

determined by boiling-point, was only 460 feet. The Upper Tana and the country extending to Mount Kenia was based upon Mr. Hobley's map, checked by several observed latitudes and a number of bearings of Mount Kenia. All these bearings had been inserted upon the map as given in the original documents, even though they had not been accepted as correct in every case. The position of Kenia was taken from Lieutenant Höhnel's map, and depended upon that of Kilimanjaro. It should be noted that on Mr. Hobley's original map Kenia was placed in long. $38^{\circ} 43'$ E. Mr. Hobley had two of Dent's half-chronometers with him; but he had some difficulty in determining their rates, and the results of his observations could not, therefore, be trusted. Mr. Hobley was equally unfortunate with his aneroid. The altitude of the highest camp reached was determined by a boiling-point thermometer. The route from the Tana to Machako's had been laid down from Mr. Hobley's observations. Nearly all the other routes were from surveys of Captain Lugard, Mr. Bateman, Mr. Pigott, and other officials of the East Africa Company. He had also inserted the routes of Count Teleki, Mr. Hildebrandt, and Dr. Krapf; but with respect to the last, he had done so with diffidence, as the position of the village in Kitui, from which that missionary started for the Tana, was a matter of considerable doubt. Krapf, on going to the north, had passed the Mwakini Hills and Mount Date, and if these were identical with the Mwakini Hills passed by Mr. Hobley and the Mount Thata seen by that explorer to the northward, a different direction would have to be given to Dr. Krapf's route.

It was matter of regret that Mr. Hobley had not ascertained a larger number of native topographical names, or even the names of the chiefs. On the other hand, he was to be praised for not having covered his map with a European nomenclature, which would have proved of no service to those who followed his footsteps as an explorer. The few names of this kind inserted upon the map were to be looked upon as merely provisional, and would in course of time be superseded by native appellations. In conclusion, he could only say that the work effected by this expedition, no less than the route surveys made by other officials of the British East Africa Company, had materially added to our knowledge of a large portion of Eastern Africa.

The PRESIDENT: Mr. Gedge has been known for some time very favourably to the Society by the account of his journey along with Mr. Jackson, which was read here the year before last. To-night we are happy to have seen him, and he has given us a very meritorious paper, and has shown us scientifically interesting photographs. Captain Dundas appears to have done all his work and conducted the expedition with great credit, and I know you will direct me to include him and his immediate subordinates, of whom Mr. Ravenstein has spoken, in the thanks which, I think, you will direct me to give to Mr. Gedge.

*Expedition to the Tahan District, Pahang, Malay Peninsula.**

By H. N. RIDLEY, Esq.

It has been reported by natives and others that in the interior of Pahang lies a mountain known as Gunong Tahan, which is the loftiest in the Malay Peninsula, and is estimated at upwards of 12,000 feet

* The map, reduced from that sent by Mr. Ridley, is simply a map of the Tahan River; Mr. Ridley does not indicate precisely where it joins the Tembeling.

altitude, but, owing to the height of the mountains surrounding it, this has only been seen afar off by one or two explorers, who were unable either to reach it or to locate it accurately. With the view of exploring this mountain an expedition was fitted out by the Government of the Straits Settlements, and it started from Singapore on June 23rd, 1891. The exploring party consisted of Mr. W. Davison, Curator of the Raffles Museum; Mr. H. N. Ridley, Director of Gardens and Forests, S.S.; and Lieut. H. J. Kelsall, R.A., with an adequate staff of zoological and botanical collectors and servants. On arriving by steamer at Pekan, the capital of Pahang, on the Pahang river, the party was joined by a young Australian volunteer, Mr. J. Townson.

Most of the heavy baggage, rice, and stores had been sent on to await the arrival of the party at Kwala Tembeling (mouth of the river Tembeling). Repairs to the boats and collecting the men delayed the expedition at Pekan till the 28th, when it started. Owing to the previous drought the rivers were very shallow, and progress was exceedingly slow, and it proved impossible to travel to any purpose at night. The boats were therefore tied up in the evening, and the camp pitched, during which time till dark, and again in the early morning, before starting, the collectors busied themselves in obtaining such specimens of plants and animals as they were able to find.

At Temerloh it was necessary to obtain smaller boats for ascending the shallower rivers. Here we had to relinquish the largest boat, and transfer all the baggage to small ones, in which we reached Pulan Tawar, the residence of the Sultan of Pahang, on August 9th.

The Sultan put at our disposal the services of Penglimah Yusuf Garang, a chief of the Kwala Tembeling district. We reached Kwala Tembeling early on August 12th, and found the stores and coolies awaiting our arrival. The Tembeling river was very shallow, and we could use only the smallest boats. Of these we had not a sufficient number, so that it was necessary to take up the baggage in two instalments. Lieut. Kelsall and Mr. Townson then took the boats and went with all speed to the mouth of the small river Tahan, taking $2\frac{1}{2}$ days. On the 15th, Lieut. Kelsall, having selected a spot for a camp at the mouth of the Tahan, left Mr. Townson in charge, and returned with the boats to Kwala Tembeling. Meanwhile I was bringing up more stores in some other boats, accompanied by Penglimah Garang. On approaching the mouth of the river I visited the Penghala Raja of the Tahan district, to try to get guides from him, but he was either unwilling or unable to assist us. Nor indeed were we at all able to get any guides or reliable information about the mountain. Indeed, I do not believe that any Malays have visited it, though an important man was sent up there by the Rajah a couple of years before. It was reported that he had got up to the mountain, which he found covered at the top with *Casuarina* trees, and that the only bird that he saw there was the bird known as the Morai,

the black and white robin (*Copsychus musicus*). Further, that he and his men perceived on the mountain two figures: one with a black coat and white trousers, and the other with a white coat and black trousers, and recognising these as *hantus* (spirits) they hastily returned. The only evidence in his story that he had been there lies in his seeing Casuarina trees, which are here peculiar to the tops of the mountains and to the sea-shore, and never occur in the intermediate country. The Morai, common in the lowlands, disappeared at Kwala Tembeling, and does not occur at all in the Tahan district.

Tradition also alleged that on the summit of the mountain was a house entirely made of gold, and a monkey as big as a buffalo. Some of the Kelautan men we had with us stated that they had heard that the mountain rose out of a large lake or swamp, from which spring the rivers Kelautan to the north, Kechan to the west, and Tahan to the south.

Further, that there were two routes, viz. the one we took up the river Tahan, and one by the Kechan, but that the latter ended at the foot of a lofty precipice, whence it was impossible to ascend the mountain. All these traditions are, I believe, derived through the Sakais, the wild tribe properly called Temuns, who inhabit this district. The Malays, it is true, visit the Tahan river for guttas, dammar, gharu wood, and rattans; but as they go in boats, the distance they travel must be very short, and they receive most of the produce from the Sakais. By the 18th all the stores were brought up to the mouth of the Tahan, where a big camp had been made, and stockaded to keep out wild beasts.

The country from the mouth of the Pahang river as far as to the mouth of the Tahan is flat and sandy. The rivers Pahang and Tembeling traverse plains covered with short grass and bushes, and small woods farther away. The woods are thicker and denser, but the timber is small. Here and there are swamps and a few rice-fields, but the Pahang Malay is too indolent to do more cultivation than is absolutely necessary for existence. Although the country appears well suited for cultivation, in Penghala Raja's garden were several healthy Arabian coffee-trees, without a speck of the coffee-leaf disease, a great rarity in the Peninsula. He himself, however, was totally ignorant of the use of the coffee-berries, using the leaves only to make tea of. This open country abounds in pigs and tigers, and at certain spots herds of the wild cattle known as *sladangs* (*Bos gaurus*) may be met with. It was at Pulan Tawar that the Sultan drove a herd of *sladang* into an enclosure, and captured the whole. However, the animals on finding themselves caught, fell to fighting so fiercely that all but three were killed. One of these three was sent by H. E. Sir Cecil C. Smith to the Zoological Gardens, where it is still living. The tigers are very destructive to the buffaloes, but rarely kill the natives. Peacocks, jungle-fowl, pigeons, and hornbills are very plentiful, and supplied the

expedition with additional food. The latter birds are very good eating, the flesh being brown and tasting like beef-steak. The elephant and rhinoceros also occur in this district, but are much scarcer here.

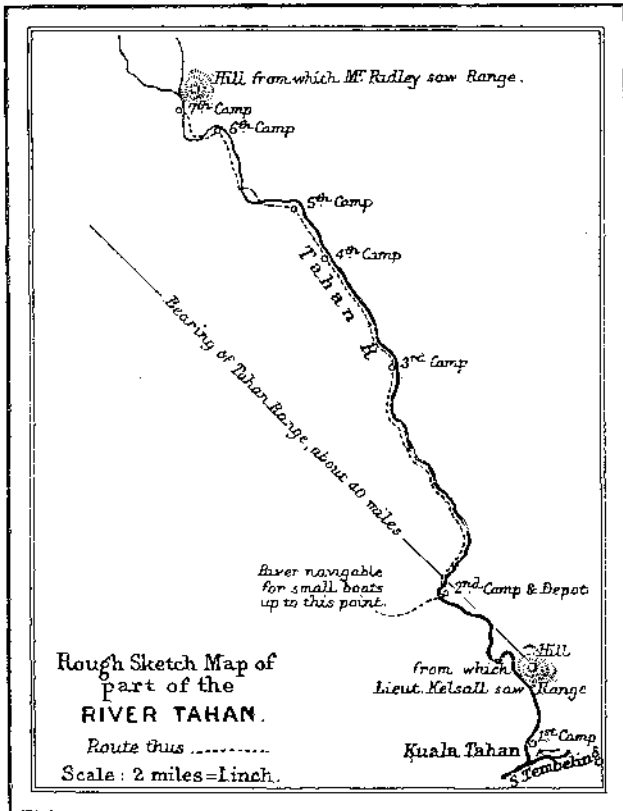
The expedition was well supplied with dynamite, with which no expedition in a region of streams and lakes should be unprovided. From the Tembeling river upwards, the rivers were dynamited every evening and large supplies of fish collected, so that the camp was fed largely on fresh fish. It may be worth noting for any traveller using dynamite for collecting fish, that the charges used should be small, so as to stun the fish rather than kill them outright, as in the latter case they sink and do not come up till they are spoilt for eating. Sometimes over a hundred fish, chiefly of the carp family, would come up after a single explosion.

On August 19th I and Mr. Townson left the Kwala Tahan camp with four boats to journey up the river Tahan and pitched the next camp at the mouth of a small stream called Sungei Tenok (Tapir stream). Though only three miles, it took nearly two days to accomplish this, as the stream was so low down that we had to wade and drag the boats through passages made by piling up the stones at the bottom of the river. This was most laborious work, as the river-bed was covered with slippery round pebbles, and it will give some idea of the difficulties of this part of the route up stream when I say that on the return journey, when the water had risen, we came down this two days' journey in an hour.

While waiting for the arrival of the rest of the party and stores, I explored the hills in the neighbourhood of Sungei Tenok, hoping to get a view of Gunong Tahan, but without success. The Tahan river is, as I have said, a narrow rocky stream, running between hills of about 1000 feet altitude and higher, covered to the top with very dense jungle, full of rattans. The vegetation comes down to the water's edge, and the hills are so close that one can see but a short way ahead. Even sending men to the tops of the highest trees on the highest points of the ridge was almost useless, as the trees were so equal in height that nothing but endless tops of trees could be seen. Lieut. Kelsall, by ascending a very lofty tree at Kwala Tahan, saw the Gunong Tahan ridge for a short time, at a distance of about 40 miles. (See Map.)

At the Tenok river it was found impossible to progress further in the boats, and leaving some men in charge of the camp there, we proceeded along the right bank of the Tahan river, following tracks of the Sakais. Mr. Townson and I preceded the party with a few picked men and cut the path for the coolies, camping one or two days' journey ahead. But progress was very slow, the jungle was thick and wet, and the hills ran at right angles to the river, entailing a ceaseless up and down hill march; the slopes of the hills were often very steep, and in many places the rocks were very difficult for the men. The coolies,

with one or two exceptions, were a miserable lot, dirty, thievish, at times mutinous, and lazy. As we progressed they were greatly in fear of the spirits which they supposed haunted the mountain. Many got sick from dysentery, fever, and beri-beri; and kurap, a horrible skin disease, spread rapidly over the lot. These woods are certainly very unhealthy; every night after leaving Kwala Tenok we had tremendous storms of rain, which saturated everything, and even the tents were not sufficiently waterproof to prevent our getting wet. The ground



and trees were always saturated, and at night the whole of the ground in the forest was illuminated by phosphorescence on the leaves, probably due to bacteria. After journeying like this for some time, on the 31st I ascended a hill on the left bank of the river, and suddenly perceived the big range of the Gunong Tahan, lying about 12 or 14 miles off as it appeared to me. A long broken ridge, densely covered with trees, on one side of which could be seen a great white cliff probably of limestone more or less clotted with vegetation, while to the north rose the

big peak of Gunong Tahan, which I estimate at not more than 10,000 feet altitude. Between us and it lay two or three more high ridges like those we had crossed, and one could see the river winding between them towards the ridge. Descending this hill we pitched the camp on the opposite bank, and awaited the arrival of the rest of the party. During this delay I tried several routes along the river bank, but found them impracticable for coolies, so followed up a Sakai track which ran to the south along a small stream. This stream eventually changed its course to the north, and evidently started from the valley of the Tahan mountain. The woods here were exceedingly wet, the trees covered with sopping moss, in which grew a number of beautiful orchids. Tracks of elephant and rhinoceros were seen, and some of these animals were heard dashing away through the jungle at our approach. Indeed, at the camp we used to hear a rhinoceros walking about close by every night, but owing to the darkness could not see it.

One of the most striking features of these woods was the utter absence of bird life. Here and there in the little side stream one would see the beautiful little wagtail (*Henicurus ruficapillus*), white and red, and perhaps a rock bulbul or so, but otherwise animal and bird life was very scanty to see. The tiger, deer, bear, sladang, peacock, jungle-fowl had all disappeared. A wild pig was seen a good way up the river, but at the furthest point they had all disappeared. A curious yellow monkey was often heard in the early morning uttering a succession of deep sonorous notes, rising in pitch and increasing in rapidity till it ended in a sort of prolonged laugh. It was evidently a new species, but we never succeeded in getting any. The Argus pheasant was still abundant, and I came upon a number of gibbons on one occasion; but innumerable jungle fruits lay upon the ground untouched by monkeys or birds.

At night the frogs in the river made loud and frequent noises. One curious species clung to the rocks in the most rapid and turbulent parts of the stream by suckers on its toes. No snakes were seen, and only two lizards. A great number of rare and new plants were collected, among the most lovely of which were the *Didymocarpi*, with large gloxinia-like flowers, white, crimson, or white with violet or crimson tips to the petals. Many of the plants were typically Bornean, including the genera *Neckia*, *Isoptera*, *Rhynceopyle*, and *Brugmansia*. A very beautiful *Dipterocarpus* tree was plentiful, overhanging the river, with sweet rosy-white flowers scenting the woods, followed by bright pink winged fruits. It is called *Nerrum* by the natives, and is of an undescribed species of *Dipterocarpus*. Among eatable fruits in these woods we found some species of *Nephelium* and *Willughbeia*, and also a large creeper, called by the natives *Akar Panti*, with fruits resembling apples in form and colour and also in taste.

The *Champedak*, so much cultivated by the Malays, is wild in these

woods. And one frequently met with the Rambutan, but apparently introduced by the Sakais, who, like indeed the Pahang Malays, swallow the fruit whole, and pass the seeds out afterwards, thus scattering the plant over the jungles.

Another plant that must not be passed over was the fine palm, *Teysmannia altifolios*, with its huge oar-shaped leaves, of which the blade is over six feet long. It made excellent shelters for the men at night.

The Sakai tribe, which inhabits the Tahan district, we had hoped to make acquaintance with; but though there were evident signs of their presence in the immediate neighbourhood, they were so timorous that we saw none. In several places we saw sticks and trees which had been cut by them evidently not an hour before; and their sleeping shelters were constantly met with. These usually consisted of two erect sticks with one transverse one, against which palm leaves were set up on end, so as to form a kind of sloping wall. In front of this they made a fire, and sat as near it as possible. At one spot I found seven beehive-shaped huts formed entirely of palm-leaves, inside which could be seen more palm-leaves in which the Sakai seemed to have rolled himself up, the whole thing reminding one of a field-mouse nest. They also build little huts in the trees with ladders to them made by tying sticks transversely to smaller trees. The remains of zurians and rambutans were often to be found by these huts. And at one spot a long rattan was bent round the sleeping place (a more elaborate one made like a bunch of sticks with a shelter on the top), which the Malays said was a charm to keep them away. The Sakais have a great dread of the Malays, who have in times passed killed them and made slaves of their children. Hence their timidity. Mr. Hugh Clifford, the acting President of Pahang, takes much interest in this tribe and has for some time been investigating their language and customs, which are as yet quite unknown. He will shortly publish an account of their language, which is monosyllabic and very simple.

While I was following up this track to get into the Tahan valley, I received a note from Mr. Davison's camp to say that Lieut. Kelsall was very ill with fever, and it would be necessary to delay for some days. So, as our food was running out, I determined to march back to the back camp for more supplies. On my arrival I found that he was indeed dangerously ill, and Mr. Davison was himself suffering from fever, and further that only six days' food was left, and it was ten days at least before we could get the supplies which were coming up from Pekan. Mr. Townson too was attacked with fever, and many of the men were ill. It became obvious that we must retreat at once. I made a little further exploration, and having loaded up the men with as many specimens and live plants as we could carry in addition to the baggage, we retreated on the Kwala Tenok camp, where we found enough provisions to carry us on for a few days till we reached civilised districts

where we could obtain more. The expedition returned to Singapore on September 5th.

The failure to reach Gunong Tahan was due chiefly to the failure of the commissariat. Food for two months was taken, the time allotted by government, which was exceeded owing to the great difficulties of the route. The amount that the coolies can carry through this jungle is very small. Two men can carry little more than food for thirty men for one day, so that for ten days, out of thirty men twenty are required to carry food for themselves, and only ten remain for the baggage.

I shall hope soon to try the expedition again, taking the same route, but sending a plentiful supply of provision forward as far as the Tenok river, and making a headquarters store there.

The route was mapped by Lieut. Kelsall, and a copy is appended. Although the two chief plant collectors were ill during the most important part of the expedition, with the aid of the third I succeeded in obtaining a large series of herbarium specimens, over 2000, besides live plants, cuttings, and seeds. An account of these will shortly be published. In the zoological collections many birds, including several new species, a small number of mammals, chiefly squirrels, and insectivora, a good number of insects, reptiles, fish, mollusca, &c., were obtained. Several nests and eggs hitherto unknown were also obtained.

*Emin Pasha's Expedition to Lake Albert Edward and
Lake Albert.*

THE latest telegrams announce the safe return of Emin Pasha to Bukoba, on the Victoria Nyanza, from his journey to the Lake Albert Edward Nyanza and the Equatorial Province. A preliminary account of this important expedition is contributed to the June number of Petermann's 'Mitteilungen,' by Dr. F. Stuhlmann, who accompanied Emin. The object of the expedition was twofold: first, to ascertain whether the Lake Albert Edward extended to 1° south latitude, and to explore the country in the vicinity of the lake; and secondly, to open up communications with Emin's people, who had, it was understood, wandered south-westwards from Wadelai. On March 22nd, 1891, Emin left Kafuro, followed on April 1st by Dr. Stuhlmann with the rest of the caravan. The general direction of the route was north-north-west. At Kivona, Stanley's route was left to the east, and the party descended to a valley plain about 4130 feet high, which swarmed with rhinoceroses; to the north of this plain are two small lakes without outlets. Nearly all the mountain ranges which were now crossed slope away gently to the west, but abruptly and with precipitous rocks to the east. Descending into the plain of the Kagera River, a halt was made at