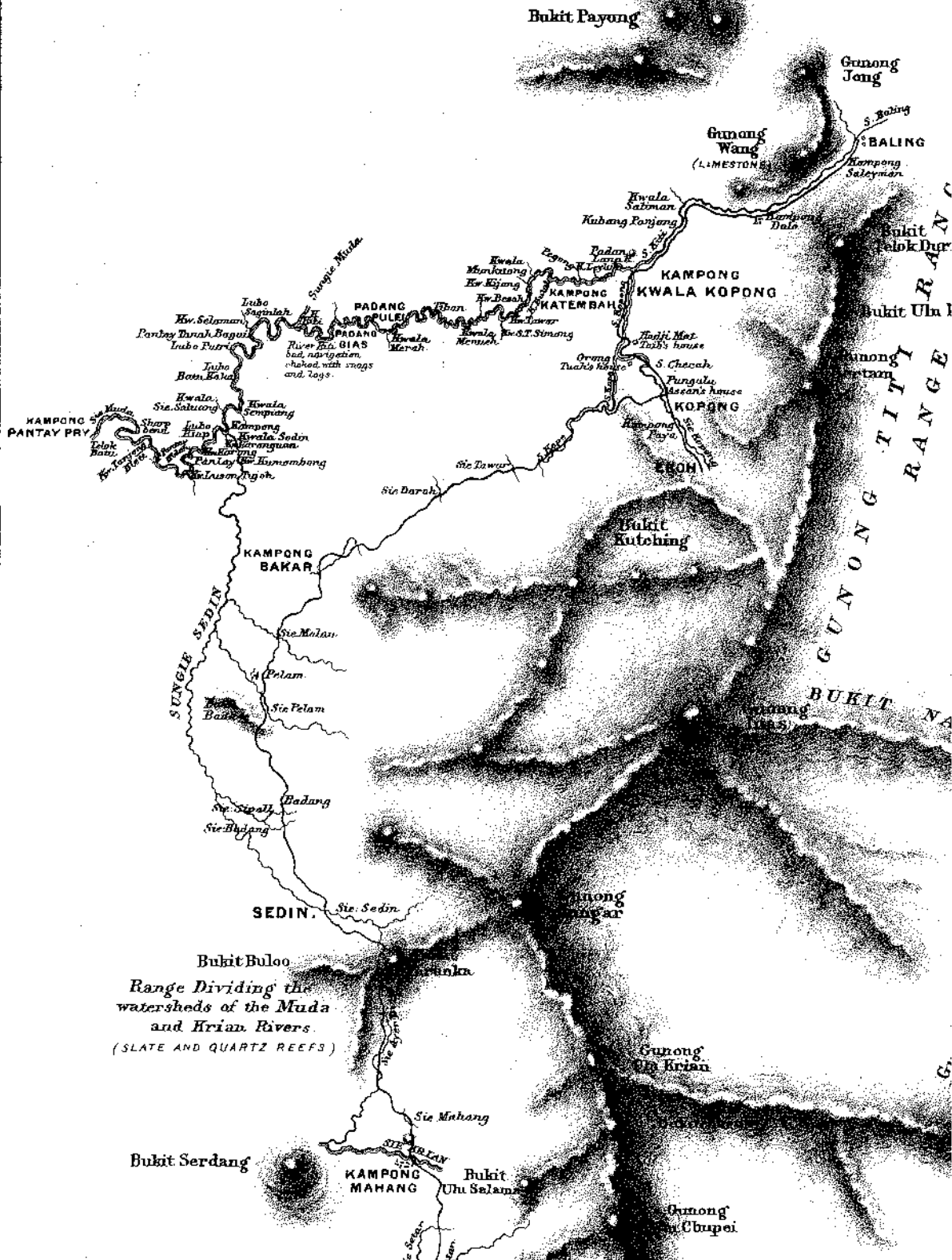




S E A

P. Varela





Range Dividing the watersheds of the Muda and Krian Rivers (SLATE AND QUARTZ REEFS)

Bukit Payong

Gunong Jang

Gunong Wang (LIMESTONE)

S. Baling

Kampung Saleyman

Kubang Panjang

Kampung Dalo

KAMPONG KWALA KOPONG

KAMPONG WATEMBAH

KAMPONG PULEH

PADANG

PADANG

PADANG

KAMPONG PANTAY PIRY

KAMPONG BAKAR

Bukit Kutching

SEDIN

Bukit Buloo

Range Dividing the watersheds of the Muda and Krian Rivers (SLATE AND QUARTZ REEFS)

KAMPONG MAHANG

Bukit Ulu Selama

Bukit Serdang

Gunong Ulu Krian

Gunong Chupoi

GUNONG TITI RANGE
BUKIT NA

ong
g
Babing
IALING
pong
man
Bukit
Telok Duri
Bukit Ulu Kopang
ong
I
n
T I T I
R A N G E
R A N G S A

T NAKSA
RANGE

Gunung
Layreng



Gunung
Klédang

Gunong Kernei
2128

Gunong Hendrong
2663

Gunong
Guling

KERNEI

PADANG SEMAI
(S. 47E)

Valley of the Perak River

NORTH BLUFF
Gunong
Besiah
SOUTH BLUFF

Bukit Naga

PADANG JIRI

Three prominent peaks
of Gunung Tjoh Range.

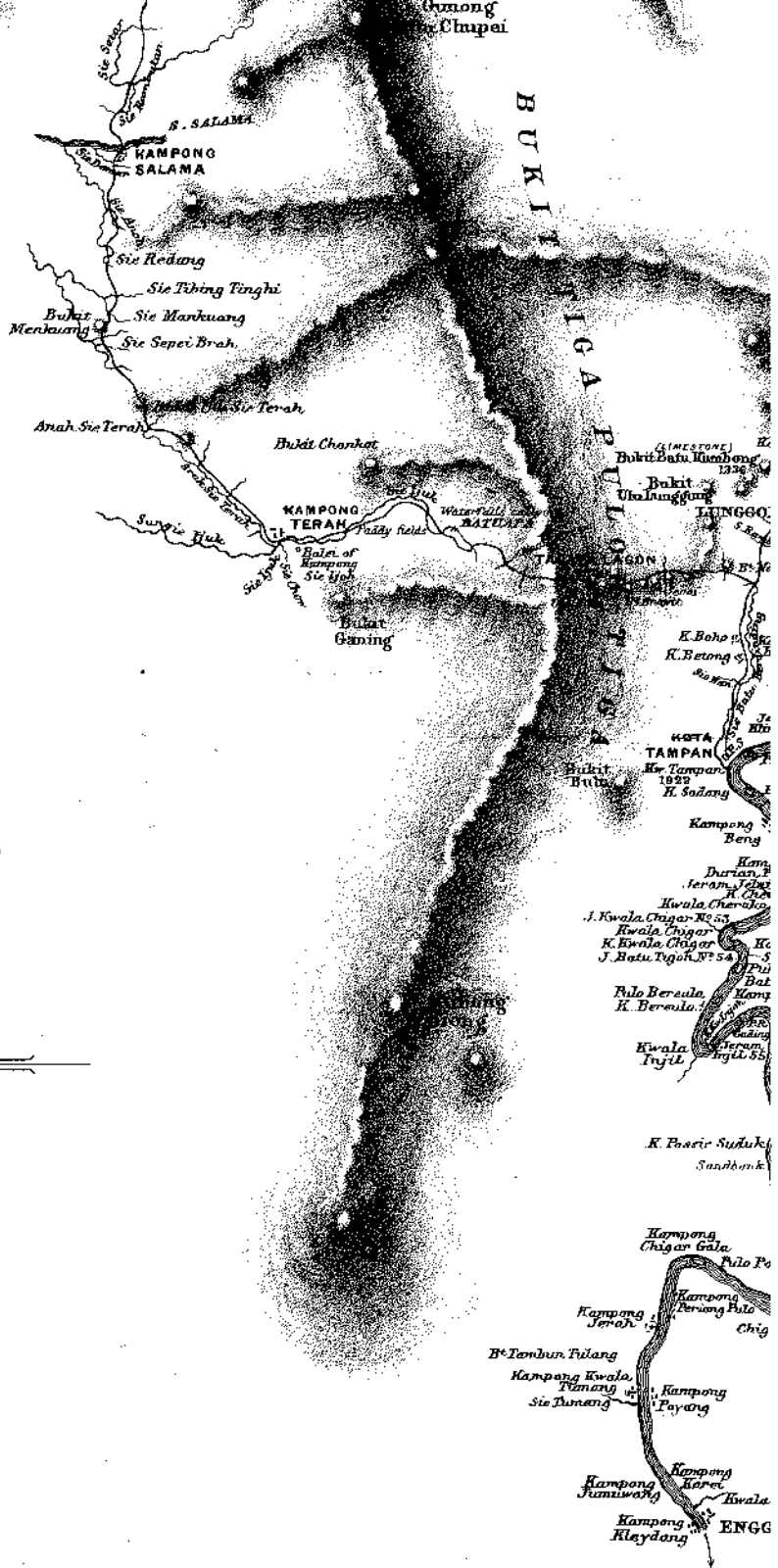
Road Top

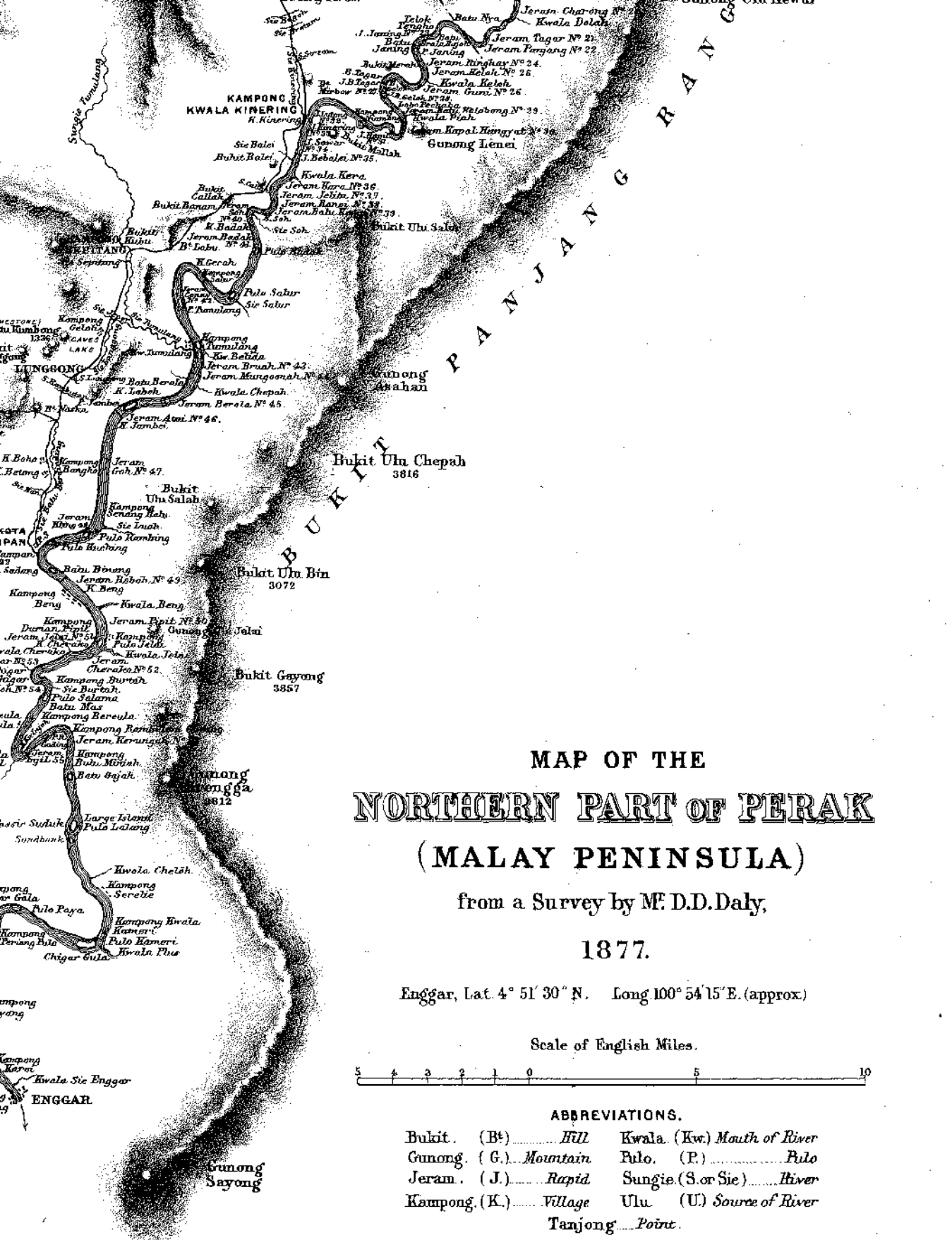
Gunong
Ulu Tumulong
6433

Gunong Ulu Kewar

N

5
ige.





MAP OF THE NORTHERN PART OF PERAK (MALAY PENINSULA)

from a Survey by M^r. D.D. Daly,

1877.

Enggar, Lat. 4° 51' 30" N. Long 100° 54' 15" E. (approx.)

Scale of English Miles.



ABBREVIATIONS.

Bukit. (B ^t).....	Hill	Kwala. (Kw.)	Mouth of River
Gunong. (G.).....	Mountain	Pulo. (P.).....	Pulo
Jeram. (J.).....	Rapid	Sungie. (S. or Sie).....	River
Kampong. (K.).....	Village	Ulu. (U.)	Source of River
		Tanjong.....	Point.

