

his starting-point. Defeated, by the opposition of the governor of Kan-su, in his first attempt to reach Lob-nor Lake by way of Lan-chow-fu, he had obtained, by diplomatic intervention, a more direct authorisation from the Chinese Government, and made a fresh start in July last for Lake Koko-Nor, intending thence to take the route by Sining and Tsaidam Plain; but whether his ultimate destination is Lhasa or Lob-nor is not clear from the reports we have received.

Additions to our geographical knowledge have been made by the surveying officers who accompanied the different columns during the recent campaign in Afghanistan. The results will no doubt be in due course made known in the form of a revised general map of the country, by General Walker; meantime it may be recorded that descriptive papers of much interest and value have been received by us from Captain Holdich and Lieutenant R. C. Temple, relating to the Thal-Chotiali route; from Captain Gerald Martin on the Kurram Valley (published in the October number of our 'Proceedings'); from Captain R. Beavan, on the country between Candahar and Girishk; Lieutenant St. George C. Gore, on the Pishin Valley; Major Campbell, on the Toba Plateau; and Major Malcolm Rogers, on the district of Candahar. Most of these descriptive papers were read in an abridged form at the Geographical Section of the British Association, and abstracts have been given in our 'Proceedings.'

Proceeding from east to west, the last subject I have to notice is the Expedition of Mr. Wilfred Blunt, accompanied by his wife, Lady Anne Blunt, to Central Arabia. The interesting account of their former journey by Lady Anne will be no doubt in the recollection of most of you, and will cause you to look forward to the account of their visit to the region described so eloquently by Palgrave, which Mr. Blunt will, I hope, give us on the 8th of December.

The Paper I have selected for reading this evening is one drawn up by Professor Veth, of Leyden, on the Dutch Expedition to Central Sumatra in 1877-79, of which the learned Professor's son, Mr. D. D. Veth, was a member. It is one of many papers we have in hand which labour under the disadvantage that their authors are not present. The paper will be read by Mr. Markham.

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*The Dutch Expedition to Central Sumatra.\**

By Professor P. J. VETH, Honorary Corresponding Member R.G.S.

(Read at the Evening Meeting, November 10th, 1879.)

If it be allowed "parvis componere magna," a parallel might be drawn between the history of Sumatran and African discovery. In both, the

\* A map of Sumatra, in illustration of this paper, is in preparation, and will be issued with an early number next year.—Ed.

work commenced with maritime exploration and was pushed forward by commercial settlements, through disputes with natives ending in wars, requiring the aid of scientific expeditions for its completion. In both, traffic and politics have opened the way, and made us acquainted with the coasts and more or less extensive adjacent regions; leaving the interior undisclosed until religious zeal and the thirst for knowledge combined to push back the limits of the unknown. Excepting a few tracts of minor extent and importance, the central parts both of the immense continent and of the relatively large island withstood to the last the efforts of the pioneers of civilisation. What, until 1877, the River Congo was to the explorers of Africa, the River Jambi was, until about the same period, to those who take an interest in the fuller geographical knowledge of Sumatra.

English literature may boast of having produced the best and most exhaustive general work on Sumatra, previous to the reduction of the Dutch colonies in the Indian Archipelago by the conquest of Java. Indeed, Marsden's 'History of Sumatra' ranks as high among the authorities for that island as the 'History of Java' by Sir Stamford Raffles does among those for its smaller but more celebrated neighbour. Both these works, however, are now to a certain extent antiquated, as each succeeding year has brought numerous contributions to our knowledge of both these islands. With respect to Sumatra, we have become very much better acquainted with the northern province, owing to the disastrous war which has been raging since 1873, and which still gives little promise of a speedy termination.

In 1843 great part of the Batak country was carefully explored by the celebrated Junghuhn, and a knowledge of its language and literature was afterwards supplied through the travels and studies of the able linguist Neubronner van der Tunk. By the annexation of the Sultanate of Siak to Dutch territory in 1858, moulded in 1873 into the new Residency of the "East Coast of Sumatra," fresh scope was afforded to commercial and agricultural enterprise, and a considerable increase of our knowledge of the country was the natural consequence. With the extensive empire of Menangkabau, in every respect the most interesting part of the island, Marsden was only superficially acquainted. It now forms the government of "West Coast of Sumatra," divided into the Residencies of Tapanuli, Padang, and the Padang Highlands, the first including part of the Batak country and some tracts formerly belonging to Achen.

The protracted war, lasting with brief interruptions from 1821 to 1837, and ending in the conquest of the once famous Empire; the surveys of Beyerinck (1843-47) and Cluysenaer (1873-75); the geognostic researches of the engineers de Greve, Verbeek, and others which led to the discovery, in 1869, of immense deposits of excellent coal near the River Ombilin; the notes of numerous scientific travellers, among

whom the names of Korthals, van Oort, Horner, Muller, Osthoff, Teysman, Cordes, Ludeking and Beccari deserve especial mention — these form the principal steps by which we have gradually acquired a much more accurate knowledge of these parts than anyone could boast of in the beginning of this century.

The Residency of Bencoolen, on the southern part of the west coast, of which the Dutch became masters by cession from England in 1824, has been well studied by Marsden, yet even here our knowledge has since been considerably extended, partly through the researches of British travellers while Raffles was Lieutenant-Governor of Fort Marlborough, partly through those of Dutch officials and tourists, including the comprehensive though superficial survey by Major Steck in 1856, which forms the somewhat frail basis of our present maps.

The Lampong districts, forming the southernmost Residency of Sumatra, were surveyed in quite as superficial a manner by the same officer. But we derive highly interesting information on this country from the travellers Du Bois, Zollinger, Köhler, and Neubronner van der Tunk.

The extensive and celebrated province of Palembang has become infinitely better known since Marsden's time in consequence of the wars carried on between 1819 and 1825 ending in the suppression of the Sultanate, of the subsequent expeditions for pacifying and annexing the semi-independent provinces of the interior, of the surveys of Major Steck and others, and of the contributions to our knowledge by Captain Salmond, Presgrave, Court, de Sturler, Prætorius, Gramberg, Teysman, Wallace, Mohnike, and others.

To the north of Palembang, filling the space between that province and the East Coast Residency, lie the native states of Jambi, Indragiri, and Kampar. The first is considered as an appendage of Palembang, the second as a fief of the Sultan of Lingga, and therefore belonging to the Residency of Rio, and the third as being, to a certain extent, connected with Siak, on which it was formerly dependent. Of this part of Sumatra our knowledge is still very scanty. The Kampar River is almost entirely unknown. Of the Indragiri River (called also higher up the Kuantan River, and in its upper course, through the Padang Highlands, the Ombilin) the middle course is unexplored. Of the Jambi I shall say more presently.

The Dutch Geographical Society, from the date of its foundation in 1873, considered it to be, not its only, but its most important task to fill up gradually the numerous gaps still existing in our knowledge of the Indian Archipelago. As Sumatra has recently engaged much attention on account of the Achenese war, the sudden development of agricultural industry in the East Coast Residencies, and the discovery of the coal-fields of Ombilin, the Society was impressed with the fact that one of the most interesting divisions of the island, though nominally under the

government of Netherlands India, had been left almost entirely unexplored. The Sultanate of Jambi is conterminous, on the west side, with the Padang Highlands and Bencoolen, on the south with Palembang, on the north with the districts dependent on our vassal, the Sultan of Lingga. It is watered by a fine navigable river, which has its source in our own territory, and may possibly be used for the transport of the Ombilin coal. Jambi comprises the inland districts of Pankalan-Jambu,\* Batang-Asei, Limun, Korinchi, Serampeï, and Sungei-Tenang. Some of these districts have excited curiosity by the fame of their natural beauty, their mineral wealth, and the number and industry of their inhabitants. This Sultanate was almost a *terra incognita*, although, in its immediate neighbourhood, the towns on the west coast had long been connected by that symbol of advanced civilisation, the electric telegraph.

The project of an expedition to Central Sumatra was first started by Colonel Versteeg, at the fifth general meeting of the Society, held at Rotterdam on the 20th of June, 1874. It was warmly commended by Prince Henry of the Netherlands, patron of the Society, and was finally adopted with general approval. The original project was to embrace the whole area watered by the Jambi River (which I will henceforth call by its native name of Batang †-Hari) and its affluents, from their sources to their common embouchure.

In consequence of this resolution, special inquiries were set on foot by the Council, for which the aid of Government was sought and readily granted. The Indian authorities were consulted, and found to be favourable to the expedition, and many interesting documents were forwarded from India, which enabled Colonel Versteeg to submit a more definite plan to the general meeting of the Society which met on December 4th, 1875. It was then decided that the expedition should consist of two sections, one travelling by land, in order to explore the sources of the river, and its affluents in the Padang Highlands; the other making use of a steam launch, or other small craft, to explore the river from its mouth upwards, and to penetrate either by the head river or its affluents, as far as they might be found navigable.

The scheme being so far advanced, the Council resolved to entrust its further management to a committee of five members, which, in the course of 1876, collected the necessary funds for the expedition through private subscriptions and Government aid. The Government not only granted a subsidy, but gave the free use of a new steam launch destined for Indian service, and many other facilities. As soon as the possibility of carrying out the project was ensured, a choice was made from among the numerous candidates who wished to join the expedition. Lieutenant Schouw Santvoort, of the Royal Dutch Navy, was selected as chief of the

\* The name is derived from the Jambu fruit. Pankalan-Jambu is a corruption.

† *Batang* means river.



expedition, and to command the launch. He immediately set to work, with zeal and alacrity, to supervise the equipment, to procure the necessary instruments, and to collect all existing information concerning the region to be explored.

It will be agreeable to the British public to learn that all the existing information respecting the inland districts of Korinchi, Pankalan-Jambu, Serampeï, and Sungei-Tenang was derived from English sources. The notes preserved by Mr. Marsden of a visit to Korinchi by the botanist Campbell, and of two military expeditions commanded by Lieutenant Dare to Serampeï and Sungei-Tenang, and the narrative of a voyage from Moko-Moko to Korinchi and Pankalan-Jambu by Thomas Barnes, printed in part in the 'Malayan Miscellanies,' contained the only trustworthy notices of these interesting regions. It was, however, a great drawback that the publication of Barnes's voyage had been left imperfect by the suspension of the publication of the 'Malayan Miscellanies,' and that even the map of this journey was wanting. The Dutch Geographical Society, therefore, is greatly obliged to Mr. Clements Markham, whose kindness procured it a complete copy of Barnes's journey from the original manuscript, and the accompanying map. This has proved to be of considerable value, for it has served partially to fill up the gaps left in the work of the Sumatra expedition, owing to the hostile attitude of the natives of the interior, which, in some instances, impeded its progress, and in others led to prohibitions on the part of the Government, anxious lest it should be involved in new difficulties while the war with Achen was still raging.

Lieutenant Schouw Santvoort had, as his colleagues, Mr. Makkink in the capacity of mate, and Mr. Hermans as machinist. The rest of the crew, consisting of native sailors and stokers, were to be ready on his arrival at Batavia; whither the launch was conveyed free, of course, by the Netherlands Steam Navigation Company. The other members of the expedition were Mr. D. D. Veth a civil engineer, and Mr. J. F. Snelleman the naturalist. As chief of the second section it was thought advisable to select some one who was well acquainted with the language and customs of the country, and, on the recommendation of the Governor of "Sumatra West Coast," Mr. A. L. van Hasselt was appointed. He was to join his colleagues at Padang.

The party started from the Helder on January 13th, 1877, and arrived at Padang on February 23rd, where they were received by van Hasselt. Schouw Santvoort, though bound for Batavia in order to take command of the steam launch, disembarked with his colleagues at Padang, sending on the mate and machinist to take charge of the vessel during his absence. Before leaving Amsterdam he had asked and obtained permission from the committee to inaugurate the expedition by making a journey across Sumatra from Padang to Jambi, unaccompanied by any European, provided that the Governor of "Sumatra West Coast"

considered it feasible. After having accomplished this journey he was to proceed from Jambi to Batavia for the launch, with which he was to continue the exploration of the river. As the Governor was willing to promote this plan, Schouw Santvoort resolved to adhere to it.

It will be well here to give a slight sketch of the political condition of Central Sumatra, which in itself was one of the most important discoveries made by the expedition.

The Sultanate of Jambi was, in former times, immediately conterminous with the empire of Menangkabau. The exact limits cannot now, and probably never could have been, determined with accuracy, as the colonists from Menangkabau gradually multiplied in the adjoining uninhabited wilds. At all events, it is certain that the district called Rantan-di-Baroeh or Rantan-Batang-Hari (extending along both sides of the great river down from the point at which it leaves our present territory near Gasing, to Tanjung and Simalidu, the first villages of the Jambi territory) belonged to Menangkabau. To the south of the bend northwards, made by the Batang-Hari at a little distance from Gasing, some other Menangkabau communities are to be found, in the district now called Tebo and Bunga, partly on the banks of the Yujuan, an affluent of the great river, and partly about the sources of the Batang-Tebo, at the foot of Gunung-Tudjuh, a mountain ridge north-east from the peak of Korinchi.

By the conquest of Menangkabau, in consequence of the Padri wars,\* the whole of the empire was nominally brought under the Dutch dominion. But the nature of a Malay State rather resembles a feudatory republic, composed of a great number of small and semi-independent communities, than a true monarchy. It is held together by the authority of a sultan with little power, and an object rather of veneration than obedience. This was the reason why the Dutch supremacy could only be maintained as far as it was enforced by the strong arm. Petty wars raged in the Padang Highlands until 1845, the territory acknowledging Dutch authority being gradually extended to the present limits of the provinces, and in some directions a little further. But the remote communities belonging to the Rantan-di-Baroeh maintained or relapsed into a dubious independence, differing in degree according to the disposition of the inhabitants and the ambition and energy of their chiefs. The most audacious and most influential of these petty potentates is the Raja of Siguntur, whose residence is situated at the northernmost point of the northern bend of the Batang-Hari. Siguntur, long left to itself, at present affects complete independence, obstinately refuses all connection with the Dutch, and enforces, by its influence, a similar policy in the neighbouring petty States of Pulo-Panjong and Sungei-Kambut. The other small Rantan States,

\* The Padris were a religious sect in Menangkabau, fanatics with doctrines like the Wahabees. Their wars led to Dutch interference 1833-34.

Takang on the Pangéan (the northernmost affluent of the great river) and Lubukh-Ulang-Aling, lying along the Batang-Hari to the south of its union with the Mamun, acknowledge the Dutch supremacy, and are independent rather from neglect on the European, than from presumption on their own side. Sungei-Kunjeit, Indamar, and Tanjang-Alam on the Yujuan are only connected with Dutch government by their hereditary allegiance to the chief of Sungei-Pagu, who holds in that division the post of chief native functionary.\* Talan and Sungei-Liman, at the foot of the Gunung-Tudjuh, are very little known, but seem to stand in a similar relation to the native chief of Pasimpei, in the adjacent division of the XII. Kotas.

In 1834 the Dutch Government made a contract with the State of Jambi, the sultan at that time seeking the protection of a stronger power against the turbulence of his own vassals. But his successor, who ascended the throne in 1855, refused allegiance to his European masters. After various warnings an expedition was sent in 1858, which stormed the Kraton and drove out the sultan. His uncle, the present Sultan Ahmed, was then set up in his place. The former sultan, generally called Sultan Taha, fled into the interior, and was not pursued. The Dutch, content to be masters of the coast, by establishing a post at Jambi, and appointing a Political Agent to the new sultan's court, and receivers of duties at the entrances of the principal rivers, patched up a government for part of the kingdom only. Sultan Taha was left unmolested, and the chiefs of the interior were allowed to shift for themselves.

At the time when the expedition was equipped, the real relation in which the two sultans of Jambi stood to each other was entirely unknown. Thanks to the knowledge acquired by the expedition, we now learn that the old sultan established himself at Telukh-Rendah on the Batang-Hari, near the mouth of the Tahir; that his authority, as far as it ever went, is still acknowledged by all the chiefs along the Batang-Hari and its affluents down to the mouth of the Tambesi; that the present sultan, unable to enforce their obedience, acquiesces in this state of things and does not even pretend to exert any influence beyond the point indicated; and that Sultan Taha, as was to be expected, bears a mortal hatred to the Europeans who strove to deprive him of his power, and spares no means to excite the different chiefs against any person who may be considered as an agent of the Dutch Government.

This then was the reason why the expedition under Mr. van Hasselt was refused entrance into the district of Batang-Asei, and was expelled from Limun, and why even the steam launch was impeded in her progress by menaces at Telukh-Benkal on the Batang-Hari, and by actual resistance at Ladang-Panjang on the Tambesi. Our gallant travellers, unaided by any military force or official authority, and clogged by instructions which made it their chief duty not to involve Government in

\* The chief native functionary in every division, or laras, is called Kapala-laras.

any difficulties, were unable to overcome the obstacles thrown in their way.

This is the explanation of the exploration of Central Sumatra having been left imperfect, notwithstanding the most strenuous efforts, and why the blank space on the map, though considerably reduced, has not entirely disappeared. The two sections of the expedition have never been able to join, except in so far as that both van Hasselt and Veth, towards the end of their labours, have visited Mr. Cornelissen, the successor of Schouw Santvoort in the command of the launch, by proceeding from Palembang to Jambi by sea. The distance which separates the two furthest points of the expedition, downwards and upwards, from the mouth of the Mamun to Simalidu, will probably not exceed 40 miles following the windings of the river. The distance from Ladang-Panjang on the Tambesi, the utmost point reached by the launch, and Temiang on the River Limun (connected with the Tambesi through the Batang-Asei), the utmost point reached in this direction by van Hasselt and Veth, will not be much more than 30 miles.

I now pass to a brief account of the different routes and stations of the travellers, beginning with Schouw Santvoort's journey across the island.

Schouw Santvoort left Padang towards the end of March, 1877, proceeding by the shortest way to Bedar-Alam in the XII. Kotas, where he was joined by Tuan Ku di Sembah, the native chief (Kapala-laras) of Sungei-Panu, whom Government had pointed out as the fittest person to accompany him on account of his credit with the Menangkabau chiefs on the Yujian. On April 4th he crossed the Sungei-Ekem, forming the frontier between the Padang Highlands and the Tebo and Bunga district. Following the course of the Yujian, he crossed the territory of Sungei-Kunjeit, Indamar, and Tanjang-Alam, until then entirely unknown, reaching the Jambi territory on the 10th. At Rantan Ikin (the head village of a chief, with the title of Tumenggung, dependent on Jambi), he was left by his companion and most of his followers. But the Tumenggung, whose good opinion he was so fortunate as to gain, allowed him to equip a boat, and furnished him with an escort. Though generally the object of suspicion and ill-will, he had hitherto overcome all difficulties by calm and prudent conduct. But on reaching the point of the junction between the Yujian with the Batang-Hari at Telukh-Kaya-Putih, and so entering the region under the immediate sway of Sultan Taha, on the 13th, he was exposed to actual danger, which he only eluded by proceeding in the most unostentatious and clandestine way possible. On the 17th he reached Dusun-Tengah, the capital of Sultan Ahmed, but at once rowed on to Jambi, to meet the Political Agent, Mr. Niesen, the chief representative of Government in those parts, who received him with the greatest cordiality. On the 20th he continued the journey to Palembang, following an unusual route, partly by land



and partly by water, and reaching the capital on the 27th, just in time to embark in the mail steamer, arriving at Batavia on the 29th.

The amount of information collected by Schouw Santvoort during this rapid and perilous journey is truly astonishing, and all subsequent experience has tended to confirm the correctness of the views he formed respecting the state of the country.

On June 17th, Schouw Santvoort was back at Jambi with the steam launch completely equipped, but as the mate, with the instruments, could not arrive until the 25th of July, he was unable to enter upon his regular work at first. Nevertheless, his time was most usefully employed in visiting the sultan and other chiefs, in collecting information, in trying the qualities of his vessel, and in various excursions to the settlements at Saba and Muara-Kompeh, to the lakes in the vicinity of Dusun-Tengah, and to some Hindu antiquities at Muara-Jambi. After the arrival of the mate, he was still detained some weeks at Jambi by a series of little accidents very trying to his patience, and also by the unusually low level of the water in the Batang-Hari, which lasted through the whole of the dry season of 1877. However, this was favourable for the survey of the lower part of the river, which was accordingly executed with great accuracy. It proved impossible to ascend higher up than Dusun-Kuab, only a little above Sultan Ahmed's residence of Dusun-Tengah. Under these untoward circumstances, the draught of the launch proved to be too much for the service required of her. At the same time the reports as to the state of feeling in the interior, and the disposition of Sultan Taha, who was highly incensed at the voyage stealthily made by a European across his dominions, became more and more alarming. Even Sultan Ahmed began to tremble for his safety, and implored the aid of the Political Agent. That officer adopted measures which induced Sultan Taha to seek greater security by flying up the inaccessible Tahir River.

Meanwhile, Schouw Santvoort, despairing of being able to proceed with the survey of the Batang-Hari before the setting-in of the monsoon, resolved to go by sea to the mouth of the Tonghal, a river to the north of the Batang-Hari, and to explore it as high up as possible. With this object in view, he left Jambi on October 29th, reaching the mouth of the Tonghal on November 1st. On the 3rd he arrived at Tungung-Puchung, where, finding his progress obstructed by heavy trunks under water, he was obliged to turn back. On the 7th he was again in the mouth of the Batang-Hari. Here his heart was gladdened by the news that an understanding between Sultan Ahmed and the Pangéran Ratoe (Crown Prince), who had hitherto taken the side of the Sultan Taha, had considerably improved the prospects of his intended voyage up the river, and that the early rains promised a speedy rising of the waters.

He was now animated by the most sanguine expectations. Yet the rising came on very slowly, and he had not been able to make a new trial, when a sudden and entirely unexpected death overtook him. He

had passed the evening of November 22nd cheerfully with the family of Mr. Niesen. In the morning of the 23rd he was found dead in his bed, without any sign of pain or contortion, and in the attitude of the most tranquil sleep.

Meanwhile, the other travellers, under the able guidance of Mr. van Hasselt, after some stay at Padang, and a tour to the Fort-de-Kock, with the view of making some arrangements with the Resident of the Padang Highlands, began the survey of the southern division of that province, known by the name of IX. and XIII. Kotas, and embracing the subdivisions of Solok, Supayang, Lolo, and Sungei-Panu. They arrived at Solok on April 2nd, and, after due preparation, proceeded on the 15th to Supayang, which place they had chosen for their first station. Their other successive stations were at Silago, Sijungjung, Alahan-Panjang, and Muara-Labu; their head-quarters in the last visited district of the XII. Kotas being divided between Lubukh-Gadang and Bedar-Alam.

Starting from these different stations, as so many centres of operations, Veth surveyed the whole of the IX. and XIII. Kotas, making excursions on foot or on horseback through the wildest and most desolate, as well as through the most populous and cultivated tracts, trying by boat the navigability of every affluent of the Batang-Hari, taking photographs of every interesting site, collecting geological specimens, keeping a meteorological journal, and climbing the two highest and most remarkable mountains in the country. Both these mountains are volcanoes, not entirely extinct, namely Mount Talang, near Alahan-Panjang, distinguished by its beautiful cluster of lakes, and the never-before ascended peak of Korinchi, measuring about 3600 metres (11,820 feet), and probably the third or fourth mountain in height in the whole archipelago, New Guinea excepted.\*

Though prevented by the hostile demonstrations of the Raja of Siguntur, and the subsequent interdict of Government from thoroughly exploring the Rantan-di-Baroeh, and taking a view of the Menangkabau communities in Tebo and Bunga, Mr. Veth contrived to visit the friendly Kota of Takung, to ascend Mount Sula to the north of Siguntur, to navigate the Batang-Hari from the mouth of the Pottar to that of the Mamun, and afterwards from Gasing to the mouth of the Pottar, all places situated beyond the actual limits of Dutch territory. By these means he ascertained the course and navigability of the Batang-Hari from Gasing to Siguntur. He also discovered the extent of its northern bend along our frontier. He was the first to discover this bend, all preceding maps representing this river as flowing from Gasing directly eastward. The circumstance of this bend bringing the river so much nearer to the coal-field on the Ombilin, induced him to

\* The peak of Korinchi seems to be surpassed in height by Gunong Rinjani on Lombok, Gunong Semeru in Java, and perhaps Gunong Kinabalu in Borneo.

explore the intervening country and part of the River Kuantan (as the Ombilin is called in its middle course). He also wished to trace the direction in which a railway might be constructed, for bringing the coal to the river. The coal would be of much greater value if brought down to the east coast than to any part of the west coast, on account of the vicinity of Singapore and Batavia. The Batang-Hari, too, is probably more fit for the conveyance of the mineral than the Ombilin.

Mr. Veth, being prohibited by the Government from entering Korinchi, obtained a view of that interesting valley, with its lake and surrounding mountains, from the top of the peak. The knowledge thus acquired, together with oral information diligently collected, tended materially to correct our notions of that country.

In all the more interesting and more dangerous parts of these excursions, the geographer of the expedition had constantly at his side the intelligent chief van Hasselt, to assist him with his experience and knowledge of the language, and with his ready pencil where the opportunity for taking photographs was wanting. At the same time, van Hasselt made most diligent researches with reference to the manners and customs of the inhabitants, their traditions and superstitions, and the state of agriculture. He brought together a large number of documents serving to illustrate the little-known Malay district of Menangkabau, so different from the ordinary Malay, either written or spoken, and an ethnological collection of extraordinary completeness. In forming this collection he was materially assisted by the naturalist Snelleman, who, though generally limiting his excursions to the more immediate neighbourhood of the places chosen as stations, saw his immense zoological and botanical collections constantly increased by the contributions snatched by van Hasselt in the wilds.

After finishing the intended survey of the southern part of the Padang Highlands, our travellers returned to Padang in January 1878, whence they intended to go by sea to Bencoolen, and then to cross the range of mountains separating the Residency of Bencoolen from that of Palembang, in order to make a trial of penetrating into the interior of Jambi from the southern side, avoiding the forbidden districts continuous with the Padang Highlands. The Resident of Palembang expected that they would be favourably received in Limun, and that this would pave the way for their ulterior researches. High hopes were entertained of the success thus promised, but on their arrival at Padang they laboured under considerable depression of spirits, on account of the unpropitious tidings they received from various quarters. From Jambi they had been informed of the sudden death of their friend Schouw Santvoort; from Amsterdam a letter was received containing the recall of Snelleman as a measure of unavoidable economy; from Palembang the Resident intimated that their best course would be to come there by way of Batavia, a hint which they could not neglect as coming from so

high an authority, though contrary to their own views as to the true interests of the expedition.

Snelleman left Padang with the mail steamer to Batavia on January 26th, and reached home on March 9th, the same day on which Lieutenant C. H. Cornelissen of the Dutch Royal Navy, chosen as the successor of the deceased chief of the expedition, left the Helder, bound for Batavia. Van Hasselt and Veth set out for Batavia on March 7th. They reached Palembang on March 22nd, where they were joined by Lieutenant Cornelissen on the 12th, who had with him a new machinist, named Snijdwint. We now enter upon the second period of the expedition.

Meanwhile, however, an important exploring expedition on the Batang-Hari was undertaken by Mr. Pruys van der Hoeven, the Resident of Palembang, in the Government steamer *Barito*, from February 4th to 26th, 1878. This expedition was undertaken partly to enforce the authority of the sultan upheld by the Dutch Government in the interior, by an imposing demonstration. The Resident was also desirous, after the reports that had reached him of the practicability of railway communication between the Ombilin coal-fields and the Batang-Hari, to judge by his own observation of the value of the river as a highway for traffic. He took with him Mr. Niesen, the Political Agent, and Mr. Makkink, the mate of the steam launch, to whom the scientific work was entrusted. Makkink, though very young, showed during this service how well he had profited by the lessons of his beloved chief, Schouw Santvoort. He made an excellent map of the river, and determined latitudes and longitudes with great accuracy. The Dutch Geographical Society owes it to him that the voyage of the *Barito* (which, owing to favourable circumstances, ascended the river higher than the steam launch had ever done, and reached the Rantan frontier at Simalidu and Tanjung) was serviceable to science. So far as its geographical results are concerned, the voyage of the *Barito* may be considered as part of the Central Sumatra Expedition.

When van Hasselt and Veth reached Palembang, the *Barito* had returned, and was ordered to transport them to the scene of their future labours by the River Musi and its affluent the Batang-Rawas. They reached Muara-Rupit on April 2nd, and thence proceeded by land to Surulangun, the residence of the chief Government officer in the Rawas district, where they expected to find everything prepared for their entrance into the adjacent country of Limun. In this expectation they were most cruelly deceived. It appeared that there was one chief of some influence in that country, called Payung-Putih, who favoured the Dutch Government, but that all the rest sided with Sultan Taha, and were decidedly adverse to admitting our travellers. Pending the negotiations with Payung-Putih, they made a tour through the Rawas district, and tried to enter the territory of the Batang-Asei, a tributary



of the Tambesi, and itself the recipient of the Limun River at Muara-Limun.

The Batang-Asei district, also part of Jambi, though the people speak the Malay of Menangkabau, has Rawas and Limun to the south, Limun to the east, the upper Ulu-Tambesi district or Serampeï to the north, and Sungei-Tenang to the west. Our travellers met with the chiefs on the frontier, and found them very well disposed. At the same time, however, they declared it to be impossible to admit strangers without the express orders of their sovereign, the Sultan Taha. Baulked of their purpose, the travellers, after ascertaining that no tidings from Payung-Putih had yet been received, resolved to visit the Palembang district of Lebung, which proved to be one of the most beautiful and interesting regions of Sumatra, and so preposterously laid down on existing maps that a more careful survey was in the highest degree desirable.

The way from Rawas to Lebung lay through an entirely unexplored and almost impervious, but eminently picturesque wilderness, and over a mountain ridge separating the waters of the Batang-Rawas and those of the Kataun, the principal river of Lebung. Having traversed this country in every direction, our travellers proceeded from Tapus, the chief village of Lebung, to Kapayang in the district of Rejang, where, taking their route through the mountainous district of Sindang, they returned to Surulangun on June 17th. During this interesting excursion Mr. Veth took many beautiful photographs at first, but it proved impossible, owing to the want of coolies and the difficulties of the road, to carry the apparatus into the Lebung country. During this tour Mr. van Hasselt made diligent researches into the various dialects of the Rejang language, quite distinct from the Malay, but never yet studied. He investigated the Renchong alphabet, which is peculiar to these regions, and collected every fragment of literary composition or traditional lore he could lay hands on, besides inquiring into the manners and institutions of the people.

On returning to Surulangun, the explorers were at last informed of the result of the negotiations with Payung-Putih. In their absence he had been to that place in person, and declared his readiness to receive them. Unhappily his power proved to be unequal to his good-will. Leaving Surulangun on June 28th, the travellers were detained several days near the frontier. At last they proceeded, under the protection of the friendly chief, on July 6th, reached Kampong-Pondok, on the Limun River, on foot, and Temiang, the furthest point of their progress, by water. Here they were informed that several chiefs had mustered their forces in order to expel them. They determined to retreat calmly, under favour of a moonlight night, by rowing up the river to Menkadei. Hearing that further retreat by water was no longer safe, as their enemies had mustered in force at Kampong-Pondok, they continued

their retreat by a rugged footpath, leading to Sungei-Baung on the Batang-Rawas, whence they returned to Surulangun in the evening of July 9th.

Here further tidings of Payung-Putih were waited for, but when they at length arrived on July 28th, they were so unfavourable, that all hopes of penetrating into the inland Jambi districts from the Palembang side were considered to be at an end.

It was now resolved that van Hasselt should proceed to Jambi by way of Palembang, to consult with Cornelissen and the Political Agent as to what remained to be done or attempted. Mr. Veth, meanwhile, was to pack the collections and baggage, and forward them to Palembang. He was then to cross on foot, by a circuitous route, the whole breadth of the Residency of Palembang, and to await the return of his friend from Jambi, at the capital.

Meanwhile Cornelissen had twice succeeded in penetrating far into the inland districts in the steam launch, but on both occasions he had been compelled to return by the menacing attitude of the natives. His first voyage was made between June 19th and July 4. He proceeded up the Batang-Hari as far as Telukh-Benkal, a few miles below the furthest point reached by the *Barito*. Cornelissen feared lest the enmity of the population might prove a serious danger, in the event of the launch grounding, and he, therefore, resolved to retire. On the voyage back, he explored part of the Tebo River, and steamed up the Tambesi as far as Rangkiling, whence he was obliged to return from want of coal.

In undertaking his second voyage, Cornelissen had in view the completion of the survey of the Tambesi, at the mouth of the Batang-Asei, and there to meet van Hasselt and Veth, who hoped to reach that place with the aid of Payung-Putih. He left Jambi on the 16th of July, taking with him the Political Agent and Raden-Hasan, son-in-law of Sultan Ahmed. On the 22nd he passed the mouth of the Marangin, the great affluent through which the Tambesi communicates with the lake of Korinchi. Hitherto all had gone well, but on the next day, steaming towards Ladang-Panjang, he was disturbed by a clandestine shot from a *ladang* (dry rice field) on the river bank. On approaching a village, it was found that a great mob had collected under the guidance of some fanatical haji, and seemed resolved to prevent either his landing or his passage. Requesting Raden-Hasan to land and inquire into the cause of the disturbance, he soon received a reply that Europeans would by no means be suffered to pass. Being unprepared for hostilities, nothing remained but to return. He came back to Jambi on July 25th.

Cornelissen was soon afterwards informed of the similar disappointment of his colleagues, by Mr. van Hasselt who reached Jambi on the 12th of August. Reports also arrived that the spirit of resistance had spread more and more among the people of the interior. The Resident

of Palembang had made a proposal to the Government to maintain its authority by erecting a fort at the mouth of the Tahir; but this plan was not adopted.

Van Hasselt returned from Jambi overland, nearly by the same route that had been followed by Schouw Santvoort when he made his journey across the island. Meanwhile Veth left Palembang on September 10th, and proceeded to Jambi, where he made several trips up and down the river in the steam launch for the purpose of taking photographs. Departing from Jambi, Veth finally left Sumatra on October 14th, arriving in Holland on February 8th, 1879.

Van Hasselt left Palembang on September 26th, 1878, remained some time at Batavia, and then proceeded to the Padang Highlands, to study, with the aid of intelligent natives, the literary and linguistic documents he had collected. He accomplished this during a sojourn of some weeks at Paya-Kumbok, the head village of the L. Kotas, and returned to Batavia towards the end of November. Here he obtained leave to proceed home, with a view to giving his aid in the publication of the results of the expedition; and arrived in Holland last May.

It had been previously arranged that Cornelissen, after finishing his work in the service of the Geographical Society, should not return to Europe, but rejoin the naval service in India. He remained at Jambi completing his maps, arranging his reports, and collecting information until March 1879. On the 14th of March he left Jambi, accompanied by Makkink, and proceeded to Batavia, where Makkink obtained a passage home in the same mail steamer which took van Hasselt to Europe.

In the regions visited by the Sumatra expedition, the most important feature—the River Batang-Hari—has, through the labours of its members, from the least known of the great rivers of Sumatra, become the one most carefully explored. Until now the Musi or Palembang River was considered to be the largest stream in the island, but since the Batang-Hari has become so much better known, it appears to be by no means inferior to the rival stream. The direct distance from the source to the mouth, in a straight line, is in both cases almost equal, viz. 340 kilometres (210 miles), but the actual length, putting aside the windings of the upper course, exceeds 800 kilometres (490 miles) for the Batang-Hari, and is not much more than 600 (370 miles) for the Musi.

For smaller *prahus* the Batang-Hari is navigable downwards from the mouth of the Sibiti, which joins it in the centre of the southern Padang Highlands. It is, therefore, practicable for the transport of merchandise over a length of 760 kilometres (480 miles), while the Musi is fit for such transport only over a length of 540 kilometres (330 miles).

The Government steamer *Barito*, a paddle-wheel boat with a draught of 16 decimetres ( $3\frac{1}{2}$  feet), could navigate the Batang-Hari without any difficulty as far as Simalidu, that is over a distance of 600 kilometres

(370 miles), or three-fourths of its length. On the Musi it could not ascend higher than the mouth of the Rawas, a distance of 340 kilometres (210 miles), or not much more than half the length of the river.

Any comparison between the affluents of the two rivers would be unsafe, owing to the incompleteness of our knowledge. The Batang-Hari can be reached by the Sangir from the heart of the XII. Kotas, and is connected with some of the most beautiful and fertile districts of the Padang Highlands by the Pottar, the Mamun, and the Pangéan. Of the Yujuan, Tebo, and Tahir, which bring the tribute of their waters from the provinces to the west, the second is by far the most important, and was found, in its lower part at least, to be navigable for the steam launch; whilst both the others can certainly be navigated by native boats. The largest of the affluents of this great river, the Tambesi, connects it with Serampeï, and by its tributaries, with Korinchi, Batang-Asei, and Limun. The Tambesi was navigated by the steam launch over a distance of 150 kilometres (93 miles), beyond which point she was stopped, not by want of water, but by the enmity of the natives. The Marangin, by one of whose upper branches the lake of Korinchi discharges its superfluous waters, is a large but tortuous river, whose lower part proved to be navigable by the launch. That the Limun River, a mere branch of the much larger Batang-Asei, begins to be navigable for *prahus* near the Rawas frontier, was proved by Mr. van Hasselt and Mr. Veth.

The population of the territory watered by this river and its branches is, on the whole, scanty; yet along its entire course and those of its chief affluents, numerous small villages are found at short distances from each other. Siguntur appears to be populous, judging from the extent of its rice fields, and the considerable importation of cattle from Rantan-di-Baroeh to the Padang Highlands argues a numerous stock. Cattle are also exported, on rather a large scale, from Tebo and Bunga through the XII. Kotas. Coffee abounds in Korinchi, and in several districts the produce of gold seems to be capable of considerable development.

The importance of the Batang-Hari, therefore, is far from merely depending on its fitness for the transport of the Ombilin coal. It has been observed, with perfect justice, by the Resident of Palembang, in his report on the voyage of the *Barito*, that this mighty river is navigable over a longer course than any other in Sumatra, and that it is eminently important for communication and commerce both with the eastern parts of the "West Coast Government," and with the inland districts of Jambi and Korinchi. But to make these advantages really available, it is of the highest consequence to connect the furthest navigable point of the river with the network of roads in the West Coast Government, and to ensure safety of intercourse on the river by some measures of wholesome severity.



Thus prudently and gradually advancing, the Dutch might bring the whole of Central Sumatra under their allegiance, and add to their dominions a new and beautiful Residency, which would soon rival Palembang in importance.

The following remarks were made after the reading of the foregoing paper :—

His Excellency Count VAN BYLANDT (Netherlands Minister) said it was with great satisfaction and a feeling of pride and gratitude, that he had witnessed the very interesting proceedings of the evening. Professor Veth had brought the subject of the exploration of Sumatra before them in such a detailed manner that very little was left for him (Count Van Bylandt) to say. His feeling of pride, however, was due to the acknowledgment by this great scientific Society of the labours of his countrymen in opening up the unknown parts of Sumatra to the inquirers of science and the progress of civilisation, while his feeling of gratitude was prompted by the great and friendly interest shown not only by the Geographical Society, but by the British public generally, in the labours of his countrymen in that direction. For several years he had endeavoured to promote a more regular interchange of communications between the Geographical Societies of the two countries, because he considered it to be of the greatest importance, at least for his country. It was known to everyone that England was the first colonial power in the world, but it was perhaps less generally known by the public at large that his country claimed to be the second. England and the Netherlands being thus the two principal colonial powers, their interests as such were in many respects the same, and created a happy solidarity between the two nations, which led him to believe that the labours of the Dutch, however modest they might be, formed perhaps a not unimportant link in the long chain of scientific explorations which were carried on in several parts of the world. He considered, therefore, that the Geographical Societies of the two countries were as two hands of the same body, the English Society of course being the right hand, but the moral encouragement which had been shown to the Netherlands Society that evening would prompt the left hand to endeavour not to remain very far behind. His friend, Mr. Markham, who now and then paid a short visit to Holland, would agree with him when he spoke of the friendly feelings which existed between the Geographical Societies of the two countries. A new proof of that had been lately given by the fact that the President of the Netherlands Geographical Society, Professor Veth, had had the honour bestowed upon him of being elected corresponding member of the Geographical Society of London, an honour which he could assure the Meeting was very highly valued, and he hoped that the presence in this country of Mr. Bicker-Caarten, as agent of the Netherlands Geographical Society, would also tend to facilitate in future the interchange of communications between the two Societies.

Mr. A. R. WALLACE said the paper which had been read gave but a very brief account of one of the most interesting expeditions that had taken place in recent years in the Eastern Archipelago. He had no doubt that when it came to be published, it would form a work of intense interest to everyone who wished to have a knowledge of that wonderful part of the world, and he only hoped that some arrangement would be made by which the account of the expedition would be published in some other language than Dutch, for that language was almost an unknown one to most Europeans. The island of Sumatra ranked as the fourth in size on the globe. He had the pleasure of visiting it himself in the year 1861, though he spent only two months there, and did not travel about much, because his object was to make

collections, and not geographical explorations. He visited the city of Palembang, and went inland 50 or 60 miles to the south-west of that place, so that he was nearly in the centre of the southern part of the island. He saw a good deal of the character of the country, and as he had also read a good deal about it, he thought it would be better for him to give a brief outline sketch of the general physical geography of the island, than to attempt an account of his own journeys. Sumatra differed considerably from the adjacent islands of Borneo and Java. It resembled Java in possessing a magnificent chain of volcanic mountains, but there was a great difference in the general character of the soil and vegetation. It was not so universally luxuriant as Java and Borneo. Large portions of it were covered with open, grassy plains, and over a great part of the lower lands the soil was by no means fertile. Still, it did not require a fertile soil to produce a magnificent forest vegetation, and Sumatra possessed most glorious virgin forests. All the north-eastern part was to a great extent an alluvial formation, and from the coast to 20 or 30 miles further inland than Palembang, the country, in the rainy season, was to a great extent turned into a lake, though here and there little patches, just sufficient for villages to be built upon them, rose permanently above the water; the consequence was, it was impossible to travel far without boats. But beyond that distance the ground rose slowly and gradually, till it became slightly undulating, cut by the numerous streams into little valleys. The rise was so gradual that at the point he himself reached there was no sign of a mountain, the land being a slightly undulating plain, half forest and half open tracts dotted about with villages, and with little ravines penetrating in every direction. He heard that further inland the country became hilly, and at last there was a magnificent range of volcanic mountains. It was known that extensive coal-fields existed there, but from what he knew of the general structure of the country and of similar coal-fields in Borneo, he could venture to predict that the coal found in Sumatra would not be such ancient coal as that which was used in this country and in the greater part of Europe, but recent or Tertiary coal.\*

From the general character of the distribution of the mountains, and the rivers, all flowing to the north-east, a very tolerable idea could be formed of the past physical history of the country. It was quite evident that the grand range of volcanic mountains was comparatively recent, and that the great bulk of the level portion of the island had been produced by the wearing away of the mountains and by the matter poured out by the volcanoes being carried down by the rivers into a shallow sea. Therefore, probably a few hundred thousand years ago Sumatra was very much smaller than at present, consisting of a great chain of mountains with a comparatively narrow border of land on each side. A very curious point in natural history showed that such was the case. The island of Banka was a totally distinct island from Sumatra, being granite, and was never joined to Sumatra, a wide arm of the sea having existed between the two. This was shown by the fact that in Banka there were animals, birds, and insects quite distinct from those of Sumatra. The fact had been ascertained by one of the Dutch residents in Banka, and instead of being a piece

\* Since making this observation I have met with a paper (in the 'Geological Magazine,' 1877), on the Geology of Sumatra, by M. R. D. M. Verbeek, the Director of the Geological Survey of the West Coast of Sumatra, in which it is stated that the Ombilin coal-field of the Padang Highlands consists of sandstones nearly 1000 feet thick, without recognisable organic remains, but resting unconformably on a marl-shale formation which is considered to be of Eocene age or intermediate between the Eocene and Cretaceous formations. The coal of Sumatra will therefore belong to the Tertiary period; and as it now forms the summits of high mountains on the central plateau, it affords an indication of the comparatively modern origin of the great mountain range of the island.

of Sumatra, this small island was really a piece of Malacca, having the same geological structure, and there could be no doubt that it was once joined to the peninsula of Malacca. Before the volcanoes originated, however, Sumatra must also have been joined to Malacca, the continent of Asia being extended so as to include Sumatra and the small islands beyond. The row of islands on the west coast also contained some peculiar animals, and were connected with Sumatra by a shallow sea, whereas immediately outside them the sea sank suddenly to the enormous depths of the Indian Ocean; and the wonderful similarity on the whole of the animals of Sumatra with those of the Malay Peninsula rendered it perfectly certain that the two countries were at one time joined, and at a not very remote period. Still it was remote enough for the intervening land to have sunk down, and then for the volcanoes to have arisen and poured such a mass of matter into the water as to form the enormous expanse of undulating country, which was largely formed of a red clayey substance such as was seen in almost all regions where volcanoes abound. It had been deposited in the sea, then uplifted, and then cut through by the rivers.

As the mountains were approached, the variety and beauty of the vegetation increased, and all the more remarkable birds and insects were found there, as well as the higher races of Malays. The whole of the southern portion of Sumatra was inhabited by a genuine Malay race; in fact, they were the originals of the Malays, speaking various dialects of the Malay language. Further north there were other races, which, though belonging to the Malay type, were not of the true Malay stock, and spoke different languages. No doubt, all these matters would be clearly explained in the work which Professor Veth had promised, and of which he supposed that the beautiful photographs now exhibited would form the illustrations.

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*Notes on the Cocos or Keeling Islands.* By HENRY O. FORBES, F.Z.S.

Map, p. 816.

I LEFT England in October 1878 for the purpose of investigating the fauna and flora of certain districts of the Malay Archipelago. Arriving in Java in the middle of November, the rains set in in such good earnest that I was beginning to fear that I should be detained in a state of almost complete inactivity till the season was more advanced, when I was informed that a small trading brig belonging to the proprietor of the Keeling Islands, was lying in the roads on the point of sailing. I at once decided to pay a visit to this outlying spot, made classic by the visit of Mr. Darwin in the *Beagle*, and by his description of the atoll in his 'Coral Reefs,' to see what changes, if any, had occurred since 1836. Embarking on the 17th of December, 1878, I arrived, after a passage rendered dismally long by continual calms and contrary winds, on the 16th of January of this year. I was received by the present governor, George Clunies-Ross, Esq., with the greatest kindness. To him I am indebted for a vast deal of accurate information regarding the islands. He is a keen observer, and thoroughly acquainted with the manners and habits of every living thing, animal and vegetable, within his domains, as I had very frequent opportunities of verifying. The history of the island for the last twenty years, during the greater part of which it has been under the present direction, would form a most