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Author(s): William MacGregor

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Journey to the Summit of the Owen Stanley Range, New Guinea.

By Sir WILLIAM MACGREGOR, K.C.M.G., Administrator of New Guinea.*

(Read at the Evening Meeting, December 9th, 1889.)

Map, p. 256.

WHEN on a visit of inspection to the district of Doura, a coast district to the north-west of Port Moresby, I learned that a river named the Vanapa entered the inlet known as Galley Reach, and that it was probable this river would be found to run towards the great mountain ranges of the interior; and I then determined to devote some time to an ascent of the river in question, if found navigable by boats. With this object in view, I left Port Moresby on the 20th of April, 1889, in my boat manned with a native crew, accompanied by my staff, and proceeded along the coast to Manumanu. On the 22nd we entered one of the mouths of the Vanapa river, which opens into Galley Reach on its eastern side, about five miles from Manumanu. This entrance to the river lies in a bend of the inlet where the coast is covered by mangrove swamps, and escapes observation unless one is searching expressly for it, which no doubt explains its being omitted altogether on many charts of this part of the country.

We got some seven or eight miles up the river the first day, having the tidal water for about three or four miles; but beyond that point, in consequence of recent heavy thunderstorms inland, the river was swollen and muddy and the current against us strong. As far as the tide ascends the river, mangroves grow on the banks, and the Nipa palm on the river's edges; but beyond that the banks become 10 or 12 feet high, and are clothed with large trees, the soil being deep and rich, but whether liable to occasional flooding cannot at present be stated.

On the 23rd we continued our course up the river for about seven miles. During the afternoon we began to approach the first low hills in the river's course, and had to ascend two rapids, the first we had met.

* Being the Report (with slight abridgment) of Sir W. Macgregor to H.E. Sir H. W. Norman, G.C.B., Governor of Queensland.

Below the rapids the river bottom contained many "snags"; not enough to impede the passage of the boat or even to make it dangerous going up against stream, but requiring very careful watching in coming down the river. The course of the stream we found to be very crooked, at times running north, at times due south. No natives, and hardly any trace of natives, were seen during these two first days of our journey. The nature of the country was much the same as that traversed the day before, there being a large amount of deep, flat, alluvial land on both sides of the river, of which, however, probably a large amount is wet, and liable to be flooded periodically. On the 24th we had much difficulty in poling and dragging the boat up some rapids, the current being very strong, and the river, though falling, still deep; so that it was difficult to see and avoid the large boulders that stud the bottom of the river at this point. On this day we entered between the first low ranges of hills, which are covered by forest. There is no appearance of forest-clearing or cultivation anywhere, nor any trace of natives. On this day we accomplished only about four miles, in spite of the best exertions.

On the 25th we continued our ascent, poling, pulling, or dragging the boat, according to the nature of the different bends of the river. We passed a number of rapids, and by night found ourselves with hills on all sides of us. These are very steep, of a slaty nature, and covered by trees, which, from the extreme steepness, are not as a rule very large. One of our party had a narrow and lucky escape from a large snake, on which he put his hand when picking up sticks to make our fire with. This reptile was cleverly noosed by a native, and the skin secured for our collection. We passed a large rock on the right bank of the river, which seems to be quite exceptional in its formation in this part of the country. It would apparently make an extremely fine building stone. Specimens were obtained for examination. It is a grey stone, full of crystalline needles, like manganite.

After we had pitched camp, I went to examine a native-built suspension bridge, which our hunting party had discovered about a quarter of a mile up stream—a remarkable structure, occurring in such a locality and built by such a primitive people as the inland natives are in this district. At the spot where the bridge stands the river is narrowed by a rocky point that encroaches on the left bank from a steep hill immediately adjoining; advantage has been taken of this in building. The bridge, which is thus only about 70 yards long, is chiefly supported by a large banyan tree, which grows on the rock on the left bank about 20 feet from the water's edge; it starts from this tree at an elevation of about 50 feet above the pool below, descends in midstream to about 12 or 15 feet from the water, and rises to about 20 feet on the right bank, where it is suspended to a tree not sufficiently large or strong to receive the whole of this end of the bridge, and is therefore supple-

mented by a post put into the ground, and this again is strengthened by a cross-bar to the live tree, and fixed by stays extending backwards to trees behind. The material employed is rattan cane. Of these, fifteen are used to form supports, but as they have not all been long enough to cross the river, some of them have been joined by knotting. The floor of the bridge is formed of four of these canes, but, as two appear to have been broken, the second pair have probably been laid down in effecting repairs! About 2 feet 6 inches from the floor there are two rattans on each side, and about 2 feet 3 inches above these again are three rattans on the lower, and four on the upper side. They are not plaited or twisted but are kept in position by split cane worked from the floor to the middle and top rattans, which serves the double purpose of connecting the several strands, and would probably prevent one from falling into the river should one stumble in crossing. A transverse section of the bridge would show it to be nearly V-shaped, but with the sides slightly rounded. The height of the V is about 5 feet, the width at the top about 3 feet 6 inches, and the distance of the middle strands from each other about 2 feet. The top strands are kept apart by a cross-stick, the ends of which are tied to the top of each strand. Suitable platform approaches have been built at the ends, and the whole structure is both strong and graceful. Five of our people crossed it at one time, and, from all appearance, it could have borne many more.

On the 26th the river had become narrower as we advanced, and we had to contend with some strong rapids. The hills are steep, but in this part there is some good timber. On a hill on the right side of the river we saw a small platform of branches near the top of a high tree, evidently a "look-out" from which the natives of the district could obtain a view of anyone approaching; and from the point where we had lunch at mid-day some clearing for planting purposes and some bananas were visible on the left bank of the river; but we neither saw nor heard any natives. During the halt for lunch there occurred the first case of fever we had on the expedition, but it soon ceased under the usual treatment. The patient was one of the Europeans. The weather, favourable from the start, still continued so, rain falling only at night as the thunderstorms originating further inland gradually extended their radius.

On the 27th we found the rapids so strong, and of such frequent occurrence that it was concluded it would not be advisable to continue to proceed in the boat beyond this day's journey, and accordingly a suitable camp was looked for, and found at a spot on the right bank of the river, where there was a small point of nearly level ground at the foot of a steep hill extending some distance inland. This place became our principal depot for the expedition. By our estimate it is 40 miles from Manumanu by water, 35 miles of this being on the Vanapa itself.

I had now satisfied myself that it was possible to conduct an expedition of sufficient magnitude up the Vanapa river, and to find a way

from our camp towards the interior. Mr. Cameron, my private secretary, left camp on the morning of the 28th to proceed to Port Moresby for the necessary carriers, provisions, &c., and I remained with a party of two Europeans, two Polynesians, and two Papuans, intending to find out what our future route should be. I was able to trace the Vanapa river several miles upwards, to lay down a line of march towards the main mountain range, to obtain certain data with regard to the relative position of the mountains, &c., which proved to be of great value to us in our further journey. But these operations were greatly impeded by the ill-health of the party, none of whom, excluding myself, escaped fever. A thunderstorm began daily on the inland ranges about 1 or 2 p.m., and rain, sometimes in torrents, followed, reaching our camp early in the afternoon. The forenoons were sultry, and the forest very wet in the morning. Everywhere there were traces of natives, where they had been fishing or hunting. No natives were seen, nor could I observe anywhere any indication of permanent native residence, except at a distance of several days' march from our camp. The furthest distance inland from the camp reached by me was between six and seven miles, and up to that point we laid out and cut a road through the "bush," but I had only one man with me up to that spot, such was the unsatisfactory condition of the health of my small party.

All the hills in this district were found to be of a slaty formation, with numerous thin veins of white quartz; in some of the creek beds there were a few large boulders of conglomerate, and many smaller ones of basalt, but these were all isolated, the fixed rocks being without exception slaty. No trace of gold or other precious metal was found. The hills are so steep that the probabilities would be against finding, by the ordinary means of search, any trace of gold in the numerous creeks. There is, however, a large quantity of timber in the district, which is clothed everywhere with dense forest, and the Vanapa river would afford an easy, cheap, and safe conveyance for it to the sea. Unfortunately, the trees were not in flower then, and it was not possible to obtain such specimens as would determine the species of the different kinds of timber; but there are many cedar and ilimo trees, the latter of which is said to resist the white ant. The hills are so steep, and the gorges by which they are separated are so narrow, that there is no land fit for cultivation beyond ten or twelve miles from the opening of the Vanapa river into Galley Reach. At our depot camp this river is about 70 yards broad and contains a large volume of rapid running water; indeed there is no perceptible difference in its size near the mouth and at this camp, 35 miles up; we observed only two creeks worthy of notice on the way up opening into it.

About two and a-half miles from camp we discovered, on 30th April, a rocky height on the first mountain we traversed (Mount Gleeson), whence a very fine view of all the mountains of the interior, right up to

the summit of the Owen Stanley Range, could be seen. It was named, and is known to us as "Jack's Rock," and is strongly recommended to future travellers as an excellent observing point, although its altitude is only about 1000 feet.

On the 12th May, Mr. Cameron arrived, with fifteen men carrying supplies. He had left the main body of the expedition to come up in two whaleboats, and as the river was flooded he, fearing we should be quite out of provisions in camp, had left the boats and pushed on overland. He reported the overland journey as something dreadful, on account of the extremely rugged nature of the hills. Cameron's party, however, came into contact with the natives that live in the country in the vicinity of the bridge spoken of. Mr. Cameron described them as very noisy, at first frightened and suspicious, but as being after a little time very friendly, offering food and inviting his party to their villages. On the morning of the 16th the two whaleboats arrived, all the stores and provisions being in good order. The afternoon rains ceased totally about the 10th, and the river in about two or three days fell to its normal volume, which greatly facilitated the passage up of the two boats. The whole of the day after the arrival of the boats was spent in preparing the packs for the march inland, to commence next morning.

We left camp on the 17th. There marched out, all told, forty-two persons: four Europeans including myself, George Belford (a Samoan half-caste, a man of excellent character and well acquainted with this country, who proved of the greatest use to me), five Polynesians, and thirty-two Papuans. There was such difficulty in transporting our baggage that every man, without respect of person, had to leave camp with all he could carry. Two Europeans, who were already too weak to accompany us, remained in camp. As the path had been cut for the first day's march, we covered about four miles before we camped in the afternoon at Exton Junction, where the Exton Creek enters the Vanapa river. We traversed the long spur of Mount Gleeson, its highest point being 1292 feet, and had to cross another ridge about 800 feet high, while the altitude of our camp at Exton Junction was only about 300 feet. Some of our carriers had to do a double trip, as there were some three or four packs we could not bring with us from camp. For this they were promised a moderate addition to their pay—three sticks of trade tobacco each.

We left Exton Junction early on the morning of the 18th, and had at the start some very steep ridges to cross, which did not, however, take us before lunch over any ground exceeding 700 or 800 feet in height. We passed several creeks in slate and quartz formation, which looked, especially one, very promising for gold, but no trace of that metal was found on washing gravel. At noon we halted at Taula Creek, at an altitude of 583 feet, for lunch, having walked over rough road, about two miles from Exton Junction. The same formation of

slate and quartz was observable here, but the hill sides were very precipitous, and the timber not as a rule large. We then ascended the steep western end of Guba Hill, which we crossed at about 1000 feet, and towards 3 p.m. camped on a spur, about half a mile from its summit, having walked about three miles. The weather remained fine, and the health of the party was good. There were many traces of the passage of natives along the ridges, where they had "blazed" trees and broken branches; but none were seen or heard.

As a native cannot carry more than about three weeks' food for himself, say for fifteen days of forward march and six days returning, it was necessary to detach a number of men from our party to fetch up supplementary supplies, as otherwise we should soon come to the end of our stock. Accordingly Peter Lifu was despatched from the top of Cæsar Hill with eight Kapakapa men, who proceeded on the morning of the 19th to Manumanu by boat, in order to bring up the river to our depot there all stores left at the coast. Some of the Kapakapa men expressed great reluctance to leave me personally, and declared they were extremely anxious to remain by me on this inland journey; but the truth was they were rejoicing to get away. Their departure made our packs very heavy for the next few days until our stores became lighter by consumption. On the 19th we marched about three-quarters of a mile along the top of Cæsar Hill, and then crossed, at a height of about 500 feet, a fine clear stream about 20 yards broad, named by us the Atoa. Its bed was contained by rocks of slaty formation, but the boulders in its course were principally basaltic. At this creek we lunched, and Mr. Cameron went ahead with two men to find and cut a path. In the afternoon we ascended a spur of Mount Kowald, and, continuing through the same sort of country as previously traversed, encamped in the evening on the top of a ridge 1500 feet high, having travelled about $2\frac{1}{2}$ miles.

The 20th was memorable, as being the first time our native carriers expressed a desire to go no further. Some of them had to do double duty, as the packs were more than the reduced party could carry, and therefore some men had to return to the last camp to bring on to the new camp what had been left. The road in the forenoon was both steep and rough, crossing the ridges of Mount Kowald. Many reasons were now assigned why they should return. We had some men who had accompanied Mr. G. Hunter and Mr. Cuthbertson to Mount Obree in 1887, and they declared they were fed much better then than the "Kovana" fed them—that I gave them no meats, jams, or biscuits; others said they thought of their wives and children, to whom they wished to return; and some thought the road impassable. On this occasion Mr. Belford, by the exercise of patience, by threats and expostulation, managed to bring the whole company into camp on the north side of Mount Kowald, about 500 feet from the summit, so that it

was not necessary for myself to return to bring them on. On this mountain were many traces of the wanderings of natives, but none were seen. The weather continued fine, but a little rain fell in the afternoon. We found, on taking stock in camp, that we had rice, on which the natives were almost exclusively fed, for fourteen days. The temperature at this altitude, 2750 feet, did not fall below 75 degrees F. We omitted lunch on this day, because there was no water convenient; but we found it preferable to have only two meals a day when on the march—a practice we followed regularly afterwards on the outward journey.

We required the whole of the 21st to descend the north side of Mount Kowald, at the foot of which we camped, on the right bank of the Vanapa river, which is here very rapid, in a rough and rocky bed, but only slightly smaller than at the depot camp. On the march down this mountain a fresh source of alarm arose for our native carriers. A small native village was seen in a northerly direction on a hill some five or six miles from us. The desire to turn back was universal. When Mr. Belford and Mr. Cameron were out of camp looking for a ford or the means of crossing the river, the two chiefs, Kebokanamo and Vale ni Koro, came to me and said the “boys”—meaning thereby all the natives, and more especially themselves—wished to turn back, because no man could ever reach the great mountain. I asked them whether they had seen the village of the mountaineers. They replied in the affirmative. And I said I should certainly not give them permission to return, nor food; but if they went I should go over to the mountaineers, when they would have to reckon with them and with myself, not as friends. In a very short time I received repeated assurances that “all would go forward; none would go back.” Mount Kowald was of the usual slaty formation. It contains a large quantity of fine straight timber, but not many trees of great size. On it we killed two or three snakes, a matter worthy of mention only because we saw none further inland. The river, at our camp at the foot of Mount Kowald, we found to be about 800 feet above sea level. In the afternoon and evening there was a thunderstorm further inland, which deluged us with rain and caused the river to rise three or four feet, a circumstance that rendered our crossing it next morning a matter of some difficulty, as several people suffered here from fever. Our party was weakened, but we had no serious case.

On the morning of the 22nd, Mr. Belford volunteered to cross the river and build a raft on the other bank, with the assistance of the Polynesians, there being good timber for that purpose on a small shingly plateau about 400 yards up the river from our camp. The river, which was muddy, and running very strong, containing many rocks and boulders, seen and unseen, was not an inviting one to cross by swimming. Belford, with a line to be used in pulling tools, canes, &c., across, was the first to take the water, and in about two hours had constructed an excellent raft of light wood, which would have served very well to transport in a

short time all our carriers, who, being mountaineers, were not swimmers, as well as our baggage; but the rattan by which it was being pulled over from the left to the right bank gave way before it was more than half way across, when the raft was hurried down stream by the current and carried off. Belford and Cæsar Lifu were on the raft at the time, but could do nothing to save it, and had to jump into the rapid stream and swim to the side where they could effect a landing. Between one and two o'clock another raft was prepared, and we were by four o'clock all safely encamped on the other side with our baggage dry and in good condition. But we had only covered $2\frac{1}{4}$ miles in two days, although those two days had been very fatiguing.

On the 23rd, we travelled about three miles, at first along the left bank of the Vanapa, and then up one of the spurs and crest of Mount Belford. It was hoped that we might be able to keep in the channel of the river for at least two or three miles, so as to reach the western end of Mount Musgrave, thus doubling Mount Belford instead of having to cross it; but it was found that the river bed was narrow, with very deep pools, confined between the ends of mountain ridges that project their heads, bare and solid rocks, into the river at each side; and past these it was impossible to get without leaving the bed of the river. The first one of these deep pools we came to we evaded by a laborious ascent of an exceedingly steep ridge several hundred feet high. When we were rounding the second one in similar fashion, we found we had got so high on the spur that I declined to descend again to the river bed, feeling sure it was much better for us to keep on the crest of the ridge and get as far from the river as possible. We therefore cut our path along the crest of Mount Belford and camped in the afternoon at an altitude of 2530 feet. Mount Belford does not differ in formation from Mount Kowald and the other hills already noticed. It is exclusively of a slaty nature, with thin quartz veins interspersed. It is not a rugged mountain, speaking comparatively; it contains a large quantity of fine trees, and is more frequented by birds than any mountains crossed by us, unless perhaps Mount Kowald. It appears, from the presence of native paths and camp sites, to be a favourite hunting ground; but no natives reside on it or plant on it. We had some light showers of rain here, but no thunderstorm.

As it appeared desirable to get further east before approaching the main range, it was deemed well to follow further along the crest of Mount Belford, whence it was hoped a spur might be found on its northern side that would lead us to Mount Musgrave, and our march was therefore continued along the top of Mount Belford during the whole of the 24th. By about 3 p.m. we had come about three miles, and I began to think it inadvisable to proceed further in that direction. Unfortunately we were completely enveloped in mist and could not see the next range. We camped at a small hunting-house—a thatched

"lean-to" with a cooking oven, consisting of a hole in the ground and about half a bushel of small slate stones showing quartz veins, a kind of stone that would not be selected for such a purpose were stones of a different sort obtainable. The altitude of this native camp was 3500 feet. The thermometer stood at 74° F., at 3 p.m.; but towards morning we felt it, for the first time on this expedition, decidedly cold, although the thermometer did not show less than 65° F. The weather was wet, but the rain that fell was not heavy. We saw much fine timber on this day's march.

On the 25th one European, and all the natives of the party except eight, turned back to proceed to the depot camp on the river to meet Peter Lifu and the Kapakapa men on their return from Manumanu, and to help them to bring on the additional stores. Those remaining now comprised two Europeans besides myself, Mr. Belford, two Polynesians, and eight Papuans. Our provisions consisted of five bags of rice and one bag of flour, with some tea, a few tins of meat, and one ham; with these things and camp furniture we were again overloaded. Mr. Cameron laid out a track for us, which we cut, down the north side of Mount Belford, but it was an exceedingly bad one, extremely steep in some places, and very rough at others. We got only a few hundred yards beyond the creek at the foot of Mount Belford, and had to camp in a wet, gloomy, very narrow gorge, where we were soon enveloped in mist and rain. We had descended only about 1000 feet, and had not put more than a short mile of road behind us. One redeeming point of the country travelled over on this day's march was the presence of some fine botanical objects; there were tall and graceful wild bananas; a pepper, nearly of the kind used as the national beverage in Fiji and elsewhere, but here growing as a tree 20 or 30 feet high; and several other things that, though rare and valuable as specimens, were too bulky and too heavy for transport. Very noticeable was a remarkably fine rhododendron, dried specimens of which were obtained.

About three-quarters of a mile from our camp of the 25th we came next morning at an altitude of 2635 feet to the Joseph river, a fine mountain stream of about 20 yards broad, running along the southern foot of Mount Musgrave. Here we were able to dry our soaked baggage, and to get a thoroughly enjoyable cold bath, and it afforded some of us great satisfaction to pick out of our skin the ticks that had been securing a lodgment therein for the last two or three days, Mount Belford being more frequented by these pests than any place I have any experience of. The scrub itch insect, which had been causing us great discomfort, was, however, not so easily got rid of as the ticks, and it may be doubted that all those that attached themselves to the expedition are yet extinct. In the afternoon we camped on a spur leading us right up towards the crest of Mount Musgrave, at a height of 3380 feet. We had been lucky enough to select a spur, up the crest of which there was a native hunting

path. Such a path is not passable to men with packs, but it requires less cutting than a ridge on which there is no track at all, and it gives a direction, which also saves time. At 7·30 p.m. the temperature in this camp was 77° F., but the position was a sheltered one. It rained a little during the night and everything was enveloped in fog. At daylight next morning the temperature was 73°.

On the 27th we continued the ascent of the ridge, following the native path; but unfortunately, our progress was slow, as most of our carriers had to perform a double journey to bring on all our baggage. About 10 a.m., Mr. Cameron, myself, and the two men clearing our path, got to the top of the ridge, about 5000 feet high. There we found a large hunting house, called by us "Goodwin Lodge." It had evidently been recently occupied, a native dog was running about, but no natives were seen, nor did any respond to our shouts. The house was about 25 feet long, 10 feet wide, and 6 feet high; the roof was covered by the leaves of a dwarfish pandanus, common there. The temperature at "Goodwin Lodge" at 10 a.m. was 71° F. The ground was soaked with moisture, and, as the sun was shining right on the clearing at the end of the house, and the earth there was warm, it seemed to be literally alive with leeches. There was the small wiry-like leech about three-fourths of an inch long, and the larger leech as thick as a goose quill and about two inches in length. Both kinds were present in hundreds and thousands. Mosquitoes were in swarms at the same place, so that we did not remain long at "Goodwin Lodge." Fortunately for us the crest we had reached turned round towards the west and north, and led us towards the main crest of Mount Musgrave, which was reached on the next day's march. We camped at an altitude of 5588 feet, on the top of the ridge, having walked about four miles, the unusually great distance being due to the presence of the good native path we followed. Fog began to close round us before noon. Most of the trees at this elevation seemed to belong to the myrtaceous family; they are not of large size. Towards evening the temperature was 65° F., and a little rain fell. During the night we could hear the sounds of native festivity and dancing, apparently proceeding from a large number of people some two or three miles north-west of us, the direction in which it appeared the native path we had followed proceeded. As we had covered more ground than usual during the day, Mr. Belford and the native carriers slept in the camp below, which we had formed the previous evening, to bring on their second loads next day, so that, having to wait for them, we were unable to shift camp on the 28th. Mr. Cameron and myself took advantage of this halt to follow up the native path some distance, and before proceeding much more than a quarter of a mile we were able to obtain a good view of the Owen Stanley Range, and to get angles, &c., from the western end of the crest of Mount Musgrave. From this point we saw a large native village on one of the ridges on the south-

west foot of Mount Knutsford. Mr. Cameron, who is a qualified and experienced surveyor, was of opinion that it would take as long to go from Mount Musgrave to Mount Victoria as it had taken to come to Mount Musgrave, although the distance in a straight line was not more than thirteen miles from the western end of Mount Musgrave to the summit of Mount Victoria.

It appeared then to be worthy of consideration whether the easiest way of reaching the highest point of the Owen Stanley Range would not be to ascend Mount Knutsford and cross from its summit, rounding the head of the Vanapa river, to the main range, along the top of which it appeared possible to proceed to Mount Victoria, a route that subsequent events compelled us to adopt. At that distance, however, it was not possible to see how extremely steep are the two great spurs that come from the summit of Mount Victoria down to the Vanapa river, and up one of which it was hoped we might force our way. It was therefore determined that we should proceed eastward along the crest of Mount Musgrave until nearly opposite Mount Victoria, and then look for a ridge on the north side of Mount Musgrave leading down in the desired direction.

On our way back to camp we heard in it the characteristic gabble of excited Papuans, and knew at once we were receiving a visit from the natives. We found there a man with whom we were soon on friendly terms. Four others soon arrived, and we, without difficulty, induced them to bring more natives to see us and to fetch us a pig and some native food, which we received before night from a score of natives—men, youths, and boys. We were visited by these people, sometimes by forty or fifty at once, as long as we remained in the vicinity, and received from them sufficient food to be of great service to us; and throughout we were on the most friendly terms with them, sometimes returning their visits, which they always invited us to do. They speak a language that has strong affinities with that of the Koiari people on the one hand and with that of the people between them and “Doura” on the other; that is a Papuan dialect. They are physically stronger than the coast men, perhaps a little shorter, having long and strong bodies, but generally shorter and more muscular legs. They do not tattoo, nor wear nose nor ear ornaments. The older men wear caps made of the best of cuscus fur, with a frontal ornament made of white shells ground down to thin plates and then sewn together, and with cheek pieces of black cassowary feathers. Others wear caps that are more elaborate, but less picturesque, trimmed with boars’ tusks and the teeth of dogs.

Youths generally wear on their heads a piece of native-made cloth, apparently manufactured from the paper mulberry, into which they gather their copious mops of hair. On the breast they wear a piece of net-work, with a small mesh, about 8 or 10 inches deep, and long.

enough to extend rather more than half-way round the ribs. It is fastened behind by strings from its four corners. They all wear the perineal band, as worn at the eastern end of New Guinea; but in addition to that every man and boy is clothed in a girdle of paper mulberry cloth about 10 or 12 inches deep, but cut up into lappets, and over this they wear in front as an apron a small net bag, about 9 inches or a foot in length. On the neck, legs, and arms they wear rings of cane, sometimes plain, sometimes plaited or twisted. Their features are decidedly good, their faces indicating more character and strength than those of the average coast men. In not a few the cheekbones are rather broad and prominent. The nose is generally of the Semitic type, the nostrils either not arched or much less so than is usual in Papuans, and the chin and underjaw are also stronger. They possess all the volubility of the Papuan race, are less shy than tribes that have seen more of white men, but are apparently superstitious and easily frightened. They informed us that they used both the bow and the spear, but we never saw one of them with a weapon, and I could not induce them to bring any to camp; not, as it appeared, as if they mistrusted us, but seemingly doubting whether it might not be misunderstood should any of them with arms in their hands meet any of our party away from camp. It is much to be regretted that personally I was such a short time near them that I was able to obtain from them only a brief list of words of their dialect. They always left our camp before nightfall. They are fond of, and will give food in exchange for, salt, beads and cutlery. Tobacco they do not prize greatly, as they grow very good tobacco themselves. I procured from them a small parcel of tobacco seed, and some peas and beans which they cultivate; all these will be forwarded to the Agricultural Department of Queensland. They grow yams, sweet potatoes, and several varieties of bananas, and have abundant food.

On the 29th we were able to resume the ascent of the crest of Mount Musgrave, along which we proceeded about two miles on this day, and camped at 7180 feet. Here the temperature was 70 degrees at noon, but fell at night below 60 degrees. We found the climate raw and foggy. Everything is draped in moss, which gives the forest a soft and lonely aspect; and at that time all objects were saturated with moisture. It seemed strange that in such a place mosquitoes should make themselves troublesome. Water for culinary purposes was not at first very good or abundant; but a copious supply was discovered a day or two afterwards, and this point was made a permanent camp. At first, too, there was great difficulty in getting fuel to burn, but it was soon found that some of the green timber burned far better than fallen wood. In the afternoon we were visited by a large number of natives, who assisted our people in transporting the baggage, and brought food for sale. Endeavour was made to induce three of them to accompany us to the Owen

Stanley Range. The man that appeared to have the greatest influence among them showed much respect for my authority, and was very frank and friendly. But when it was intimated to him, by words and signs, that I wished him to go with us, he made what were understood to be very complimentary speeches; but they always ended with a pantomime of signs and expressions, which seemed to indicate that his legs were not strong enough, that his breath was too short, and that it was impossible to get up to the tops of high mountains. Neither he nor any of his people were understood to make any objections on superstitious grounds; and it may be stated here that no Papuan on this expedition ever expressed on religious scruples any fear or disinclination to ascend the Owen Stanley Range. The chief of these people and two young men finally appeared to consent to go with me; and I understood the chief to say and mean he was going home to fill his net-bag with food for the journey; and they received small presents on this understanding. But as they did not arrive before we started next day, which, however, we subsequently learned to be impossible on account of distance, we did not wait for them; and we had no guide beyond this.

Mount Musgrave does not differ in formation from Mount Belford; but, somewhat to our surprise, we found it to be composed of slate and quartz right to the top. Our path was crossed at several places, between 6000 and 7000 feet, by well-marked veins of white quartz. There is much fine timber growing below 6000 feet, but above that altitude the trees are smaller, and often very crooked. The summit is narrow at some places, but not so rocky as its appearance at a distance led our party to expect.

On the 30th we advanced eastward along the crest of Mount Musgrave; but after reaching a height exceeding 8000 feet, and finding that there was no prospect of meeting with any spur running towards Mount Victoria, and fearing that the greater the altitude reached on Mount Musgrave the greater would be the difficulties of descent, it was determined to retrace our steps for about a mile, and to descend on the north side of the mountain in the best way we could, as there was no ridge to guide us. We accordingly left the mountain top at 7180 feet, and cut a path almost right down its northern face. We camped at about 6000 feet at half-past four, completely enveloped in mist, and unable to find our way further on account of a line of precipitous rocks which crossed our path at right angles. The temperature in the morning was 60° F., at noon 67°, and at night about 58°. We had some rain during the night, but no thunder; thunderstorms were now becoming much less frequent, being no longer of daily occurrence as they had been a month previously. On the morning of the 31st Mr. Cameron reported, after examining the ground all round, that there was no way down the mountain. I went to examine the rocks below, and found a place where it appeared possible to descend, and I therefore

returned to camp to set the people in motion. But I was at once informed that the Papuans would go no further, as they wished to carry back one of their number who was sick. We had only eight Papuans with us, two of whom I found to be ill—one of fever, the other of headache. They promptly received medicine, and were ordered back to camp; a third one, who said he too had fever, was cured instantaneously by a dose of quinine, and within two or three minutes the six remaining carriers were under way in obedience to my order. A road was cut down the rocks and precipices, but it was the steepest one, without exception, I have ever traversed by carriers. Mr. Cameron overtook me about noon to say the carriers could not and would not descend; but they made their appearance about an hour later with all their packs. By dint of great exertion we descended in this day's march 1700 feet. We camped on the edge of a small creek at an altitude of about 4300 feet, everyone excessively tired and greatly discouraged by the small progress made.

When we left camp on the 1st June, Mr. Cameron, at his own wish, returned to the camp on Mount Musgrave, as, not feeling well, he did not think it prudent to go further towards the main range. He was therefore directed to ascend, during my absence, the highest point of Mount Musgrave and Mount McIlwraith, in order to determine the watersheds of the Vanapa river, and to map out the Brown river, &c. He reached the summit of Mount Musgrave, which he found to be 9150 feet high, but did not cross the ravines that divide it from the more lofty and precipitous Mount McIlwraith. My own party now consisted of Mr. Belford, two Polynesians, and six Papuans. Proceeding across a succession of steep cliffs and rugged gorges, we, by ten o'clock, reached a clearing, on which there had been a native garden a year or two before, and after experiencing great difficulty in descending the steep rocks at the foot of Mount Musgrave, we reached the Vanapa river about noon, at the foot of Mount Knutsford. The river was here not much more than half the size it was when we last parted from it at the west end of Mount Belford. It ran west by south; had a channel about 30 to 40 yards wide, but was so full of immense boulders (of the same formation as the rocks of Mount Victoria, as was found later on), some of them being as large as a house, that it was difficult to see fully the volume of water, as much of it ran below these great rocks and was invisible. It was our hope that we should be able to proceed up the bed of the river to the foot of Mount Victoria, the nearest end of the lowest spur of which was judged to be three miles distant; but after examining the river-bed the men declared that without packs they might perhaps be able to find their way, with some danger, up the channel, but that it was completely beyond them to do so when loaded. Another consideration induced me to give up the idea of marching along the river bed; a single thunder-storm would swell the river so as to completely cut off from us, for some

time, the possibility of advance or retreat. The point at which we reached the river was at the foot of one of the leading spurs of Mount Knutsford, and it was manifestly an undertaking of such difficulty to cross, parallel to the river, the foot either of this great mountain or of Mount Musgrave, so as to reach the nearest part of Mount Victoria, that we saw ourselves compelled to adopt the plan that had suggested itself before when we were on the west end of the ridge of Mount Musgrave—viz., to ascend Mount Knutsford. It is difficult to believe that it should have been considered impossible to traverse the three miles which, at this spot, separated us from Mount Victoria; with time no doubt we could have effected it, searching our way through the dense undergrowth, and up and down the mighty rocks that would have lain in our path; but our experience in descending the north side of Mount Musgrave created a fear that the greatly higher and more precipitous Mount Victoria would present ridges too steep to be accessible. This could, however, only be a matter of inference, as that mountain was completely cut off from view at the point where we then were in the confined river-bed.

We had considerable difficulty in crossing the Vanapa, on account of the quantity of water and the rapidity of the current. Mr. Belford, however, bridged it, in about a couple of hours, in a manner that did him great credit as a man of resource; but there are not many people that would wish to cross that bridge often, a fall from which near the right bank would be certain death, as it there crosses a waterfall, where the powerful stream dashes down into an eddying pool full of great sharp rocks. The others walked across it; I crawled over it. The altitude of the river where crossed was 2790 feet, and the temperature at the time, midday, 68° F. Immediately on effecting the passage, we were at the foot of Mount Knutsford, the first mountain we touched connected directly with the Owen Stanley Range. We ascended about 500 feet from the river, over a quarter of a mile of road, and then camped. From this camp we could see the numerous gardens and garden houses on the north side of Mount Musgrave belonging to the natives that visited us; these gardens were from two to four miles distant from us in a straight line, and the fact that we camped at a halting place of the natives containing two rather well-built houses, convinced us that their villages could not be nearer than the gardens we saw. We had no rain, but the mountains were partially covered by fog from an early hour in the afternoon.

On the 2nd we continued our ascent, being fortunate enough to find a native path which we could follow now and then, it being distinct wherever the ridge was quite narrow, but not traceable when it widened out. A temperature of 69° F. was marked before sunrise, and by 10 A.M. it had risen to about 77°, at about 5000 feet. We camped for the night at an altitude of about 6500 feet, where the temperature at 3 P.M.

was 72° , and at 6 p.m., 67° . The road traversed was estimated at two miles. Fog enveloped us completely by the middle of the afternoon, but we had no rain. There was some difficulty in getting water, which had to be carried a long way up very steep ground. It was found that the geological formation was not essentially different from that on Mount Musgrave, slaty rocks and quartz cropping out here and there along the line of march. The forest at this altitude had the myrtaceous appearance noted on the higher regions of Mount Musgrave; and here, as there, the trees were not as a rule large. It was still necessary to keep one or two men employed to clear a path for us with large knives. Game there was none, except a few mountain pigeons, and they were not easily got, and could not be counted on. In the forenoon we heard some natives shouting in the forest a mile or two on the left, in the direction of their villages, but they did not overtake us.

Next day, 3rd June, we started at 7.30 a.m., and by noon estimated that we had travelled one mile, when we were completely enveloped in dense fog; temperature 64° F. Very noticeable was the death-like stillness of this place. Hardly a single bird uttered a "call," not a leaf rustled, and the men spoke in whispers when they spoke at all, which was seldom. The feeling of loneliness was increased by the striking appearance of {the trees; roots, trunks, and branches were wrapped up in thick coverings of moss, even the leaves were not free from it. Everything was soaking wet, and the fog, especially when the clouds lifted a little from the ravines or broke on the rugged spurs, made the crags and ridges look much more formidable and inaccessible than they really were, and forced one to think that we should never be able to continue the upward march next day. We camped in the afternoon on a ridge so narrow that it barely afforded width enough for the path. The altitude was about 8300 feet. An hour or so before we halted we were gratified to hear our native friends shouting to us not far behind. They stopped short, however, at the foot of an exceedingly steep and difficult ascent on which we were then engaged, but called out, urging us to return, as we could not go further, inviting us to come to their villages, and they would feed us with sugar-cane, pigs, yams, sweet potatoes, bananas, and everything they had. We replied we would visit them on our way back to the coast, but never interrupted our march; which at the time was up the face of a spur not far from the perpendicular, quite inaccessible to men with packs but for the moss-swathed trees that grew there, through the roots, trunks, and branches of which we crawled, climbed, and dragged ourselves up, often walking entirely off the ground on the roots and gnarled trunks of the stunted trees as if crossing a mangrove swamp. We could find no water at this camp, but fortunately we were able to catch rain-water enough to cook about half a meal of rice for the native carriers, but not enough to make any tea for the others. This was the last shower of rain we had on the outward journey.

On the morning of the 4th a Polynesian, whose feet were very sore, and three Papuans were sent back to Mr. Cameron's camp on Mount Musgrave, as it was becoming plain that my party was too large for the provisions remaining. We left twenty pounds of rice hid in a secure place near this camp. Our total armament and provisions now amounted to two shot guns and one revolver, fifty pounds of rice, thirty pounds of flour, about six pounds of ham, and about the same quantity of salt beef. The party consisted of myself, Belford, Joe Fiji, and three Papuans. We expected to be overtaken in a day or two by about half-a-dozen carriers with supplementary stores, but we could not wait for their arrival. As there was no water procurable, we had to start without any breakfast. After we had gone about three-quarters of a mile we came to a native hunting camp, a "lean-to" roof, suitable for about three men, provided with three cooking places, each of which consisted of an excavation in the ground about 18 inches wide and nearly the same depth, with small stones sufficient to half fill it. A halt was made here, as we felt sure there must be water somewhere in the vicinity of such a camp. We did not proceed further that day, as it was thought prudent to bake bread sufficient for two or three days lest there should be no water higher up. The altitude of this native camp was 8815 feet, the temperature at noon in the shade 63° F. We were evidently about to emerge from the zone of moss and fog; the trees were larger and straighter, and moss was far less abundant than from 6000 to 8000 feet, and we found that we were just at the upper edge of the afternoon fog that had settled down so dense on the mossy region immediately below us.

On the following day, 5th June, we first came into contact, at an altitude of about 9000 feet, with an undergrowth of bamboo. At first this did not cause us much trouble or delay, as the stems were generally about an inch in diameter, and therefore easy to cut; but about 500 feet higher the bamboo changed its character; the stems grew as close together as wheat in a field, but of such length that they often ran completely over the tops of, and entirely covered up, large trees. To cut a path through this was tedious and tiresome. This kind of bamboo met us off and on until we left Mount Knutsford, and beyond that, fortunately, there were none. The zones of moss and mist end together; a dry and fine climate begins with the bamboo, and it is never lost until one descends again, at 8000 to 8500 feet, into fog and moss.

At 2 p.m. on the 6th June we reached the summit of Mount Knutsford, 11,100 feet high. It is not until within some 500 feet of the summit of this mountain that Alpine plants and flowers are met with. The top of the mountain ends in two masses of rock, each about 100 feet high, that stand about a quarter of a mile apart; a smaller and lower mass of rock lies about half-way between them. These peaks were found to be covered by an Alpine flora; but as the area was limited, so was the number of species and varieties obtainable. Indeed, this great mountain

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is very disappointing in regard to its flora, as, except above 10,000 feet, little grows besides trees, moss, and bamboo. I believe, with some confidence, that I obtained specimens of almost every Alpine plant that grows on the mountain. The quartz and slate formation extends to the top. The climate was magnificent, dry and cold, between 60° and 70° during the middle of the day in the partial shade of the forest there, and as low as 45° to 40° at night and early morning. Here we were in the afternoon clear above the great masses of snow-white cumulose clouds which lay below us some two or three thousand feet and completely cut off all view of the hills and valleys beneath.

The upper surface of this vast ocean-like cloudy expanse was almost dazzling in its whiteness, extending its rugged masses, more uneven than the jagged peaks of any mountain land, so far that nothing could be seen beyond their horizon. These great cumuli lay apparently perfectly still, like an arctic world of frozen snow; but every now and then small jets of mist shot with arrow speed up narrow ravines right to the summit of the mountain as if projected upwards by the weight of the superincumbent cloudy matter forming the upper layer of the stratum. These clouds are formed locally, and are not brought up by the south-east wind, from the force of which they are protected by the Owen Stanley Range. The stratum is usually about 4000 to 5000 feet thick. The tops of the higher mountains on the south and south-east, Mount Service, Mount Morehead, and Mount Mellwraith, projected above this stormy-like sea of cloud, clear, bold, and dry, at least 2000 feet; Mount Victoria towered 4000 or 5000 feet clear over it, and on the north and north-east Mount Griffith, Mount Douglas, and other striking heights, which will be mentioned later on, reared their lofty crests several thousand feet above mist and damp into one of the finest climates on the globe.

On the evening of the 6th, some of my party were certain they had heard guns fired on the slopes below us, from which it was inferred that those who were to bring us additional stores were close at hand. So sure were they of this that I was induced to remain at the top of Mount Knutsford the whole of the 7th to permit of the party behind joining us. But no one appeared, and I therefore lost a day, except that I was able from the peaks of Mount Knutsford to select the route to be followed to the top of Mount Victoria, and had an opportunity of completing my collection of the Knutsford flora, and of filling in geographical details in the forenoon before the country below was covered by its pall of cloud. In the morning a clear view could be had from the summit of all that lay between Mount Knutsford and the south coast. The native community we had come into contact with on Mount Musgrave, it was clearly seen, have nearly all their gardens and garden-houses on the north side of that mountain, but the permanent villages, four in number, were distinctly visible, three on the lower spurs of Mount Knutsford, and one on Mount Griffith, at a height not exceeding in any

case 4000 or 4500 feet. This occupation on the two mountains last-named is the only representation of human habitations seen on any of the mountains of the Owen Stanley Range.

At about 10 a.m. the low country began to become obscured by small points of clouds, rising up sporadically, and somewhat later the view presented would have satisfied the wildest imagination as a picture of chaos, for ocean, earth, and sky seemed so thoroughly commingled and confused that no idea whatever could be formed where one began or another ended.

The top of Mount Knutsford is the best point from which to note the rise and course of the river Vanapa. Nothing can possibly be more clear than that it drains the whole of the south side of the entire Owen Stanley Range from Mount Victoria to Mount Lilley. Indeed, besides that draining, it carries almost nothing else to the ocean, as all the water it receives after reaching the north side of Mount Kowald is insignificant. At the north-west end of Mount Musgrave it divides into two great branches; one runs west, and drains the eastern slopes of Mount Cameron, the east and south sides of Mount Lilley, and the south sides of Mount Thynne and Mount Griffith; this branch cannot be much less than the eastern branch. The latter lies at first between Mount Knutsford and Mount Musgrave, and then for a short distance separates Mount Knutsford from Mount McIlwraith, until a projecting spur of Mount Victoria divides them. This branch then splits up into five distinct streams; the first one lies between Mount McIlwraith and Mount Morehead, the second between the latter and Mount Victoria, the third between Mount Victoria and the southern aspect of Mount Douglas, the fourth between Mount Douglas and Winter Height, and the fifth, the principal branch and real head of the Vanapa river, flows between Mount Griffith and Mount Knutsford on the west and that part of the main ridge of the Owen Stanley Range called Winter Height on the east. From the west end of Mount Musgrave to the sea this river is well suited for the transport of timber; beyond that point its channel is so full of immense stones and boulders that it would afford no water carriage.

No other river receives any part of the drainage of the southern aspect of the Owen Stanley Range. Between Mount Victoria and the Brown River there lie the great mountains, Mount Service, Mount Morehead, and Mount McIlwraith, all from 10,000 to 11,000 feet high; and to these perhaps should be added, although the Brown does not approach them, Mount Musgrave (9150 feet) and Mount Belford (about 6000 feet. As we could not see what course the Brown takes, a European was sent up the Laroki to make a traverse of that river and to look for the Brown, and he has reported that the latter is a branch of the Laroki, and describes the Laroki itself as being much smaller than the Vanapa.

We were now left with six days' food, and there was no appearance of any more reaching us. Our three native carriers were very much disquieted, and volunteered to Belford the information that their countrymen who had gone back for supplies had informed them, before they left, that they would run away during the night, and would not return. Mr. Belford was directed to tell them they were lying, and that I was determined to proceed, whether we received more food or not. To myself they offered no objection, and at starting no demur was expressed.

It was, however, not without some amount of anxiety that a forward march was ordered on the morning of the 8th. I had estimated that we could make our six days' food last for ten days, and that by forced marches we could double the head of the Vanapa and reach the top of Mount Victoria in four or five days, and return to where we were in three, whence in one day we could reach the 20 lbs. of rice we had left at the third camp on Mount Knutsford. Belford gallantly offered to accompany me himself if there was not sufficient food to take on the whole party, or if they should refuse to go; but I decided to carry forward the total number of my five companions; not omitting even Joe Fiji, his objectionably rapacious appetite notwithstanding. We accomplished fully five miles in a northerly direction along the summit of Mount Knutsford, and camped on a small creek that divides it at its northern end from Mount Griffith. About 9 a.m. next day we crossed the Vanapa for the last time on the outward journey. The altitude of this crossing was 10,130 feet, the temperature 59°. It is even there a fine mountain stream about five yards broad, with a very rocky bed. On crossing we began the ascent of the central ridge of the Owen Stanley Range. At this point there are several large spaces on the face of the mountain where grass grows freely, but on which there are no trees whatever. As wild dogs were howling in the vicinity, some of our people expected to find natives at these clearings, but I could see no trace whatever of human presence except our own, either past or present. Mr. Belford, when in advance of the three men who were carrying all our food, set fire to the grass as a signal to those behind who had lingered about the river and must have been fully half a mile from us. To my great alarm, the fire in a few minutes covered scores of acres and swept like a tornado in a straight course towards the river, whence our men were coming. I feared they should have to throw away their packs and run for their lives, but very fortunately there was a wet strip along the middle of this great grassy patch which did not burn, and along this they soon appeared, greatly to my relief. The surrounding forest growth, although it looked very dry, did not burn. Early in the afternoon we reached the top of the great ridge at the point named Winter Height, which has an altitude of 11,882 feet; and about 5 p.m. we camped, after having walked about five miles, on the lowest part of the

great central ridge at a point where the top of a glen on the south side meets the top of a glen on the north side, forming the lowest part of the central portion of the Owen Stanley Range, to which has been given the name of Dickson Pass. Its height is 10,884 feet, and it divides Mount Douglas from Winter Height.

In our camp at Dickson Pass the morning temperature before sunrise was 44° , and at 8 a.m. it had risen to 55° . The forest here was mainly composed of cypress. We had water near. We passed over the top of Mount Douglas, 11,796 feet, and had an opportunity of picking strawberries there; they were not of large size, excellent in flavour, but not quite ripe. At 5 p.m. we pitched camp, after a march of about five to six miles, some four hours' march from the top of Mount Victoria, the name I have given to the highest crest of the great Owen Stanley Range. Soon after we had camped there arrived two Polynesians—George and Cæsar Lifu, and four Papuans, sent by Mr. Cameron to bring us supplies. They had brought rice and flour, which we could manage without, but of meat, of which we had practically none, they did not bring an ounce. Indeed, it was clear that their enthusiasm to get to the top of the "Great Mountain" was greater than their consideration for us, for even the rice and flour they had left on the way, and now they joined us with empty hands and empty stomachs, and we had to share our scanty stock with them. They did not, however, return so light, as geological and botanical specimens had to be transported.

At about 11 a.m. of the 11th June I reached the top of the north-west peak of Mount Victoria, and at once set to work to collect geographical data and botanical and other specimens. I do not feel competent to pronounce on the geological formation of Mount Victoria; the specimens will be duly examined by competent authority hereafter, but it may be mentioned that a few hundred feet from the top of the highest crest I saw the largest vein of quartz I have seen in the Possession, about 15 inches thick. There are no trees on this mountain within 1500 feet of the top, and but few bushes grow within 1000 feet of the summit. The flora is disappointing, except as regards grasses, which were numerous, far beyond my expectation. There are probably few species or varieties of flowers or grasses of which we have not brought away examples, but the total will, it is to be feared, be surprisingly small. There are several varieties of daisies, buttercups, forget-me-nots, heaths, &c. There are very few birds, the most noteworthy being a lark, only one specimen of which was obtained by my private collector, Joe Fiji; but to my great disappointment I learned the day after we had left the mountain that Cæsar Lifu and Joe had eaten two of my three new birds obtained on the mountain, and that one of the two was the lark.

We were camped two nights on Mount Victoria, the 11th and 12th of June, at an altitude of 12,452 feet, that is, about 670 feet from the

top of the highest peaks, and we therefore can speak of its climate with some degree of authority. The temperature rose in the middle of the day, on the tops of the peaks when the sun shone straight on them, to 70° ; in the morning the grass was all quite white with frost before the rays of the sun reached it. Icicles were brought into camp the afternoon of the day we got to the top; and next day I saw one, the largest I observed, more than an inch in diameter and seven or eight inches long. During the day, from about 10 a.m. till 4 p.m., the temperature in the shade was between 50 and 60° . The sky was blue and cloudless, except when the wind was blowing strong from the south-east, when there was some haze. At night there was no trace of cloud to be seen, except those that lay like lead in the great valleys below, and the stars shone out as brilliantly as on a frosty winter's night in the British Isles. From the dryness of all plants and trees on the Owen Stanley Range it was apparent there had been no rain for several weeks, and the whole range did not show a single cataract or waterfall of any kind, nor even was there the murmuring of a mountain stream to break the deep oppressive silence that reigned on this great lone mountain. Mount Victoria is, during this season at least, emphatically a dry mountain, and the same may be said of all the other great mountains of the Owen Stanley Range traversed by us; but yet, strange to say, water oozes from some of the gigantic rocks on the crest of Mount Victoria, and only 200 or 300 feet from the top of the south-east peak I caught a small frog which was floating benumbed with cold in a little pool of water, where there was sufficient to enable one to say it was "running." We suffered much from the cold, as we had not sufficient clothing to protect us, so that in spite of fires a good deal of discomfort had to be endured. It seemed also to sharpen the appetites of a party already not strangers to hunger.

The crest of Mount Victoria runs from south-east to north-west, and may be described as composed of six different peaks, but they might be divided differently by different observers. The north-west one and the south-east one are a few feet higher than any of the others, and perhaps 50 or 100 feet higher than some. It is impossible to say which of these two is the higher; after examining both, the one from the top of the other, I hold them to be of equal height. They are also more easily ascended than the central masses, being broader, longer, and far less rocky. The distance between the north-west and south-east peaks is from a mile to a mile and a quarter in a straight line; the chief portion of two of the intervening peaks lies to the north of this straight line. Up the sides of the north-west and south-east peaks there are great breaks in the rocks, that are now filled up with débris and growing grass, up which one can walk without the least difficulty if sure of one's feet and head, and the top of each is not less than eight or ten yards long. On this nearly level ground made up of decomposed rock there grew

flowering moss and heath, and it was easy to drive a peg a foot or two into the ground on which to rest the compass in taking angles. So easy is the ascent of these two peaks, that I walked with hobnailed boots right up the north and down the south side of each, without having to creep, scramble, or use any support. But it is very different with the central peaks, to the top of all of which I climbed only after tremendous exertion. The upper hundred feet or more is usually perfectly bare rock, sometimes nearly perpendicular, sometimes overhanging; but patience will enable one to get to the top of each of them if one is prepared to incur a little risk. Fortunately the surface of these rocks is rough, and provides good footing, and supplies holding ground for the fingers. The different peaks, or parts of the same peak, are sometimes separated by chasms many scores of feet in depth so that to pass from peak to peak, a somewhat perilous descent and a laborious ascent has to be undertaken, often several times before a way to the bottom or top can be found. Mr. Forbes, in speaking of what I take to be the portion of the Owen Stanley Range I have named Mount Victoria, says in a report to the Scottish Geographical Society, published in August 1888:—"The Owen Stanley Peak is a gigantic isolated pyramidal block standing in weird loneliness, detached from the main range, on its own base, culminating in several acuminate rugged central peaks and pinnacles, whence radiate sharp spurs with precipitous flanks, down whose gorges dash impetuous torrents, whose waters filled the air with a ceaseless moan, to join the Warumi and the Naoro. On the topmost of these—Huxley Pinnacle—I have bestowed the name of my honoured master in biology, who, from the deck of H.M.S. *Rattlesnake*, described and named the range in honour of her captain."

The relation of Mount Victoria to other mountains will be mentioned later on; but it must be remarked here that there is no topmost pinnacle on Mount Victoria, and that, therefore, I was unable to identify the one that was named Huxley Pinnacle by Mr. Forbes. I have, however, myself given no name to any particular peak on Mount Victoria, deeming the name of the Sovereign, bestowed on the mountain as a whole, sufficient to meet, for the present at all events, all practical purposes. Great rocky precipitous buttresses are thrown out by the mountain, exceeding 12,000 feet in height, two on the northern side, two on the southern side, and a mighty one on the south-east, and all of these are bristling with peaks and pinnacle-like rocks, and contain hundreds of inaccessible crags and precipices, more than enough to try one's resources in bestowing names, were they each to be specified.

Mount Victoria is far from being the isolated block it has been customary to represent it. It is simply the eastern end of the Owen Stanley Range, which runs without any break, as one continuous whole, from the south-east end of Mount Victoria until the range meets Mount Griffith and Mount Scratchley; the length of this part of the range (for

it continues further west, into Mount Thynne and Mount Lilley) is about 20 to 25 miles. The lowest part of the Owen Stanley Range from the east end of Mount Victoria to the junction mentioned is Dickson Pass, which, as already stated, is 10,884 feet in height. It need hardly be said that it was because of the fact that Mount Victoria is only a crest at the end of the great Owen Stanley Range that we adopted the route we took round the head-waters of the Vanapa and along the top of the range itself, which gradually led to the summit of Mount Victoria. The Owen Stanley Range ends at the east in Mount Victoria, beyond which there are a number of low rounded hills separating it from the range in which Mount Obree is situated, a range which trends away northwards and forms one side of a large valley, which will be mentioned again. It is therefore quite erroneous, from a geographical point of view, to speak of Mount Obree as being part of the Owen Stanley Range, but the low country that intervenes between the ranges cannot, in all probability, be seen from Mount Obree itself by one looking thence towards Mount Victoria, and it is not distinct from the coast.

Mr. Cameron's calculations and my observations make the height of Mount Victoria 13,121 feet, an estimate that comes very near to that given on maps and charts, 13,205. This close approximation was not expected, as Mount Obree is entered on our charts as 10,246 feet high, and was found by Mr. Cuthbertson (*vide* Report of Royal Geographical Society of Victoria, vol. v. part. ii.) to be only 8000 feet. But Mr. G. Hunter and some of the natives that went on that expedition say they did not go to the highest point of the Mount Obree Range, and Mr. Hunter says distinctly that he had a glimpse of a peak about 1500 feet higher than the one ascended, lying some distance to the north of it. This may account for the above great discrepancy between the estimated altitude and that ascertained by Mr. Cuthbertson. The weather, it appears, was so thick at the time that only occasional glimpses could be had of the neighbouring mountains. But, of course, all these measurements, my own included, are only approximate.

The view northwards from the top of Mount Victoria was of the greatest interest. It has been already mentioned that the Owen Stanley Range meets Mount Griffith and Mount Scratchley. The first sight of the top of this latter mountain was had from the top of Mount Knutsford, whence it could be seen rising at some distance over Winter Height. {It presents a bold rocky serrated crest, with well-defined outline. Like Mount Victoria, it is at the top destitute of trees, and for 500 feet downwards consists of bare rocks or patches of brownish grass. It is about 12,250 feet high. It runs in a north-easterly direction for three or four miles, and then opens out into two great ridges, which run down for about half a score of miles to end opposite Mounts Gillies and Parkes. A few miles further north than Mount Scratchley,

and running nearly in the same direction, is the second highest mountain in the Possession, so far as at present known. To this mountain I have given the name of Albert Edward, in honour of His Royal Highness the Prince of Wales. About 1000 feet of the top of this mountain is treeless, consisting of rock partly bare, partly grass-covered. Only some four or five miles of the crest of this mountain was visible from Mount Victoria. Its height has been estimated at 12,750 feet.

The north coast was for several hours in the forenoon plainly distinct from the top of Mount Victoria. This mountain is some fifteen to twenty miles nearer to the south than to the north coast. The country lying between it and the north coast is far less mountainous than that between it and the south coast. Looking from the top of Mount Victoria, between 360° and 90° magnetic compass, only two great mountains are seen between the Owen Stanley Range and the north coast; these two are Mount Gillies and Mount Parkes, both great mountains, but evidently divided from each other and from the Owen Stanley Range; they are probably 7000 or 8000 feet high, but it is very difficult to estimate such altitudes looking down on them from a great height, as in this instance. Mount Gillies, the more westerly of the two, is a rounded mountain without any rugged peaks, clothed in unbroken forest. It cannot be less than 15 to 20 miles long, running in a north-westerly direction. It is separated from Mount Scratchley and Mount Albert Edward by a valley a mile or two wide, and from Mount Parkes, which lies immediately east of it, by a river. Mount Parkes resembles Mount Gillies in general features; it has no sharp well-defined peaks, is generally covered with forest, and has a length of 25 to 30 miles, and runs in nearly the same direction as the Owen Stanley Range. Mount Douglas which, looked at from the south side, appears only as a moderate elevation on the Owen Stanley Range, runs north and east for several miles until it nearly meets a south-east spur of Mount Scratchley. A valley some two or three miles long lies between Mount Parkes on the north and the ends of Mounts Scratchley and Douglas on the south; this valley widens out and separates Mount Victoria from Mount Parkes, and bending round towards the north-east, separates Mount Parkes from the end of the Mount Obree Range. On this valley I had noted three large lakes, as I supposed, and had actually sketched them into my note-book, when I was saved from this blunder by a native setting fire to one of them, when I could see they were great grass clearings in the forest. Smoke was rising from many other points in this valley, which is not less than 30 miles long, and will average four or five broad. It appears to carry a considerable population. Far away in an easterly and southerly direction were several mountain ranges. The highest peaks easterly were those I supposed to be on Goodenough and Fergusson Islands, and higher still, in a south-easterly direction, were the mountains in the

Mount Obree Range. There is thus north of the Owen Stanley Range and between it and the north coast a great extent of comparatively flat country; and there is much more population there than on the south side. It was impossible to see which way the rivers ran. Rivers could be seen, as between the end of the Mount Obree Range and Mount Parkes, and again between Mount Parkes and Mount Gillies; but it was not possible to determine in which direction they ran, as those two mountains are of immense size and there is low country, nearly flat, all round them,

Carefully taken angles having been recorded, outlines of the mountain chains made, and collections as complete as practicable secured, we left the top of Mount Victoria on the morning of the 13th on our return journey. Driven into the ground on the top of the south-eastern peak I left the peg I used for resting the compass on in taking bearings; and Mr. Belford informs me he left a powder-flask on the top of the north-west peak, containing a paper, on which he has written that I ascended the mountain on the 11th June, 1889, and named it Mount Victoria.

With regard to the nomenclature of the few mountains named on this expedition, it may be as well to state briefly the principles on which this has been done. No names have been given except where they were believed to be required for the purposes of description. Native names were not as a rule obtainable, but where they exist and are known they are adopted. The intention was that the names given to the mountains of or near the main range should present a permanent historic record of those concerned in forming British New Guinea. The name Owen Stanley is retained for the whole range; its highest crest, the great and rugged mountain mass forming its eastern end, is named after the sovereign. It is not necessary that remark should be made here on the others individually, beyond this: that it was well known that there was already, for example, a Mount Scratchley and a Mount Douglas; but these names (and it will be found that the remark applies to all others that have been repeated) have previously been bestowed on small hills that do not merit such great names and that possess native appellations. In future maps these will probably resume their native names. I cannot but express the hope that the historic names that have been bestowed on this expedition, every one of which has been given on public and not one on personal grounds, will become identified with British New Guinea.

I regret that neither myself nor Mr. Cameron could identify many of the places named by Mr. Forbes. That gentleman is undoubtedly a competent and careful observer, but his nearest approach to Mount Victoria was at such a distance from that mountain that, on account of the rugged and mountainous nature of the country, we have found it far from easy to determine how many great mountains or mountain spurs intervened between Mr. Forbes and Mount Victoria with the

Owen Stanley Range beyond it. That there were such is plain from the position he assigns to the Brown river. Mr. Forbes has clearly been looking at the south-east end of Mount Victoria, so that the mountain has shut off from his view its great extension on the north-west into the Owen Stanley Range. Mr. Forbes would probably also look into the deep, dark glen that separates Mount Knutsford from the central ridge of the Owen Stanley Range, and which looks at a distance of a few miles as if it cut off Mount Victoria from the part of the range lying to the north-west. This appearance at first deceived us when on Mount Musgrave. Hence Mount Victoria has presented to Mr. Forbes, somewhere south-east of it, the appearance of being an isolated pyramidal block, which, as has been shown, is far from being the case.

On the 16th we found ourselves in camp on the south side of Mount Knutsford, near the Vanapa river. We now desired to pay our promised visit to the natives. It was necessary that some one should cross the river and ascend the dreaded north side of Mount Musgrave to collect those of our party we had left there, and to get them to descend that mountain to meet my party near the river lower down. There was really no one except myself at all able to undertake such a hard march, as I alone wore shoes, and the others suffered greatly from sores and blisters on the feet; and I therefore felt myself called on to make it, which I did, accompanied by one Papuan. The rest of the party, carrying all the arms, &c., were to go by way of the villages. I reached Mr. Cameron's camp about 4 p.m., and found all well except one native carrier, who was dying of chest disease. All preparations were made for a move next morning in the direction of the native villages. I started with a native boy for the villages on the foot of Mount Knutsford, where I hoped to meet the party returning from Mount Victoria; but when I got down to the nearest village I found that they had not come that way, and concluded they must for some reason have changed their minds and braced themselves for the ascent of Mount Musgrave after all. I accordingly returned the same day to camp, so that next day should not be lost, and found them all safe there. The natives received me very kindly. As we descended the mountain we met a number of them on the way to our camp with food for sale. The chief man and some others turned back and accompanied me to their nearest village, which, however, turned out to be only a small collection of garden-houses. They presented me with sugar-cane and some newly dug taro, and were very friendly and communicative until I began to sketch an outline of the mountain range before me, which seemed to alarm them, as they soon left us on different pretences, some to bring us a pig, others to fetch different articles for barter. But as we had to leave before their return, in order to get back to camp before night, we did very little trade that day. One of our party had a similar experience when he visited them and began to sketch the same mountain

outline ; but this was unknown to me at that time. In coming down the river I stopped to visit the natives of Tohila, the owners of the suspension bridge mentioned above. They brought us pigs and native food, and I was able to obtain a short list of words of their dialect. They much resemble the Mount Knutsford natives, but are less robust, and have not so well marked features. Their language has a close resemblance to that of the Mount Knutsford tribe, but it has many words that are the same as or akin to Motu. They also are evidently Papuans without any trace of any older race. They were very friendly, and did not appear to be distrustful. They carried no arms, and we saw several children and girls.

The return journey from the top of Mount Victoria to the coast was accomplished in twelve days. The whole expedition may be said to have ended without mishap. I greatly regretted the death of the poor man who succumbed on Mount Musgrave ; but there were besides him several men who proved physically unfit for such a journey. Unfortunately I had no opportunity of selecting them when they started. Several of the party suffered severely from fever, but only one was seriously ill. The collections made have not fulfilled the hopes entertained. The official collection of birds contains a few new ones of value, and several specimens of rare kinds. To encourage those that carried guns in collecting, I allowed them the same advantages as I gave to my two private collectors. Of each sort of bird I took the first specimen ; the person shooting took the second ; I the third, and so on. This collection will reach Brisbane for examination by the first trip of the *Merrie England*. The geological collection will, I trust, in the hands of Mr. Jack, the Government Geologist of Queensland, tell a connected tale of much interest, as it covers the whole ground traversed. The botanical collection is being forwarded to Baron Sir Ferdinand von Mueller, from whom we shall hear of its value in due course.

GOVERNMENT HOUSE, PORT MORESBY,
1st July, 1889.

The above was read, in the absence of the author, by Mr. A. P. Maudslay, who prefaced it by the following remarks :—

“The paper which I am about to read is the report of Sir William Macgregor, Governor of British New Guinea, on his ascent of the Owen Stanley Range in the months of April to June last. The exploration of this lofty range of highlands, which extends along the south-eastern peninsula of New Guinea at a distance of 60 or 70 miles from the coast, has been, as you are aware, the great desideratum in the geography of the British part of this great island, since Port Moresby was settled by our missionaries about twelve years ago. It was first discovered, I believe, by Lieut. Yule when surveying the coast from the Gulf of Papua in the schooner *Bramble*, in 1846. On that occasion the westerly end only was sighted, where a peak, named Mount Yule on our charts, was seen and carefully triangulated, its height being found to be 10,046 feet. The extension of the range to the south-east, and its more lofty peaks, were discovered by Captain Owen Stanley on his surveying

expedition in the *Rattlesnake* in 1849 and 1850. The range, hidden by a lower coast range when close inshore, was seen from a distance out at sea (for the expedition never landed in this part), and the altitude of a number of peaks was ascertained by triangulation on two separate occasions. Seen at this distance the range appeared as a continuous elevation, and is so described by Mr. Macgillivray, the historian of the voyage, who states that on a clear day it was visible in a length of 300 miles. One of the important geographical results of Sir William Macgregor's expedition is to show that the range is not a continuous ridge, but a broad belt of steep and rugged mountains separated from each other by valleys and ravines. To ascertain the nature of this range of highlands and that of the country beyond, whether a plateau suitable for settlement or not, has been the object of many expeditions since the settlement of Port Moresby. First in the field was the enterprising missionary, Mr. Chalmers, who reached the lower hills at the foot of the highest peak in 1879. Since then Mr. Goldie explored the valley of a river which flows from the range, along which a party of Australian gold-hunters reached the foot-hills. Expeditions were next, in 1883, despatched by the enterprise of two Australian newspapers, for the express purpose of reaching the summit and, if possible, crossing the island to the north coast: that of the *Argus* was commanded by Captain Armit, and the other, sent by the Melbourne *Age*, by Mr. Morrison. Both failed to reach even the foot of the high range; the failure being due partly to physical obstacles—the extremely rugged nature of the intervening country—and partly to the ill-will of the natives. In 1886 and 1887, Mr. H. O. Forbes, the well-known traveller, partly under the auspices of our Society, made two attempts to make the ascent, both of which resulted in failure. All these attempts were made from the south or south-east from Port Moresby, from which side it is now believed the high peaks are extremely difficult to reach. New attempts made from lower down the coast in 1887, were more successful. In that year Messrs. Hartmann and Hunter reached a considerable height, and a more important expedition, sent by the Government of Victoria, under Mr. Cuthbertson, reached, as it was thought, the summit of Mount Obree (10,246 feet). But this lies at the lower south-eastern end of the range, and has been found by Sir William Macgregor not to form part of it."

This paper was illustrated by lantern-slide views of the scenery and natives, exhibited and explained by Mr. A. P. Goodwin, one of the European companions alluded to by Sir W. Macgregor, who accompanied him as far as the summit of Mount Musgrave.

In the discussion which followed, BARON VON HÜGEL said the people whom Sir William Macgregor had met on his way to the high peaks of the Owen Stanley Range were most interesting from an ethnological point of view, but the paper did not give many details about them. Judging from the little that was known, they evidently belonged to a different tribe from those on the coast. As yet, so far as he knew, no weapons or manufactured articles had been procured from the interior. All the other New Guinea implements, utensils, and weapons, were very characteristic in their ornamentation, and the northern people had a totally different way of ornamenting clubs, spears, &c., from those of the south-west.

Mr. G. R. ASKWITH said he went with Sir Peter Scratchley's expedition to New Guinea. He remembered how, as they approached the shore from the south-west, the peaks of the Owen Stanley Range were seen above the clouds, looking like a cloud themselves. No man, as far as was known, had ever reached those heights, and Sir William Macgregor might proudly claim honour for that which he had accomplished. The white man trusted that beyond lay a land more fertile than on the coast. The native would have claimed that there dwelt only the ghosts of the departed, and that as those became lighter and lighter, and ceased to haunt the

plains, so they were "numbered with the many" upon the distant and unknown mountains. It was to be hoped that Sir William Macgregor had shattered the belief of the natives, and had shown that there might be a country beyond the peaks useful to those who now held rule over the land. New Guinea was situated with regard to Queensland just as Ireland was to Great Britain. It required to be developed, taken care of, and fostered, not the less because it had a large population of aborigines. He was sure that Sir William Macgregor would think it no disparagement of his work if it were said that ten years ago it would have been impossible to get to the top of the range. Sir William had been in a position to build on the labours of his predecessors, and it was owing to the labours of naval officers such as Captain Moresby, and such missionaries as Mr. Chalmers and Mr. Lawes, that he had been able to get Papuans to follow him through districts where hostility might have been expected. Formerly the only carriers a traveller could have obtained would have been the inhabitants of the particular village in which he found himself, who would not have dared to go beyond the borders of their own village. But Sir William Macgregor had been able at Port Moresby to get carriers to accompany him through the country, where without doubt some rumours of the British name had spread. When he (Mr. Askwith) was at Port Moresby, some hill-men came down, attracted by the news that a ship had put into the harbour. They were covered with blotches of hair, hideous in themselves, and still more hideous in their wives. If such natives had not known who the people were who had come among them, they would with the greatest pleasure have put an end to them on any plea which commended itself to their view. He himself, twelve miles from Port Moresby, had met some natives of the Koiari tribe head-hunting. Some neighbouring villagers had taken the lives of some of their people, and they were determined to have heads in return. What chance would unwary travellers have against men whose aim was unerring? He had seen a penknife put upon a bank, and a native hit it, at twenty yards' distance, three times in succession. As to the future of this land, no man could as yet foretell. He could only hope that its harbours might be busy coaling stations on the highway between Australia and China, and that the country beyond those misty heights might become a sanatorium for Queensland, as Darjeeling was for Calcutta.

Mr. P. L. SCLATER, F.R.S., said New Guinea was a most attractive ground to any student of Natural History, particularly to one who had devoted the greater part of his time to the study of birds. The great group of Paradise birds was peculiar to the mountains and lands of New Guinea and the adjacent parts of Australia. Mr. Goodwin had drawn up some notes about those that were found during the expedition. There were twelve or thirteen of them, some being of the most extraordinary character. Now that Sir William Macgregor had shown the way up the Vanapa river, it was to be hoped that others would follow him. Of course, the few plants and animals as yet obtained from the Owen Stanley Range were a mere sample of what would be found by future explorers. He hoped that all the specimens obtained during the expedition would be placed in the hands of competent persons.

The PRESIDENT had no doubt that the members of the Society would have given a warm welcome to Sir William Macgregor if he had been able to come among them after his very arduous and important expedition; but as he was far away, they were extremely fortunate in having his friend, Mr. Maudslay, to read the paper for him. They had also been fortunate in finding in London Mr. Goodwin, who formed part of the expedition. He had but one remark to make in the nature of criticism upon the paper. It should be distinctly understood that the Royal Geographical Society must not be considered as in any way committed to Sir William Macgregor's nomenclature. It would very likely turn out that the mountain to which he had

given the name of Mount Victoria was christened some forty years ago Mount Owen Stanley. Evidently Sir William Macgregor was under the impression that the name of Captain Owen Stanley had been given only to the range, and not to the peak. The Admiralty charts of 1850 would hardly bear out that impression.

Mr. J. T. Last's Map of Eastern Africa, between the Rovuma and the Zambezi.

Map (in two sheets), p. 256.

MR. LAST having left England for Zanzibar soon after reading the paper, June 27th, 1887,* in which he gave a general account of the expedition with which he had been entrusted by the Society, and having since proceeded to Madagascar, where he is still engaged in zoological researches, he has been unable up to the present to furnish the report which he then promised on the scientific results of his journey. His valuable maps, field-books, and tables of observations were, however, duly handed over to the Society before he left England, and, as the region which he explored is now become one of much public interest, we have thought it well not to delay any longer the publication of his map.

The chief objects of the expedition, as stated in the instructions given to Mr. Last, were to make a survey of the Namuli Peaks, and to study the climate and economic products of the district, and the character and languages of the native tribes. He was also to determine by accurate observations the position of the junction of the rivers Lujenda and Rovuma, and in travelling thence to the Namuli Hills, to take the hitherto unexplored native caravan route through the Medo country, visiting also the Mavia people, and, if he visited Lake Shirwa and the Scottish Mission station of Blantyre, he was to connect his survey with that of Mr. Consul O'Neill. Finally, he was to return to the coast by way of the Lukugu valley, and thence proceed to Mozambique.

In carrying out his mission, Mr. Last visited Blantyre and made from that place a joint excursion with the British Consul, Mr. Hawes, north-westward to the Angoni country and the southern shore of Lake Nyassa. A report of this journey was sent by the Consul to the Foreign Office, and Mr. Last's own narrative, with a map, was published in the 'Proceedings R.G.S.,' 1887, p. 177.

Mr. Last's original MS. map consists of seven sheets, the scale being about 1 : 550,000, or $8\frac{2}{3}$ statute miles, or $7\frac{1}{2}$ geographical miles, to one inch. In the map illustrating the present paper the scale has been reduced to 1 : 1,500,000, or 23 statute miles to the inch. His positions have been retained and Consul O'Neill's routes inserted. Although both these travellers visited the Namuli Hills, they do not appear to have touched at the same villages, so their routes cannot be absolutely tied together.

* *Vide* 'Proceedings R.G.S.,' 1887, p. 467.

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