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Explorations in British North Borneo, 1883-87

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Source: *Proceedings of the Royal Geographical Society and Monthly Record of Geography*,
New Monthly Series, Vol. 10, No. 1 (Jan., 1888), pp. 1-24

Published by: [Wiley](#) on behalf of [The Royal Geographical Society \(with the Institute of British Geographers\)](#)

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PROCEEDINGS

OF THE

ROYAL GEOGRAPHICAL SOCIETY

AND MONTHLY RECORD OF GEOGRAPHY.

Explorations in British North Borneo, 1883-87.

By D. D. DALY, Assistant-Resident in charge of Province Dent.

(Read at the Evening Meeting, December 12th, 1887.)

Map, p. 60.

THE purport of this paper is to give a personal record of two exploring expeditions which I undertook, from the east and from the west coast of North Borneo to countries and tribes in the interior hitherto unvisited by the "white man."*

On 27th August, 1884, I left Sandakan, the capital of British North Borneo, in the steam launch *Sabine*, and entering the mouth of the Kinabatangan, ascended this, the largest navigable river of the territory,

* The harbours and coast-line of British North Borneo are carefully delineated in the Admiralty charts, and the 'Handbook of British North Borneo' affords abundant information regarding the climate, trade, products, minerals, agriculture and form of government that obtains in the youngest colony of Great Britain.

The most southerly point is in lat. $3^{\circ} 52' N.$; the most northerly, $7^{\circ} 25' N.$; the most westerly point is in long. $115^{\circ} 20' E.$; the most easterly, $119^{\circ} 16' E.$

The area is computed at 31,000 square miles.

The seaboard is estimated at 700 miles.

Population, 150,000.

Sandakan, Kudat, and Gaya are the principal land-locked harbours. Sandakan, which is 1000 miles distant from Singapore, is the headquarters of the Government.

Two hundred thousand acres have been taken up for tobacco planting.

A Royal Charter was granted on 1st November, 1881, and the following Treasury returns speak for the steady progress of British North Borneo.

TABLE OF COMPARATIVE REVENUE, EXPENDITURE, AND TRADE.

Year.	Revenue Proper.	Expenditure Proper.	Imports.	Exports.
1881	dollars. 20,208	dollars. 108,295	dollars. 160,658	dollars. 145,444
1882	38,935	189,223	269,597	133,655
1883	50,738	267,531	428,919	159,127
1884	82,449	196,240	481,414	262,759
1885	110,256	208,072	648,318	401,641
1886	127,731	195,803	849,115	524,724

No. I.—JAN. 1888.]

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as far as the draught of the vessel permitted, and thence proceeded in boats. The banks were lined on either side with mangroves and nipa palms as far as the tidal influence, and the first place of importance reached was Malapi. This is the depôt for the edible birds' nests that are brought from the marvellous Gomanton Caves, which are situated about 12 miles to the northward. The nests that are collected are valued at 25,000 dollars per annum, and the North Borneo Government had let the caves in 1884 at a yearly rental of 9000 dollars. The height of one of the vaults in these limestone caves has been estimated at 900 feet, upwards of twice the height of St. Paul's, London, and some idea may be formed of the swarms of swifts (*Collocalia*) when it is said that a steady column of these birds has been timed by watch to fly for three-quarters of an hour from one of the apertures. Scientists are agreed that the birds' nest is composed of the inspissated saliva of the bird. All these birds' nests are sent to China, where they are prized as a luxury in the well-known Chinese birds'-nest soup. It should be noticed that all the birds'-nest caves in the territory are formed of limestone rock, and that these are isolated mountains of limestone in a country of secondary formation.

I had five boats in tow of the steam-launch, and they were especially selected from being flat-bottomed dug-outs for facilitating transit over the rapids. After passing Bod Langit—which means the hill to the skies—a legend recording that it formerly reached the heavens, but owing to the wickedness of the inhabitants it subsided to its present height of 400 feet—large boulders of stratified sandstone dipping to the eastward at an angle of 35° were noticed in the banks. Then a hill of limestone called Chuko Besar, which contains some small caves and yields a few hundred birds' nests each year. The Kinabatangan here, at a distance of 85 miles from the mouth, is four fathoms in depth and about 50 yards wide, with high banks. Many places were now passed on either side which had been abandoned some eleven years previously on account of that terrible scourge of the East, small-pox. When natives are asked their age, the usual answer is that they were so many years old at the time of the last epidemic of small-pox. The interval between each has been named to me as eighteen or twenty years, and the old men sometimes acknowledge to have seen the ravages of three or four epidemics. Vaccination has of late years been largely availed of and sought after by those natives who have come under the influence of the North Borneo officers.

From Malapi to the mouth of the Lokan river there are rich tracts of low-lying lands, well adapted for sago plantations, sugar, and other low-lying products. In the banks I noticed from three to nine feet deep of loamy humus deposits in many places. The total absence of sago plantations, except a few sago-trees in gardens, on the east coast, has never been accounted for, and is still more surprising from the vast area

of wet, swampy lands in which the sago-palms love to grow spontaneously and throw out suckers. On the west coast the sago plantations form the principal industry of the people, and the export royalty on the same is the largest item of revenue. Last year, at the request of Governor Treacher, I forwarded 2000 roots of sago-palms from Province Dent on the west coast to Sandakan on the east coast, to form the nucleus of a sago plantation, and it was satisfactory to learn lately that the plants had struck, and we may hope to see the sago cultivation extend all over the east coast in future years.

The recapitulation of names of places would be tedious in this paper, and the accompanying map of North Borneo has been specially compiled for reference; the large rivers Kinabatangan and Padas are from my field notes.

The settlements between Malapi and the Lokan river are the most flourishing, and are inhabited by Sulus, Buludupis, and Tambanuahs on the river Kinabatangan. There are no villages such as are understood in other countries; the names comprise certain tracts of country, frequently a streamlet or an important bend of the river, and the houses are widely scattered, each house having its own padi-fields, fruit plantations, and a patch of jungle scrub land. At many places on either bank were to be seen dense clumps of fruit trees that were allowed to run wild when the small-pox decimated or drove the people away. These trees comprised langsat, durians, two kinds of rambutans, two kinds of pulasans, two kinds of the Chinese lichee, limes, oranges, and mangoes; many of them were richly laden with a profusion of fruit, which travellers were free to gather, and with which the boatmen loaded up my boats.

Large game in the jungle comprises elephants, rhinoceros, deer, and wild pig. Among birds we got some fair snipe and pigeon shooting. The argus pheasant is common, but is surpassed in beauty by the burnished sheen of the metallic-fire back and white-plumed tail of the "Bulwer" pheasant.

We found a settlement called Sebongan completely deserted on account of the voracity of the crocodiles; the flat-bottomed dug-outs in which the natives paddle about being easily capsized, and the occupants devoured by these crocodiles.

The river Lamag, on the true right, is used by light-draught boats, and from the head of it to the Segama river gold-fields the distance is 22 miles. A road is now in course of construction to enable the miners to reach the goldfields, and when it is completed, Sandakan, the capital, will, viâ Segaliud river, and overland to the mouth of the Lamag, be within two days' communication of the Segama gold-fields.

The highest point of navigation for steam launches drawing six feet is the Lokan river, an important tributary that takes its rise in a spur of the mountain Kinabalu, 13,680 feet high. There is a considerable

population on the Lokan river, and the people are friendly. I now followed up the Kinabatangan in boats; a strong current against us limiting the speed to $1\frac{1}{2}$ mile an hour.

Sapatidak, Belat, Belongan settlements, were now passed, and there were small patches of crops of swamp rice, Indian corn, sugar-cane, native tobacco, ground-nuts, betel-nut palms, coco-nut trees, sirreh-leaf vines, and the usual tropical garden vegetables.

On the true right the River Maluar, said to be auriferous, was passed, but heavy rains had swollen its current so that it was impossible for the boats to stem it.

The scattered huts of Dalimarcot now came in view, and the small clearings were a relief to the eye after having passed through a large extent of uninhabited jungle forest. Here in both banks were compressed heaps of leaves and wooden *débris* from four to ten feet thick, that had been washed down by floods. Where the river water had washed part of the layers away, the section of the bank presented the appearance of a cutting in a haystack. These large deposits, if undisturbed, may, after many centuries of compression, form into coal. The banks in many places are 40 feet high, and numerous fruit trees denote former habitations.

The river Quarmote, on the true right bank, was now reached, and the chief, Rajah Tuah Dorkas, was interviewed. There were forty-four houses on the north bank of the Kinabatangan, and all the people, excepting traders, belong to the Tambanuah tribe. They wear only the loin-cloth (*chawat*) and carry blow-pipes (*sumpitans*) and poisoned arrows.

Rajah Tuah Dorkas is a Tambanuah converted to Mahommedanism; he and Panglima Sarei receive the proceeds of the Batu Timbang Caves in alternate years. These caves are situated on the river Quarmote, and are difficult of access on account of rapids; small boats can be paddled in ten days up to the foot of the limestone mountain. The birds' nests given to me were of the best white description, but the large proportion are grey, mixed with feathers. There are two seasons per annum for collecting them. Experts say that if there were three collecting seasons per annum, all the bird's nests would be white and of the highest value. As at present managed, the nests are allowed to grow too old, are mixed with feathers, and young swifts are hatched therein and many of these valuable nests are spoiled. If the nests could be gathered before the eggs are laid, three harvests per annum could be collected with much profit.

Government supervision would, as in the Gomanton, Madai, Segalong, and other caves much conduce to a larger output from the Batu Timbang caves; but the journey is arduous, and could not be accomplished there and back under three weeks from the Kinabatangan river.

I made an agreement with the chief that in consideration of police and other Government protection, one-third of the birds' nests should be

given to the Government per annum. The products from the Quarmote river are, rattans, guttapercha, birds' nests, camphor, and beeswax.

In the evening the people were called in by sound of gong to have a dance (*main-main*) in my honour. They came in large numbers, and dancing was kept up till daylight. The favourite dance consisted of the women holding each other's hands, moving in one circle, whilst the men also holding hands, moved in an outside circle but in the opposite direction. The band was composed of gongs tuned to different keys, and wooden drums; the music, it is needless to say, was monotonous to the European ear.

At a place called Tagai, we came upon a wild tribe of Tungaras, who all jumped ashore and ran away from us, leaving five long boats in the river. We put some rice and fruit in their boats to show them that we were friendly; and the next place was Baka, where there were some more clearings belonging to the Tambannah tribe. Here we came upon a rapid where the force of the current was very great. The stratified sandstone rocks now dip to the westward at an angle of 20° , whilst the same rocks on the lower part of the Kinabatangan were always observed as dipping to the eastward. Our boats are now dragged by rattans that are pulled by our boatmen as they walk along the bank.

At the Karamuk river we found the chief, Deramatuan, an intelligent and very friendly Tambanuah, who has much influence among the Sukongs and other tribes about the Karamuk river. But there are old standing blood-feuds with the Puteh tribe on the Labok river, and head-taking is a recognised custom; and Deramatuan, who is well aware that Government is determined to put an end to this baneful practice, is unable to stop it. This river is said to take its source from the same high range that feeds the Labok and Kinabatangan rivers, and which is called by these people Mangalaskalas, but known as Bod Udan by the tribes of the interior. Paddling up to the mouth of the river Karamuk, the silence of the great river was suddenly broken by plaintive strains of song which re-echoed among the rocks and hollows of the Kinabatangan. On a high bank beneath clumps of fruit-trees, there were twenty Tambanuah men and women performing an incantation over some medicine which was to be administered to the chief, Deramatuan. They all held palm branches in their hands, which they waved in graceful unison and in perfect time to the melodious cadence of their voices. The women sang one line, and the men took up the solemn refrain in a sort of Gregorian chant. They danced gracefully, holding each other's hands, in a ring around the mysterious object of their charms; both the dancing and singing are continued until the sorcerer declares that the spell has been worked over the medicine. It should be stated that the Tambanuahs declare that after death, their souls find rest in peace on the top of the great mountain Kinabalu, as their forefathers believed before them.

At Imbok, where Pangeran Besar Asin is the ruling chief, a curious mausoleum was visited on the bank of the river. It is built of solid bilian wood, the posts and beams are prettily ornamented and fluted, the ends being carved into grotesque heads of animals. These bilian posts are perfectly sound, although I was assured that they must have been over a hundred years in the ground, and are proof against the inroads of the white ants. There are thirty or forty bodies in one mausoleum, which is encircled with fruit-trees, the clusters of langsat and rambutan overhanging in graceful profusion. At Punpun the headman is Rendom, who lives in a large house raised ten feet off the ground; there is a centre passage through the top part, with many rooms containing families on either side, the people being very shy. Underneath there are the usual pigs and some hunting dogs. We now frequently meet boats, paddled about by two Tambanuahs, each boat containing from five to seven hunting dogs, which are landed on the bank at various places, and invariably find either deer or wild pig; the natives know by the bark of the dogs when the quarry is at bay, and it is then despatched with spears. There are high mountains, called Bod Narkiw, visible from Imbok, to which I got some compass bearings. These ranges are said to contain birds' nests, but I was unsuccessful in finding any one who had visited them.

The Tambanuah, Romanow, and Tungara tribes are afraid to enter the caves, they assert, on account of tigers and dragons which inhabit them.

All along the banks we found rich soil, the secondary sandstone formation still prevailing. At Karangan the tribe of Romanows were first met—Headman, Tamat. There are about 500 Romanows scattered about this district; they are very wild, and live in wretched hovels. They plant padi, move from place to place on the rivers every second year, making a fresh clearing each time, and therefore destroying much valuable jungle forest. Their habits are gregarious, and they will not settle down and make permanent homes. At Kwáyoh we saw large clearings, planted with padi, ground-nuts, Indian corn, and sugar-cane. We ascended the hill about 300 feet high, and obtained good magnetic bearings to Kinabalu, which will approximately determine our longitude.

On September 15th, 1884, we reached Penunghah, where we found five Dayak constables; it was a great relief to leave the boats after twenty days' voyaging from Sandakan. During the last ten days the work of getting through the rapids was very trying to the boatmen, who sometimes drove the boats with poles, sometimes dragged them by ropes along the bank, and sometimes all hands lifted the dug-outs over the rocks and through the tumbling waters. At the rapid Tapugnet the confused waters broke in waves over the boats, and it required fifteen men to drag my boat through.

The police station at Penunghah is situated at the junction of the Penunghah river with the Kinabatangan river; and though it is elevated

70 feet above the present level of the river, which is 450 feet above sea-level, the floods during the rainy season, November and December, have been known to rise in these gorges and lap the foundations of the police-station. There we found, and also at various places during the journey up the Kinabatangan, large bamboo rafts, called lanteens, made fast to the bank by rattans. On the raft there is a house constructed of bamboos and leaf-walls and roof, which protects the trader, his family, and the goods he has for sale. The goods consist of Manchester shirtings, bags of rice, kerosene oil, brass-ware, dried fish and salt, the latter commodity being very expensive. In return, the natives bring from the interior, guttapercha, indiarubber, camphor, birds' nests, beeswax, and other jungle products. The use of money is unknown, all transactions are by barter, and commerce between different tribes and races may be viewed here in its most primitive state.

Penungah will in future years be an important depôt for trade with the interior from the east coast, from its situation near the confluence of several rivers. At present there are only a few houses where jungle produce is stored to await the arrival of the lanteens from the sea-coast. Four years previously it would have been dangerous for any of the inland tribes to visit Penungah; now, with the presence of a few constables, the Tungara, Romanow, Tambanuah, and other tribes pass and re-pass opposite the police-station with perfect freedom and security. The Sarawak Dyaks are quite fearless in penetrating to the interior mountains, and bring to Penungah large quantities of guttapercha, indiarubber, beeswax, camphor, and edible birds' nests. My men now required a spell, five of them were down with fever, and in spite of every care and doses of quinine one of them died. During the nineteen days that we were coming up the river there were heavy fogs hanging about all night until 8 or 9 A.M., when the sun came out with tropical intensity and dried our wet clothes; the sudden transition from drizzling cold to steaming heat often brought on feverish attacks.

About a mile higher up than Penungah, the Kinabatangan branches into two rivers, viz. the Melian and the Mungago. The Melian is the proper Kinabatangan, but the latter name is dropped. All around them are high ranges varying from 2000 feet to 6000 feet, and densely covered with jungle. The pebbles in the streams contained granite, sandstone, silicates, quartz, micaceous schist, and large quantities of iron pyrites embedded in blue claystones and rolled pieces of coal. The prevailing rock is sandstone; the granite has evidently been washed down from the slopes of Kinabalu. Near the Mungago river we were taken to a mineral spring, the water tasted salt, probably one of the salt oxides of iron, and all around were tracks of wild cattle and of deer, that came to lick the salt. The people drink the water as medicine for rheumatism. The head-hunting tribes on the Mungago river are still carrying on their blood-feuds.

On September 24th, 1884, I ascended the river Melikop in flat-bottomed dug-outs, and after three days' pulling and poling through rapids, reached the Obang-Obang limestone birds'-nest caves, which had hitherto not been visited by Europeans.

It is three hours' climb from the Melikop river to the caves; the aneroid registered 1810 feet above sea-level at the entrance of the caves. The last half-hour's walk was over slippery mossgrown limestone boulders, and the air was strongly impregnated with the odour of the bats' and swifts' deposits of guano. The first cave reached is the most valuable, but can only be entered by experts in climbing. The entrance is a small hole about 4 feet by 4 feet, and is closed by a wooden grating so as to attract attention to the spot, as otherwise the unwary traveller might suddenly be precipitated to the depths below. Every two months this doorway is opened, and the climbers let themselves down into the caves by means of rattans, and gather all nests, either large or small. This makes six seasons per annum, and the same periods are also observed in the collections at the Senobang caves in the Ulu Penunah. The seasons at Gomanton, Batu Timbang, Madai, and Segalong number two or three during the twelve months, and these are too few according to the Tungara tribe. They maintain that by collecting frequently, say six times per annum, they procure white nests in first-rate order, though some of their nests are young and but half formed, and that the Sulu traders give them a higher price in consequence. I noticed a great scarcity in swifts, and a great preponderance of bats, which might be attributed to the too frequent collection of nests, which prevents the swifts from breeding.

The Obang-Obang mountain runs north and south, and is half a mile in length. There are seven entrances to the vaults from the top of the range, all situated close to each other. Five of these vaults do not contain any birds' nests, there being no swifts, only bats dwelling there. The only chamber that can be entered by any one who is not an adept at climbing on rattans to the roof of the vaults is only 50 feet high, and contains both bats' and swifts' nests. The bats' nests are similar in form to the swifts', but are made of moss only, which these mammalia pick off the limestone boulders outside. There were some handsome stalactites that were uninjured, and some stalagmites were forming on the floor of the chamber. We climbed up to the summit of the mountain, aneroid registering 2150 feet altitude above sea-level, and obtained a grand panoramic view of Kinabalu (altitude 13,698 feet) and other high ranges. Among the trees were casuarinas, hill bamboos, cedars, rattans in great profusion, and the wild betel-nut, which my followers were glad to chew, as they had run out of the cultivated kind. The two nights that we slept there were very cold, and we saw nothing of the dragons and other preternatural animals that Tungara legends recorded as haunting these hills. On our way down the hill we

had a few rifle shots at orang-utan (*mias*) in some lofty trees; they abound in these parts, and their red-haired skins are worn by Tungaras as martial cloaks on the war-path. On my return to the village of Gamud, I made arrangements with the Tungara chiefs that they should pay the North Borneo Government one-third of the birds' nests that were collected each season as their tribute for protection of life and property afforded by the establishment of a police-station at Penungah. To this proposal they willingly agreed. When I first arrived here the women and children ran away and hid themselves in the back rooms of the house, and the men looked nervously suspicious; none of them had seen a white man before, and they examined my arms and chest, and were very merry at the idea of my skin being white, which they seemed to think an absurd freak of nature. We soon established friendly relations, and they brought in quantities of fruit, fowls, and Indian corn, which made a large heap at my feet. I returned them presents of blue drill, brass wire, Chinese tobacco, salt, and beads. They all smoke from morning till night, and out of pipes that have brass mouth-pieces and large bowls, such as are also used by the Dusun tribes of the west coast. The tobacco is grown by themselves, and retains a green colour by their process of fermentation.

One of the first requests they made was to ask my permission to attack the Makeealiga tribe. This name is given to the inland tribes by the people of the east coast, but the same people are known as Peluans by the natives of the west coast. They urged that I might, in two days' march, reach the Sapulut tribe, who killed Mr. Frank Wittt and his thirteen followers in 1882. I explained that my mission was one of peace, and that I only sought information about the country, its products, and its inhabitants. In the clearings I found tobacco of the small-leaf variety growing very strong, though uncared for; also sugar-cane, Indian-corn plants standing nine feet high, sweet potatoes of several varieties, cotton trees, caladiæ, all looking very healthy, and denoting fertile soil. The padi is dibbled in the fields without the ground having been dug.

The Tungaras are a strong and well set-up race, taller than the coast tribes, fond of hunting with dogs and spears. They have not yet learned the use of guns or of gunpowder. They had not previously seen a double-barrelled breech-loader, and when I opened mine to put in a cartridge, they exclaimed, "Oh, it is broken!" I brought down a few of the swifts that build the edible birds' nests, and found them to be very small, and to have a patch of white on the back and tail.

The men only wear the loin-cloth; the women have but one garment, viz. a short petticoat, which is kept up around the waist by coils of brass wire; the young girls have, as an addition, coils of brass wire from the ankle half-way up to the knee.

The cloth is woven from the thread made from the cotton trees, "kapok," that grow luxuriantly around their houses, and the women

use the same kind of spindle for making thread as are common among the Dusuns of the west coast, holding the cotton in the left hand and occasionally giving a twist to the spindle with the right hand. The people knew of no other minerals besides coal and iron pyrites. Their houses accommodate from ten to fifteen persons, and they do not keep pigs under their houses as other sea-coast tribes are in the habit of doing. Their sleeping hours are peculiar. No bedding is used, but they sleep on mats until about midnight, when they wake up shivering with the cold of these inland mountains. A fire is then lighted on a large oval-shaped hearth, that is made of clay in the centre of each house, and all the inmates, young and old, sit round the fire until dawn in a crouching attitude, telling long-winded stories, sometimes nodding, and sometimes leaning against his or her neighbour with head resting on the knees. Their chants at night-time are doleful and monotonous in tone. For striking a light, the men carry in their waistbelt a small bamboo prettily carved, in which some tinder and a bit of porcelain are kept out of the rain. By holding the tinder and the piece of broken plate in the right hand, and striking it sharp on the side of the bamboo, the tinder is ignited.

Two attempts were made to visit the Senobang birds'-nest caves on the Penunah river, but the floods had now set in and the rapids were impracticable. The Tungaras at the head of the Penunah are hostile, and have a feud with the Tungaras and Tambanuahs who are friendly to the Government. I lost two boats that split on a rock in a rapid, and a rifle, two bags of rice, ammunition, lamp, my cooking utensils, and sundries were carried away by the rushing waters over the falls. The rainy season—October, November, and December—having set in, I returned to the sea-coast which I reached after an absence of sixty-four days.

My next exploring expedition will describe the Padas river and its tributaries on the west coast.

The embouchure of the Padas river is a vast delta emptying itself on the west coast opposite the British colony of Labuan; and the Padas river is the principal water-system of Province Dent, the latest and the most valuable acquisition, so named after Mr. Alfred Dent, the originator of the British North Borneo Company. The portion nearest to the sea-coast for 15 miles is covered with mangroves and intersected by numerous salt-water channels.

The next 50 miles of the Padas river pass through vast swamps of sago-palm plantations and padi-fields, with occasional belts of jungle forest. The people in these lowlands are mostly of the Besayah tribe, intermixed with Brunei, Malays, and Dusuns. The principal settlements passed were Gadong, Lupak, Limbawang, Berkalow, and Morak, where the sago cultivators are most numerous. Herds of buffalo and cattle roam along the banks; and the plains, where the padi-fields have been

allowed to run fallow, threw up luxuriant grasses. The houses and gardens denote a prosperous state of existence; the latter containing all the usual fruits and vegetables that are common to Singapore. A steam-launch drawing six feet ascends as far as Berkalow, a distance of 60 miles, when the base of the coast range is reached and sandstone boulders with iron bands dipping at an angle of 60° towards south-west, the strike being nearly north and south, indicate the recent rock formation. Nearly all the country between the coast range and the sea is one vast low-lying swampy stretch, where the sago-palms grow luxuriantly. When a palm tree has reached maturity, say eight or ten years old, it is cut down, split open lengthways with an axe, and the pith is chopped out with bamboo scoops, and by repeated washings the starch is sieved and extracted, and after drying in the sun, becomes the sago of commerce, ready to be shipped off to Europe. As fast as the sago-palms are cut down, fresh suckers spring up spontaneously, so that the sago plantations can never die out, and the export royalty on the same will remain a constant source of income to the Government.

On the true right passed the Mantannior Besar, a stream navigable for two days by small boats. This country is reported to be gold-bearing, but no specimens have as yet been brought in. I washed a good many dishes of dirt-gravel about here, but did not get the trace of either gold or tin.

After much poling and dragging of our boats through rapids and over rocky shoals, the landing-place Bebung was reached, the aneroid recording 140 feet above sea-level. Here the boats were hauled up on the bank, as further navigation is impracticable on account of rocky barriers, and the traffic is carried on by climbing over the coast range until the Padas river is again reached.

After two hours' climbing over rocks a fast-flowing river, the Sungei Rayoh, was reached, where traders make a depôt for rattans, india-rubber, guttapercha, and beeswax, which has been collected and brought here for barter by Muruts, the generic name of the tribes residing on the Pagalan river and Upper Padas. After wading through the river Rayoh, we commenced climbing the dividing coast range, following a jungle track that trended over broken spurs of rocky hills. The line of moss-covered trees so essential in the eyes of Ceylon and other highland planters was reached at 2140 feet. The climbing now became more arduous, the more so as it was raining hard, and we were glad to reach the summit of the gap, where the aneroid registered 3200 feet. This pass is called "Tataubun," and the party had a rest, which gave time to the straggling baggage-carriers to climb up with their loads. All the summits of these ranges are very narrow, and precipitous on either side; and looking at the ranges from the sea-coast, numerous landslips are visible on the west coast. These landslips are in a great measure caused by the south-west monsoons beating with

relentless persistency on the sandstone formations. On this summit there is a rock christened "Penobon," about three feet from the track, and all travellers as they pass by are expected to place a bunch of leaves or a branch on the top of the stone. There was a heap of branches, ferns, and leaves, about two feet high, deposited by passers-by as their simple offering of propitiation to the spirit who guards the great mountain pass. It was pouring rain, the storm-clouds were carried across us by a strong breeze, and the view of the sea was totally obscured. These altitudes must be very damp, as all the trees are thickly encrusted with moss.

We now descended, and at 2310 feet reached a permanent rivulet called Sumpongho, where there were two small sheds or rest-houses for wayfarers. The rocks were sandstone impregnated with oxides of iron, quartz was also found containing crystals. In the afternoon we descended into the fertile and picturesque valley of the Pagalan river, the largest tributary of the Padas river. The Pagalan takes its rise in the spurs of the mountain Kinabalu. We crossed large plains of "lalang," i. e. a coarse sedge-grass that springs up after the ground has been exhausted by repeated crops of padi; but the soil was greasy and most productive, and evidently only required rest. Naloyan, near the Pagalan river, altitude by aneroid 610 feet, was the first village we reached, and the Murut chief Zalimboh put his house at our disposal. This is a large habitation, 50 feet square, very clean, no pigs underneath, though there are pigs under the neighbouring houses. There were fifty-two human heads and pieces of human bones hanging from the rafters of the ceiling; the skin of some of the faces was so well preserved by the process of tanning pickle that the expression could still be recognised. I explained that I could not eat my evening meal in a room where these were suspended, and asked Zalimboh to cut them down. This request he and his sons cheerfully complied with, but with a bland smile of patronising pity at the white man's amiable squeamishness, and so to humour me they took down the ghastly trophies, and huddling them altogether in rattan baskets, put them away at the back of the house; doubtless they were reinstated as drawing-room ornaments after my departure.

Our climb over the range 3200 feet high in the gap from the river Rayoh and down to the Pagalan river took ten hours, and the next day the party woke up very stiff. The news of a white man's arrival soon spread about among the populous settlements of the Pagalan and Padas rivers, and the Muruts began to crowd into the audience-chamber in such numbers that the air was redolent of the unpleasant odour of half-naked savages. Each chief brought a fowl or a few pounds of rice or a basket of Indian corn as a token of friendship, which I reciprocated with presents of red and blue drill-cloth, beads, and brass wire. Some brought in sugar-canes 10 feet long and of great thickness, bundles of bananas,

eggs, fruit, and vegetables, for which they received an equivalent in return. These presents were frequently offered by them with an ulterior motive, to gain my goodwill in some long-standing inter-tribal feud, and as I had come with the avowed object of stopping their head-hunting forays, I always returned a *quid pro quo* for their presents. The salt brought by us from the coast was a most valued commodity, as there was none in their mountain ranges, but medicines such as quinine, vaseline, medical oils, Cockle's pills, and plasters, proved to be wonderful talismans in gaining the goodwill of the Muruts. They are savages *pur et simple*, and came in their war-paint. The orderly stood at the foot of the stairs, and all spears, swords, blow-pipes, and poisoned arrows were taken by him, deposited in a heap under the house, and returned to the owners when they took their departure.

The Murut does not wear any clothes, but sports a bit of bark in front; some strings of coloured beads encircle his head, a few charms hang around his neck; he carries a spear as though he feared no man, and annexes a new wife whenever he is "off with the old love." The women and children are much neglected, and much of my time was taken up in giving medicines and dressing sores and wounds. The Muruts have from time immemorial borne a bad name as head-hunters, but those tribes near the coast under the influence of British officers are steadily abandoning their bloodthirsty raids. Of course those inland tribes that have not come within the pale of Government protection still keep up the debit and credit account of the number of heads taken by each tribe. The baneful custom of cutting off human heads by stealth and in open warfare is gradually dying out, but there are powerful tribes, numbering 1000 armed men in one locality, that are yet unreclaimed. The past history of Borneo, as well as of many other countries, teaches us that the more hostile and savage the tribe may be in its primitive state of ignorance, the more faithful and friendly it will become when converted by British influence from the errors of its ways. The experience of six years' settlement of British North Borneo has shown that not only have barbarous customs been abandoned by many of the native tribes, but that vast tracts of country have been made available for trade, where the indigenous products were previously locked up.

The Pagalan river is a shallow, turbid, and sluggish stream when not in flood, is 50 yards wide, and navigable by flat-bottomed boats for seven or eight days. There are rich patches of padi growing on either side, and rice is of a red colour. The pebbles in the river-bed were quartzose, bluestones, sandstones, and a few scattered pieces of granite, probably washed down from the Kinabalu ranges.

From Naloyan to Binahi the way led through many swamps and cultivated settlements near the Pagalan river. At Bahab, the path lay through plains of sedge-grass, and some of the houses were 100 feet

long by 50 feet wide. After passing Gunting and Punshilan, we arrived at the large house of Panglima Prang, all very clean, no pigs under the house, the inmates busy making mats and baskets from the leaves of the pandanus. Here I got the dried skin of a small leopard and of a bear of unusual size. The inmates were all armed with spears and blow-pipes; in their belts were sheaths of poisoned arrows. More rice-fields, Indian-corn and tobacco gardens, and we reached Binahi, which is situated at the junction of the Pagalan with the Padas river. All this part of the country is known as Sandéwar. The level of the Padas river at Binahi is 610 feet above sea-level by the aneroid. The chief of the Muruts is Maharajah Oban, and my party of followers all put up in his large house. In the evening I held a long conference with him and some of the neighbouring chiefs. Among others present were Maharajah Wali, Panglima Prang, Singha Muntri (i. e. the Lion Minister), and Singha Turbang (i. e. the Flying Lion). Their enemies from time immemorial are the Peluans, a generic name given to all aborigines in the interior and corrupted into Punan by the coast people. It was with a view to putting a stop to the head-hunting raids between the Muruts and Peluans that I came here. The Muruts were very frank in naming and numbering the heads they had taken; and I found the debit and credit account to be as follows:— The Muruts have taken twenty-six heads of Peluans, the Peluans have taken thirty-one heads of Muruts; balance in favour of Peluans five heads, and four Muruts who were also wounded in the last affray. Each side distrusts the other, and peace can only be made by the Peluans paying a commensurate amount of blood-money in compensation for five heads that stand against them. I accordingly sent word to the Peluan chiefs that I would be on the Upper Padas in six days, requested them to meet me, and guaranteed their safety from the Muruts. During the interval I explored part of the Pagalan valley, and then turned down the Padas river to visit the gorge named "Batu Penutol," a remarkable gap in the coast range, through which the Padas river has burst. This gorge is situated about $1\frac{3}{4}$ miles from the junction of the Pagalan river; it is 18 yards wide, with nearly perpendicular ferruginous sandstone rocks on each side; above these rocks are stiff slopes for about 400 feet, which culminate in the jungle-clad ranges up to 5,000 feet on either side. In the rocks of the gorge there are holes and fissures in which bees swarm, and the Muruts are watchful to take away the wax and honey before the floods come down. On the right there is a cavern in the rocks, and the popular belief is that this is the home of a dragon that keeps guard at the great gate of the Padas river.

We paddled through the gorge, but could only descend the river for half a mile, as all navigation was found to be impracticable on account of rocky rapids. We could find no traces of gold or other minerals,

although we washed many dishes of gravel-dirt in different parts. The rocks here are all sandstone, weathered black from the combined action of the air and water; these have also laminated bands of iron in places coated with quartz crystals.

There is a peculiar feature about the floods that come down the Upper Padas and Pagalan rivers in consequence of the narrowness of the gorge. When the floods reach this junction, there is hardly any current perceptible in the rising waters, which are blocked up against the mountain range, and form a reservoir covering many square miles. The country appears like a large lake, some three miles wide. The waters rise steadily, but there is no swift rush of waters to make it dangerous. When the flood rises above the flooring of the house, and makes the latter untenable, the inmates betake themselves, with their goods and chattels, to higher ground, where they remain until the flood has subsided. Sometimes the houses stand, and only the roofs are carried away. If a house is found to be floating away, ropes of rattans are made fast to it, and boats tow it to a safe place. I fixed on a spot for a police-station and a market-place in Sandêwar, so that trading with the interior may be carried on with mutual security between the coast people and the aborigines of the interior. The Muruts promised to give the police every assistance. The land is a rich brown detritus, and up the hill-sides of Tonam and the ranges—800 feet above the river-level—may be seen patches of hill padi, sweet potatoes, and Indian corn. The women work at clearing jungle and planting as well as the men. Provisions are very cheap, but the Muruts are improvident, and seldom store sufficient rice for their yearly consumption. Money is not understood. Murut boys drilled holes in the North Borneo copper cents which I gave them, and wore them as necklaces and in their waistbands. All trading is carried on by barter. For four yards of blue drill-cloth, worth 15*d.*, I received 20 lbs. of red rice, which would have cost 3*s.* 2*d.* at Mempakol; also ten fresh eggs for blue drill worth 2½*d.*; 100 cobs Indian corn for red Turkey drill worth 7*d.*; fowls from 2½*d.* to 5*d.* each.

The people have nearly all they want in the way of food, excepting salt. These large rivers yield them fresh-water fish every day. The forests are full of deer, which multiply, as there are no tigers, as in India and in Malay Peninsula, to kill them, and some one of the large household brings in a deer or two every few days to one house. The flesh is dried and smoked, and carried about in baskets as provisions on a journey. They grow their own tobacco, which is dried green, and is smoked by both men and women in huge cigarettes, the covering of which is made of banana leaves. On the sea-coast the cigarette wrappers are made from the young shoots of the Nipa palm. All the tropical fruits are plentiful during the season, and when the rice harvest has been gathered in, the Muruts brew a strong spirit called "burack" from fermented rice which is not boiled. This is the same spirit which intoxicates the Dusuns of

the west coast, but there is this difference between the Muruts and Dusuns: the Murut drunken revelry is confined to the men only; but with the Dusuns I have seen men, women, and children all rolling about, shouting and laughing in their mad orgies.

Many chiefs from Ilagood, Towán, and other parts of the Pagalan river came to see me at Binahi, and they frequently expressed a hope that a European officer would be sent to live among them, so as to put an end to their blood-feuds. They spoke very candidly and cheerfully, through the interpreter, who translated the Murut dialect into Malay to me, telling their grievances, and recounting, with a certain sense of pride in their prowess and valour, the number of heads they had taken in their lives, and the names of their Peluan victims. I explained that the past was passed, and that the British North Borneo Government would not take cognisance of what had taken place when there was no form of government over them, but that in future head-hunting would be treated as murder, and the offenders hanged. They promised to pay annual capitation-tax to government, viz. one dollar for married men and half a dollar for bachelors per annum.

As these wild tribes did not understand either silver or copper coinage, they agreed to pay in kind at the following rates:—150 rattans, valuing the rattans at 1 dollar per 100; or 4 catties (= $5\frac{1}{3}$ lbs. avoirdupois) of guttapercha, valuing the guttapercha at 30 cents a cattie; or 5 catties beeswax, valuing the beeswax at 25 cents a cattie; or 6 gantongs (= 18 lbs. avoirdupois) rice, valuing the rice at 18 cents a gantong. These rates of poll-tax were for married Muruts; one-half of these to be paid by bachelors.

The climate in these valleys that are surrounded by high ranges is very pleasant; very few mosquitoes, no sand-flies, and cool nights.

Two Muruts started off for the sea-coast with a letter from me, and returned after three hours' absence, looking very serious. They said they had walked for upwards of an hour when a deer ran across a padi-field in front of them, and as this was a bad omen when starting on a journey, they returned. The superstitious fears common to savages prevail amongst all these tribes. A bird flying in an un-toward direction, a fowl with its head chopped off flapping on the ground towards a certain point, blood shed by some simple accident on a journey, the cry of birds, such as argus pheasants, hawks, or wood-pigeons—all these are omens, good or bad, according to fixed laws handed down by tradition, presaging failure or success either in peaceful journeys or on the war-path.

During many years spent amongst wild tribes, I have found medicines of all sorts, as other travellers in other countries have also experienced, to gain the goodwill of savages. In this country of Sandêwar, Province Dent, the principal complaints were sores, fever, dysentery, and other interior complaints. For sores and wounds,

vaseline and carbohc oil were found to be most beneficial and in great demand; lead and opium pills were efficacious in cases of dysentery. For these remedies I was indebted to Dr. J. H. Walker, Principal Medical Officer of British North Borneo, whose published reports after many years' service in the country testify to the salubrity of the climate.

The crocodiles are very numerous in these fresh-water rivers, and many of the natives are taken by them every year. A large crocodile, 14 feet long, was towed by boat to the bank close to the house of the chief Maharajah Oban, where I was staying. It was shot by a Peluan. There was much joy manifested by the Muruts at its capture, as it had eaten a brother-in-law of the chief. Pieces of the bones and skull were found inside, and brought to the house with a good deal of merriment. A chief who has many wives has usually many brothers-in-law, and he is obliged in a measure to assist or support the latter. The loss, therefore, of a brother-in-law more or less is not only immaterial, but rather a merciful dispensation; and so there was as much joy, feasting, and congratulation as if Maharajah Oban had been presented by one of his wives with a new baby.

Whilst waiting for my messengers to return, who had been sent to summon the chiefs of the Upper Padas to meet me, I visited many of the outlying settlements, making surveys by prismatic compass, and estimated rate of travelling by watch, and the natives everywhere welcomed the "white man." In many of the houses I expressed satisfaction that there were no human heads hanging in the head-chamber; and I was informed that the people had cut them down, as they had heard that I would not enter or take a meal in a house where they were to be seen.

The Upper Padas river near its junction with the Pagalan river is 70 yards wide, with a strong current. Having met some Sarawak Dyaks, who were looking for guttapercha and camphor, I bought their boat, and accompanied by fifty followers ascended the Upper Padas. The party was composed of one Punjabi sergeant, three Dyak constables, and the rest were Muruts, Besayahs, Brunei Malays, and traders. For the first few miles there were small plots of rice, sweet potatoes, and Indian corn on each side, and then cultivation ceases and tangled masses of rattans line the banks. Many trees are seen with branches bowed down with the weight of bees' nests and large cakes of yellow beeswax. The absence of cultivation near the margins of large rivers is a common feature in North Borneo; the fact is, the people prefer making settlements at the head of small streamlets, where heavy floods cannot reach them.

The first night we camped on a large deposit of rolled stones in the river; and I shot a "kijang," a small spotted deer, quite a feast for the party. The night was cold and foggy, and the mosquitoes very busy.

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A herd of wild cattle (Malay *tumbadow*, scientific name *Bos Gaurus*) had trodden down a cane-brake. These cattle are large, of a brown colour, with yellow legs, pretty heads, and handsome horns. They are sometimes speared, but the natives do not as a rule like to approach them.

The next day we found some trees black with some thousands of huge bats; and as the Muruts in the boats said that they valued them as articles of food, I shot a few—some of them measured $4\frac{1}{2}$ feet from tip to tip of wings.

At the next bend of the river we were hailed by a party of Peluans who had heard the shots, but they would not approach us for some time. At last they mustered courage, keeping well behind trees for fear of being fired at, and asked what we were doing in their country. The interpreter told them that there was a white man on board who was going to visit the chief Si Dolamit. They did not believe this, and said we were only deceiving them, and that they had assembled in large numbers. They then began hacking away with their swords at branches, this being their form of oath. They called out that if we took the same oath, by chopping off branches, they would come to us; but a sudden suspicion crossed them that we were playing false, and they suddenly called out, "We are off!" I took off my coat and walked out on the sandbank, showing, with my arms out, that I was not armed; but they made off all the same. This shows the distrust that exists between the Muruts and the Peluans, and that a mere wordy peace-making between them will not suffice.

We paddled on up-stream and arrived at Sungei Api, where the cliffs are about 60 feet high. The exposed section of the river-bank showed red earth from the surface to a depth of 10 feet, then 25 feet deep of yellow clay resting on horizontal layers of blue fire-clay and sand. No houses; fruit-trees plentiful. The main course of the Padas is now north and south, and it is said to take its rise in the Gura mountains, which are also reported to feed the Lawas, Trusan, and Limbang rivers.

No places of importance were passed until the river Padas suddenly narrowed to about 40 yards, with deep water in places, and hardly any perceptible current, the river being nearly on a level. It is dammed by some large sandstone rocks, one of which has all the shape of a dog's head. These rocks are called "Batu Uko," i. e. the Dog Rocks.

The Muruts, Peluans, and other savages have many interesting legends; and the following legend regarding the formation of the "Dog Rocks" may be taken as a sample of their folk-lore:—

Legend of the Dog Rocks:—There were formerly two houses, one on each bank of the river, at this place. The rocky steps leading up the bank to the houses are quite plain at this date. The house on the north bank had no fire, nor any means of lighting one, so the inmates called out to the people of the opposite bank to send them some. The latter said, "There is a great flood rushing by between us; how can we send

the fire?" The others called out in fun, "Oh! fasten it to a fowl." So the fire-stick was fastened to the fowl; but it set fire to the feathers of the fowl, which dropped in the rushing waters and was drowned. Then the people of the north bank laughed in derision at the simplicity of those people, and called out again, saying, "As you managed so badly with the fowl, fasten the fire-stick to a dog on the back of its neck." This was done, and the dog was lowered into the flood. Now the great spirit of the river was angry at the levity of these people, the more so as the mighty flood was rolling by, carrying with impetuous force the giant trees of the forest, and it was impossible for a poor dog to swim across such a raging torrent. As the dog was carried away to destruction, the people laughed louder than ever, when suddenly the dog, the houses, and the people, excepting a very pretty girl, were all turned into stone. The pretty girl was spared. Alas! for a few minutes only, owing to her covetousness. There was a brass gong on which she used to play, and she thought she would take it away, and run away. She lifted the gong to her shoulder, but had not moved many paces when she also was turned into stone. A rock detached from the house represents her transformation. A huge boulder jutting out from the bank is a very fair model of a dog's head.

On the night of the 21st June, 1885, we were camped on the bank of the Padas river at Api. There were fifty traders (Murut), constables, and followers in the party, and we were waiting for the arrival of the Peluan chiefs, especially Si Dolas, to come and make peace with the Muruts.

I had turned into my mosquito curtain, around which the sentry was walking his rounds, when a Peluan chief of the west bank, named Si Dolamit, a fine able-bodied fellow, arrived with ten followers. All carried spears, blow-pipes, and sheaths of poisoned arrows, and they had two rifles, muzzle-loading Enfields, stamped "Tower 1867." He brought me presents of water-melons and bananas, for which he received cloth and brass wire. His neck was encircled by many necklaces of coloured beads, and other bands of them passed round his head and forehead. He evinced great interest in my guns, as he is a great deer-hunter, and says he cannot live without venison or wild pork every day.

Another Peluan chief, named Si Ongandey, a bold warlike-looking fellow, carrying his blow-pipe and spear as though he was afraid of no man, arrived to take part in the peace-making. He wore numerous bead necklaces, and on his breast hung a number of charms, birds' beaks, shells, bears' claws, teeth, and bones of vampire-bats; he had fifteen followers and a few women and girls. The latter were afraid to come across the river, until Si Dolamit sent two of his wives across in my boat to fetch them. It should be noted that the bringing of women is a sure sign of peaceful intents among wild tribes.

Then the ceremony of taking oaths of peace and friendship com-

menced. The site on the high bank of the river under dark-foliaged fruit-trees was picturesque. The North Borneo flag was hoisted on a staff beneath a wide-spreading "langsats" tree, the clusters of its luxuriant fruit hanging like huge bunches of grapes. Behind the flag-staff stood three constables, and I stood in front with a few chiefs and traders; the Muruts sat cross-legged on the grass on one side, facing their ancient enemies the Peluans.

Then the Murut chiefs commenced taking the oath by chopping at a stick or sapling with great vigour, repeating the words of the oath in a loud voice, until towards the end they appeared quite excited. A Murut chief took the oath and then a Peluan, turn about, and as each oath takes six or seven minutes to repeat, it took a long time. The following is a *précis* of the form of oath, each mark + denoting a chop at the stick, until it is finally chopped up into little bits.

Form of Murut and Peluan oath:—"I follow the authority of the Government of the British North Borneo Company +. The Sandéwar + and the Peluan + people are now of one mind +. If I kill a Sandéwar (if a Peluan is swearing) man + when I go to the water may I not be able to drink + when I go to the jungle may I not be able to eat + may my father die + may my mother die + may my wife die + may my children die + may my house be burned down + may the padi not grow in my fields + may a crocodile swallow me + may the eggs never be hatched in my fowl-house + may I never catch a fish when I go fishing + may my life be ended + I cut this stick + as if I was chopping my own head off + the Great Spirit is my witness + may this stick grow into life again + if ever I kill or take any more heads + and I follow all the customs of the British North Borneo Company + and I take this oath with a sincere heart + and I shall pay the poll-tax of the Company +."

As the North Borneo flag fluttered above, these chiefs frequently pointed at it, and when the swearing of both Muruts and Peluans for everlasting peace was concluded all were friends and "long-lost brothers." The Peluan savages crowded round me begging for cloth, beads, salt, and brass wire, of which I had brought a small quantity. Before parting with any of my presents, I referred them to the traders who had accompanied me, explaining that my duties were purely Government work, that I had nothing to do with trade, and that all trading was left by Government to private enterprises. The traders had first a good time of it, and I subsequently made presents of all the coast products I had brought. The traders received guttapercha, camphor, beeswax, and indiarubber in barter for a few yards of cloth or brass wire, or parcels of coloured beads. Then the coast Muruts bartered salt for poisoned arrows, and as the Peluans opened their sheaths of poisoned barbs, there was much critical choosing and picking out of the best envenomed arrows. The Peluans are very clever at mixing the deadly

poisonous sap of the famous "epoh" trees, and their arrows were consequently in great request by the Muruts. The Peluan chief Si Ongandey very candidly told the mob, that it was fortunate that the "white man" had come with the Muruts; for if any of them had landed yesterday on the east bank of the Padas river, he would have had some of their heads; but, he added in a patronising way, "that Muruts can now enter my country with safety."

An amusing incident, illustrating the character of the people, took place whilst the Murut chief Panglima Prang (i. e. commander-in-chief) was taking the oath. He was chopping away at the stick, repeating the oath in a loud voice, when he came to the part "may my wife die" (if ever I take another head), when he stopped short and exclaimed with a grim smile, "I have no wife, you Peluans cut off her head long ago;" and the Peluans gave a shout of laughter in which he joined, the crowd around rolling about on the grass convulsed with merriment. This would denote that the retaliation in taking heads does not proceed from a spirit of affection for the departed relatives, but rather from a sense of revenge or *vendetta*, engendered by a feeling that shame has been cast upon the tribe by losing one of the family at the hands of an enemy.

The object of this journey in opening up the interior for trade was in some measure accomplished, and I returned to the sea-coast, crossing the range again at an altitude of 3200 feet. Many of these untutored savages have since come to Mempakol, the principal seaport of Province Dent; but much still remains to be accomplished in drawing to the sea-coast the rich products of the vast interior.

In concluding this paper, I would wish to mention that I have been describing more especially those tribes that inhabit the interior of British North Borneo.

Since the Company took over this vast extent of country in 1881, the presence of British officers carrying out a judicious form of government has put an end to individual acts of oppression among the sea-coast tribes, without in any way interfering with the personal freedom of the sons of the soil. They come to us for justice and protection, and we have every reason to hope that the inland tribes will in time follow their example, and learn to appreciate the blessings of civilisation under the magic of a Royal Charter.

In introducing the foregoing paper:—

The PRESIDENT said the paper was an account of explorations made in North Borneo by Mr. Daly, who had been employed for nearly five years under the British North Borneo Company, as one of their district administrators. The paper was of very considerable interest, and threw light on a practically unknown part of the world. In fact it might be said that, with the exception of part of Africa, Borneo and New Guinea were the two countries in which more geographical work remained to be done than in any other.

After the paper :—

Sir RUTHERFORD ALCOCK said Borneo was the great central island of the Eastern Archipelago. It was the largest island in the world, except, perhaps, New Guinea, and its history was both interesting and instructive. Exploring in an unknown country under the tropics was no holiday work. Mr. Daly had not only shown care, zeal, and industry in carrying out the chief object of his mission, which was to get some influence over the natives, but being a surveyor and a fair geologist, he had obtained useful information which was of geographical interest. The region he had travelled through was entirely virgin ground, having never previously been trodden by white men, and not many white men would follow him if they had to undergo the same vicissitudes as Mr. Daly did. The Eastern Archipelago had been the great scene of battle between all the European powers—Portugal, Spain, Holland, England. Strange to say, it was the spices to which so much value was attached. Borneo was once a very flourishing group of kingdoms, and Brunei, which now numbered only a few huts, formerly had 2000 houses and 25,000 inhabitants. There was then a flourishing trade between China, Japan, and North Borneo. The natives were then a fairly industrious race, but the Portuguese and the Spaniards, and afterwards the Dutch, were so bent upon keeping all the sources of wealth to themselves, that they used to burn or otherwise destroy the cloves and nutmegs which they did not want. The Spaniards compelled the natives not only to sell their goods to them at their own price, but to send to Manila goods that were fitted only for the Chinese. The consequence was, the trade fell off, and the native chiefs, seeing they could not trade to advantage, took to piracy and head-hunting. Some retribution was owing to them, and the British North Borneo Company was engaged in a work which might in some way redress the balance. It was hoped that the natives would be brought back to pursuits of industry and the cultivation of the soil. Piracy was almost a thing of the past, and he trusted that in a very few years North Borneo would be restored to the flourishing condition in which it was a century and a half ago. Of course the officers of the Company travelled for objects of administration, but they had taken great pains and trouble to obtain information as to the state of the interior. In North Borneo there were ranges of high mountains, many fine rivers, and great sago swamps. It possessed some of the richest and most fertile soils in the Eastern Archipelago. There seemed to be nothing that grew in the tropics that would not grow there; and he hoped that in a few years the blessings of civilisation would be realised by the natives in consequence of the work of the Company.

Mr. TREACHER (Governor of British North Borneo) said he had known Northern Borneo for seventeen years. The paper which had just been read conveyed a faithful impression of the simple, amusing, though occasionally truculent, interior tribes, and the difficulties to be faced in reaching them. The members would, no doubt, concur with him in thinking that the climate was a healthy one for a tropical country, having regard to the healthy and hearty appearance of Mr. Daly after five years' such work there. It was not a climate in which the white man could, as a rule, perform hard work out in the open, and the superabundant unemployed of London would have no chance in Borneo. The actual outdoor labour must be left to Chinese (who were the best possible colonists for such a country, whether they were regarded as labourers or as capitalists and traders) and to the natives of India and Borneo. In the interests of North Borneo, of the European capitalists who were investing in land there, and of the overpopulated districts of India, it was to be hoped that the Indian Government would shortly see their way to sanctioning Coolie immigration into Borneo, as they had recently done in the case of the native states of the Malay Peninsula. For tobacco-growing, which was the principal crop at present cultivated by Europeans, Chinese labour was probably the

best, as it was work which called for both physical strength and intelligence, and the labour was paid for entirely by contract : each Chinaman having a small portion of land assigned to him, on which he sowed the seeds given him, bringing the crop, when ripe, to the manager for sale, the price varying according to the quality of the leaf. For such cultivation as coffee and tea, requiring much manual labour, Borneo would be somewhat handicapped in the competition with Ceylon and the densely-inhabited parts of Java, unless cheap labour could be obtained from India. The climate and soil had been found to be especially suitable for the growth of tobacco ; and from experiments which had been made, it would seem that the temperature and the rainfall—two elements which had to be quite as much considered as the richness of the soil—made Borneo suitable for the growth of almost all tropical products. The kind of tobacco grown was not the cheap stuff ordinarily used for stuffing cigars or pipe-smoking, but the very thin, delicate, and elastic kind which was used for wrapping cigars, and which commanded a high price. It was the same as that grown in Sumatra by tobacco companies, which year after year paid dividends of 100 per cent. or more. In Borneo the cultivation was almost entirely in the hands of Dutch and Germans, and as every now and then the British public talked of the congestion of capital and the want of outlets, he could not understand why they did not send out to Borneo, and endeavour to participate in these alluring dividends. Perhaps they would in time. Tobacco-growing was no new thing in Borneo, the natives having grown considerable quantities for years past on the west coast. When he said that the climate was healthy he did not mean that all parts were equally so. The town of Sandakan, the capital, for instance, was certainly healthy for a tropical country, but when a new station was opened on virgin soil, there was, and always would be, a very considerable amount of fever ; and, as a rule, the richer the soil the greater the amount of sickness. He thought he was right in saying that amongst all the Company's European officers only one death could be entirely attributed to climate. He supposed that most present had a general idea of the objects and position of the British North Borneo Company, but he had often been amused by questions that had been put to him with regard to it. When he was first appointed Governor he was asked by one gentleman, "Why have you been selected? You cannot plant coffee, can you?" An Oxford Don supposed he was going out to bully the poor natives, or form them into slave-gangs, and make them work for nothing on the shareholders' plantations. Another gentleman, who should have known better, set about the report that Indian warriors, Sikhs, had been hired to fight the natives, who were then compelled to buy Manchester goods at extortionate prices. He scarcely need say that there was no element of truth in any of these suppositions. The Company by its Royal Charter had the right to plant and to trade if it chose, as well as govern ; but in this differing from the old East India Company, it at an early stage resolved to exercise its governing powers only, and to facilitate in every way possible the legitimate operations of traders and planters, who need not fear any Government competition. Trade was free to all flags. Hardly any trouble had been had with the natives. They were not numerous, considering the size of the country, and it had always been found that when they understood the objects of the Company, and the mode of government, they welcomed its representatives. Some of the tribes had had to be protected from head-hunting incursions by others, and once or twice authority had had to be asserted over tribes who had been led away by the tales of persons who were averse to any form of good government, such as were to be found in every country. The whole of Borneo was now under European domination—the Dutch holding by far the greater part, and England, through Rajah Brooke and the British North Borneo Company, the remainder, with the exception of a very small portion belonging to the Sultan of Brunei, who appeared to be in a somewhat sickly

state, wedged in between the boundaries of Sarawak and British North Borneo. The Dutch, for reasons best known to themselves, were taking no steps to encourage the opening of their portion of the island. Sarawak was flourishing under the rule of Rajah Brooke, and the last reports from British North Borneo showed, in the estimates for 1888, a surplus of revenue over expenditure, a result which must be considered most satisfactory, seeing that it was only in 1881 that the Charter was granted to the Company. In concluding his remarks he wished to mention Lieut. Wittl, the Company's first explorer. He was an intrepid traveller and able observer, and lost his life in the service of the Company. He would also point out that though he had only alluded to the tobacco interest, European capital was also invested in Borneo in mining and the timber trade, and he hoped that the large deposits of guano in the wonderful caves would also be worked by European capital.

Sir RAWSON RAWSON asked Mr. Daly to give some description of the character and capabilities of the harbour of Sandakan.

Mr. DALY said the harbour of Sandakan, the headquarters of the Government, was by far the most important in British North Borneo. Seventeen rivers and streams emptied themselves into it. There was 26 feet of water on the bar at low-water spring tides, so that most vessels could enter with safety. Alongside of the jetty there was 22 feet of water. The town is situated on the north side of the bay at the base of some steep cliffs. Especial care was given at the first to the laying out of roads on proper gradients. The dimensions of the allotments were 33 feet of frontage by a depth of 66 feet. The upset price at auction was 16 dollars, and the annual quit-rent was 50 cents on each allotment. The principal warehouses and shops—some of them of brick—were built on piles over water; private houses dotted the slopes of a valley. The town was easily drained, and there was a permanent supply of pure fresh water running all the year round. The place was remarkably healthy. The natives had increased considerably in numbers, and the trade had greatly developed during the last six years. Speaking from memory, the population was composed, in round numbers, of 3000 Chinese, 600 Malays, 300 Sulus, 500 of native and other nationalities, and 30 Europeans. The harbour was about 15 miles in length and about eight miles in width. The Gomanton birds'-nests caves were 12 miles distant by path from the harbour. Excellent tobacco was grown at Suan Lambah on the south side, and realised a high price in Amsterdam. Around the Segaliud and other rivers the country is famous for its timber, especially for the ironwood known as "bilian," for which there is an export trade to China. When he left Sandakan in June last, there were three or four ships lading with timber for China and Australia. Government House stands on a commanding eminence, and among other buildings may be mentioned the Government offices, jail, police-quarters, hospital, two hotels, and the club.

The PRESIDENT proposed a vote of thanks to Mr. Daly. Whatever might be the prospects of the North Borneo Company in the way of extending commerce and civilisation, they certainly had a fine field for geography. Considering that the President of the Company had been President of the Royal Geographical Society, and that he was still a member of the Council, it would be a virtuous act on his part to stimulate the officers of the Government of North Borneo to carry out geographical exploration as far as possible. No doubt there were great difficulties in the way, but that should not prevent efforts being made to thoroughly explore the country. Even from the point of view of the Company's interest, the best thing that could happen to it would be to obtain a thorough knowledge of the resources of the country. The Geographical Society would be very happy to assist in the publication of any information which was obtained by the Company's officers.

MAP OF BRITISH NORTH BORNEO

Compiled from the Admiralty Charts and the
Surveys and Explorations of

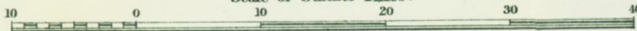
Messrs F. X. Witt, W. B. Pryer, F. Hatton, H. J. Walker & D. D. Daly

To illustrate the Paper of Mr Daly

Explanations.

Bandar	Town	Kwala	Mouth of River
Batu	Rock	Labuan	Anchorage
Besar	Large	Merah	Red
Bukit, Bod	Hill	Pulo	Island
Danau	Lake	Sungei	River
Gunong	Mountain	Tanjong	Point or Cape
Kawpong	Village	Telok	Bay
Keichil	Small	Trusan	Passage or Channel

Scale of Statute Miles.



7°

6°

C H I N A

S E A







Keenapoussan I.

Pometiken I.

Bintoot I.

Bohan I.

Lapun Lapun I.

Tavo-tavo

Mandah I.

Pt Banga

M Ledan

Cagayan Sulu (Spanish)

Tando Tao

Lake Singau

Mulegee I^s

S U L U

Mambahenauhan I.

Lankayan I.

S E A

Sibaung I.

Flying Fish Rk

Lihiman I.

Boaan I.

Siligaan I.

Grt. Bakkungan I.

Lit. Bakkungan I.

Gulisaan I.

Black Rock

White Rock

Low I.

Tampassne Pt

Fikus I.

Gison Pt

Gusong I^s

Usucan I.

Densely wooded

Sabine R.

Sibayo R.

Sapulock R.

Kadei R.

Sibang R.

Timbang I.

Ningcala I.

Sekong B.

Manondang R.

Sapungun R.

Manuputut R.

Swamp

Manamban R.

Manamban R.

Manamban R.

Manamban R.

Manamban R.

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Manamban R.

Manamban R.

Manamban R.

Manamban R.

Obilde Rock

Laurel Rock

Baguan I.

Gubbins Rock

Taganac I.

Ninuyon Laut I.

M Derat I.

SANDAKAN MARBOUR

B. Mulantah

Bai I.

Bayan Chanon

Timbang I.

Ningcala I.

Sekong B.

Manondang R.

Sapungun R.

Manuputut R.

Swamp

Manamban R.

Manamban R.

Manamban R.

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Manamban R.

Manamban R.

Manamban R.

Low Land dense jungle and forest

Kinabatangan Hills

Malapi Confusion Hills

Notch Hill 903

Temegang

White Hill

Gold Hill

Ragged Hill 1455

Lepping R.

Batu Tatak

Tide ends

Segama River

Segama River

Segama River

Segama River

Segama River

Segama River

Segama River

Segama River

Segama River

Segama River

Segama River

Segama River

Segama River

Nymph Reef

Lagoon Point

Driftwood Pt

Mamahuan R.

Segama River

Segama River

Segama River

Segama River

Segama River

Segama River

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Segama River

Segama River

Segama River

Segama River

Segama River

Segama River

Pegasus Reef

Maggie Bank

Gem Reef

Rene Shoal

Tangua Bay

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Harrop

Sunday B^{ks}

Maggie Bank

Gem Reef

Rene Shoal

Tangua Bay

Harrop

Harrop

Harrop

Harrop

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Discovery R.
Low land swamp & jungle
Hog Point
Dent Haven







