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First Ascent of One of the Snow Ridges in the Mountains of the Moon.

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(Read before the Alpine Club, March 5, 1901.)

Stanley's 'Mountains of the Moon,' or Mount Ruwenzori, as the range has become erroneously called, was the prearranged turning point of the second Tanganyika expedition which I led in 1899. When this expedition reached Tc in March, 1900, it had entered Africa at the mouth of the Zambesi and travelled *viâ* Nyassa, Tanganyika, Kivu, the Albert Edward Nyanza, and, subsequently to visiting the mountains, we returned by way of the Albert Nyanza and the Victoria Nyanza, to the east coast of the continent at Mombassa.*

Our objects had been zoological, geological, and geographical, and the prospect of contemplating and actually setting foot upon the *Montes Lunæ* was the one feature of our long journey which—at any rate to me—offered a prospect of unmixed delight. I had known Central Africa before, and the *Montes Lunæ* were something quite above the monotonous sweltering barbarism of the tropics, no less in one's estimation than in altitude. They were, in fact, the one great assemblage of snow summits in the Old World about which it could be said that nothing but the fact of their existence was actually known. Indeed, our information respecting them was at that time limited to the following facts. The range was snow-capped, and consequently of

* An illustrated general account of this expedition was given by me in 1901, under the title of *To the Mountains of the Moon* (Hurst & Blackett).

great height, and the huge massif, which at any rate rivals the Alps in magnitude, lay between the two sources of the Nile; the Albert Nyanza in the W. and the Victoria Nyanza in the E., just as the *Montes Lunæ* of the ancients are represented in Ptolemy's map as stretching between two great lakes far to the S. of the ancient territories of Egypt. They were discovered by Sir Henry Stanley; and during the Emin Relief Expedition were repeatedly seen, through their almost perpetual canopy of storm-clouds, by all the members of that expedition. It was during this expedition that Lieutenant Stairs made a first attempt at a high ascent on one of the north-western peaks. He reached an altitude of 10,000 ft., but owing to his route having led him on to an isolated Pisgah, was compelled to return without having reached the snow, or having been able to bring any of it back with him to Sir Henry, as he said he intended to.*

Later Stuhlmann visited the range from the S. and W., and during his visit made a desperate attempt to reach the snow-line over the south-western spurs. Like Stairs, however, Stuhlmann was forced by the cold, which began to affect his men, and also by want of food, to abandon the effort at 12,000 ft. In 1895 Mr. Scott Elliot visited the region, and gave a much more detailed account of the huge massif than any previously published. This undismayed explorer, although climbing alone, and shaken with repeated attacks of fever, made several high excursions on the E., S., and W. of the range; reaching, at a point near that attained by Stuhlmann, an altitude of 13,000 ft. Like the previous climbers, Scott Elliot was, however, unable to reach the snow-line anywhere. Subsequently, except for one or two minor excursions made by the officers of the Uganda Protectorate, and during one of which, Mr. Bagge tells me, he reached the upper part of the bamboo zone in the Nyamwamba valley, the mountains had remained undisturbed by the presence of white men until the spring of 1899, when we came upon their eastern flanks. Thus at the time there were several points of geographical interest which awaited exploration in the range. In the first place, we did not know at what height snow lay perpetually upon these equatorial slopes, for no one had reached it; neither did we know whether the mountains possessed glaciers; for although Scott Elliot thought he had seen evidence of former glaciation in some of the lower valleys, he had not seen any actual glaciers; while Stuhlmann, who had obtained some

* See *In Darkest Africa.*

superb views and photographs of the western aspect of the snow peaks, had expressly doubted the existence of glaciers in connection with them. Moreover, as I quickly found, while marching from Katwi on the Albert Edward Nyanza towards Fort Jerry, in Toro (my real starting point for the mountains), our whole appreciation of the range had been completely befogged and obscured through the persistent and erroneous use by geographical compilers of the terms Mount Ruwenzori and Ruwenzori in the singular, as if there was in reality only one great mountain, whereas we are dealing, as a matter of fact, with a range quite as long and quite as lofty as that portion of the Alps which stretches between Mont Blanc and the St. Gothard Pass.

At the time of our visit Mr. Bagge was at Fort Jerry, and as he had been up the Nyamwamba valley as far as the bamboos, I decided to follow this course, more especially because one of the boys who had been with him on this excursion had gone on after his master's return as far as the heath zone, some tufts of which he brought back. He had finally come to a halt on the shores of a small lake, where, so he said, he was in the company of a number of great black birds, bigger than sheep, and which bellowed like bulls. He said, further, that he did not think the ascent of any of the mountains near the lake would present much difficulty, as the tangle of heath ended near the shore, and beyond this there were nothing but steep slopes of stones and rock, ending above in an amphitheatre of snow. I therefore intended, at first, to explore the Nyamwamba valley and the mountains which were associated with it.

For this journey I took twenty of our Ujiji boys, with the headman Omari Kidogo, and my Nyassa cook. These men carried preserved provisions for a fortnight, and two and a half loads of rice. The men carried two small patrol tents, and I had also my ordinary tent, six blankets, some flannel shirts, a tarpaulin jacket and hat, a pair of ordinary nailed boots, and one pair of indiarubber sea-boots. For the men's food, in a case of emergency, I bought three live goats and a sheep near Fort Jerry, and we acquired five more live goats on the road. It will thus be seen that the party was quite self-contained, and so long as we could get water we were prepared for a month, or even more. The utilisation of live goats is, I believe, a great secret of success on all high mountains of this sort. They can climb almost anywhere where a man can, they do not require carrying, they find their own food, and they can be killed and eaten whenever

the party desires fresh meat. These arrangements being completed, we left Fort Jerry towards the S.W., but through the flooding of two rivers—the Wimi and the Mobuko—I was compelled to abandon the Nyamwamba valley, and to take that of the Mobuko instead. We had, in fact, great difficulty in crossing the Wimi, and on the third day out were obliged to camp on the plains above the river-bed. It was from this camp that I obtained a first clear view of the whole range. The dawn I found had broken absolutely cloudless, and when I looked out towards the W. from the tent there hung the whole long line of snow peaks, every crag and detail brilliant and sunlit above the still shadowed portions of the lower earth. As the sun rose the details became clearer, and I noticed below the snow on the summits a curious orange band, which was evidently the brown line of rocks mentioned by Stanley, when he viewed the heights from the Semliki valley on the other side of the range. The view of the mountains from this camp in the early mysterious light of the morning was more strange and beautiful than any I have ever seen. We were buried in some vast yellow plains of scorched grass, which formed a gorgeous foreground to the deep purple forests of the nearer hills, while beyond these, again, there rose the higher ridges of the range in tier upon tier of paling blue, until they terminated above in a lonely line of brilliant snow peaks against the dark western sky.

Besides its lonely grandeur, this extended view of the great range was of the utmost importance during the latter part of our exploration, as it gave me an opportunity of making a rapid sketch, and obtaining some photographs of the various snow peaks and the different mountain masses, so that I was subsequently able to identify my position at various points within the range. It was, moreover, of further importance, as it at once dismissed from my mind any last remnant of the idea that Ruwenzori could be considered as one mountain. Before us to the W. there rose a great range, which looked as vast and formidable, and composed of as many different elemental peaks, as do the Alps from some of the Italian plains to the S. From the spot where we stood there were visible some seventy-five miles of the range, and in this length there were at least four groups of individually distinct and snowy peaks. It will be remembered that Stuhlmann, when viewing the range at a distance from the W., described the various snow peaks which he saw under the names of his different scientific friends; and it may further be remembered that these peaks were associated by him in four distinct groups.

There was the southern group of mountains immediately round the peak he called Moebius. A little to the N. there were the great snowy heights round Ngomwimbi, further to the N. again there were the lofty peaks of Kanyangogwi and its associates, and still further to the N. the equally lofty mass which has generally been known as Saddle Mountain. From where I stood on the eastern side of the range the mountains again arranged themselves into these four groups, and there can be no doubt that both Stuhlmann and I were viewing the same series of mountains from opposite sides of the range, and from positions about seventy-five miles apart. From this first complete view of the range, it became also equally obvious to me that its exploration, from a mountaineering point of view, is a task which, in all probability, unless someone devotes his life to it, will not be completed for a great number of years; and it was also, at the same time, made evident that to talk of ascending Ruwenzori was as absurd, as absolutely stupid, in fact, as if one were to talk of ascending *The Alp.*

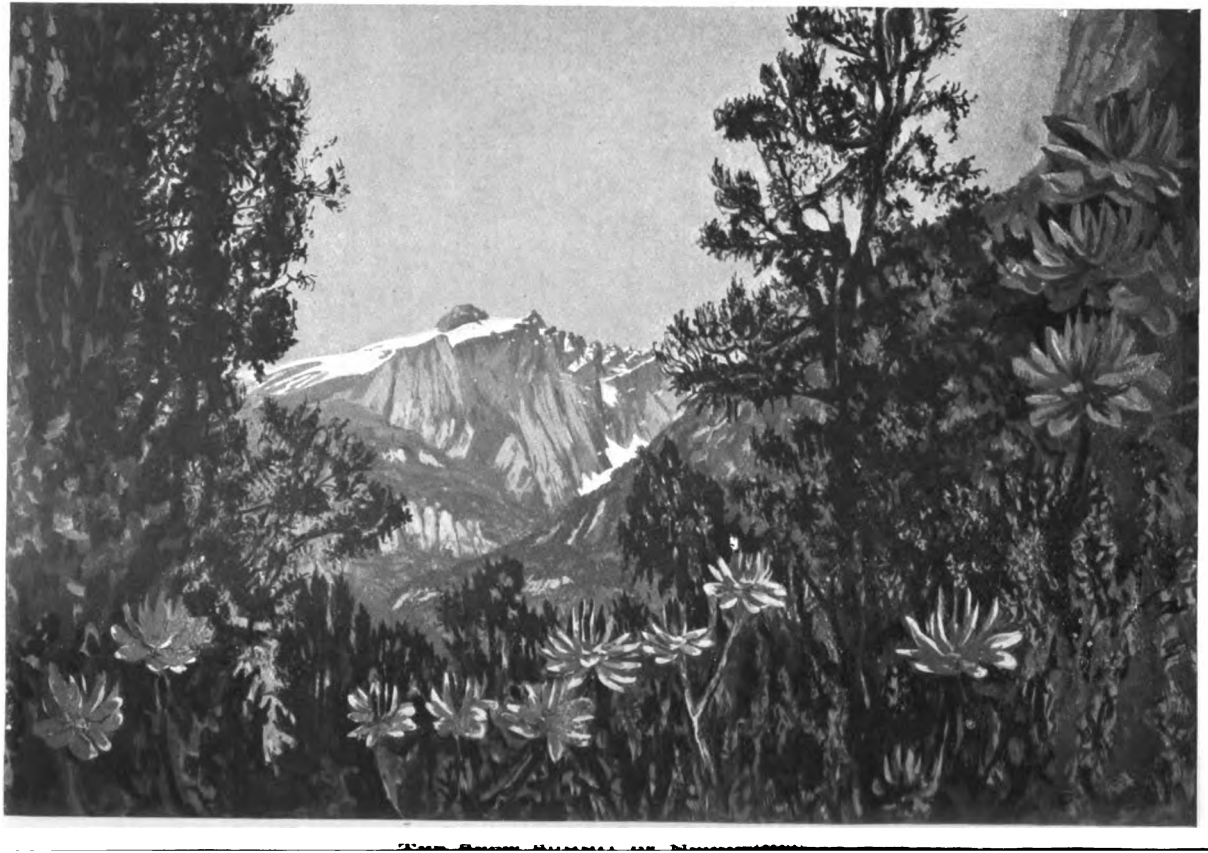
From this camp after a short early march we reached the Mobuko river, and found it in flood, and more impassable even than the Wimi. The Mobuko, or, rather, the valley in which it flows, itself winds however far back into the mountains, and the view which we had seen in the morning had, in part, been obtained through a cleft in the outer rampart of hills in which the river runs. This valley itself, therefore, offered a good means of approach to the higher portions of the range, and I determined to abandon the Nyamwamba route altogether, and to try this valley forthwith; we turned consequently abruptly to the W. It was a rough hot march, and in the floor of the valley so completely buried amongst the immense grass, that I finally struck out of it with one boy, leaving the men to come more slowly along the flat. As we skirted the lateral hills, two magnificent herds of elephants passed close to us along the valley, and towards evening the party rejoined at a small village and finally camped in a larger one some two miles further to the W., the last, in fact, belonging to the people of the plains. The men and myself were all very tired, but after being refreshed by nearly a gallon of goat's milk, I ascended a small spur, and found that the valley in front was almost closed by a tooth-like mountain, which guards the entrance to it and rises above the forest in bare, black, and almost absolutely perpendicular precipices, to a height of, perhaps, 13,000 ft. A little to the S. of this, and just visible between it and the southern shoulder of the valley, there was a

solitary snow-peak, wild and rugged enough to raise doubts in the mind of any climber. It appeared to be about four or five miles away to the W. On the following morning we pushed rapidly up the valley, until we rounded the shoulder on the southern side. Once round this we entered the mountain region proper; ridge after ridge rose to the N., and to the S., and to the W., through the upper forests of which there soared stark black masses of bare rock. Immediately in front of us there was a steep forest-clad spur, which we ascended, and on the summit found a narrow meadow covered with grass and flowers. There were a few huts amongst the trees. From this ridge there now opened out before us one of the most superb panoramic views of great mountains I have ever seen. The north-western face of the ridge fell about 1,500 ft. precipitately into the river, and commanded about four miles of its upper valley; and round this, rising into a vast natural amphitheatre, some thirty huge mountain masses contemplated the white line of the torrent in an absolutely bewildering array of cloud-spanned precipices. The natives of the little village on the ridge were a friendly primitive people, who bartered peas and beans eagerly for cloth. I made friends with the old chief, and finally got him to agree to go with me, together with fifteen of his men. This was a great score, as the mountain people are used to the cold and they know certain paths which lead a long way up through the forests, and are used by them while trapping the hirax, out of which they make fur coats, not unlike those used by the peasants in the mountain districts of Sicily. The chief, however, was by no means anxious to make this journey, and he repeatedly and solemnly assured me that no one would ever get up to the snow, that beyond a certain height the mountains were absolutely packed with devils, and that as we approached the snow-line we should find that the white stuff continually changed its place, like a Will o' the Wisp. It was here, as I sat, long after the sun had set, watching the endless changes of colour which swept over the precipices as the daylight died out and that of the moon increased, that one of the strange phenomena of these mountains began to manifest itself. I began to hear in different directions a faint roaring like that of a distant sea, which would gradually increase until it proclaimed itself near at hand as a mighty rushing wind. It was a wind, however, which was not distributed everywhere, but which blew, so to speak, in patches, always descending from the upper forest-clad slopes and roaring away down the steep wooded cañons until it disappeared. Again and again the

faint murmur would become audible high up on some lonely summit, and the descending current would gradually fall wailing and moaning through the heavy-hanging forests like a weird unearthly voice, until it finally toppled into the limp, hot valleys below. These strange gusts were, in fact, the air, which had become cooled in contact with the frozen peaks, and was now falling in dense masses into the warmer world of the plains.

Next day the way taken led down a steep descent of about 1,000 ft. into the bed of a southern tributary of the Mobuko, which we crossed, and then began to ascend along the great gorge of that river itself. Though the gradient was steep, the bush and forest were not too thick, and after about three hours' climb we rested on an overhanging rock. The forest was now more or less diversified with bamboos, and in the afternoon we entered a very thick grove beneath which the ground was boggy and black. After a time the boggyness and blackness of the ground became more pronounced, and we sank up to our knees in a mixture of moss, ferns, brambles, and bamboos. A wet, cold, and impenetrable fog had settled over the mountains, and finally rain fell in torrents. We were evidently getting to a considerable height, for it was easy to march in a coat, with a tarpaulin jacket over that; and about four o'clock we reached another great overhanging mass of schist, under which we took shelter from the rain. Fortunately beneath the rock the ground was dry and dusty, and we were able to light fires, for the temperature had sunk to 40°, and whenever the wind stirred among the tall, wet bamboos, which shut us in like a fence, the naked Swahilis crowded round the fire miserably. Towards evening the rain ceased, and from the top of the rock under which we had camped I could see the heavy disintegrating storm clouds rising in all directions off the dark forest-clad slopes, and disclosing as they went the almost black spurs of the central masses towards which we were making. As they lifted some brilliant shreds and patches of snow appeared on one of these central peaks, and I was wretchedly misled, as I found afterwards, by our then apparent proximity to the higher portions of the range. On each side of the central group, the lower spurs of which could now be distinctly seen, there was a deep cleft running E. and W. That to the N. appeared to be the higher, and both passes opened towards us in a kind of expanded meadow, a high alp, in fact, two or three miles long and about three miles broad, and which lay immediately in front of us.

In spite of the abundance of blankets I had brought with me, we awoke cold and stiff, and after an enormous breakfast set off towards the meadow. On the brambles there were splendid blackberries, and among the thorns there now appeared heath bushes, many of which attained an enormous size. We found the meadow which fronted the central peaks very boggy, but it was flooded with warm sunshine as we crossed it and ablaze with brilliant flowers. One of the spurs of the central heights rose abruptly from the meadow in huge precipices of brown micaceous schist, which in most places looked quite unscaleable; but leading to the northern cleft which we had seen the night before there was the course of an old torrent, which at some former time had swept down into the meadow under an immense overhanging face of schist, and up this we could ascend by creeping along the channel under a cliff which overhung it for more than 50 ft. This route was so exceedingly steep that it was with some difficulty the loads were got up at all, and finally the sheep had to be hauled up neck and crop by a rope. I was determined, however, that everything should go up, as I was beginning to feel sure that the snow was further to the W. than we had supposed. We reached the actual cleft visible the night before after a considerable traverse to the N., and found ourselves completely in the heath zone; the bamboos had disappeared, and the whole of this upper world was clothed in a dense forest of moss-draped heather-trees, and floored with patches of deep sphagnum and parti-coloured moss. The great trunks and branches of these trees are as hard as the bowls of briar-root pipes, which are made out of one of their allies, and they lay around us just as they had fallen for centuries—this way and that, some rotten, but more sound, and piled up to 30 or 40 ft. above the surface of the ground below. Over their sharp twisted limbs moss of every kind was growing, forming a surface like a long-forgotten graveyard, and this, surrounded by the sombre forest of heather which still stood, with its black foliage and long, grey, waving moss beards, made up an absolutely unearthly scene. It was a most difficult place to cross, for every step had to be taken at random among the moss and slippery, rotting stems. The men and loads were, in fact, continually disappearing with a yell and a crash, and requiring to be hauled to the upper world again with a rope. It was at this point during the journey that I was most doubtful what to do, for it was physically impossible to have pushed far, if the valley had remained the same.



The men, however, seemed to assume that I was going on at any price, and in this way we came finally to steeper and better ground. The ascent now followed a small river, and was tolerably easy, but we were soon brought to a standstill by heavy clouds. We knew that we were now N. of some of the central peaks, and at the time actually on their northern slopes, and the old chief was very anxious that I should ascend immediately, as he said there was plenty of snow on the crests above; but while we talked the clouds broke in the upper part of the valley, and disclosed a huge mass topped with snow still in front. Before us, the valley was blocked by another great step, 700 or 800 ft. in height, over which the stream fell in a cascade, and the top of which we did not reach till nearly sunset, camping once more under an immense overhanging cliff of schist. There was plenty of firewood, but the thermometer had dropped to 30°, and in spite of all we could do it was bitterly cold. As the sun set the clouds as usual dispersed and rolled away, leaving immediately in front of us a splendid pink mass of snow and rocks, the summit of which appeared to be about two miles away and perhaps 2,000 ft. above where we stood. This is the peak which is known as Ngomwimbi, and it often appears as the culminating height among the central group of peaks when the range is viewed from a great distance. I was woke next morning by the intense cold; white frost covered the twigs of the heath forest and sprinkled the ground, but not even frost disturbed the heavy slumbers of the cook, whom I found on his back quite naked, and snoring loudly beside a red fire. We ate our one sheep, which we had killed the night before, and we ate it all; and shortly after sunrise started once more along the valley in a cloudless morning, with the as yet untouched snows of the great mountain range obviously accessible and immediately before us. Our route up Ngomwimbi was plain from where we marched, and I do not think presents any difficulty even when the short snowfield is reached which slopes up to its actual crest. I was making for this route when, on reaching a southern spur of the mountain masses to the north, we came suddenly upon a most surprising view. The valley swept to the right, and steeply enclosing it on the north there rose the huge buttresses of the snow peak of Kanyangogwi, and a northern snowy extension of Ngomwimbi, which curved round and standing much further back stretched between. The valley, in fact, ended in this direction in a great snowy horseshoe, which appeared dazzlingly white and beau-

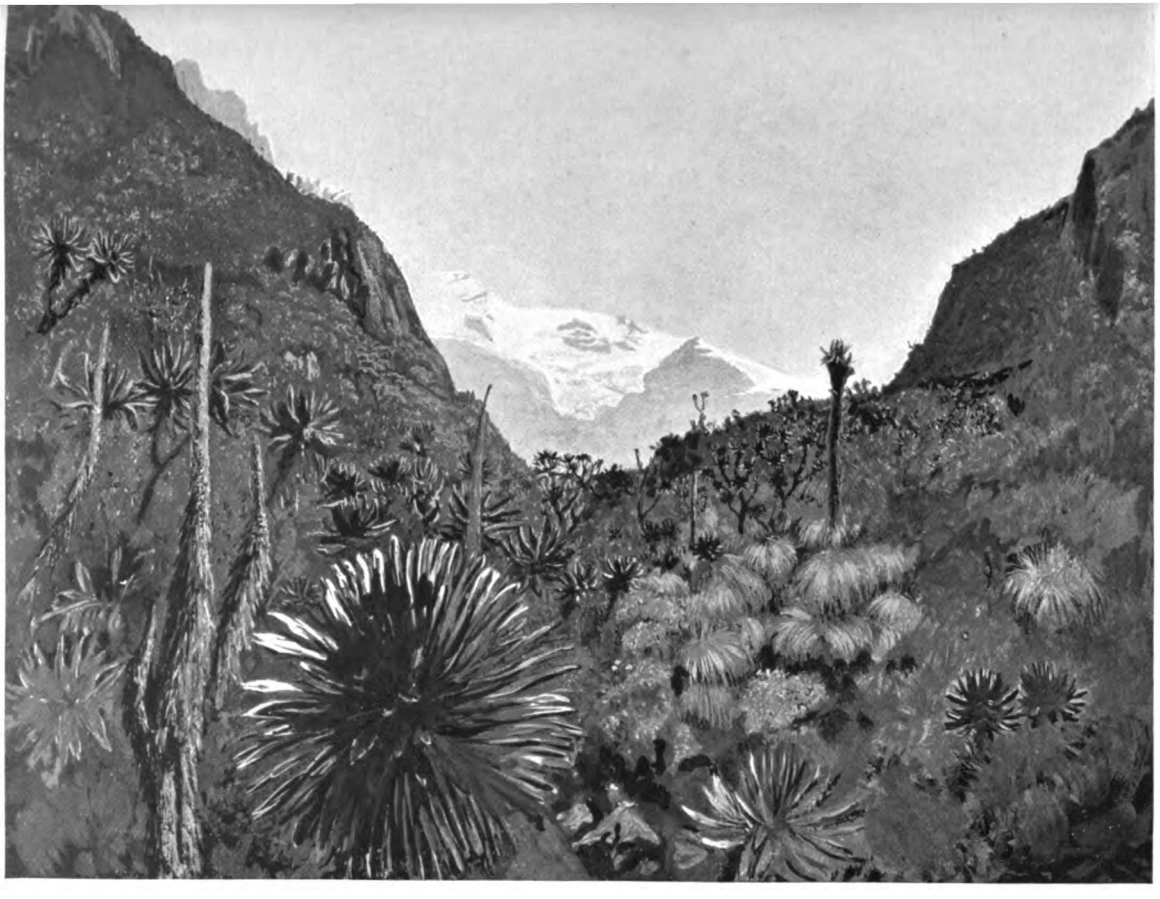
tiful in the early sunshine, and from these snow-fields I saw now, to my extreme surprise and delight, that there descended three superbly green glaciers, the snout of one of which pushed far into the valley, and was almost level with where we stood. From what we had seen, it becomes obvious that the culminating ridge of the range passes in a succession of snowy cols and summits, N. and S. between the more conspicuous peaks. The crests and ridges of Ngomwimbi are separated from those of the more northern group of summits associated with that known as Kanyangogwi by a deep cleft; and it is in this cleft that the glacier which I have named the Mobuko glacier descends almost to the floor of the valley. The eastern arête of Ngomwimbi, which we had seen the night before, forms an angle with the snow ridge which now faced us at the end of the valley, and in this angle the smallest of the three glaciers we had just discovered, fell towards an obvious moraine. From the ridge closing in the end of the valley, and which the natives call Sitchwi, a much broader mass of ice descended, from which a cascade fell into the floor of the valley near the snout of the Mobuko glacier. On the Mobuko glacier itself there was a terrific icefall, and from where I stood, I came to the conclusion it would be impossible to ascend either by this or by the small glacier on the right; but it appeared that there was a practicable ascent towards the broad glacier itself, after working along a rocky ridge first to the right, and then to the left, on to the top of the ridge. There were, in fact, many obvious methods of attacking the numerous snow ridges and summits which were in view. The summit of Kanyangogwi, the snow ridge of Sitchwi, much further back at the end of the valley, and the black rocky crest of Ngomwimbi, are, I am pretty confident, much of the same height, I do not suppose there is 1,000 ft. difference between the three. I had thus several courses open to me; I could follow out the ascent I had planned the night before, and by working back along the valley reach the short upper snow-field of the Ngomwimbi summit; I could cross the valley bodily to the N., and work up over the brown lichen-covered rock-faces of Kanyangogwi, to the patchy snow-field which now appeared above them; or we could push further up the valley and ascend by the broad glacier, on to that particular summit of Ngomwimbi which, as I have said, the natives call Sitchwi. I wanted to visit the large glacier which we had just discovered, so I decided upon this latter route. We climbed rapidly over the lower portions of the rock-faces to the S. of the glacier, till we reached some old moraines,

View of the Small Glacier between the Northern Snow Ridge of Ngomwimbi and

which we crossed, and moved steadily up to the cascade coming from the glacier itself. We were now at an altitude of something over 13,000 ft., snow was lying about in large masses, and in some places far below us; we were also clear of all vegetation except a little lichen and moss, and I moved on as rapidly as possible towards the head of the cascade, for clouds had gathered on the snow-fields above, and this part of the ascent looked as if it might be hazardous if we missed the way. We had not got up to the water, however, and were on an awkward rock-face, when the mist swept down on us, and for some time held us in a very unpleasant situation indeed. It was intensely cold, fine snow was falling, and we were nowhere in particular, on the ice-worn edge of a precipice, which sank sheer into the valley some 1,600 ft. below. I, therefore, turned immediately straight up without crossing the stream, as I was afraid that, unless I could get some sort of shelter, the Swahilis would die. We climbed for some time over steep wet rocks and snow, until, again without warning, the clouds sank suddenly, and we were once more in the warm early sunshine of the equatorial day. We had, in fact, reached the southern angle of the broad glacier itself, and I halted upon the ice, the Swahilis touching it and tasting it suspiciously, and grinning with the fierce cold. While we rested, another squall came on; the wind rushed off the ice filled with fine driven snow, causing a general panic among the men, but I succeeded in piloting them across the stream to the shelter of some huge rocks, where there was also a quantity of dead moss with which we were able to light fires. It was now about eleven o'clock, and I immediately left this our final camp alone, striking up across the rocks to a point I had seen from the valley below. As I skirted the snow-fields on the slope above, there was a glorious view of the snow-peak of Kanyangogwi to the N.; it is very high and precipitous, and drops beyond the col to the W., in a succession of fearful precipices; above which, near the top, huge masses of snow were hanging as if by a single hair, until they should finally topple over as others had into the green valleys thousands of feet beneath, each leaving a great blue rent in the treacherous white slope above. Hundreds of glittering white heaps of snow had fallen from this peak upon the Mobuko glacier about 2,000 ft. below me. Looking towards the W., as I neared the final cap of the ridge, the view remained shut in by the black snow-streaked precipices of Ngomwimbi, and advancing further, I came upon a line

of seracs, which in places appeared to be about 200 ft. in height, ending against the gable of rocks to the S. From where I stood, it was obvious that the last climb on to the ridge was going to be awkward and steep. I therefore took a boiling-point observation where I was, which gives the height as 13,702 ft., and this observation was repeated with approximately the same result next day. I then left the hypsometric apparatus on the snow, carrying only an aneroid, an axe and a rope. Had there not been a heavy fall of snow within the last few days, I should say that this portion of the ascent would have been almost impracticable for one man; as it was, most of the irregularities in the ice and rock were filled up into a soft steep slope. I had twice to take to the ice, but finally the rock became better, and I got out on to a small patch of snow under a mass of rocks which stood about ten feet above me on the left. It was the top of the ridge, but there was hardly anything to be seen, the snow sloped gradually away to the W., while a furious cold wind came rushing from the Semliki side. Having reached this point on the ridge, I had accomplished all that I had intended to do. I had got up to the snow and the ice, and on to one of the high ridges of the Mountains of the Moon. I therefore executed an ungodly dance, set my aneroid, and began to descend slowly again to the lower snows. At the place on the snow where I had taken the confirmed hypsometric observation of 13,702 ft. this aneroid read direct at 15,400 ft., and on the top of the ridge gave a differential reading of 1,200 ft. higher, which may be taken as approximately correct, and when, consequently, this is added to the hypsometric observation, it gives an altitude of 14,900 ft. as the highest point reached on the ridge. I found the way down anything but pleasant, my hands were numb with the cold in spite of gloves, and the superficial wetness of the snow and rocks had now, in the afternoon, frozen into an intensely slippery glaze; and I had several rather unpleasant foretastes of being shot bodily over the seracs on to the lower snows. Finally, however, I got down to the place where I had left the hypsometric apparatus, and after resting some time, found my way down the lower snow-slope and into camp, just after sunset. Omari, however, was not there, and I found that he had gone out to look for me, being alarmed at my long absence on the upper part of the ridge.

Among the most interesting results of this journey from a general point of view, is the first ascertainment of the actual



THE NORTHERN SNOW RIDGE OF NGOMWIMBI FROM A POINT ABOUT 12,500 FEET.

height of the snow-line at the remarkably low level of 13,500 ft. The snow-line on the Himalayas is at least 14,000 ft., and one would have naturally supposed that the snow-line on the African equator would have been correspondingly higher. It is therefore distinctly fortunate that a number of boiling-point observations were taken, up to, and beyond, the line of permanent snow, both on the ascent and descent of the ridge selected. Moreover these observations were subsequently confirmed by my colleague Mr. Fergusson who made a climb on the same ridge further to the N., some weeks later. The spot reached by Mr. Fergusson was that reached some months afterwards by Sir Harry Johnston. Johnston's highest point, 14,800 ft. by boiling, does not quite agree with Mr. Fergusson's 14,600, but since Mr. Fergusson has had much experience at this kind of work, it is probable that the first determination is the more accurate of the two. Still later Mr. Wilde, an officer of the Uganda Protectorate, has made an ascent of the same ridge, which is, according to a direct aneroid reading, 14,900 ft. Thus the altitudes reached are, myself 14,900, Mr. Wilde 14,900 (?), Sir Harry Johnston 14,800, and Mr. Fergusson 14,600 ft. It is certainly to be regretted that Johnston was not sufficiently enterprising to attempt some of the other peaks which surround the valley, as well as the one I selected for an ascent, for had this been done, I feel confident that his recent statements respecting their enormous altitude would never have been made.*

With respect to the highest altitude attained by any of the summits of the range, it will be remembered that Stanley, Stuhlmann, Stairs, and Scott Elliot all came to exactly the same conclusion, assigning about 16,700 ft. to the highest peaks. My own impression is precisely the same. Johnston, on the other hand, speaks with confidence of 20,000 ft. as a minimum, and Mr. Wilde, following his lead, thinks that at any rate they may reach 19,000 ft. Johnston confesses that he is judging entirely by his eye, and his contention in fact really resolves itself into this: 'from one peak I saw another, at 'what distance I can form no idea, but which I feel must be '20,000 ft.' One can imagine the smile with which such an estimate will be received by actual mountaineers. There is, however, a practical, although a rough and ready, method of determining the outside altitude of these mountains. I have photographs taken forty miles from the range, on

* See discussion following paper in the *Journal of the Royal Geographical Society*, vol. xix., January, 1902, pp. 40, 41.

plains at an altitude of about 4,000 ft., and in which the higher portions of the range are seen rising abruptly above the plains. We ascertained the fact that the snow-line lies as low as 13,500 ft., and therefore from the plains to the snow is 9,500 ft. In no case does the snow cover quite a third of the height from the summit to the plains, but assuming it to cover a full third, this gives an altitude of 16,500 ft. as an outside height for any of the peaks.

The Lofoten Islands.

By J. NORMAN COLLIE.

(Read before the Alpine Club, February 3, 1902.)

IN the paper which I am to read to you this evening I shall describe a series of rock peaks which form the main part of the Lofoten Islands. These islands, situated as they are inside the Arctic circle, lie more than 1,200 miles north of London, more than 100 miles further north than Iceland, also far further north than Hudson Bay, Behring Straits, or most of Siberia; therefore they would be covered with ice and snow, and be surrounded by a frozen ocean during winter and summer, were it not for that warm current that has its origin in the Gulf of Mexico, and which, after flowing thousands of miles, sweeps past the northern coast of Norway, finally losing itself amongst the ice floes of Spitzbergen and Franz Joseph Land. The influence of the Gulf Stream on the temperature of the northern coast of Norway is well illustrated by the fact that the sea round the Lofoten Islands, and even further north at Hammerfest and the North Cape, is open all the year through, whilst the Kristiania Fjord, in Southern Norway, which is untouched by the Gulf Stream, is during the winter months covered with ice. As an instance of the reverse effect the Labrador current might be cited—that is to say, of an Arctic current flowing southwards. This current comes south down the eastern coast of Labrador from Baffin's Bay and Davis Straits, and it affects to such a degree the climate of the Straits of Belle Isle and Newfoundland—which are in the same latitude as London and Paris—that for many months in the year the Straits of Belle Isle are closed to ships. Even at the end of July I have seen snow drifts lying on the seashore unmelted, whilst the bare uplands behind were covered with far-stretching snowfields. Icebergs too drift on the